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A DEVELOPING COUNTRY STRATEGY FOR U.S. INDUSTRIAL
EQUIPMENT MANUFACTURERS - BASED ON AN ANALYSIS OF THE
DEVELOPMENT OF THE NIGERIAN PULP AND PAPER INDUSTRY

Pace University

D.P.S.

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A DEVELOPING COUNTRY STRATEGY FOR U.S. INDUSTRIAL
EQUIPMENT MANUFACTURERS - BASED ON AN ANALYSIS OF
THE DEVELOPMENT OF THE NIGERIAN PULP AND PAPER
INDUSTRY

A Dissertation

Presented By

LAURENCE RICHARD RAPKE

To the Faculty of
The Graduate School of Business
of Pace University

In Partial Fulfillment
of the Requirements for the Degree
of Doctor of Professional Studies in Management

June 1979

DEDICATION

This document is dedicated to the memory of my father, Gus.

I would like to thank all interested Pace University faculty members as well as the numerous pulp and paper industry experts who supported my investigative efforts.

Finally, I would like to convey a special thank you to my wife, Jacqueline, whose support enhanced the completion of the many phases of this investigation.

Laurence R. Rapke, D.P.S.

PREVIEW

ABSTRACT OF DISSERTATION

A Developing Country Strategy for U. S. Industrial Equipment Manufacturers - Based on an Analysis of the Development of the Nigerian Pulp and Paper Industry

By LAURENCE RICHARD RAPKE, D.P.S.

Dissertation Director: Professor T. H. Bonaparte

The purpose of this investigation was to formulate a developing country strategy for U. S. industrial equipment manufacturers based on an analysis of the development of the Nigerian pulp and paper industry. The study covered the 1960-1978 time period, and specifically focused on the pulp processing equipment procurement scenario for each Nigerian project.

The primary hypothesis of the study was that procedures used by U. S. multinational corporations to market pulp processing equipment domestically are not appropriate for use in developing countries, and must be modified to be effective. For each Nigerian pulp and paper project, the hypothesis was tested on the basis of the actual performance of U. S. firms that were potential suppliers of pulp processing equipment.

It was found that the hypothesis was valid. This finding led to the conclusion that the "traditional" domestically-

oriented marketing strategy in which a U. S. firm relied on its reputation to provide it with inquiries for the supply of a specific piece of equipment was not effective in developing countries. It was further concluded that the "traditional" strategy should be de-emphasized, and that a "departmental package" or systems strategy, whereby a U. S. firm could potentially provide an entire pulp processing equipment package to a developing country customer, should be adopted as the primary marketing approach.

As an extension of these conclusions, it was recommended that the feasibility of forming a U. S. national group to market pulp processing and, perhaps, other industrial technologies to developing countries should be explored. It was suggested that the "prime-mover" in this marketing group should be a U. S. manufacturer of major pulp processing equipment items. It was noted that national marketing groups, similar to the proposed one, already exist in other countries.

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PREVIEW

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CHAPTER ONE

INTRODUCTION

For most developing countries, economic advancement is held as an ideology which is synonymous with the attainment of both an economic and political independence as well as a higher quality of life for its population. Forestry related industries, due to their many special features, can often play a significant role in this development process. They furnish a wide spectrum of products which enter into various sectors of the country's economy. Historically, the demand for these products, ranging from newsprint to packaging papers, has been shown to be proportional to rises in measures of economic development. This investigation of the introduction of pulp and paper technology into Nigeria will lead to the development of an effective means to facilitate the economic maturation of developing countries through the transfer of forestry related technology.

THE PROBLEM

Statement of the Problem

The problem is to devise an effective means of facilitating economic advancement of developing countries through the introduction of pulp and paper technology.

Specific Problems

1. The first problem is to assess the indigenous resources of the country to determine its compatibility with various potential pulp and paper technologies.

2. The second problem is to determine the type and size of the pulp and paper mills on the basis of anticipated future demand.

3. The third problem is to evaluate the actual pulp and paper projects with respect to both resource utilization and enhancement of economic advancement.

DEFINITION OF TERMS

Prior to defining the terms which will be used in this investigation, the researcher would like to present a brief survey of various definitions of both "technology" and "the transfer of technology mechanism."

A very instructive definition of technology has been proposed by Shepherd who has maintained:

Technology is the application of scientific and technical knowledge to the creation of a specific product or performance of a specific task. It encompasses the thousands of detailed steps that are necessary to develop and manufacture a product, including the design and development of manufacturing processes and equipment.¹

¹Mark Shepherd, Jr., "The Critical Issues of Technology Transfer", *Transfer of Technology: The Future of Regulation*, Monograph Five (New York: Council of The Americas, May, 1977), p. 2.

Kamenetzky has recently offered another definition of technology as follows:

Technology deals with how to do it and may be defined as the organized set of all the empirical and scientific knowledge required for producing and distributing any good or service.²

Yet another insightful definition of technology has been offered by Chudson, who has stated that technology refers to all forms of knowledge that affect the productivity of the factors of production.³

To continue our focus on definitional terms, let us now consider some thoughts on the transfer of technology mechanism as set forth by two experts in the field.

Nayudamma has defined technology transfer as follows:

Technology transfer is essentially a coupling between people who produce new technology and those who need it.⁴

Perhaps, in a general sense, this is the key to the entire subject; that both technology sender and receiver should find the process to be mutually beneficial.

²Mario Kamenetzky, "Pre-Investment Work and Engineering As Links Between Supply and Demand of Knowledge". (Washington, D. C.: The World Bank, September 20, 1978), p. 1.

³Walter A. Chudson, "Chapter 5: Foreign Investment And The Acquisition of Technology: Kenya and Tanzania", D. Babatunde Thomas, Importing Technology into Africa - Foreign Investment and the Supply of Technological Innovations (New York: Praeger Publishers, 1976) p. 83.

⁴Nayudamma, Notes of Lecture at Visvesvaraya College of Engineering, Bangalore, India, November 17, 1972, p. 16.

Robert Solo has offered the following insightful thoughts on technology transfer:

The "transfer of technology" is commonly used to connote the process with which we are here concerned. Yet, this term is misleading, for it is not "transferring" but "learning" that is at issue - the capacity of a society for learning and applying what it learns in order to produce more with the same human and natural resources.⁵

In the researcher's opinion, Solo has clearly isolated the key to the entire transfer of technology mechanism. That is, learning, not just mere transferring must occur, in order for the transfer process to be truly meaningful to the technology recipient.

To complete our survey of definitional terms, another observation of Solo regarding the transfer of technology through the importation of industrial equipment, such as the types we are considering, is relevant. It is as follows:

The importation of products or equipment is a means of using the knowledge of others directly, and also of learning from others, for the imported product offers itself as a model for analysis, experimentation, and imitation.⁶

Given the above background, the following definitions will be used for the purpose of this study:

⁵Robert A. Solo, Organizing Science for Technology Transfer in Economic Development (Michigan State University Press, 1975), p. 11.

⁶Ibid, p. 12.

1. "Technology" is a set of knowledge and know-how and a group of techniques relating to a specific activity or operation. For this technology to be viable, it must be compatible with the economic, legal, political, and social structures of the country. In order to successfully transfer technology from a developed to a developing nation, maximum use must be made of the human and natural resources of the developing country.
2. "Economic Development" is the real rise in per capital income which is derived from deducting the population growth rate from the Gross Domestic Product growth rate.
3. "Multinational Corporation (MNC)" is a firm which is nationally based with respect to ownership and top management, but is world oriented. It knows no national boundaries and pursues global business objectives by allocating its resources to world market opportunities.
4. "Traditional Marketing Approach". This strategy is a low risk, low involvement one in which the U.S. MNC relies on its international reputation to provide it with inquiries for the supply of pulp processing equipment for any project that is planned anywhere in the world.
5. "Departmental Package Marketing Approach". This type of strategy is a middle-of-the-road approach in which the U.S. MNC would seek out partners or expand its own capabilities as required, so as to be able to provide a complete "departmental" proposal to the buyer in the developing

country. This proposal would include quotations not only for the major equipment supplied by the MNC, but also for all other pulp processing equipment and peripherals produced by other manufacturers. Detailed engineering for the entire departmental package would also be included; this work would either be performed by the lead U.S. MNC, or by another firm that had been contracted to handle it.

6. "Turn-Key Marketing Approach". This strategy can be characterized as both high risk and high involvement. In this approach, the U.S. MNC would take the leadership on a proposed project and supervise the entire design, manufacture and installation of equipment, construction and start-up of the facility. The degree of financial involvement of the U.S. MNC would depend upon specific project circumstances.

7. "Mechanical Wood Pulp" - Wood pulp obtained by grinding or milling into their fibers, coniferous or non-coniferous rounds, quarters, or billets or through refining coniferous chips. Also known as groundwood pulp and refiner pulp. It can be either bleached or unbleached.

8. "Semi-Chemical Wood Pulp" - Wood pulp obtained by subjecting coniferous or non-coniferous wood to a series of mechanical and chemical treatments, none of which alone is sufficient to readily separate the fibers. According to

the exact treatment method, it may be called semi-chemical, chemi-groundwood, or chemi-mechanical. It can be bleached or unbleached.

9. "Chemical Wood Pulp" - Sulphate (Kraft) and soda and sulphite wood pulp except dissolving grades, bleached, semi-bleached and unbleached. There are four component pulp categories as follows:

a. "Unbleached Sulphite Pulp" - Wood pulp obtained by mechanically reducing coniferous or non-coniferous wood to small pieces which are subsequently cooked in a pressure vessel in the presence of a bi-sulphite cooking liquor. Bi-sulphites such as ammonium, calcium, magnesium and sodium are commonly used. The two classes are bleached, including semi-bleached and unbleached.

b. "Unbleached Sulphate Pulp" - Wood pulp obtained by mechanically reducing coniferous or non-coniferous wood to small pieces which are subsequently cooked in a pressure vessel in the presence of sodium hydroxide cooking liquor (soda pulp) or a mixture of sodium hydroxide and sodium sulphite cooking liquor (sulphate pulp). The two classes are bleached including semi-bleached and unbleached.

c. "Dissolving Wood Pulp" - Chemical pulp (sulphate, soda or sulphite) from coniferous or non-coniferous wood, of special quality, with a very high cellulose content (usually 90% or greater), readily adaptable for uses other than paper making. These pulps are always bleached.

d. "Other Fiber Pulp" - Pulp of fibrous vegetable materials other than wood.

10. "Newsprint" - Uncoated paper, unsized (or only slightly sized), containing at least 60% mechanical wood pulp (percent of fibrous content), usually weighing not less than 40 g/m^2 and generally not more than 60 g/m^2 of the type used mainly for the printing of newspapers.

11. "Fine Paper" - Paper, except newsprint, suitable for printing and business purposes, writing, sketching, and drawing made from a variety of pulp blends and with various finishes. Examples include papers for books and magazines, wall paper base stocks, box linings and coverings, calculator papers, duplicating, tablets, lithographs, banknotes, stationery, typewriter, and poster use.

12. "Paper and Paperboard" - Construction papers and paperboard, household and sanitary papers, special thin papers, wrapping and packaging, and paperboard.

Delimitation of the Study

The study will be limited to an investigation of the

transfer of pulp processing technology to Nigeria. The supplier of the above mentioned pulp processing technology will be a U.S. MNC whose equipment is considered to be acceptable by pulp and paper authorities for use throughout the world.

The study is also restricted to the 1960-1978 time period which covers the span of Nigerian political independence.

Basic Assumption

The United States MNC is able to supply the entire spectrum of pulp processing equipment for any type of pulp and paper project that could be introduced into a country like Nigeria with a tropical climate.

Basic Hypothesis

The primary hypothesis is that procedures used by U.S. MNC's to market pulp processing equipment domestically are not appropriate for use in developing countries and must be modified to be effective.

The Need for the Study

The need for this study arises from the fact that no other investigation has been conducted which analyzes the performance of all U.S. MNC's in marketing a specific industrial technology to a developing country. It is intended that the lessons learned from this study will enable