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The effects of small scale rice mills on rural employment and income levels : a case study of women paddy processors in dakwari Village kano

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THE EFFECTS OF SMALL SCALE RICE MILLS ON RURAL EMPLOYMENT AND INCOME LEVELS:

A CASE STUDY OF WOMEN PADDY PROCESSORS IN YADAKWARI VILLAGE, KANO

A Thesis submitted to the Department of Sociology, Faculty of Social and Management Sciences, Bayero University Kano, in Partial Fulfilment for the Award of the Degree of M.Sc (Sociology).

BY

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DEDICATION

To my late father Alhaji Lawan Bukar,
and my daughters Fatima and Hauwa.
I affectionately dedicate this dissertation.

CERTIFICATION

This thesis entitled The Effects of Small Scale Rice Mills on Rural Employment And Income Levels is written by Alsha Bukar Ali (Mrs.) and certified by the following people, for the award of Master's Degree in Sociology.

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CHAPTER ONE

INTRODUCTION

STATEMENT OF THE PROBLEM

Agriculture and agriculture related activities (such as food processing) constitute the main source of employment and income for the generality of the rural population in the society. There are numerous studies which have examined the contributions of the agricultural sector to the development process as well as the role of the National government in accelerating agricultural production. Reynolds (1975), Lipton (1977) Wharton (1970) etc. examined the various contributions of the agricultural sector and highlighted the positive role of agriculture in providing raw materials for the industrial sector, market for manufactured products, food for the domestic population, labour and capital for other sectors of the economy as well as the necessary foreign exchange with which to develop the national economy and society.

However, there is very little literature in the area of food processing activities and their contributions to socio-economic development. Similarly only a few studies exist on the government's attempt to develop this vital sector of the Nigerian society and economy. For instance the recent government concern with the role of women in development has brought into focus the various activities undertaken by women, especially rural women such as food production, food processing, child care, home care and other non-agricultural employment activities.

In Nigeria, the establishment of the Better Life for Rural Women Programme, has further generated a lot of interest in the role of rural women in the development process. The Programme has also provided the government with an opportunity to articulate a policy position in respect of the role of

rural women in the development process. One of the key areas of activity of the Better Life Programme is the involvement of rural women in food processing. Food processing is an important source of employment and income for the rural women. For generations the rural women employed traditional techniques and technology to process grains and oil seeds (such as groundnuts). One of the objectives of the Better Life Programme is to introduce modern mills and other modern methods of processing foods in order to lighten women's drudgery or hardship as well as to improve their income levels and general conditions of living. However, although modern food processing technology was introduced into the country since the colonial period, it has only recently become widespread.

1.2 PROBLEMS AND OBJECTIVES OF THE STUDY.

The major objective of our study is to examine broadly the introduction of modern food processing technology in rural Nigeria, and its transformation of the working and living conditions of the rural women. In particular, we shall examine the extent to which the modern technology has affected women's employment and income in the rural area.

The study will specifically focus on rice processing activities for the following reasons:-

(a) Since the ban on rice import in 1986, there is a sharp increase in the number of modern rice mills in the rice producing areas of the country such as the Kano River Project Area in Kano State.

(b) Over the years, rice has become one of the major staple foods for urban consumers in the country.

It is therefore envisaged that the introduction of the modern rice mill would have a profound effect on the women who use traditional rice processing technology. The study will be conducted among the rural women of Yadakwari village in the Kano River Project area. Yadakwari is one of the few villages in the area with a long history of modern rice milling activities. Furthermore, it is one of the rice producing areas selected for the implementation of the Better Life Programme on rural industrialization.

1.3 SIGNIFICANCE OF THE STUDY:

Our study will represent an important contribution to the existing body of literature on women studies, and studies on food processing activities in rural areas in developing societies. It will also provide a data-base for possible policy and programme formulation for the rural industrialization process. It will show the effects of industrialization on the rural woman. This may be of particular relevance to the Better Life Programme and the National Commission on Women in Nigeria and other developing societies.

1.4 AN INTRODUCTION TO RICE PRODUCTION, PROCESSING AND MARKETING IN NIGERIA.

(i) Agro-Processing Industries and Rural Employment: An Introduction

An attempt is made to briefly review the emergence of new technology i.e. agro-processing industries and rural employment creation in Nigeria. A particular reference is made to the introduction of rice mills in the country. Rural employment in general is seen within the context of the overall agricultural

development strategy of the government. The major source of employment is farming in the rural sector, mainly during the rainy season. Non-agricultural activities in this sector were only seasonal, after the strenous labour demand of the farming season.

This pattern of agricultural employment opportunity has since changed, particularly with the introduction of agro-processing industries. During the colonial and post colonial periods, emphasis was placed on import substitution industrialization strategy. Many agro-Processing industries were established. These include: textile mills, canning industries, ground-nut and palm oil mills, mills for processing grains (corn, millet, maize and rice) into flour. These industries are labour displacing; because only a few people were absorbed into the labour force created by the modern sector. Unemployment and low income levels in rural Nigeria became more widespread especially in the 1980s.

The modern rice mill is one of the industries that is making significant impact on the working and living conditions of especially the rural women. The history of the modern rice mill began around 1984, with the installation of the Abakaliki Rice Mill in Eastern Nigeria. However, by the late 1980s there are hundreds of these mills scattered in especially rice producing areas of the country (Birch of Yadakwari village in Kano State). It is significant to provide an introduction to rice production, processing and marketing as a basis for our subsequent study or analysis of the relationship between the introduction of the modern Rice Mills and employment and income generation in rural Nigeria.

(ii) **Rice Production**

Rice has been an important food item which was grown and consumed in all parts of the country in the past. In the early 1960s Nigeria produced rice to meet its domestic needs; during this period the production level was commensurate with the domestic demand.

In 1970, there was an increase in the demand for rice in the country, especially among the urban people. The major reason for the increase in demand was the rapid increase in population growth as well as the insufficient production of clean rice by traditional processors and the rising income levels, particularly among the urban dwellers. In order to meet this demand, large quantities of rice were imported into the country. For example, in 1982, over one million tonnes of rice was imported as against 600,000 tonnes imported in 1981[12]. This trend of importation continued until 1986, when a ban was placed on the importation of food items, including rice. The government therefore embarked on various strategies to boost domestic production of rice, a crop which is grown in most of the Northern and Western regions of the country. Some of these strategies include

1) to bring more land under cultivation of rice,
2) To improve irrigation facilities ,
3) To promote research and development in rice production.

For example, the National Cereals Research Institute developed and recommend to farmers 29 improved rice varieties, that are adapted to various ecological zones of the country. As a result of these policies/strategies, a significant increase in rice paddy output was recorded in all the rice producing states.

(iii) **Rice Processing**

In the rice producing areas of the country, rice processing, using mainly the traditimal method, is one important activity carried out by the rural women. The traditional processes carried out by the women are the following:-

a) **Parboiling**: The steaming of paddy, in order to make husking easier.

b) **Drying**: Spreading out the paddy to dry in order to prevent breakage while husking.

c) **Husking**: The hand-pounding of the paddy to remove the husks from the grains in stages until the rice is polished. (By using a wooden pistle and motar).

d) **Winnowing**: Cleaning the husked rice, by women, using calabashes.

e) **Destoning**: Removing any foreign particles and stones in the clean rice for a better quality. With the increase in paddy output, more small scale rice mills were introduced in most rural areas. These privately owned, 16-horsepower diesel-engine mills are easily installed. The average milling capacity of each mill is about 400 tonnes per annum. Similarly large scale rice mills (with modern parboiling and milling facilities) can be found in parts of the country where they process rice in very large quantities. For example, this type of mill can produce more than 200 tonnes of rice daily, or between six and ten tonnes per hour. This large scale mill is highly capital intensive and solely dependent on imported spare parts. It is not popular among the small rice producers, and is mostly owned by the government or private organisations. Examples of this type of mill include the Sokoto Haske Rice Mill and Associated Products, Bida mills, Jos and Pateggi mills.

However, our study only focused on the introduction of small scale rice mills and the effect on the employment and income levels of women rice processors.

(iv) **Rice Marketing**

In the past there were two sources supplying rice in the country.

1) Rice marketing, handled by individual grain merchants.

2) Private Organisation licensed by the government to import rice for distribution in the market. The two sources were unco-ordinated, therefore government set-up the Nigerian National Supply Company (NNSC) in 1976 to ease the situation on distribution of rice in the market. This company was dissolved in 1984 and followed by the ban on rice importation in 1986. Since then trade liberalization policies have allowed for free competition in the marketing of foodstuff, including rice.

Nigerian rice producers handle the supply of paddy or clean rice directly in the market. This source of supply is used by the women [i.e self-employed] to purchase paddy for processing. As at the time of this research, the price for a bag of paddy 50kg was N300.00 while a 'mudu' of paddy was sold for between N4.00 and N5.00. The milled rice was sold about N500.00 per bag of 50kg and N8.00 for a mudu.

Another source of supply of paddy for the women involved in rice processing, was locally arranged. That is, women rice traders supply (even on credit) to buyers at home: mostly those women in purdah. The clean processed rice is purchased in bulk by the women traders who sell in the market. However our study tended to concentrate on the effects of mills on those women involved in rice processing.

1.5 NOTES ON STUDY AREA:

Yadakwari is a rural town located in Rano Local Government Area, Kano State. It is about 45 kilometers from Kano City, along Kano-Zaria Road. This village has a total population of about 9,954 (Local Government Directorate, Military Government's Office, November 1988).

Yadakwari is composed of a cluster of compounds surrounded by an earthen wall. Some compounds consist of a fenced cluster of straw and mud huts, frequently divided into separate sections. Although a Hausa family (**iyali**) consists of a husband, his wife or wives and his children, some other families and their unmarried relatives often live together in the same compound. Thus all the people living in one compound belong to the same household. Such a household is a basic economic and social unit, as the members of a household work, cook, and have meals together.

The population of the study area is composed of three different ethnic groups, with the Hausa forming the major group (94%). The remaining 6% are the Fulanis and other tribes. The lingua franca is Hausa, and they are almost exclusively Muslims. A number of women live in seclusion as a result of prevailing Islamic customs, and over 50% of women in this village are married. The major economic activity of this population is farming during the rainy seasons. Nowadays, with the irrigation facilities provided around the area, farming is also done during the dry season.

Basically the men (household heads) are involved in farming during the cropping season with assistance from the male members of their family who live in the same household. In that case mutual help plays an important role among the household heads of the village. Similarly the small local farmers and their dependents

provide labour for hire to household heads. Other secondary activities during the rainy season include trading, weaving, barbering, butchering, etc. On the other hand during the dry season, activities include, farming with the irrigation facilities and vegetable gardening. Crops grown include maize, cowpea, groundnuts, rice, wheat and vegetables.

Apparently, few women are involved in farm work and all other women are mainly concerned with processing of grains and vegetables as the main economic activity. In addition to that the females participate in spinning, trading, cap-making, weaving, sewing etc. The actual rice processing like parboiling, drying, dehusking, winnowing destoning and polishing are carried out by the women in Yadakwari in their respective homes. Marketing of these processed grains are done only by children or the unsecluded women in the village. The alternative is to purchase the rice from private homes.

The money earned from the various economic activities is used by the women to purchase cooking and household utensils for their daughters on the ocassion of their marriages. They also provide gifts at wedding or name giving ceremonies, and other special occasions like Sallah. Similarly, they provide clothes and household necessities for themselves and their children from this source of income. Sometimes when the man cannot provide, the woman also buys foodstuff for the family's consumption.

However, Yadakwari has an advantage since it is within the Kano River Project Area (KRP) under the Hadejia Jama'are River Basins Development Authority, established in 1976. This village is also one of the priority areas for extension programmes of the Kano State Agriculture and Rural Development Authority (KNARDA)

in promoting rice production on its Fadama Land. Through this project, a sizeable proportion of the inhabitants have found employment under the irrigation scheme not only as farmers, but also as drivers and labourers. It is also noted that Yadakwari is one of the main rice producing areas in the state. Other rice producing areas include Hadejia, Jahun, Kafin Hausa, Gwaram, Kura, Bichi; Karaye, Guri, Danbatta, Kazaure and Minjibir.

In the area of education, the literacy rate of the population is generally increasing: particularly because of childhood Koranic instruction, the Muslim population can now read and write in Arabic. Educational facilities are provided for children of the area, and a few adults also attend some form of adult education classes.

1.6 METHOD OF DATA COLLECTION:

We mainly used elite or depth interviews to generate most of our data: the interviews were conducted on a sample of rural women in Yadakwari. During the course of the field survey, we also interviewed a number of relevant government officials from the Directorate of women Affairs, Kano State Agriculture and Rural Development Authority (KNARDA), Kano State Ministry of Agriculture and Rural Development, Hadejia-Jama'are River Basin Development Authority (HJRBDA). The information gathered from the ministries provided us with the necessary background information for the write-up of a number of chapters in the dissertation. We also interviewed all the nine mill owners in Yadakwari village, a selection of the male labourers who operate the mills, as well as male paddy parboilers pound around Danbatta.

For the purpose of identifying our women respondents in Yadakwari village we used a non-probability sampling method- i.e. Quota Sampling method. It is important to note that we could not obtain a sampling frame of the women in the village, nor could we conduct a simple census survey to obtain a sampling frame because of time and financial constraints. We therefore purposively selected a sample of forty (40) women respondents with the assistance of the village head. The women were selected in such a way as to reflect the major categories of women affected by the introduction of modern rice mills in the village. We however note the selection of our respondents is not free of biases. There are four categories of women respondents; viz:

(1) Women paid to parboil and handpound paddy using traditional methods i.e. labourers "masu Aikatau"

(2) Women who purchase paddy and process it using traditional methods for sale in the market.

(3) Those that started paddy parboiling for a fee as a result of the introduction of the rice mills.

(4) Those that started to purchase paddy to process it for sale in the market as a result of the introduction of the mills.

In respect of the first two categories, we drew a sample of fifteen (15) from each category. These categories represent the majority of the women affected by the introduction of the mills in the village. As we could not determine their respective number, and in the absence of any scientific procedure for determining their numerical strength, we selected the number mentioned above according to time and financial limitations.

With respect to the last two categories, we came to learn about their existence in the course of our field survey. Also from our discussions during the interviews with the villagers, it was obvious that there are not many of them. However, their number is increasing in this village. Therefore, we purposively selected an equal number of five (5) respondents from each category. It should however, be noted that all the conclusions reached in respect of our study, are limited to the forty (40) respondents in our sample.

Although, we did not use scientific methods in the selection of our sample, it should be noted that our sample was selected as a result of repeated visits to the village before we conducted the full scale field survey. The actual survey took a total of three (3) months, between October (1989) and January (1990), that was the period of rice processing. During this period, we visited the village sixteen times. We spent an average of two hours per respondent during which we asked them numerous questions including their life histories, socio-economic characteristics, occupational activities, traditional rice processing activities, their relationship with customers, millers, mill operators, as well as their married life. We also asked a number of attitudinal questions as well as other relevant factual information with regards to the modern mills. Similarly, unstructured or elite interview method with the sampling frame used, gives enough time for the women to speak for themselves and to make as many as necessary call backs in order to get all the information required. Being a woman, myself, I did not encounter any problem regarding access to the compounds i.e. where these women live. We also encountered very little resistance from the male heads of these compounds or household units.

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We mainly used a tape recorder to record our interviews. We had established a good rapport during our visits before the full scale field survey, and as a result, we did not encounter any problem in the course of our interviews. At the end of the survey exercise, we utilized the services of a qualified interpreter to transcribe the recordings into English from Hausa.

1.7 METHOD OF ANALYSIS:

The analysis of the data and case histories collected was largely qualitative; that is, it involved a non-staistical method of analysis. In this qualitative research, we used descriptions and various quotations that are rich in imagery and that can convey our message to our readers.

1.8 ORGANIZATION OF CHAPTERS:

The study is divided into five chapters, the first chapter is the introductory chapter, chapters two and three are on theoretical framework and literature review respectively. While chapters four and five are on data analysis, conclusions and recommendations.

CHAPTER TWO

THEORETICAL FRAMEWORK

2:1 INTRODUCTION:

In this chapter, a critical analysis of the theories of modernization is made. Some of the major assumptions and the major exponents of these theories are presented. The theoretical issues that relate to theories on transfer of technology are examined systematically. Within this context, we explore the effects or the implications of transfer of modern technology in traditional rural societies.

2:2 THEORIES ON MODERNIZATION AND TRANSFER OF TECHNOLOGY:

A Critique:

Modernization theory represents one of the major theories of social change. This theory attempts to account for the process and dynamic factors related to social change in developing societies. In effect, it formulated a definite path and models of change for these societies. Some of these theoretical models are ideal-types that viewed modernization as the transformation of the traditional societies into modern western societies.

Therefore, this study proposes to examine some of the empirical weaknesses, and the theoretical adequacy of this theory. This is in the light of analysing the problems of modernization in the traditional societies as regards the introduction of new technology. In this respect, we shall provide a critique of the major assumptions of the modernization paradigm.

The forerunners of the modernization theory are Comte (1968), Spencer (1966) and Durkheim (1964) and Marx-Weber (1942). While the major exponents of this theory of modernization are Talcott Parsons (1951), Hoselitz (1960), Smelser (1964), Rostow (1960), Moore (1963), Nash (1942), Redfield (1941) and Eisenstadt (1966).

The common feature of their works is the assumption that traditional society is characterized by indices of traditionality and therefore modernization/development consists of abandoning these characteristics and adopting those of the modern (western) societies. According to this assumption, the traditional societies are backward, unresponsive to change, and incapable of generating change from within. This is as a result of certain inherent norms and values in the traditional society that prevent people from taking rational decisions.

For example, using the concept of pattern variables, Parsons (1951) and similarly Hoselitz (1960), elaborating from Marx-Weber's ideal type, characterised the modern societies as universalistic, achievement oriented, and functionally specific. On the other hand, the traditional societies are characterised as particularistic, ascriptive and functionally diffuse. To become modern, Hoselitz suggests that traditional society must eliminate its traditional pattern variables to adopt those of modern societies.

Another major assumption of this theory is that modernization occured through the diffusion of cultural elements from the western modern societies to the traditional societies. Theorists like Nash (1954) emphasize the diffusion of knowledge, skills, organisation, values, technology and capital, as the primary factors for modernization or development and social change. According to this view, since modernization consist of diffusion and acculturation of this modern skills, traditionalism remains when there is obstacle or resistence to this diffusion.

In another assumption, the theory conceived the traditional norms, skills, and values as not only constraining the people to be responsive to change, but these also constrained them from initiating change from within.

Similarly, this theory also assumed that change is unilinear and uniform in all societies. For them societies must change from one stage to another, with the next state being necessarily higher than the former one. For example, societies move from traditional (rural) to modern (urban), organic to merchanical, gemein-Schaft to gesel-Schaft and from simple to complex societies. Examples of this line of reasoning can be found in Rostow's stages of economic growth. But these assumptions are incorrect, primarily because they do not correspond at all to the past or present reality of the traditional societies, whose modernization they are supposed to guide. This notion has been put forward without considering the fact that change can take place at any stage, and not necessarily passing through the same path as the modern societies. In view of this analysis, the modernization theory has a number of significant weaknesses as observed by Frank (1967), Foster Carter (1973), Hoogvelt (1980) and Taylor (1979) among many others.

Generally this theory does no more than a classification or a typology of what it considers to be the major structural characteristics of societies at different stages of societal evolution. Also, it does not say anything about the actual historical processess of transition from one stage to another. Rather it only presents a vague reference to cultural diffusion as the process whereby evolutionary break through is transmitted.

Another weakness of this theory of social change can be seen from the dichotomies presented, such as Hoselitz and Parson's pattern variables. For instance, it is incorrect to characterise the social, economic, and political roles of the traditional societies as distributed almost exclusively in terms of ascriptive norms. Thus, one can challenge the empirical validity of this conception of modernization, by simply finding some elements of the traditional in modern society, such as particularism, ascription and diffusion, and that of modernity (e.g. Universalism, achievement orientation and functional specification) on traditional societies. Therefore, these characteristics are not important for determining modernization/development in a society, and the adequacy of this approach is cast in doubt.

Most of the modernization theorists ethnocentrically advocated westernization, and based their analysis on the standard of the western societies, without relating this to our type of traditional society. The notion that modern-western societies are above all other societies, makes the theory value-laden. The theory is only dominated by western-scholars, who postulate that what is desirable in western societies, is also diserable in others. But this concluding prescription is not applicable to our traditional societies, since it is based on western ideas.

Another significant weakness of this theory is the conception that traditional societies must adopt technologies and skills of the western societies in order to become modern. But the empirical validity of the transfer of technology is questionable, since technology is diffused only in part. This conception, as observed by Frank (1967), suffers from serious theoretical shortcomings because of its failure to take adequate account of the determinant structure and development of the social system within which diffusion, acculturation, and modernization will take place.

The basic argument is that to discard the existing techniques (traditional) and skills in order to copy from the West is not the most distinctive ingredient of modernization. Because technologies are cultural traditions that can be developed within the human communities in order to deal with their environment, (therefore) mere borrowing of technology and skills from others does not necessarily lead to the achievement of the desired modernization objectives.

The theory also wrongly assumes that traditional societies cannot internally generate change because of their constraining norms and values. But these norms and values do not hinder any change, nor do they stand as an obstacle; rather they facilitate changes. This means people in that society usually decide by their own rational thinking to adopt what is suitable and beneficial, and not just follow and imitate western skills blindly. For example when rice mills are introduced in the rural area, not everybody adopts it immediately, until after its benefits are considered satisfactory as evidenced by the demand for milled rice.

However, inspite of the above weaknesses the modernization theory of change tends to become relevant for this study concerned with social change. The major rationale for this is primarily because, firstly the diffusion of modern technology is one of the processes of change or modernization and/or development of traditional society; and our study is concerned with this. Secondly, since our study is concerned with the introduction of modern technology and has generated a proposition that modernization is presumably linked to modern technology, then it becomes relevant for this study, to determine the effects of this modern technology on the employment and income levels of the rural (communities) women, although our study represents a critique of this framework.

Nevertheless to put this theory into empirical reality, it is clear that the theory assumed people in the traditional society only become modern through a particular life experience they undergo i.e. the adoption of new technology. And since there is the belief that employment in a modern processing industry has particular capabilities to change those people involved to move from more traditional to more modern pole in their attitudes, values and hehaviour, then one can argue that this adoption of new technology is likely to have unfavourable effects on the people participating in the traditional industry. Thus it becomes unsatisfactory to emphasize such mode of experience as characteristic of modern society or development because it is capital intensive.

Therefore, our basic assumption is that there is a problem whenever a new technology is introduced to fit into the existing traditional system. Similarly with respect to the introduction of rice mills in rural Kano, we intend to examine the effect of this modern method on the traditional industry. In particular the rural women whose employment opportunity and income levels in this traditional rice processing industry are likely to be affected, is the major concern of this study.

Moreover, this study raises important issues related to the relationship between development or modernization and the transfer of modern technology which is perhaps, or assumed to be, the most distinctive ingredient of modernization that can be borrowed and established in the traditional society. We shall explore this.

In general modernization theorists contend that modernization of rural areas in less developed countries (LDCs) necessarily entails the transfer of modern (advanced) technology. The optimistic view about the transfer of modern technology is that it would bring about rapid economic

growth, and that the resultant benefits would inevitably "trickle down" to the poorest areas and to those with low income levels. For instance, B. Higgins (1959) advocated that advanced technologies are more effective and that they can foster the development/modernization process in the developing societies. In effect this approach suggests that what traditional societies need is western technology, and that to introduce this, westerners have to come along with their capital intensive technologies and technical know-how. Also for them these societies need not go through the same difficult and tortuous path which the advanced countries passed through to arrive at their present high level of technology. It is also said that the traditional societies have an advantage in that they could make immediate use of the accumulated experience which it has taken the advanced countries years to acquire, by borrowing or transfering the advanced technology.

In relation to our research, these kind of technologies are not relevent to the traditional societies, because it would not be possible to continue to import the technology, as well as the experts and the spare parts to the traditional society for its development. Thus, it will result in a total displacement of the traditional technology and of the indigenous labour.

Similarly, Rostow (1962) suggests the idea of borrowing and incorporating the sophisticated technology from the superior ones into the organisational terms and settlement patterns of the traditional societies, as an important aspect of development and modernization of these societies. Unfortunately some of the developing countries which imported advanced technology from Europe and America have found it very unsuitable to their environment (Onyemelukwe (1974). Particularly,

African countries like Ghana, Kenya, and Nigeria which adopted capital intensive food processing facilities or other industries in their rural areas, have experienced that these technologies created only few jobs and depended on imported resources. As a result of this, there was not only an overall decline in employment and income, but also a further drain on foreign exchange. Therefore, this kind of capital intensive technology is not appropriate or relevant for the needs of our traditional societies, thus we cannot suggest the introduction of this kind of advanced technology to traditional societies such as the one under study. It may not likely create any employment opportunity that could improve the income levels of the people in that society.

Similarly, Stewart (1978) observed the nature of the technological dependence of the developing societies on the advanced countries. He explored the impact of technology on development with particular reference to the conditions of technological dependence. According to this work, any distortions in development patterns resulting from the use of technology must be attributed to misuse rather than the nature of technology itself. But on the other hand it is apparent that technology adopted has resulted in favouring a particular lop-sided pattern of growth, creating employment problems and skimped income distribution, and failing to use the available human resources of that developing society. Also, in this study, Stewart went on to elaborate on the conflict between the economic development and the theoretical treatment of technology, that is by formulating alternative approaches. However we do not advocate the transfer or adoption of advanced technology because it is the nature of the technology itself rather than its use, that may likely create problems of employment and low income levels among the people of the traditional societies.

There are alternatives to the advanced technology that seemed to dominate the thinking of development agencies. For instance, Schumacher (1974) contended that advanced technology could not be relevant to the needs of the developing societies. That it tended to create technological unemployment as it is capital-intensive, and that means the machine based techniques would replace traditional labour-intensive technology and it would eventually throw people out of work in the traditional society.

Therefore Schumacher puts forward the idea of "intermediate technology transfer." Thus he referred to a technology immensely cheaper than the sophisticated, highly capital-intensive, technology of modern industry. It emphasized the importance of improving the production capacities of people in their existing work places, and this technology is more suited to the circumstances in which they are to be introduced. This is because it is not enough merely to relocate technology developed in a highly industrialized context to another which is not industrialized. Furthermore, he also stated that the poor can be helped to help themselves, but only by making available to them a technology that recognizes the economic limitations and boundaries of (their proverty). Therefore for him, the participation of local people, involving their local knowledge, provides the basis for improvement in the traditional society. In that case, it may not be relevant to the traditional rural society like the one under study, because we cannot advocate a technology that would not create enough employment for the people for whose purpose it has been introduced. For example, intermediate technology also tends to be capital intensive, labour saving, and dependent on imported spare parts and foreign experts.

Thus there is a need for a technology that is best suited to the needs of the traditional societies: a technology that could make use of locally available resources to produce goods and services needed by the communities. In this line of reasoning, other studies emerged which emphasized the need for an "appropriate technology transfer" and/or the need for the development of "indegenous technology."

Appropriate technology has often been identified with unsophisticated technologies which are not only concerned with techniques but also with the social aspect of development/modernization. For instance, Elizabeth O'Kelly (1983) has observed that appropriate technologies are essentially community based, and can be acquired within the village level. A technology that can be produced locally is highly dependent upon the locally available resources, and can be adopted to fit the life-style of the rural people. This allows for the accumulation of local skills and capabilities without throwing (or replacing) the unskilled and semi-skilled labour out of work in the process. Appropriate technology is that which is in conformity with the local customs, and could fit the different social contexts of the rural people in which the technology is to be established.

"Indigeneous techology" as observed by Onyemelukwe (1974), similarly refers to a technology that is rooted within the community and which evolved naturally from the one already in use, such as the improvement of the existing traditional techniques. Therefore he argued that modern imported technology is not an essential ingredient of development or modernization of traditional societies. It rather prevents the development of an indigeneous technology, and it also distorts the employment and income levels of people and can alter the entire indigeneous skills in the direction of improvement. In this context what

disqualifies the imported technology is the total dependence on imported space parts, and being it is capital-intensive, it also ignores all the needs of the recipient.

Therefore, we can agree that each technology presumes a certain level of acquired experience and traditions in the society, so that whenever a technology is imposed on a society not equipped with the equivalent cultural back-ground, the result is quite often disastrous and no amount of training and technical assistance can change this culture; nor is it proper to try to force cultural change on people. In this case what is required is a technology based on the least scarce resources deriving from the natural or indigeneous skills of the community, based on local raw materials, labour and spare parts. In relation to the study, this kind of technology, (i.e the small scale rice mill,) is inappropriate because it is operated by the men instead of the women.

Similarly, P.D. Dunn (1978) pointed out the problems of establishing an indigeneous technology as an enormous task. For him it requires a big effort to change the outlook of a people who have been spoon-fed, and have taught themselves to accept the idea that they have nothing to offer and must look to the outside for ideas, experience, capital, and even for what they ought to think. Thus, these societies, for him, can establish indigeneous technology only if they can develop the will power, stategy and self-reliance of the people. He also added that development is based on local resources, and progressively builds up the skills of the community which is essentially rural based. For example, the small scale rice mill introduced in the rural communities need to depend completely on the local spare parts, labour, and resources of the area. Romensh K.D. and Dennis L. (1979) observed that the operation, the maintenance, and the repair requirements of appropriate technology tend to be simple and capable of

standing rough use so that the people can learn by doing. For them appropriate technology is that which tends to liberate the human being from doing degrading, execessively heavy and dirty work, and it tends to be capable of producing basic goods needed by the poor people. Also they describe this technology as labour-intensive which uses local resources in terms of material and energy that improves productive capacity on a sustained level of providing skills, encouraging capital formation, and rural development capabilities. According to their analysis appropriate technology is usually built on the local technological traditions, blending with and enhancing existing cultures. These may even tend to improve the environment and help the people by encouraging self-reliance. Therefore these kinds of technologies are the most highly recommended to rural societies. Particularly the appropriate technology needs to be initiated by those involved in the activity concerned.

Norman Clark (1988) argued " that the standard debate about appropriate technology for development/modernization has tended to suffer from an over-simplified view of the nature of technology itself. He stressed the point that it is not so much the sophisticated nature of technology that is in question, but rather how relevant it is for the application considered, and what changes have to be instituted to ensure successful application in a development sense. Therefore Clark viewed technology as a complex dynamic system with a key social dimension. For him it is much easier to focus directly upon an appropriate set of technology for a developing society. With this point of view, the introduction of new technology to developing areas, which has increased overtime, has not resulted in any increase in employment of the abundant labour, especially among traditional communities. It rather resulted in a bad form of modernization which helped to sink them into even deeper and

hopeless unemployment problems. This can be largely attributed to the nature of technology which tends to be too highly sophisticated and capital intensive for the needs of that community.

In view of our study, introducing new technology, whether appropriate or indigeneous, there is a need to relate the relevance of these new technologies to the rural communities. That is, the technology has to be dependent on the indigeneous labour, skills, raw material, spare parts and even its operation and maintenance. It is this kind of technology that is highly recommended for the complete benefit of the total rural community. For example, the introduction of the small scale rice mill, which is a new form of technology in the rural society, tends not to be dependent on imported spare parts skills or raw materials. Therefore it is the concern of this research to examine the likely effect the small scale rice mills may have on the employment and income levels of the women who are known to be processing rice traditionally.

In the next chapter we shall also review some related studies conducted in Nigeria and other developing societies, with a view to linking them up with the major objectives of our research.

CHAPTER THREE

LITERATURE REVIEW

3:1 INTRODUCTION:

This chapter deals with the review and criticism of the related studies that are found relevant to this research. First and foremost we try to summarize the major concern of the studies under review and then look at the related issues ignored by these studies. This is to enable us to state clearly the major intention of our own study which other studies failed to explore.

Also in this chapter we briefly discuss technology and rural employment creation in Nigeria in relation to our research. Similarly notes on the nature of rice production, processing and marketing in Nigeria are presented in order to put the research in perspective.

3:2 REVIEW OF LITERATURE ON RELATED STUDIES:

Most of the studies done in Nigeria on rural processing industries tend to concentrate on the factors that affect the performance of the mills, and their under-utilization. For example, a study by Oni and Ikpi (1981) focused on small scale rice mills in Nigeria, and gave reasons for the under-utilization of the existing rice mills capacity. In the study they identified the seasonal nature of paddy supply as an important factor, since paddy is harvested and processed mainly between September and December. Also, the short marketing season, as a result of that seasonal nature, determines the use of the mill capacity. Other reasons include the poor maintenance of machines, lack of spare parts, poor handling of the milling machinery, and poor rural infrastructure.

Furthermore the study also revealed that the hand-pounding methods of rice processing is gradually being taken over by the small scale rice mills in the country. In this study an estimate of about 987 small scale mills during the period 1977/78 was given (that must have been even more in the recent years with the increase in rice production). Although the study focused on small scale rice mills for its micro-economic analysis, it failed to examine the effects of these mills on rural employment and income levels, which is the major concern of our study.

Another study by Barau (1979) enumerated the factors which affect the performance of small scale rice mills in the Wukari Local Government Area of Gongola State. He identified a number of problems that include inadequacy and irregularity of the supply of raw materials, and also poor handling of the mills by often unskilled operators as major factors that affect the performance of the mills in the country. Barau also observed that the fall in demand for local rice was as a result of inadequate processing facilities for qualitative rice. This has contributed to the large importation of rice in the 1970s, although his major concern was the inadequate utilization of the small scale rice mills in the area. Barau's study also focused on the small scale rice mill, but it did not examine the likely effect of the introduction of the mills in the rural areas, especially among the women who are employed in the traditional processing industry.

Fagade and Bobade (1983) gave a historical account of the development of rice mills in Nigeria. They examined the adoption of merchanised processing operation in the country. According to them, the small scale producers mostly handle processing of paddy

rice by using traditional methods, in spite of the modern system which was mostly adopted by large-scale producers. According to them, paddy rice production is still largely done by the small scale producers, but the adoption of the modern mills by these small producers is still very slow. However, the study tends to concentrate on the poor adoption of modern mills by small scale producers, in that they still practice traditional methods. It has not examined the likely effects of the new method of processing on the traditional industry. The study ignores the effects of the mechanized processing operation on the traditional hand-pounding methods, and on the living and working conditions of the rural communities which our study intends to look at.

There is also a similar study by Obibuaku, L.O (1976) on the introduction of a hydraulic palm oil press to Gbedum Village in Ibadan. This study revealed that when this technology for oil pressing was introduced, about 72 per cent of the people used it, but after a year, the figure dropped to about 24 per cent. Although the women knew about the benefits they withdrew from the use of the oil-press for several reasons. First and foremost the by-products of the pressing pit were lost, i.e the fibre that was used as a source of heat. Secondly, the daily time schedule for using the oil press, did not coincide with that of the women. Thirdly, the size of the mortar was disigned for men, and women could only use it with an increased labour force. Also during the peak season the women had to wait for the use of the oil press, because the time and the operation was only suitable to the men. Eventually the women did not benefit from this new technology. Although this study has

examined the adoption of new technology by both men and women in this village. it did not examine the likely effects of this new technology on the employment and income levels of the women.

Simmons, E.B.(1973) examined the relevance of food processing industries to the rural women. He conducted a study on three Zaria Villages where various food processing technologies were introduced. He also showed the effects of the new technology on these villages. It was estimated that about 90 per cent of women were concerned with at least one food-processing activity. In most cases the women alone calculated cost, sales, prospects and profits of their processing activity. The income earned was then generally spent on gifts, clothes for themselves and the children, or on such investments as animals.

In this study Simmons also observed that the rural food processing industry added to self-employment and increased the incomes of most women. Thus, greater amounts of raw materials could be processed and more products of better quality could be produced for sale and for consumption. Although the study is similar to what we intend to examine, our study is particularly concerned with the effects of small scale rice mills on women paddy processors. Simmon's study however tends to overlook the displacement of some women's labour through the mechanization of the traditional industries. The study also ignores the fact that the women lose their economic freedom and self-reliance since most of them cannot own or control the new firm.

In a related study on West Africa countries, M. John (1988) observed that women accepted and adopted the modern mills

introduced in the area for milling millet for flour. The study revealed that the mills relieved the women of the drudgery of hand-pounding the millet after several hours of threashing and dehusking. According to this study, the women in Njau Village said that one of the chief benefits of the mills is the way they feel both healthier and younger. The major concern of this study is the time saved by these women: time which can be used to grow more food so as to earn more income for themselves and for their families. However, this study tends to concentrate on the impact on the women caused by the introduction of the mills in Njau village. Particularly it pointed out the time saved for other farming activities; but the study ignored the effect of the mills on the employment and income levels of some women labourers who are mainly concerned with the hand-pounding of millet. Probably those women are displaced from this area of specialization; the study does not say.

Another study by Rozeboom and Parker (1974) examined the economics of small scale rice mills in Liberia. The major concern of this study is the efficiency of the large scale mills in terms of out-put in relation to small scale mills. They observed that large mills are more efficient than small-scale mills and hand-pounding methods. They argued that the larger and more modern the mills, the larger the quantity of rice processed in Liberia. Therefore the large scale mills are substituted for the small scale mills, so that Liberia could gain a considerable amount of clean rice as the out-turn of large mills is potentially higher. Although the study has analyzed the relationship between the two modern methods and

hand-pounding, it has not examine the effect of the mills on the employment or income levels of the women involved in traditional hand-pounding.

Olayemi and Oni, (1974) examine some economic aspects of small scale rice mills in the North-West and in Kwara State. They analyzed the cost and returns of the millers, and then identified some major problems of these milling industries. Also they identified the problems associated with the higher efficiency of rice milling industries and enumerated the factors, just like other studies, as the inadequacy and highly seasonal supply of paddy, lack of storage facilities and shortage of spare parts as some of the major constraints in both states. This study also tended to concentrate on the profitable venture of the modern mills and ignores the likely effects of the modern mills on the working and living conditions of the people working in the traditional hand-pounding industry. Rather it enumerated the factors associated with its performance.

Nevertheless, there are some related literature on other developing countries, especially South-East Asia, which examined the introduction of rice mills and their effects on rural income levels and employment. For instance, Timmer (1974) examined the relationship between employment and different processing techniques in Java (Indonisia). He observed that the introduction of the more capital intensive mechanical rice processing facilities had dominated both hand-pounding and small scale mills that were largely used in this area. He found out that the more capital - intensive the new technology the less number of workers got

employed in the processing industry. He also found that the introduction of new mills in Java had led to a decline in traditional hand-pounding to less than 20 per cent. As recently as 1971 about 80 per cent of Java's rice paddy was hand-pounded, both for subsistance consumption and local marketing. Therefore he estimated a loss of over 100,000 jobs in the traditional rice processing industry, especially among the women in Java.

Similarly in Nigeria, rice processing activities are mainly done by rural women using traditional methods. Therefore, in addition to examining the relationship between employment and the introduction of rice mills in Yadakwari village, our study will also look into the effect of these mills on the income levels of the women in rural Kano. This becomes necessary since the introduction of the new technology has drastically affected the employment of the traditional rice processors. Then, it is our major concern that we examine the likely effect of these new methods on the income levels of the women too.

An F.A.O. Paper (1983) on Bangladesh, observed that the introduction of mills has led to the displacement of female labour engaged in the rice processing activities. Hand-pounding of paddy rice has been traditionally women's work, including a significant number of children who assist the women. They reported that the spread of these mills in the 1970s had caused a large reduction in the employment of women and the majority in the rice business were displaced. Also this paper failed to give account on the income levels of the women in the rice processing business.

Another related study from the World Bank Staff Working Paper (1985) discusses the impact of technology choice on Rural

Women in Bangladesh. It describes the full range of women's economic contribution and importance to the rural economy and to the consumption and welfare of their families. The paper examines the extent, causes, and effects of technological changes in food processing especially rice. It reveals the capital and labour intensiveness of various crop-processing technologies and their impact on the employment of women.

According to the paper, although the post-harvest activities are the most significant source of rural employment for women in this area, the landless and the maginal families are identified to be most affected by the loss of opportunity due to technological changes in food processing such as rice. Therefore, the study highlighted the government programme to improve the status and skills of women in Bangladesh, especially in the area of rice processing. This paper is related to our study since it examines the effect of new technology on employment of women involved in rice processing. But the paper also ignores the effect on income levels of these women in Bangladesh.

Also in another World Bank Staff Working Paper (1981) a survey was conducted which deals with the review of literature involved in explaining the adoption process of technological innovation in agriculture. Most of the empirical works in this survey investigate the factors affecting adoption of new technologies specifically Green Revolution innovation. According to this paper, past experience shows that an immediate and uniform adoption of innovation in agriculture are quite rare. In most cases, adoption behaviour differs across socio-economic groups, and over

time some innovations have been well received while other improvements have been adopted by only a very small group of farmers. Also the survey reveals that an attempt was made to identify and validate various barriers or deterrents to the adoption process.

It is our view that this survey is related to our study also since it deals with the innovation of new technology, especially its effects on employment and income levels, which we intend to examine. This paper, however, only concentrates on explaining the adoption process itself rather than the effects. Therefore, our study will examine not only the employment, but also the income levels of the women in Yadakwari Village. Indeed our study will provide a clear understanding of the effects of the mechanization of traditional hand-pounding methods on the living and working conditions of the rural women.

CHAPTER FOUR

DATA ANALYSIS

4.1. INTRODUCTION

Rice mills were first introduced in Yadakwari village in 1981 by a private entrepreneur. Prior to this time, all the rice produced in the village and its environs was processed using traditional techniques.

In the urban markets, such as Kura and Kano, there were two types of rice sold: imported and locally produced rice. There was price differential between the two types of rice: the imported rice had a higher market value than the locally produced rice. One of the factors which accounted for the price differential was the poor quality of the local rice relative to the imported rice. The poor quality was as a result of the traditional methods used to process the local rice. Also locally processed rice was dark in colour, contained stones and certain particles and often with an unpleasant odour. Some entrepreneurs in Kano State (including the person who first installed the mill in Yadakwari) took the initiative and installed a few mills in selected areas.

The major objective was to improve the quality of the locally processed rice. Although the locally processed rice was cheaper than the imported rice, the entrepreneurs envisaged that improvement in the quality of the locally processed rice would increase the level of demand among mainly urban consumers.

When the Yadakwari rice mill was installed, there was general resentment from the villagers. The owner of the mill, an absentee rice farmer from Kano city, had been growing rice in the

village for many years. He was well known in the village and had many friends there, including the village head. The village head welcomed the installation of the rice mill. He regarded it as an effort aimed at modernising his village. He said that the mill would draw people from the city to cultivate rice in the villages it would also promote trading activities.

However, initially, the majority of the women and their husbands in the village were not happy with the installation of the mill. There was a widespread rumour that any rice processed by the mill would loose its taste and the quantity would reduce (**Afki**). By **Afki**, they meant that while a given quantity of locally processed rice could feed 10 people, the same quantity of rice processed in the mill would only feed about 7 people. It was also widely believed that rice processed in the mills has the smell of engine oil. That is, **Ta na warin inji**. Such rumours spread to the neighbouring Kura town which is a major market for Yadakwari rice. As a result of such rumours, many people in the village refused to patronise the rice mill. It took the combined effort of the village head and his assistants to explain to the people the advantages of the rice mills and dispelled the rumours circulating regarding the rice processed in the mill.

Initially, the miller charged the same rate as the traditional processors for the processing of a 'mudu' (a measure) of rice. The traditional millers and the modern rice miller charged the rate of 20 kobo per mudu. Gradually the mill attracted customers. These customers were the absentee farmers from Kano city.

As the mill-processed rice gained acceptance, so did the mills themselves. In a matter of a few months, the number of customers increased dramatically. The pioneer mill owner explained:

> When we first started our operation in the village around 1981, few women brought their paddy for milling. After a few weeks more people were coming and today especially during the rice processing season, people have to follow a queue for milling their paddy.

The millers gradually increased their service charges over time. A miller justified these price increases in the following terms:

> One cannot help increasing the fee charged for milling, because of other expenses like fuel, spare parts and general maintenance. In fact, the price for the milling machine and spare parts have gone up and we will soon increase our service fees again.

However, as the miller increased his charges, so did the traditional rice processors. By 1984, the number of mills in the village had increased to nine. Similarly, mills were installed in the neighbouring villages such as Garun Mallam, Chiromawa and Kadawa.

The establishment and spread of the modern rice mills had transformed the general volume of economic activities in the village as well as the working and living conditions of the traditional rice processors . Our survey revealed that the mills are mainly owned by private traders from Kano and neighbouring Kura Town. Only one of the mills is owned by a Yadakwari male trader. On the average, three men, labourers recruited from the village, are employed to work in a mill. Our major interest is to examine the nature and level of the response of the rural women to the introduction of the mills as well as to determine the manner or extent to which the modern mills affect the working and living conditions of these women.

As revealed in chapter one of this study, the majority of the women of this sample whose ages range between fifteen to forty

five are directly and indirectly involved in tradional rice processing. Since there are different categories of women processors, the introduction of the mills will affect them differently. A general socio- economic characteristic of the women in the village is that they are of low income for instance the mean income level ranges between one thousand to three thousand naira per annum and they largely depend on food processing activities (traditional rice milling, corn milling, etc.), selling prepared or cooked food (such as '**tuwo**', '**fura**', '**kunu**', etc), and petty trading (such as selling of light consumer household goods). In respect of the last two occupational activities, the women depend largely on their children or the children of their relations to market the commodities. The majority of these women do not attend any formal or western school, and in accordance with the cultural practices, they were married between the ages of ten to fifteen . Their husbands are mainly low income farmers. It is significant to note that the women involved in the traditional rice processing can be divided into two categories:

(a) Those paid (service charge) to process the rice (i.e labourers)

(b) Those that purchase paddy and process it for sale in the market (i.e. entrepreneurs or producers).

The second category is more affluent and engage in numerous occupational activities (such as petty trading, etc.). To this extent, the introduction of the mills affected them differently.

4.2 WOMEN PAID TO PROCESS PADDY USING TRADITIONAL METHODS:

Prior to the introduction of the mills in the village, this category of women who are called '**masu Aikatau**' (labourers) were paid a token fee to parboil and handpound rice. The payment was both in cash and in kind, a certain quantity of the processed rice. The more the modern mills became widespread, the more these women were affected. In general, the introduction of the mills affected them in two ways:-

(a) Out of the sample of fifteen women about 7 or 43% , of those that were paid to traditionally process the rice, lost employment in the traditional milling industry and consequently relied on other occupational activities (such as corn threshing (**Surfe**). The loss of employment in the traditional rice milling industries also meant a loss of income from this activity. The majority of the women in this sample found better alternative income generating activities. In fact, a former labourer now turn into entrepreneur or petty trader who buys the paddy, parboils it herself and takes it to the mill for processing before it is sold in the market.

She said:

> When the mills were introduced we were skeptical. We thought that our end had come. Gradually, my customers stopped bringing their paddy for processing; instead, they took it to the mill. For a time, I had nothing to do, as I spent all my life processing paddy. I learnt the skills from my mother. You see, my son is a headmaster in a nearby village primary school. He is also a hardworking rice farmer. One day, he said when I harvest my rice I will give some of it to you to start as capital (**jari**). He gave me one and a half bags of paddy and assisted me with ₦50 with which to purchase fire wood. I parboiled the rice and took some to the mill for milling. I sold the processed rice in the market. Since then I have been in this trade.

Since the introduction of rice mills out of this total sample of fifteen (15) women who were paid to traditionally process the rice, only 4 (27%) could be said to be worst off than when they were traditionally processing the rice.

These women are now engaged in '**surfe**' (hand pounding corn in preparation for milling in the corn mills).

One of the women explained :

> I am used to 'Aikatau' (wage labouring). Since I stopped processing rice because of lack of customers a few years ago, I concentrate my life on '**surfe**'. Although, surfe is an all the year round activity. It attracts less income relative to traditional rice processing activity. I thank God (Allah) that I have an occupation. I lost my husband last year, and I have grown up and married daughters. Life is not easy with me. My last born will soon be married. I am doing my best to save for the wedding. I have entered '**Adashi**' (Thrift saving scheme). Every week I put in N5.00. May God help us, Ameen.

About 53 per cent (8) of the women in our sample have not entirely left rice processing. The traditional rice processing involves two major tasks: Parboiling and handpounding. While the modern mills have effectively replaced handpounding and other related activities, the mills have rather re-enforced the traditional parboiling methods.

The mills are not equipped with parboilling facilities, this aspect of rice processing is still largely handled using traditional techniques. These women therefore are paid certain fees to parboil the paddy before it is taken to the mills. One of the women explained that:

> The introduction of mills is a mixed blessing for us in this village. On the one hand, it has destroyed part of our culture. For time immemorial rice in this village is processed using traditional methods. In fact, both my mother and grandmother were engaged in this trade. I learnt the trade from them. In our compound, all the women including unmarried girls were engaged in this trade. Right now my eldest daughter assists me in parboiling rice. She also sells prepared food for me as well as sell kolanuts. We are sad that this cherished tradition of traditional rice processing is fast disappearing. I thank God that I parboil rice now. Everyday, I am getting more and more customers. My customers are satisfied with my work. Men from the city (Kano) bring their paddy for parboiling. There are also many paddy traders in the villages and from Kura who purchase paddy from the farmers and take to us for parboiling.
>
> You can see, even now we are very busy in this house. Our problem is that the cost of firewood is increasing. Kerosene in this village is more expensive than in Kura Town. I am happy to tell you that my condition of living has improved especially in the last two years. I get mor income now. I pray to Allah to enable me save enough to go on pilgrimage to Mecca. Though, I understand that hajj fares have increased dramatically. Our prayer is with Allah and Prophet Mohammadu.

The majority of this category of women are engaged in a multiple of occupational activities. They seem to express satisfaction with the new occupational activities. They care no longer opposed to the new mills. In fact one of them said :-

> When the mills were originally introduced in the village we were opposed to it. You see, we were ignorant then, we did not know that it is a good thing to have happened to our village. Although, there is no single women who is provided with employment in the mills, we thank God that it is our husbands, sons and brothers that are working in these mills. In this difficult period, it is better to provide employment to the male members in our village. Most of them are married. This gives them the opportunity to feed their families. Nobody likes idleness (**Zaman banza**)

During our interviews, we gathered that there are many women who were not previously engaged in paddy parboiling but have now taken up in this acitivity. The majority of them are young and recently married. We interviewed five (5) of these women because they were not many as at the time of our research. In fact, some of them revealed that they used to assist their mothers in rice processing during childhood. One of them said:

> My mother is well known traditional rice processor in this village. All my senior sisters are engaged in this trade. In fact, all of them are engaged in parboiling rice for interested customers. Our mother is now too old to undertake such straining actitities. You know, I am her last born. Our father died not long ago. Our mother is now looked after by our senior brother who is a successful farmer and trader in this village. In fact, he brings me his paddy for parboiling. He is a very nice man. My husband too works with the Kura local government, their office is in Kura town. He too is engaged in rice farming. I parboil all his rice. He assists people from the city (Kano to hire land for rice farming in this local government area (Kasar Kura). They often bring this paddy to me for processing. I am happy with my trade.

It is not only women who engage in parboiling paddy for a fee. Traditionally, paddy parboiling is a woman's occupation or activity; however, the last season (1990/91), we discovered that men are beginning to engage in parboiling activity. A lady friend of mine informed me that she learnt that men parboil rice in Dambatta local government area, especially in areas around Tomas Dam. Therefore, I made a day trip to the Tomas area and found men actually parboiling paddy: they parboil the paddy in drums and dry them. One of the men told me :

We started this activity this year. We have friends who work in the mills. We pay them occasional visits. During both rainy and dry season, we undertake agricultural wage labouring activities. Some of them are secondary school leavers who could not get employment in government ministries. We get alot of income in the wage labouring activity.

One day, one of our friends who is a mill operator said that many customers in the city have complained that they find it difficult to get women parboilers and when they employ the services of the women parboilers they often encounter unnecessary delays and protocols. This is mainly because the majority of these women operate within their homes which are in most case out of bounds to men. He advised us to try with parboiling. Four of my friends have three empty drums which we used to thresh wheat (**bugun Alkama**) in the last four months. In fact, one of my friend's mothers parboils rice. He is quite used to the parboiling process. He has been watching his mother, and step mothers (his mother's co-wives) and sister traditionally process and/or parboil rice.

We got our mill operator friend introduce us to customers. We got one civil servant from Dambatta local government area. He brought his two bags of paddy. We installed our drums near the mill. We successfully parboiled the rice. Since then, we have been getting more and more customers. We parboil a whole bag at a time. The customer gets his parboiled rice within two days. We use large container (drums) while the women use smaller containers and as a result they are able to parboil a relatively smaller quantity of paddy at a time. We have now secured a place very near the main road and customers bring their paddy to us.

As a result of our activity many young men are now engaged in paddy parboiling. In the near future parboiling would be wrestled out of women by men. You see, we are not ashamed of parboiling. It is not labour intensive relative to wage labouring such as weeding or harvesting (**bugu**).

The above quotation from the young man around Tomas Dam brings a new dimension to the rice processing industry. Although, at the moment, this activity is largely confined to the Dambatta local government area and there is no evidence of it in Yadakwari; it is only a matter of time before it spreads to all the major rice producing areas in the state. This could well mean that the women paddy parboilers could loose their jobs.

From the foregoing analysis of the available empirical data, it could be concluded that the introduction of modern rice mills has transformed the lives of those women in this sample of fifteen who are paid to process paddy using traditional techniques. Although, some of them here lose employment in the traditional rice processing industries, they have however, secured alternative occupational acitivities. Some of these women found better income generating activities relative to the previous rice processing activity.

A significant proportion of these women remained in the rice processing industry mainly as paddy parboilers. Most of them indicated that they are now relatively better off as parboilers compared to when they were engaged in rice processing using traditional methods (handpounding). Although the villagers, including the rural women, were initially skeptical and disapproving of the installation of new rice mills, they are generally now happy with the presence of these mills. The introduction of the mills have generated employment opportunities for the following categories of people in the rural society:-

(a) Young married women (who had previous experience in paddy processing during childhood) are now engaged in paddy parboiling.

(b) Male members of the village have found employment in the mills.

(c) Young men are forming groups to parboil paddy in drums for interested (mainly) urban customers and civil servants engaged in rice farming.

It could therefore be concluded that the introduction of small-scale rice mills have brought more positive benefits to the women in this sample in terms of both employment and income. Similarly, the working and living conditions of some men have generally improved.

4.3 WOMEN WHO PURCHASE AND PROCESS PADDY FOR SALE IN THE MARKET.

The way the introduction of the mills affected this category is significantly different from the experience of the first category of women (that is, those paid to process rice).

As indicated in the earlier part of this chapter, this category of women are relatively better off that the first category of women, in that they possess the necessary capital with which to purchase paddy to process for sale in the market. A sample of 15 women in this category were selected and interviewed. The majority of these women (9 or 60%) still purchase and sell rice to interested customers. It should, however, be stated that while they purchase the paddy, they no longer use traditional methods to process it.

About 30% ($^3/_9$) of these women actually parboil their paddy and take it to the mills for the final stages of the processing. One of these women said :

> When the mills were introduced in this village, we were initially skeptical. We feared that we would loose customers who may not like the rice processed in the mills. But, later we risked and took a portion to the mills, and it sold quickly. Traders from the city (Kano) actually preferred

> the milled rice; they said it is cleaner and acceptable to their customers in Kano. Therefore, very few people in this village handpound their rice. All of us here (in this compound) take our parboiled rice to the mills.
> I parboil my rice myself with the assistance of my daughters. I enjoy the work. You know, I have been processing rice since my childhood. By parboiling the paddy myself I save some money. Since I am an expert in this trade why should I pay others to parboil it for me. All the women in this compound parboil their own paddy.

However, the remaining 6 out of the 9 ($^{6}/_{9}$) women or (70 percent) contract out the parboiling process to professional pasddy parboilers. They claim that by contracting out the parboiling it allows them extra time with which to concentrate on other occupational activities. One of these women explained:

> Everybody in the village now welcomes the mills. We hope there will be more of them. If I had the capital, I would have bought one myself. I contract out the parboiling of my paddy. My neighbours have perfected the art of parboiling. They have never disappointed me. All my customers are satisfied with my products. My rice comes out fine just like imported rice (**Shinkafar Waje**).
> You see, by contracting out the paddy parboiling activities to professionals, it allows me time to concentrate on other activities such as petty trading, selling cooked or prepared foods.
> I take my parboiled rice to the mills. I thank God that I am now better off relative to the time I was parboiling and handpounding the paddy myself.

The remaining 40 per cent (6 out of the 15 sampled women) no longer purchase and process paddy. They explained that they are not in the rice processing industry because of numerous reasons, none of which is related to the introduction of modern mills in the village.

Some of them went bankrupt while others diversified into other economic activities and gradually disengaged themselves from the rice processing activity. One of these women said:

> I have been involved in rice processing until the last two years. With the introduction of the mills in this village a few years ago, I used to contract out the paddy for parboiling and mill it in the mills before it is sold in the market. A relation of my husband used to come and purchase the processed rice from me. Sometimes, he collects the rice with the understanding that he would bring the money after a few days. One day, he failed to repay for the rice as scheduled. He kept making part payments. It nearly led to the break up of our marriage with my husband. The action of, his brother led to the dwindling of my capital. I finally decided that I cannot cope with the business. I therefore used what was available with me to purchase palm oil, groundnut oil, Omo detergent, sugar, salt and other household items. My children sell the commodities for me. Also, people come and buy from the house. I am very happy with this activity. I learnt the lesson of no giving my commodities on credit to any one.

Another woman lamented that she used to be a successful trader in processed rice. She said:

> I used to buy paddy, get it parboiled and send to the mills. The marriage of my two daughters in the last four years made me spend all my capital. My husband used to work in Hadejia-Jama'are government office at Kadawa. He was retrenched, and he had no money to pay for the wedding expenses. We didnot like to disgrace ourselves; so, I used my capital to meet all the marriage expenses.
> At the moment, I sell prepared food: my younger children sell them. We are not as prosperous as before. If I had the capital, I will go back to my former trade. I think it is rewarding. My husband has now got employment with Kura local government, I am optimistic that things will improve in the near future.

In the course of our interviews, we learnt there are a number of men and women who, since the introduction of the mills in this village, have been making investments in the rice processing industry. This category of people were not previously involved in the processing industry. Many of them came from Kura and Kano city. However, a few of them came from the village. This category of people are generally grain traders. They find it profitable to purchase the paddy, contract out its parboiling and process it in the mills. They in turn market the processed rice. We identified five (5) of these traders and interviewed them. They tended to be better off with this chain of rice businessess . In fact some of them are mill owners themselves. One of these traders said :

> I used to go to Yadakwari and Kura market to purchase processed rice which is sold at **'Kasuwa Rimi'** or Rimi market in Kano city. Later, I discovered that you make greater profit if you could buy the paddy and get professional parboiler who parboils fine. If you take the parboiled rice and process it in the mills you get better quality rice. You sell it at much higher prices. I have over the past two years established paddy customers, for the processed rice. It is a worthwhile experience. I will never buy processed rice in the market and re-sell it in Kano.

Another respondent is actually a trader in Yadakwari village. He is also a farmer. He said :

> I have been a farmer and trader for most of my life. I grow all sorts of grains (wheat, rice, maize, sorghum). Also, I grow vegetables during the dry season. I have been engaged in grain trading for several years. I buy and sell processed rice in the city. I get the paddy from my farms, process it and sell it in the market. Also, I buy paddy, get it parboiled and processed for sale in the market.

> You see, I am a grain trader; so many of my customers bring paddy to me. Before, I used to sell the paddy to other traders. Later, I told myself, why could I not get this paddy processed the same way I get the paddy from my farm processed. Since then, I process any paddy I purchase from the market.

It is now clear from the above analysis, that the installation of rice mills in Yadakwari village largely generated employment opportunities for as well as increased incomes of the women rice processors. For example, majority of the women earn between ten to fifteen naira per week from rice processing as against two to five naira while using traditional methods in the past. Those who no longer process rice, do not because of reasons other than the introduction of the mills in the villages.

Similarly, the mills have provided new opportunities for traders within and outside the village to purchase paddy, parboil it, get it processed in the mills and ready for sale in the markets.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

The study attempted to contribute to existing knowledge on the transfer of modern technology in the rural areas as well as the effects and implications of such technology transfer on the working and living conditions of the rural populace. More specifically, it examined the introduction of modern rice mills in rural Kano (Yadakwari village) and how the new technology has transformed the living and working conditions of the rural women who mainly used traditional methods or techniques of rice processing.

The study examined the extent to which the installation of the rice mills have affected employment opportunities and incomes among the women rice processors.

The study broadly identified two categories of traditional women rice processors:

(a) those paid to process the rice using traditional methods; and

(b) those who purchase the paddy, parboil and handpound it themselves for sale in the markets. Regarding the first category of the rural women, the study found that although a small portion of the women lost employment in the traditional milling industry as a result of the introduction of the modern rice mills, the majority of the affected women got a better alternative employment and income generating activities.

It was also found that the majority of the affected women continued to get employment in the paddy parboiling industry which is not yet mechanized. Actually, the rice mills only replaced the final stages, of rice processing; i.e. the hand pounding process.

Similarly, it was found that the establishment of the mills had led to the proliferation of paddy parboilers in the villages. All the paddy parboilers explained that they earn more income relative to the period before the introduction of the mills.

It was however, found that in another part of Kano state (Dambatta local government area) men are beginning to engage in paddy parboiling. It is expected that as more men engage in the parboiling process many women paddy parboilers may loose customers and employment in the rice industry.

The survey revealed that the introduction of the mills had in general positively affected their living and working conditions. Although, about 40 per cent of this category of women are no longer engaged in the rice processing industry; this was as a result of factors other than the introduction of the modern mills. The majority of the women explained that the introduction of the mills have provided them with more income earning opportunities. It has enabled them to adapt to the mills as well as use the time saved to engage in additional income generating employment activities.

Chapter two and three of the study reviewed modernization theories as well as theories on technology transfer. From this study, it could be concluded that the introduction of the mills in the Yadakwari has gone a long way to support the view that technology transfer (especially, the transfer of appropriate technology) further enhances employment and income opportunities in the rural areas. The important point to note is that although, the technology (mill) may have the effect of displacing traditional women processors; it has however provided them the opportunity to engage in other higher income earning employment opportunities as well as provide employment opportunities to their husbands, brothers and sons in the new mills.

In the light of the above summary and conclusion, it could be proposed or recommended that the Better Life Programme should focus more attention in the areas of providing the necessary subsidized capital to enable the rural women to own the rice mills. This may take the form of encouraging women co-operatives in villages where rice is widely grown and processed.

Similarly, there is a need for the government to commission research on improving the efficiency of the existing technology for parboiling rice. This would go a long way to further highten the women's burden in rice processing.

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APPENDIX I

DEFINITION OF TERMS

This section gives a precise meaning of the following terms used in this study.

a) **PROCESSING**: Can be defined as "The act of changing the physical form of a commodity. Processing adds value (form utility) to the agricultural products and offers a chance of improving their quality" (Burau, 1981 memo pp. 2). Besides, when rice is processed, the non consumable part (paddy husks) are removed and only the valuable parts (clean rice) are retained, either for consumption or for sale in the market. The act of processing involves parboiling of paddy rice, drying, husking, polishing, winnowing, de-stonning, using either traditional or modern methods.

b) **EMPLOYMENT**: It is the participation or engagement in some occupation/activities usually but not always for pay. e.g. the particiapation of the rural women in the paddy rice processing activities (both as labourer and self-employed).

c) **INCOME**: The gain derived from the use of labour or capital (or both combined) by the rural women from the act of processing paddy rice or other economic activities in the village.

d) **TECHNOLOGY**:- Introduction of new techniques or transfor of machinery (such as small scale rice mills) in order to improve the processing of paddy rice so as to obtian better quality and quantity of clean rice and to increase efficiency.

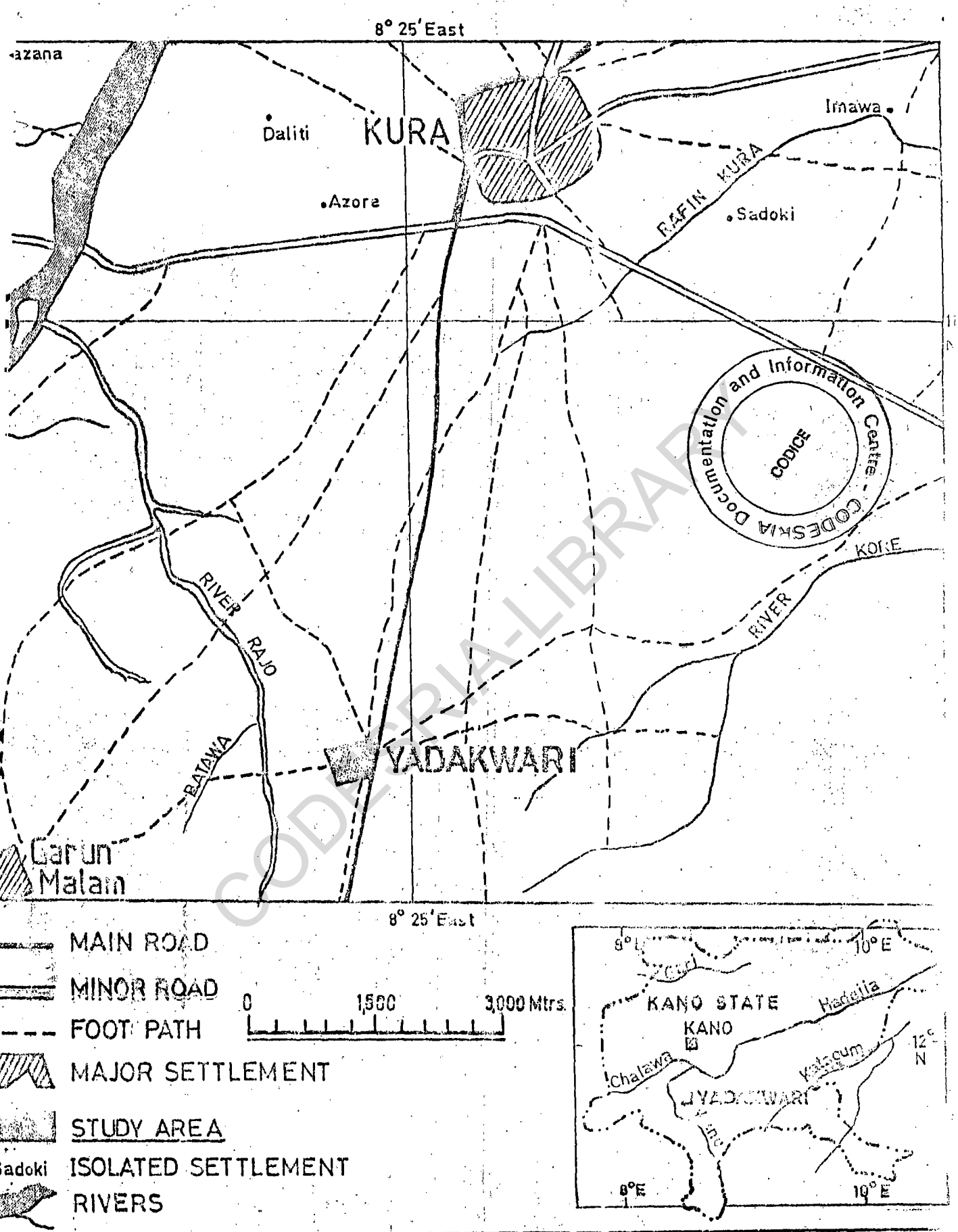
e) **MILL**: It is a small scale machine for processing of paddy rice. The system of rice processing saves time and labour compared to the hand-pounding of paddy rice performed by women. Normally, payment of fees are changed for this service.

f) **'MASU AIKATUA'**: It is a hausa term for a wage-earner, e.g. women who hand-pound paddy for people for payment and are not self-employed.

g) **'MUDU'**: It is a hausa word for a measure. Usually a bowl is used for measuring the quantity of paddy or clean rice to determine price.

APPENDIX II

1 : LOCATION MAP OF THE STUDY AREA



: Map of Kura District, Kano Emirate 1 :62,500 by Kano State Survey Division, Kano, 1970.