PN ABX-844

A STRUCTURAL ANALYSIS OF SELECTED GHANAIAN MICRO-ENTERPRISES

Submitted to

The United States Agency for International Development

The HBCU Research Program
Grant Number - PCE-5053-G-00-3056-00

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November, 1995

ACKNOWLEDGMENT

Several people and organizations have rendered assistance to us during the course of this research project. Our sincere appreciation go to retired Vice Chancellor, Professor F. O. Kwami of the University of Science and Technology (UST), for his interest and encouragement in getting UST involved in our collaborative efforts; to the late Pro Vice Chancellor, Professor Ansah Ansamoah for his help during our initial contact with and visit to UST; to the Vice Chancellor, Professor E. Amonoo-Neizer, for his interest in the project as well as his efforts to coordinate the collaborative process with UST, and for providing accommodation facilities at UST, which also served as our headquarters, during the data collection phase in the Summer of 1994; to Dr. S.E. Incoom of the Department of Economics and Industrial Management and Mr. John Quansah, Acting Director of Technology Consultancy Center (TCC) of UST, for their contribution to the questionnaire development and the data collection.

Our thanks also go to Dr. Albert Ofosu Asiedu of the Ghana Forestry Research Institute, for his candid exposition of the status of forest resources in Ghana and for his willingness to share information with us; to the officials of the Ghana Timber Export Development Board for their generous help and cooperation during our visits to their offices in Kumasi and Takoradi respectively; to Mr. Henry Oko Okai of the Ghana Export Promotion Council for assisting us with transportation during the initial phase of our data collection period; to Mr. Joseph R. Mensah, formerly of Agricultural Development Bank and Miss Harriet Wontumi of Agricultural Development Bank for assisting us with our financial transactions in Ghana; and to Mr. Ben Gyampo for expediting all our transportation arrangements during our data collection activities in Ghana.

We are grateful to Dean Sundar Fleming of the NCCU School of Business for his support and encouragement throughout the project period. Our special thanks go to Mrs. Geraldine Scott of NCCU School of Business for typing all our reports and assisting us with our travel arrangements; to Mrs. Juanita J. Anyane-Ntow of NCCU School of Business Computing Center for her assistance in handling all our procurement needs and for providing advice in the area of technology during the

research process; to Mr. Nathaniel Hall of NCCU and Mrs. Joyce Smith of NCCU Grants and Contracts office for their help and understanding in guiding us through the administrative process at NCCU.

Our appreciation also go to the executives and members of the Small Scale Carpenters Association of Ghana, for their enthusiasm in responding to the questionnaire; to Rev. S. K. Fugah, the National President, to Emma, the Anloga Secretary who administered several questionnaires in Kumasi, and to Mr. Kwame Abban, the Deputy National Secretary, who travelled with us around the country to administer the questionnaire; to Mr. George Anaba, Deputy Northern Regional Administrator, Mr. Mohammed Hardi of the Northern Regional Administration office, Mr. Yesa Yesa of Tamale Timber Market and Mr. S. Antwi of Ghana Furniture Manufacturers' Association, Tamale, for helping to organize the questionnaire administration in Tamale.

We also wish to thank Mr. Adolf Wilburn of USAID, Washington, D.C., for his mentorship and for providing us with information and materials that were instrumental in guiding us to write a successful grant for USAID; to Mr. Stafford Baker, USAID/Ghana for his interest and invaluable advice; to Mr. Kenneth Amusah and Mr. Floyd Spears, USAID/Ghana, for making the initial accommodations and transportation arrangements for us in Ghana; to Mr. Jeffrey R. Lee, Mr. Cleveland Thomas, and Mr. Peter Weisel, USAID/Ghana, for their interest in our project as well as for the advice and information shared with us during the study; to officials of Amex International for sharing information with us; to officials of UN's International Trade Centre in Geneva for generously providing us with materials and information during our visits to their offices; and to Dr. David Rakes whose interest, help and guidance throughout the research project is greatly appreciated.

Finally, we wish to thank our families for their patience and understanding for the several hours, weekends and holidays, including Thanksgiving weekend, that we spent away from home, in order to have the project accomplished. We couldn't have done it without their understanding.

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EXECUTIVE SUMMARY

Bolstered by the momentum gained from the economic and structural reforms of the 1980s, Ghana appears well positioned for the arduous and long-term task of creating the enabling environment needed for private sector-led economic growth. There is a growing consensus among economic development specialists that Ghana's nontraditional export sector is the nation's best economic engine for long-term, sustainable economic growth. Ghana's agenda for economic growth through growth in nontraditional exports comes as the economies of the world adjust to a globalized marketplace dominated by a triad of powers—the United States, Japan, and the European Community. Additionally, there is a heightened awareness that the key determinant of economic prosperity is no longer natural resources but people and innovative skills, as shown by the examples of Singapore and Japan. As Ghana seeks a more competitive position for its nontraditional exports, there is the added realization that the production of manufactured goods is now being guided by a new set of competitive advantage concepts.[1] Competition on the basis of price has given way to competition on the basis of quality, product differentiation, timeliness, and innovation. It is this new and emerging paradigm for international trade that is the catalyst for this **structural analysis of selected Ghanaian micro-enterprises**..

Research Philosophy And Objectives

The purpose of this study is to perform a structural analysis of a critical and often overlooked sector of Ghana's wood products industry—the small and medium enterprise sector. The study has relied extensively on the pioneering work of Michael E. Porter of the Harvard University Business School. Porter's research and writings on **"Industry and Competitive Analysis (ICA)"** are internationally

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[1]Dunning, J. "Do We Need A United Nations of Economics?", **Management Research From Rutgers**, Number 26, Winter 1995.

recognized as representing the most current and comprehensive thoughts and theories explaining why firms of some nations prosper in global competition while similar firms in other nations falter. While most of the attention and reaction to Porter and the emerging theories on competitive advantage has been directed toward Porter's three generic strategies for competitive advantage, it is critical that policymakers in Ghana and other developing market economies not lose sight of Porter's admonitions and counsel regarding the critical role that five structural forces have on shaping industry structure. Sustainable success in international markets is dependent to a very large extent on industry structure. Operating on the assumption that there must be an expanded role for Ghana's SMEs in the export of nontraditional wood products, the research project sought to compile a body of empirical evidence and analyses that could serve as the initial foundation for crafting plans and strategies for greater participation of micro-entrepreneurs in the production of internationally-competitive value-added wood products. With assistance from the faculty and staff at the University of Science and Technology (Kumasi), the project sought to amass information and analyses that could be used to:

- Determine the feasibility and viability of wood products manufacturing by small and medium sized firms as a sustainable source of jobs and income generation, particularly in Ghana's rural sectors;

- Adapt, replicate, and verify the applicability of the Harvard-originated **Industry and Competitive Analysis** techniques in a fragmented, rural-based industry sector in a developing country;

- Determine the relative strength of Porter's five structural forces and determine how those forces could be adjusted to enhance the competitive advantage of Ghana's wood products as nontraditional exports;

- Determine roles that the business education units of Ghana's universities might be empowered to assume in providing marketing and production management assistance for micro-enterprise development in Ghana's wood products industry.

Ghana's Wood Products Industry

Forest or wood products are annually responsible for 6% of Ghana's gross domestic product. Sales of the nation's forest and wood products constitute approximately 11% of the nation's yearly earnings from exports. The importance of wood products to the citizens of Ghana is further amplified when one realizes that some 70,000 workers comprise the nation's wood products labor force, and it has been estimated by the Ghana Timber Export Development Board that 2 million of Ghana's 15 million residents derive their livelihood directly or indirectly from the forestry sector. Global concerns for the maintenance of the world's tropical timber resources will, in all likelihood, place increasing priority on value-added wood processing during the remaining years of the 1990s. It is expected that there will be more internal pressure on the Government of Ghana to further decrease the export of logs, and to push for more and more pre-export processing of wood resources by Ghanaians in Ghanaian facilities.

Although initiatives such as the Trade and Investment Program (TIP) have provided significant boosts to the promotion of wood products as nontraditional exports, it should be equally clear that there are greater opportunities for a wider spectrum of firms in the furniture and furniture parts export markets. Data released by the United Nations' International Trade Centre (ITC) document this potential. The ITC has reported that imports of furniture and furniture parts from developing market economies into the member nations of the Organization for Economic Cooperation and Development (OECD) increased by 168.2% from 1983 to 1987. Data from the ITC shows that imports of furniture and furniture parts from developing countries rose faster than imports from industrialized nations during the latter years of the 1980s.

The Small And Medium Enterprise (SME) Sector

While it is understandable that initiatives such as TIP have focused on Ghana's larger furniture manufacturing firms, it is critical for the continued success of the economic recovery program that more attention be directed to SMEs, and particularly to those SMEs located outside the Greater Accra area. In an effort to better understand the nature of the SME sector in Ghana, the Technology

Transfer Centre (TTC), a unit of the Council for Scientific and Industrial Research (CSIR), recently conducted a comprehensive study of the SME sector. From the TTC findings it was reported that:

> **"... of the 8,351 industrial establishments surveyed** [by the Statistical Service] **in the country, as many as 8,109 (97.1%) fell within the SME sector. Of the total number of industrial employees of about 157,000, nearly 72,000 (46%) were in the SME sector."**

Although most official statistics indicate that Ghana has some 200 furniture manufacturers, these statistics generally do not include the more than 2,000 members of the Small Scale Carpenters Association (SSCAG), most of whom are actively engaged in the manufacture of furniture. The Ghana Timber Export Development Board (TEDB) has reported that the 2,000 plus members of SSCAG are responsible for the production of 90% of the furniture and other household wooden items consumed in Ghana.

Ghana can transform its SME sectors into competitive economic engines as have a number of other developing countries. The ITC has reported that over 30% of total exports of manufactured goods from Pakistan are produced by small manufacturing firms, and in Thailand and Sri Lanka, small locally-owned traders and manufacturers account for approximately 35% of total national exports.

From Comparative Advantages To Competitive Advantages

Porter [1990] advises that a nation's competitive strategies for a specific industry must grow out of an operational understanding of the structure of the industry and how that industry is changing. Ghana has identified its wood products industry as a candidate industry for the nation's nontraditional export program. Formal competitive strategies for the nation's wood products industry should be considered within the context of a sound operational understanding of the structure of the nation's wood products industry. Porter [1990] presents indisputable evidence that shows that conventional economic theory based on comparative advantage, factor endowments, and advantage based on factor prices or government interventions through protection and tariffs does not explain why nations succeed in international competition. When considering factor comparative advantages, Porter

[1990] cites Germany, Japan, Switzerland, Italy, and Korea as successful trading nations, but nations with very limited natural resources; nations that must import most of their raw materials. Also within nations such as Korea, the United Kingdom, and Germany, it is the resource-poor regions that are prospering relative to the resource-rich ones.

While Porter [1990] acknowledges the obvious advantages inherent in economies of scale, he makes a point to indicate that although large domestic markets historically have been thought to be necessary prerequisites for economies of scale, the cases of Hong Kong, Taiwan, South Korea, Switzerland, and Denmark are offered as examples of countries where industries did not have large domestic markets, but their industries were international leaders, nevertheless.

Porter [1990] cautions developing nations of the peril of linking their export programs to factor costs and to competing on price alone. Development programs that target new industries based on factor cost advantages, with no strategy for moving beyond these low costs considerations are doomed to fail in short order. Porter's theory begins with individual industries and competitors within industries and extends to the economy as a whole. A clear understanding of the attributes that foster competitive advantage in specific industries based on the industry structure is the foundation upon which sustainable competitive strategy can be developed. Porter [1990] has stated quite emphatically that:

> **"The forces of structural analysis is on identifying the stable, underlying characteristics of an industry rooted in its economics and technology that shape the arena in which strategy must be set. Understanding industry structure must be the starting point of strategic analysis."**

Understanding Industry Structure: The Starting Point

Porter [1990] identifies five competitive or structural forces, the collective strength of which determines the ultimate profits in the industry. The strength of the forces in an industry determines the degree to which inflow of investments drives returns to free market levels, and thus determines the capacity of firms to sustain above-average returns. According to Porter, all five forces jointly

determine the prospects for industry profitability. The strongest force or forces become crucial for competitive advantage strategy formulation.

In an attempt to adapt and replicate Porter's **"industry and competitive analysis (ICA)"** methodology, the five competitive or structural forces measured and analyzed for the Ghanaian wood products industry were:

(1) threat of entry into the industry;
(2) intensity of rivalry among current competitors;
(3) pressure from substitute products;
(4) bargaining power of buyers; and
(5) bargaining power of suppliers.

To date, few researchers and policymakers have sought empirical evidence on industry structure as a necessary prerequisite for formulating international marketing strategies. The very limited research on competitive advantage strategies conducted in an African setting is typically firm-specific rather that industry wide. In many cases, development strategies launched on behalf of developing market economies fail to take the structure of the specific industry into consideration. This research represents an initial step toward filling that void. Traditional descriptive statistical methods as well as multivariate statistical techniques were employed in analyzing the data.

Using Porter's's industry typology, more than 1,000 questionnaires were administered over a 6-week period in 8 of the 10 governmental regions of Ghana during the summer of 1994. Although the completion of each questionnaire typically consumed more than one hour, 502 usable responses were obtained. These 502 completed questionnaires constitute a unique and valuable database on Ghana's small scale wood products firms.

Results and Lessons Learned

Many of the results of this study are reaffirmations of the findings of the TTC study on the nation's SME sectors. Ghana's small scale wood products firms are male dominated and the source of training for a significant number of Ghana's young males, particularly in the rural sectors. A surprisingly large number of the responding firms engage the services of impressive numbers of young male apprentices. Just as most of Ghana's current master carpenters acquired key aspects of their furniture making skills from the craftsmen of earlier generations, today's master carpenters are providing similar training and experience for Ghana's current and next generations of furniture manufacturers. Any national program for human resource development in Ghana's furniture manufacturing sector must consider the very large apprenticeship activity that is a major part of the SME sector of the wood products industry.

Small scale furniture manufacturers, for the most part, operate with small, locally-produced, and technologically inefficient hand tools. Despite impressive displays of creativity, work ethic, and masterful skills, these firms are severely constrained by the limitations of the equipment and technology available to them. The higher standards of quality required by initiatives such as ISO 9000 will require significant technology upgrades. Quality considerations in Ghana's wood products industry must be broadened and in step with quality requirements in Europe and North America. Concern for quality in the wood products industry must extend well beyond concerns for the proper management of moisture content of wood inputs.

With rare exception, the micro-entrepreneurs in Ghana's wood products industry have no access to formal modes of business financing. The prefinancing of orders and the supply of raw materials by the customer are very common practices in the industry. Clearly, these very necessary practices place the small furniture manufacturer in an unusually weak bargaining position with furniture buyers and undercuts industry profitability and competitiveness. A suitably arranged form of micro-loans to businesses in the industry with the sole purpose of producing for exports could alleviate some of the financial problems facing the industry. For instance, financing small operators through cooperative lending (credit union/susu concept) agreements and/or micro-enterprise loans organized

around groups of three to five borrowers using rotation borrowing and peer pressure as well as motivation techniques and group support to collect repayment could be explored.

Access to better grades of lumber and other raw materials is a common problem throughout the industry. A number of small scale furniture manufacturers throughout Ghana painted very graphic pictures of incidents where they were denied the opportunity to purchase certain better grades of wood, even when they were willing and able to buy in bulk and pay in advance. Access to quality wood inputs is a problem for many of Ghana's small scale wood products firms. The unavailability of quality wood inputs drives down the quality of finished products available to the domestic market. This makes the industry vulnerable to domestic as well as foreign competition within Ghana. Within the past decade, a number of impressive world-class hotels and office buildings have been constructed in the Accra area. Because of issues of quality, local furniture manufacturers have little or no opportunity to try and address the furniture needs of these new facilities. The economic impact of these investments in Ghana is not maximized when Ghanaian firms can't compete for business opportunities. The small scale furniture manufacturers are in an acutely weak bargaining position with suppliers of raw materials.

Most of the small scale furniture manufacturers do not export any of their products. However, nearly all the respondents expressed interest and willingness to export, given, of course, that the necessary conditions are in place to make such activities realistic.

The exploratory use of principal components and factor analysis confirmed that the most important and distinguishing competitive forces in the Ghanaian wood products industry were the bargaining powers of suppliers and the bargaining power of buyers. Concerns for the environment scored high among the respondents. Factor scores also indicate that the basic characteristics of the small scale wood products firm are important in understanding the nature and structure of the wood products industry. Issues related to rivalry and concern for what was perceived to be the very minimal entry barriers to the industry were also key results from the multivariate analysis.

The Ghanaian wood products industry is an example of an acutely fragmented industry. A high level of discipline is nearly always required for effective competition in fragmented industries. The competitive structure of fragmented industries generally requires extraordinary focus or specialization in a tightly constrained group of products [Porter 1990].

As a prelude to proposing specific competitive strategies for Ghana's small scale wood products industry, it appears that efforts to enhance the role and future contributions of small scale firms would benefit from investigating the feasibility of a pilot program of production disintegration. The very strong support for product standardization and concerns for product quality expressed by Ghana's small scale furniture manufacturers, suggest that micro-enterprise development in Ghana's wood products industry would be enhanced through such a pilot program of "production disintegration". Production disintegration would require designated small scale furniture manufacturers to become dedicated producers of standardized finished or unfinished furniture or furniture parts. Production disintegration would likely also require affiliate relationships with manufacturers located in foreign markets.

Production disintegration could also be built around strong cooperative operations among micro-entrepreneurs, particularly among small scale furniture manufacturers located in the same general geographical areas. Such arrangements would enable clusters of small scale wood products firms to achieve economies of combined operations, such as bulk buying of raw materials, reduced number of stops in the production processes, reduced handling costs, reduced transportation and marketing costs and facilitate the development of economic production runs of exportable standardized furniture parts or finished products at competitive prices for the world market.

Implementation Preparation

The **"Industry and Competitive Analysis (ICA)"** used in this exploratory study has immense potential for the development of a viable private business sector in Ghana. It is recommended that the results and methodology of this study, and if available, the results of other similar studies on

Ghana's furniture industry be presented and discussed at a forum or conference in Accra, Ghana. Prospective participants may include Ghanaian furniture manufacturers---both large and small, government representatives whose policies affect the industry, representatives from the timber and forestry sector, representatives from the banking and financial industry, representatives of USAID and TIP contractors, and representatives of other donor agencies in Ghana. Invitations could also be extended to representatives of the North Carolina furniture industry. Because of the very critical role that business educators must assume in building and maintaining a sustainable private business sector, special efforts should be devoted to involve representatives and administrators from the business education units of Ghana's universities.

Clearly, the ideas expressed in this summary cannot be realized without considerable more research and effort. A viable pilot program of production disintegration will as a minimum require additional attention to topics such as:

1. Research on quality standards requirements, consumer preferences, and market opportunities in selected major international markets.

2. Market niches for the Ghana furniture industry in foreign countries.

3. Alternative or creative financial arrangements and approaches to assist the furniture industry in Ghana.

4. Training requirements necessary to help the industry become and remain competitive.

5. Efficient environmental management techniques for Ghana's furniture manufacturing industry.

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I. INTRODUCTION

Background

Ghana has been cited by the international donor community as the most successful case of sustained economic reform on the African continent.[2] Ghana's transition to a market economy began in 1983 with a series of comprehensive economic policy reforms. The Ghana Statistical Service points, with pride, to hard evidence indicating that the decline in real gross domestic product that characterized the pre-1983 decade has not only been addressed, but the growth in real per capita income has turned positive. With greater controls on the growth of the nation's money supply, prospects are bright for continued price stability and for more convertibility and confidence in the Ghanaian cedi.[3]

Ghana's adherence to market economic principles over the past 12 years has bolstered the nation's prospects for the arduous and long-term task of creating the enabling environment needed for private-sector led economic growth. Continued economic progress and growth will increasingly depend on Ghana's capacity to foster internationally competitive enterprises in strategically selected industries throughout the 10 governmental regions of Ghana.

Because Ghana, like most Sub-Sahara African nations, is still largely a nation of rural residents, the success of efforts to promote sustainable economic development will invariably be measured by the creation of jobs and economic stimulation among Ghana's non-urban population. Ghana's development in the 1990s and beyond cannot be viewed as a situation where rural producers and residents are perceived to be subsidizing urban consumption and industrial investment; a widely held

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[2]**Economic Reform in Africa's New Era of Political Liberalization: Proceedings of a Workshop for SPA Donors,** hosted by the U. S. Agency for International Development, Washington, D.C., April 14-15, 1993.

[3]**The State Of The Ghanaian Economy in 1991**, The Institute of Statistical, Social and Economic Research (ISSER), University of Ghana, Lagon, July 1992.

perception during the early 1960s.[4] The rapid migration of Ghanaians to Accra and other urban centers will likely not be slowed to acceptable levels until youth and others in search of employment are convinced that economic opportunities exist in the villages and small towns throughout Ghana. With approximately 70% of the nation's residents located in the rural sectors, Ghana must aggressively seek to broaden what many residents now see as an urban-based private business support system, and minimize its dependence on traditional exports of cocoa, timber, gold and diamonds while increasing the development of non-traditional exports.

Nontraditional Exports and Industrial Policy

The Government of Ghana and development specialists recognize the importance of international trade to Ghana's economy. The very high ratio of the returns from foreign trade to Ghana's GNP and the very important role that trade has assumed in the nation's economic recovery program since 1983, underscore the importance of international commerce to Ghana.[5] Bilateral agencies such as the U.S. Agency for International Development (USAID) and the United Kingdom's Overseas Development Administration (ODA) have joined with government leaders in making nontraditional exports the centerpiece of Ghana's economic growth model. The rationale for Ghana's decision to link its economic development program to growth in nontraditional exports has been clearly documented by the USAID Mission in Ghana.[6]

USAID has stated that growth in nontraditional exports is a strategy that is likely to gain favor and acceptance with the citizens of Ghana. USAID offers reliable evidence confirming that nontraditional exports are very significant sources of critically needed foreign exchange. USAID reported that nontraditional exports have involved 1,381 exporters and 167 different products; a rather diverse set

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[4]**Country Program Strategic Plan, FY 1992-96, Ghana**, United States Agency for International Development, June 1992.

[5]**The State of the Ghanaian Economy In 1991,** The Institute of Statistical, Social And Economic Research, The University of Ghana, Legon, July 1992.

[6]**Country Program Strategic Plan, FY 1992-96, Ghana**, United States Agency for International Development, June 1992

of exporters and products.[7] Nontraditional exports will, in all likelihood, continue to be one of the nation's most reliable catalysts for the creation of new jobs. USAID has used the results of a study of Ghana's manufacturing sector conducted by the Harvard University Institute for International Development as confirming evidence that Ghana's relatively small population of 15 million is simply too small to support efficient production runs.[8] The attraction of foreign investments in manufacturing and the efficient capacity utilization of the nation's manufacturing sector will depend on larger and more stable external markets for the products and services of Ghanaian enterprises.

The Government of Ghana's commitment to economic growth through growth in nontraditional exports is thoroughly documented in the nation's official statement of industrial policy. The 1992 document, **"Industrial Policy Statement: A Strategy For Industrial Regeneration,"** contains a variety of position statements affirming the Government's support of nontraditional exports, small and medium sized enterprises, informal and formal micro-enterprises, and the need for rural economic development.[9]

With respect to nontraditional exports, the industrial policy document includes recognition that there is likely to be special opportunities in export-oriented wood furniture; the key concern of this research report. In recognition of the needs and special opportunities for economic development in Ghana's rural sectors, the following statements are expressed in the industrial policy document:

- The informal sector and micro-enterprises are important seed-beds for entrepreneurial development particularly in rural areas of Ghana.
- The Government is particularly keen to promote the development of entrepreneurial skills relevant for small and medium size enterprises.

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[7]ibid.

[8]ibid.

[9]**Industrial Policy Statement: A Strategy For Industrial Regeneration**, Ministry of Industries, Science & Technology, Republic of Ghana, January 1992.

- Accordingly, the Government has given high priority to the establishment of an Entrepreneurship Development Programme under the National Board for Small Scale Industries (NBSSI).[10]

The Government recognizes that small scale industries have relatively limited capital requirements and generate considerable amounts of employment with little capital outlay.[11] The Government of Ghana has used its industrial policy document to officially advance its support for a nontraditional export program that includes small scale industries sited throughout Ghana. While there are several products and industries that can, and perhaps will, contribute to Ghana's nontraditional export programs, one with immense potential is Ghana's wood products industry. Research commissioned by USAID indicates that while the opportunities for Ghana's timber continue to be promising, the market for Ghana's wood products are likely to have more long term potential.[12]

Ghana's Wood Products Industry

Wood products will undoubtedly continue to be a major contributor to Ghana's economy. Forest or wood products are annually responsible for 6% of Ghana's gross domestic product, and are the sources of approximately 11% of the nation's yearly earnings from exports. In the critical area of jobs, the Ghana Timber Export Development Board (TEDB) estimates that some 70,000 workers comprise the wood products labor force. Furthermore, it is estimated that 2 million of Ghana's 15 million residents derive their livelihood directly or indirectly from the forestry sector.[13]

Three broad categories of overlapping operations constitute Ghana's wood products industry. The TEDB groups wood products operations in the following categories:

- primary (logging)

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[10]ibid.

[11]ibid.

[12]**Country Program Strategic Plan, FY 1992-96, Ghana**, United States Agency for International Development, June 1992.

[13]**"The Ghana Timber Industry"**, unpublished working paper of the Timber Export Development Board, September 1993.

- secondary (sawmilling, plymilling, veneering)
- tertiary (furniture, furniture parts, moldings, floorings)

Although some firms function in more than one area, the distribution of wood products firms is as follows:

Activity	Number
Logging	200
Sawmilling	103
Plymilling	9
Veneermilling	15
Chipboard Manufacture	1
Furniture Manufacture	200
Flooring	6
Doors	6
Moldings	7
Toys	2

The 200 furniture manufacturers referenced above are those firms that are officially registered with the Government of Ghana as furniture manufacturers. Some 40 of the 200 furniture manufacturers are classified as large or medium-sized firms, and generally hold membership in the Ghana Furniture Manufacturers' Association. The more than 2,000 members of the Small-Scale Carpenters Association of Ghana (SSCAG) who reportedly are responsible for the production of 90% of the furniture and other household wooden items consumed in Ghana are not included in most statistical profiles of Ghana's wood products industry.[14]

Results from the 1989 national forest inventory indicate that there are 680 tree species in Ghana. Only 40 of these 680 species have commercial use at the present time. The nation's production area is 1.2 million hectares with an estimated 188 million cubic feet of growing stock. Approximately 54% of the tree stock is mature and marketable.

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[14]**Ghana Gazette**, Number 4, December 1993, Timber Export Development Board.

Concerns from environmentalists and consumer activist groups are pressuring Ghana and other tropical timber producing nations to institute enhanced measures to ensure the sustenance of their tropical forests. With leadership from the internationally acclaimed Forestry Research Institute of Ghana (FORIG), Ghana has joined with other member nations of the International Tropical Timbers Organization (ITTO) in crafting critical new policies calling for more ecosystem-based, sustainable resource management practices. The last two to three years have been characterized by unprecedented emphases on the efficient and judicious use of Ghana's forest resources.

Growing concerns for forest sustenance and waste reduction will place increasing priority on value-added wood processing during the remaining years of the 1990s. It is expected that there will be more internal pressures on the Government of Ghana to decrease the export of logs, and to push for more and more pre-export processing of wood resources by Ghanaians in Ghanaian facilities. Logs and less-processed wood materials have constituted the bulk of Ghana's wood product exports for the past two decades (see Table A-1 in Appendix). It is expected that future exports will include greater shares of furniture, furniture parts, and other processed materials. In the TEDB statistics in Table A-I, "other wood products" include furniture, furniture parts, floorings, profiles, moldings, and wooden toys.

Forest management policies and procedures are resulting in restrictions on the cutting and utilization of Ghana's forest resources which will place more emphasis on value-added wood processing and furniture manufacturing. For 1992 and 1994, revenue from the export of furniture and furniture parts averaged 3.04%[15] and 2.46%[16], respectively, of Ghana's export earnings from wood and wood products.

[15]**Ghana Gazette**, Number 2, March 1993, Timber Export Development Board.

[16]**Ghana Gazette**, Number 5, April 1994, Timber Export Development Board.

Wood Products: Nontraditional Exports

The Government of Ghana in cooperation with several bilateral and multilateral donor agencies has identified wood products as having immense potential as nontraditional exports. It is very clear as stated by ITTO that "wooden furniture is a value-added product in the high-value category."[17]

Although initiatives such as the Trade and Investment Program (TIP) have added significantly to Ghana's nontraditional export program, it should be equally clear that there are greater opportunities for a wider spectrum of firms in the furniture and furniture parts export market. Research released by the United Nations' International Trade Centre (ITC) document this potential. The ITC has reported that imports of furniture and furniture parts into the member nations of the Organization for Economic Cooperation and Development (OECD) from developing market economies increased by 168.2% from 1983 to 1987. Furthermore, imports of furniture and furniture parts from developing countries rose faster than imports from the industrialized nations.

Imports of furniture and furniture parts from developing economies by OECD nations rose from $1.1 billion in 1983 to nearly $3.0 billion in 1987. Imports to the United States rose from $756 million in 1983 to $2,144 million in 1987, a growth rate of almost 184%. ITTO and ITC reported that Japan purchased $409.2 million in furniture and furniture parts from developing countries in 1987. Developing market economies also sold $263.9 million of furniture and furniture parts to member nations of the European Community in 1987.

Although all developing economies have reason for hope in view of the apparent market opportunities for furniture and furniture parts from the developing world in industrialized countries, sight should not be lost of the fact that the vast majority of the current import activity in the furniture industry by industrialized economies is from the so-called Asian Tiger nations. Equally important is the fact that the bulk of the imports from the developing nations to OECD member nations is

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[17]**Wooden Household Furniture**, International Tropical Timber Organization & the International Trade Centre UNCTAD/GATT, Geneva 1990.

wooden furniture such as wooden seating, cabinets, tables, bedroom storage devices, and living-room cupboards.[18]

The challenge facing Ghana and its furniture manufacturers is to transform what is commonly viewed to be a comparative advantage over some of its competitors into competitive advantage in the international furniture and furniture parts market. Ghana, like most developing economies, can take advantage of the generalized system of preferences (GSP) that generally provides temporary duty-free access for Ghanaian manufactures into developed economies. In addition to multilateral aid to African, Caribbean, and Pacific member states, the agreements under four sessions of the Lome Convention provide Ghana with yet another avenue to enhance its exports. As a signatory to the Lome Conventions of 1975, 1979, 1984, and December 1989, Ghana can seek duty-free entry to the member nations of the European Community for specified commodities and products.

As Ghana seeks to broaden its participation in international trade and become more competitive with Asian furniture manufacturers, unwavering attention must be paid to trends characterized by the greater harmonization of rules and policies governing labelling, quality, and performance standards underway in the member nations of the European Community. Ghana must also be ever sensitive to the variety of design concerns present in most OECD markets.

II. RESEARCH OBJECTIVE

The primary objective of this research is to perform a structural analysis of the wood products industry in Ghana as a foundation for understanding the competitive forces operating in that industry. Such a structural analysis is a precondition for developing sustainable competitive strategies. A second objective of the research is to utilize an adapted version of Porter's approach to the analysis of industries to assess the probable contribution that rural-based micro-enterprises in the wood products industry in Ghana might be enhanced and structured to contribute to the nation's private

[18]ibid.

sector growth strategies. A final objective is to determine the relative strength of the five competitive forces identified by Porter and to determine those forces that could be adjusted to enhance the competitive advantage of the wood products industry in Ghana.

III. LITERATURE REVIEW

The 1991 effort of the Technology Transfer Centre (TTC), a unit of the Council for Scientific and Industrial Research (CSIR), represents a comprehensive attempt to understand the small and medium sized enterprise sectors of Ghana. The TTC study has succinctly stated why more attention and action must be directed toward these firms and their development. It was reported that:

> **"... of the 8,351 industrial establishments surveyed** [by the Statistical Service] **in the country, as many as 8,109 (97.1%) fell within the SME sector. Of the total number of industrial employees of about 157,000, nearly 72,000 (46%) were in the SME sector."**[19]

With a distinct focus on the utilization of technology, the TTC study documented the impact of policy reforms and business regulations on SMEs and made recommendations for addressing existing barriers and problems. Although the primary emphasis of the TTC study was technology development in the food processing industry, there are very important implications for small scale furniture manufacturers, the focus of this study. It was concluded that in Ghana, SMEs are predominant in capital goods manufacture, metal fabrication, leather works, wood processing, food and beverage manufacturing, bakery, textile and garments, ceramics, alcohol distillation, automobile repairs, and automotive body works. SMEs make significant use of locally developed technology in their operations. For most SMEs, locally made machinery, while superior to pure traditional methods, is inferior to imported substitutes as a result of lack of precision and standardization. The TTC study results suggest that because of the availability of raw materials, Ghana has comparative advantage in some 13 product areas, including wood products.[20]

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[19]**Report On Small And Medium Enterprises Sector Study**, Technology Transfer Centre (CSIR), Accra, 1991.

[20]ibid.

Important institutional sources of support identified by TTC included the Fund for Small and Medium Scale Enterprise Development (FUSMED). FUSMED was cited as a critical source of support for the expansion and rehabilitation of existing SMEs or for the establishment of new SMEs. The Pilot Studies Fund (PSF) was listed as an assistance source for small-scale firms and micro-enterprises to underwrite the cost of feasibility studies, market surveys, and financial counseling. Selected findings from the TTC study include:

1. Potential linkages between the SMEs and large-scale sectors have not been fully developed.

2. Lack of standardization has made it difficult for small-scale enterprises to produce items for use by the medium and large-scale enterprises.

3. Government policy requires **all** industrial enterprises to register with a multiplicity of government agencies, namely; the Ghana Investments Centre; Internal Revenue Service; Customs, Excise and Preventive Service; Ghana Standards Board; Ministry of Industries, Science and Technology; the National Board for Small-Scale Industries; and the Registrar-General's Department. The study understandably concludes that many of the SMEs encounter problems in interfacing with the multitude of different government agencies.

4. Most of the SME operators have very little formal education.

5. Approximately 30% of the TTC respondents were found to possess the requisite technical and vocational expertise in their respective fields which they acquired through formal technical education as well as on-the-job training.

6. Approximately 90% of the SME operators started their projects with their own capital and assistance from relatives and friends. The sector has been deprived of institutional credit which is regarded as a major impediment to the development of the sector.

7. The SMEs produce largely for the domestic market.

8. Some 90% of the respondents to the TTC study indicated that the lack of basic input materials was a major constraint.[21]

[21]ibid.

The World Bank has investigated the plight of Ghana's small enterprises in seeking financial assistance.[22] The World Bank found that Ghana's economic recovery program and efforts to reform financially repressive policies had little immediate effect on the conditions that inhibited banks from financing small enterprises. With or without the economic recovery program, Ghana's small enterprises were in a situation where their demand for credit was largely left unsatisfied. The World Bank study was based on a survey of 133 enterprises identified as successful and therefore as potential candidates for bank financing.[23]

Studies conducted by the United Nations' International Trade Centre (ITC) offer evidence that there is opportunity for increased involvement in export activity by the SME sector of Ghana and other developing countries. The ITC has provided the following information on export activity by SMEs in some developing countries. For the following sample of countries, the ITC reports:

- **Pakistan**: Over 30% of total exports of manufactured goods are by small manufacturing units.
- **Thailand. Sri Lanka**: Small locally-owned traders and manufacturers account for approximately 35% of total national exports.
- **India**: In 1982-1983, 93% of exports from the organized small-scale sector were of "nontraditional products." Forty-five percent of engineering exports in India emanated from the small-scale sector in 1982-1983.[24]

The ITC has devoted considerable time and effort trying to determine those factors that preclude increased participation in export activity by SMEs. The ITC has concluded that while there are a myriad of factors and conditions that preclude participation in export activities, SMEs in most developing countries face the following common obstacles:

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[22]Aryeetey, E. Baah-Nuakoh, B., Duggleby, T., Hettige, H., & W. Steel, **Supply and Demand for Finance of Small Enterprises in Ghana**, Discussion Paper No. 251, Technical Department, Africa Region, Washington, D.C., World Bank, 1994

[23]ibid.

[24]**Exports From Small And Medium-Sized Enterprises In Developing Countries,** International Trade Centre UNCTAD/GATT, Geneva, reprinted 1993.

- Lack of information on possible export markets; sometimes even inability to locate information sources.

- Absence of guidance on export regulations and procedures.

- Inability to identify sources of assistance for product development and product upgrading for export.

- Lack of information on requirements of export markets in regard to quality control, packaging, etc., and inability to locate information sources.

- Lack of information on export credit and insurance facilities as well as facilities for meeting import requirements, particularly facilities for obtaining imported raw materials for export production.

- Lack of information on the operations of indirect marketing channels like merchant export houses, and lack of guidance on how to deal wi[illegible]ch commercial agencies.

- Absence of guidance on basic management issues relevant to exporting firms.

- Absence of sound advice on steps that need to be taken to enter the export field.[25]

The Ghana Trade and Investment Program (TIP) has provided solutions for the many of the barriers cited above. AMEX International, one of several TIP contractors, provides export assistance for Ghana's nontraditional exporters. During the first three months of 1994, AMEX provided assistance to 18 wood products companies. Eleven of these 18 companies increased their exports by approximately $6.8 million between September and December 1993, and had total exports of almost $30 million for the year.[26] Understandably, the TIP initiative has focused on those firms best positioned to immediately contribute to the growth of nontraditional wood products. Firms assisted to date under TIP tend not to be the firms that are rural-based or micro-enterprises.

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[25]ibid.

[26]**Quarterly Report (January - March 1994), Ghana Trade and Investment Program, Export Assistance Component,** AMEX International, Inc., Accra, Ghana, May 1994.

Dunning [1995] recently suggested that the world economy may be entering a new phase of market-based capitalism—a phase variously described as alliance, relational, collective, associate and the 'new' capitalism[27] Among a variety of distinguishing characteristics of this new phase, Dunning posits that individual enterprises are perhaps best able to advance their economic objectives, and those of their national economies, more by competition rather than by cooperation. Although scholars [Cournot 1851] for more than a century have acknowledged the influencing role of competition on the behavior of business firms, it has been the contemporary efforts of Porter [1979, 1980, 1985. 1985a, 1986, 1987, and 1990] that have sparked renewed interest in the study of competition as a key determinant of economic success. Porter [1980] has advanced the position that it is the structure of an industry that ultimately determines the competitive rules of the market place as well as the strategies available to the individual firm in the industry. Porter presents cost leadership, product differentiation, and market focus as the three generic strategies for coping with industry structure. In an assessment of Porter's typology of generic strategies, Hambrick [1983] concludes that Porter has effectively built on previous findings and has crafted strategies that are appropriately broad, but not so broad as to be vague. Similarly, White [1986] describes Porter's generic approach to business strategy as one that incorporates a few critical dimensions, yet has strong theoretical underpinnings. Murray [1988], on the other hand, contends that Porter's generic strategy concept fails to provide a solid theoretical framework since it fails to adequately guide empirical research on the three generic strategies. Murray is particularly critical of the lack of clarity with respect to Porter's market focus strategy.

Lefebvre, Langley, Harvey, and Lefebvre [1992] sought to empirically gauge the relationship between Porter's three generic competitive advantage strategies and the process of technology management in small manufacturing firms. Based on a sample of 651 manufacturing firms in the Canadian province of Quebec, Lefebvre et. al. found that technologically more sophisticated firms tended to hold stronger competitive positions and that technological strength appeared to be linked to both cost advantage and product differentiation. With a sample of 65 firms in the office and

[27]Best, Michael. 1990. **The New Competition: Institutions of Restructuring.** Cambridge, Mass.: Harvard University Press.

residential furniture industry, Droege, Vickery, and Markland [1994] sought to test marketing, innovation, and manufacturing competencies as determinants of competitive advantage and business performance outcomes. Their results indicate that marketing and innovation competencies are positively related to most conventional measures of firm performance such as return on investment, market share, etc. Their results strongly suggest that a firm's capacity for innovation is a key determinant of performance and competitive advantage.

Porter [1995] recently suggested that economic activity in America's inner cities could become sustainable if such economic activity was crafted to capitalize on the competitive advantages inherent to inner city locations, and results in products and services that are difficult to offer elsewhere. Porter's focus on the inner city provoked wide ranging commentary from inner city proponents such as the Mayor of Indianapolis, Secretary of the U.S. Treasury, and a host of community developers. Porter must be credited with successfully elevating discussions regarding inner city development strategies to include considerations for competitive advantages that might be unique to particular inner cities.[28] In many respects, American inner city economic conditions are representative of economic environments in developing countries. Research commissioned by the World Bank [Biggs, Moody van Leeuwen & White, 1994] underscore the desire for merchants in developing countries to use their apparent comparative advantages as economic stepping stones to competitive advantages. Based on studies conducted in Cote d'Ivoire, Ghana, Kenya, Senegal, and Zimbabwe, Biggs et. al. present evidence that African producers can successfully meet the demand for specific garments by American consumers. Working with retailers such as J. C. Penney, Montgomery Ward, KMart, Dayton Hudson, and Pier 1, promising case studies suggest that African comparative advantages can be transformed into true competitive advantages.

Porter [1990] advises that a nation's competitive strategy for a specific industry must grow out of an operational understanding of the structure of the industry and how it is changing. Ghana has identified its wood products industry as a candidate industry for the nation's nontraditional export

[28]Letters to the Editor re "The Competitive Advantage of the Inner City." **Harvard Business Review.** 73: 144-154.

program. Formal competitive strategies for Ghana's wood products industry should be formulated after a sound understanding of the nation's wood products industry has been developed.

Despite the clarity of Porter's emphasis on industry structure as a determinant of subsequent strategy, there is an acute paucity of attention to industry structure. Although Porter has clearly enumerated those factors that shape and determine industry structure, few researchers have sought empirical evidence to measure industry structure as the basis for developing strategies to compete in the world market. The very limited research on competitive strategy conducted on African countries is generally firm-specific. Moreover, none of the strategies recommended for international trade and competition by African nations ever takes the structure of the entire industry into consideration. This research study seeks to fill this void.

IV. THEORY OF COMPETITIVE STRATEGY

Porter [1990] argues that conventional economic theory of comparative advantage, factor endowment and advantage based on factor prices or government interventions through protection, tariffs, subsidies and direct involvement does not explain why nations succeed in international competition. In other words, these factors do not promote sustainable competitive advantage in international trade nor do they promote sustainable economic development that could result in a nation attaining a higher standard of living for its citizens.

Among the several examples cited by Porter [1990] to support his argument are the following:

- Factor Comparative Advantage
  The most successful trading nations, among them Germany, Japan, Switzerland, Italy, and Korea, have been countries with limited natural resources that must import most of their raw materials. Also, within nations such as Korea, the United Kingdom and Germany, it is the resource-poor regions that are prospering relative to the resource-rich ones.

- Direct Government Involvement
  Looking across nations, the industries in which government has been most heavily involved have, for the most part, been unsuccessful in international terms, despite the argument that competitiveness is most strongly influenced by government policy. In Japan for instance, sustained targeting by the government of industries such as aircraft and computer software (beginning in 1971 and 1978, respectively) has failed to be competitive in the international market place.

- Economies of Scale
  Economies of scale and other market imperfections are indeed important to competitive advantage in many industries. Having a large home market, often cited as an advantage, offers little explanation. Hong Kong, Taiwan, South Korea, Switzerland and Denmark for example, do not have large home markets, and none of those countries had the largest home demand for the products involved in their international competitive success.

- Government Policies
  Governments have implemented various policies designed to improve comparative advantage in factor costs; for example, reduction in interest rates, efforts to hold down wage costs, devaluation that seem to affect competitive prices, subsidies and export financing addressed at particular sectors. According to Porter, comparative advantage based on factors of production is not sufficient to explain patterns of trade.

The theory of factor comparative advantage deemphasizes a role for business strategy, such as improving technology or differentiating products, and leaves firms with little recourse but to attempt to influence government policy, thus providing little guidance for appropriate business competitive strategy [Porter, 1990].

Nearly all the exports of less developed nations tend to be tied to factor costs and to competing on price. Development programs often target new industries based on factor cost advantages, with no strategy for moving beyond them. Their ability to earn modest profits is therefore at the mercy of economic fluctuations. Policies based on altering factor costs will often prove ineffective, because, as Porter's research indicates, factor comparative advantage does not explain national success in most industries. Subsidies of any kind according to Porter, will have little leverage where competition

is based on quality, time-based product development, and advanced features rather than price. The expansion of exports because of low and weak currency, at the same time as the nation imports sophisticated goods that its firms cannot produce with sufficient productivity to compete with foreign rivals, may temporarily bring trade into balance or surplus but lowers the nation's standard of living. Instead, the ability to export many goods produced with high productivity which allows the nation to import many goods involving lower productivity, is a more desirable target because it translates into higher national productivity.

Porter's theory begins from individual industries and competitors within industries and extends to the economy as a whole. According to Porter, the industry level is where competitive advantage is either won or lost. A clear understanding of the attributes that foster competitive advantage in specific industries based on the industry structure is the foundation upon which a sustainable competitive strategy can be developed. Porter [1990] expresses this concept in the following words:

> **"The forces of structural analysis is on identifying the stable, underlying characteristics of an industry rooted in its economics and technology that shape the arena in which strategy must be set. Underlying industry structure must be the starting point of strategic analysis."**

Porter identifies five competitive forces or structural attributes, the collective strength of which determines the ultimate profit in the industry, where profit potential is measured in terms of invested capital. The strength of the competitive forces in an industry determines the degree to which inflow of investment drives the return to the free market level, and thus the ability of firms to sustain above-average returns. All five competitive forces jointly determine the intensity of industry competition and profitability. The strongest force or forces become crucial for strategy formulation.

In an attempt to adapt and replicate Porter's structural analysis of industries, the five competitive forces measured and analyzed for the Ghanaian wood products industry were: (1) threat of entry into the industry; (2) intensity of rivalry among current competitors; (3) pressure from substitute

products; (4) bargaining power of buyers; and (5) bargaining power of suppliers. Variables or indicators for these five structural forces are outlined below.

Threat of Entry into the Industry

New entrants into an industry bring new capacity, and compete for market share and resources. Production costs may escalate while selling prices decline, thus bringing down profitability. The threat of entry into an industry depends on the existing barriers to entry, coupled with the reaction from existing competitors to the entrant. If barriers are high or the new entrant can expect sharp retaliation from entrenched competitors, the threat of entry is low.

Barriers could be caused by :

1. Economies of Scale: resulting in decline in cost as the absolute volume of production per period increases. Thus, the new entrant is forced to come in at a large scale or accept a cost disadvantage.

2. Product Differentiation: whereby established firms have brand identification and customer loyalties, which results from past advertising, customer service, product differences, etc. This may force a new entrant to spend heavily to overcome existing customer loyalties.

3. Capital Requirements: the need to invest large financial resources in order to compete creates a barrier to entry.

4. Access to Distribution Channels: if the distribution channels for the product have already been served by established firms, the new entrant must persuade the channels to accept its product through price reductions, cooperative advertising allowances, etc., which reduce profits. The more limited the wholesale or retail channels for a product are and the more existing competitors have these tied up, the higher the entry barrier will be. Entry barriers may be established through ties with channels based on long term relationships or high quality service.

5. Cost Disadvantage Independent of Scale: examples are technology, specialized knowledge, or techniques that are kept proprietary through patents or secrecy; favorable access to raw materials; favorable location; preferential government subsidies; learning or experience curve, and;

6. Government Policy: can limit or even foreclose entry into industries with controls such as licensing requirements and limits on access to raw materials, or other forms of reputations and standard requirements.

Intensity of Rivalry among Existing Competitors

Firms in every industry compete for market position and opportunities to improve position; price advantage; advertising battle; product introduction ; and increased customer service or warranties. If competition escalates, then all firms in the industry may suffer and be worse off than before. Intense rivalry is characterized by the following:

1. Competitors are numerous or are roughly equal in size and power.
2. Industry growth is slow.
3. High fixed or storage costs.
4. The product or service lacks differentiation or switching costs.
5. Capacity is normally augmented in large increments.
6. Competitors are diverse in strategies, origins, "personalities" and relationships to their parent companies.
7. High strategic stakes - volatile if firms have stakes in achieving success.

Exit barriers are high if the industry is characterized by the following:

1. Specialized assets.
2. Fixed costs of exit.
3. Strategic interrelationships.
4. Emotional barriers.
5. Government and social restrictions.

When exit barriers are high in an industry, excess capacity does not leave the industry, and companies that lose the competitive battle do not give up. Profitability of the industry can be destroyed as a result.

Competition in an industry continually works to drive down the rate of return on invested capital towards the competitive floor rate of return and firms habitually earning less than the floor will eventually go out of business. On the other hand, the presence of rates of return higher than the adjusted free market return serves to stimulate the inflow of capital into an industry either through new entry or through additional investment by existing competitors.

Pressure from Substitute Products

All firms in an industry are competing with industries producing substitute products. Substitutes limit the potential of an industry by placing a ceiling on the prices firms can charge. Substitutes are other products that can perform the same function as the product of the industry.

Collective industry action or response against a substitute may improve the industry's collective position against the substitute. Collective response may be in areas such as advertisement, product quality improvement, marketing efforts or securing greater product availability. Substitute products that pose the most threat are those that are:

1. Subject to trends improving their price performance trade-off with the industry's product, or
2. Produced by industries earning high profits.

Hence trend analysis is important in deciding whether to head off a substitute strategically, or plan a strategy with it as an inevitable key constraint.

Bargaining Power of Buyers

Buyers compete with the industry by forcing down prices, demanding higher quality products or more services and playing competitors against each other, all at the expense of industry profitability. A buyer group is powerful if:

1. It is concentrated or purchases large volumes relative to sellers' sales. Large volume buyers raise the stakes to keeping capacity filled in an industry characterized by heavy fixed costs.

2. The products it purchases from the industry represent a significant fraction of its cost or purchases. Buyers become price sensitive in such situations.

3. The products it purchases from the industry are standard or undifferentiated, i.e., alternative suppliers are easily found.

4. It faces few switching costs that may lock buyers to a particular seller or producer.

5. It earns low profits. This creates great incentives to lower purchasing costs. Highly profitable buyers are usually less price sensitive.

6. Buyers pose a credible threat of backward integration. Such buyers are in a position to demand bargaining concessions. Buyer power can be neutralized when firms in the industry offer a threat of forward integration into the buyer's industry.

7. The industry's product is unimportant to the 'quality' of the buyers' products or services.

Thus, consumers tend to be more price sensitive if they are purchasing products that are undifferentiated, expensive relative to their incomes, and of a sort where quality is not particularly important to them. Retailers can gain bargaining power when they can influence consumers' purchasing decisions. Careful buyer selection can be considered a strategy.

Bargaining Power of Suppliers

Suppliers can exert bargaining power over industry participants by raising prices or reducing the quality of purchased goods and services. Powerful suppliers can therefore squeeze profitability out of an industry unable to recover cost increases in its own prices. A supplier group is powerful if:

1. It is dominated by a few companies and is more concentrated than the industry it sells to. Collective buying will reduce supplier power.

2. It is not obliged to contend with other substitute products for sale to the industry.

3. The supplier group's products are differentiated or it has built-in switching costs. This cuts off buyers' options in playing one supplier against another.

4. The supplier group poses a credible threat of forward integration. This works against the industry's ability to improve the terms on which it purchases.

Government as a Force in Industry Competition

No structural analysis is complete without a diagnosis of how present and future government policies at all levels, will affect structural conditions. Government must strive for determinants of prosperity, such as incentive, effort, and competition, and avoid counterproductive choices such as subsidy, extensive collaboration, and temporary protection that are often proposed. Government's proper role is to push and challenge its industries to advance, and become competitive and responsible for their own growth and development. An industry can become competitive by stressing an under served product or market segment, employing a new approach to the buyer and by altering the manufacturing process [Porter 1990].

What is important for economic prosperity is national productivity. Exports from industries achieving high levels of productivity contribute to the growth of national productivity. A rising sophistication of exports can support productivity growth even if overall exports are growing slowly. To achieve this, Porter [1990] suggests that focus must not be on the economy as a whole but on specific industries and industry segments.

V. RESEARCH METHODOLOGY

While the emphasis during the data collection phase of the study was on the owners and managers of small and medium sized furniture manufacturing firms conducting business in each of the furniture producing governmental regions of Ghana, it was recognized from the outset that much information regarding the key structural features of the nation's wood products industry was likely to be found in a variety of other sources.

Despite the key interest in amassing primary data on the opinions and experiences of Ghana's small and medium sized furniture manufacturers, quality time was spent interviewing representatives of

organizations with extensive experience or knowledge relevant for understanding the Ghana wood products industry. Several days of interviews were conducted with officials of the Geneva-based International Trade Centre (ITC) of the United Nations. The ITC states in its publications that its purpose is to "works with developing countries to set up effective national trade promotion programs for expanding their exports and improving their import operations." The ITC in cooperation with the International Tropical Timber Organisation (ITTO) publishes a regular report on the demand and prices for tropical timber products. The ITC made available a portfolio of research reports depicting trends in market opportunities for furniture and furniture parts in countries like the United States, Germany, Japan, Australia, and a number of other industrialized countries. The results of these interviews and research reports are reflected throughout this report.

Background information on trends and policies governing Ghana's wood products industry was provided during interviews with the national and regional officers of the Small Scale Carpenters Association of Ghana. Officials of the Ghana Timber Export Development Board (TEDB) in Kumasi and Takarodi were excellent sources of information on policies and trends in Ghana's forestry sector. Discussions with the Director of the Forestry Research Institute of Ghana provided the principal investigators with very rich insights into the nation's very strong commitment to maintaining the sustainability of the nation's forestry resources. These interviews provided a very solid foundation for the empirical data gathering phase of the study.

The survey questionnaire was developed based on Porter's competitive strategy model. The main parts of the questionnaire are:

- Profile of respondents;
- Profile of businesses;
- Rivalry among firms in the industry;
- Threat of entry into the industry;
- Pressure from substitute products;
- Bargaining power of buyers;
- Bargaining power of suppliers; and
- Miscellaneous.

The unit of analysis for this research is the rural-based micro-enterprise in the Ghanaian wood products industry. The fundamental rationale for this research is to assess the prospects of micro-enterprise profitability based on the collective strength or weakness of the five structural competitive forces.

One thousand questionnaires were administered in eight of the ten governmental regions of Ghana during a six week period from July 7, 1994 to August 18, 1994. The regions surveyed were: Ashanti, Brong Ahafo, Central, Eastern, Greater Accra, Northern, Volta, and Western. The Upper East and Upper West regions of Ghana were not included in the sample because the furniture manufacturing activities in these parts of the country were considered minimal. A total of five hundred and two usable responses were obtained. Descriptive statistical techniques were used to perform the initial analysis of the data. The data reduction techniques of principal components and factor analysis were employed to determine and gauge the strength of the competitive forces that reportedly determine industry structure and industry potential profitability.

This exploratory effort to better understand the structure of the fledgling and fragmented, but uniquely complex, Ghanaian wood products industry made investigatory use of two widely used multivariate statistical procedures, principal components and factor analysis. These procedures facilitate reductions in dimensionality while maintaining the sufficiency of the data set. The essential purpose of both principal components and factor analysis is to describe, if possible, the relationship among many variables in terms of a few underlying, but unobservable, random quantities referred to either as principal components or factors.

In principal components analysis, each component is viewed as a weighted combination of the original input variables, with as many components derived as there are input variables. On the other hand, in most factor analysis, each input variable is viewed as a weighted combination of factors, with the number of factors being fewer in number than the original set of input variables [Kachigan 1983].

In this research effort, 502 micro-entrepreneurs from Ghana's wood products industry provided usable responses to a 128-item survey instrument. The 128 items included items that represented variables identified by Porter [1990] and other contributors to the competitive advantage literature as being important for understanding the structure of an industry. Additional variables that described the respondents and the performance levels of their business operations were also included. Variables among the original 128 variables that had a significantly high nonresponse rate were deleted from the statistical analysis. A total of 65 structural and profile variables were retained for the analysis. A listing of these 65 variables can be found in the Appendix as Exhibit A-I. Although there are distinct differences between the two dimensionality reduction techniques, both principal components and factor analysis are employed in this exploratory study to provide different but similar insights into Ghana's wood products industry.

In both principal components and factor analysis, the same correlation matrix of the correlation coefficients of the 65 variables was used as basic input. Principal components analysis was used to try and account for the total variation among the 502 micro-entrepreneurs in their responses for the 65 variables. The principal components methodology was employed in such a manner that each successive **composite variate** would account for a smaller portion of total variation. Although as many **composite variates** as there are original variables are required to reproduce the total variation, often, a significant portion of this total variation can be accounted for by a smaller number of principal components, also referred to as **composite variates**. Inspection of how subsets of the original variables are combined often reveals relationships between variables that are not apparent.

If Porter's approach to understanding the structure of an industry is directly applicable to Ghana's wood products industry, then one might reasonably expect to find **composite variates** that correspond in some degree to the five forces identified by Porter as being the determinants of industry structure; namely, (1) threat of new entrants, (2) bargaining power of suppliers, (3) rivalry among existing firms, (4) threat of substitute products, and (5) bargaining power of buyers. Although our primary purpose in employing principal components analysis is dimensionality reduction, there is no consensus regarding the number of components to retain. In the absence of

scientifically based decision rules, most users of principal components analysis tend to generate components until some specified amount of total variation is accounted for.

The **MINITAB PCA**[29] procedure was used to employ the principal components data reduction technique to identify a smaller set of **composite variates** that account for a reasonably large proportion of the total variance in the original 65 structural variables. Output from the algorithm included:

- eigenvalues (variances of the particular **composite variate**);
- proportion and cumulative proportion of the total variance explained by each **composite variate**; and
- coefficients for each **composite variate.**

The second multivariate statistical model used in the study was factor analysis. While factor analysis is also a linear reduction technique, factor analysis has more inherent structure since it assumes a specified model implying a reduced form of the input matrix. In summary, the factor analytic model is built on the assumption that there is indeed a smaller set of factors that can reproduce exactly the correlation in the original set of 65 structural variables. Berenson, et al. [1983] provide the following mathematical foundation for factor analysis.

$$\boldsymbol{X} = \Lambda \boldsymbol{f} + \boldsymbol{Y}$$

where $\mathbf{X}$ = 65-dimensional vector of observed responses

Λ = 65 x q matrix of unknown constants called *factor loadings*

$\mathbf{f}$ = q-dimensional vector of unobservable variables called *common factors*

Y = 65-dimensional vector of unobservable variables called *unique factors*

[29]**MINITAB Reference Manual,** Release 9 for Windows, July 1993.

The essence of the mathematical representation and of the factor analytic approach is that the observations can be decomposed into components that are common to all variables and is called the ith **communality**. The remaining variation for the ith variable is often labelled as the ith variable's **uniqueness,** or **specific variance.** These communality measures show the amount of variance in each variable that is accounted for by the factors taken collectively.

A possible and frequent difficulty with using **principal components analysis** as the method for obtaining the initial factor extractions lies in the fact that the first factor extracted accounts for the largest portion of the total variance, and each successive factor accounts for less and less.[30] This rather lopsided distribution of explained variance complicates the task of providing interpretation for the various factors. Researchers have shown how a redefinition of the factors, in such a way that the variable loadings on the various factors tend to be either very high (loading values near +1.0 or near -1.0) or very low (near zero), eliminating as many medium-sized loadings as possible, should aid in assigning some reasonable meaning to the extracted factors. Factor rotation is the procedure employed by factor analysis to accomplish this transformation. The **varimax** rotation method was used.

VI. RESEARCH RESULTS

The data analysis is divided into two sections. The first section is based on descriptive statistical measures and the second section is based on the two multivariate statistical procedures described in the previous section.

Profile of Respondents

All of the respondents are males. An overwhelming majority of the respondents (92%) own their businesses. Eighty percent of them are between the ages of 19 to 45 years. Sixty-five percent have middle school education. Eighty-six percent learned their skills through apprenticeship training, and

[30]Adapted from explanations provided by Kachigan, S., **Statistical Analysis**, Radius Press, New York, 1986.

10% have technical school education . Eighty-four percent had training that lasted between three to five years.

Profile of Businesses

Eighty-four percent of the businesses surveyed were small scale sole proprietorships, and 11% were partnerships. About 90% of the businesses have between one to ten apprentices. Forty percent have no employees, and 55% have between one to six employees. Forty-seven percent of the businesses are registered, while 53% of them are unregistered. About forty-seven percent of the businesses have been in operation for periods between one and five years; twenty-four percent have been operating for periods between six and ten years, and twenty-six percent have been operating between eleven and thirty years.

Approximately 10% of the businesses have large machines and equipment; and almost 90% operate with small hand tools. Seventy-seven percent of the firms belong to a trade association while twenty-three percent do not belong to any trade association. Most of the respondents are members of the Small Scale Carpenters' Association of Ghana. Seventy-eight percent perceived the trade association they belong to as beneficial, while 22% perceived no benefits to association membership. The main line of business is furniture manufacturing.

Threat of Entry

This competitive strategy was measured by the respondents' perception of the number of firms entering the industry. Most respondents perceived the industry as one that is easy to enter. Seventy-nine percent of the respondents felt that the possibility of numerous firms entering the industry is high. However, most claim they had financial difficulties when they started their operations. Lack of adequate knowledge of the market and capital were also cited as areas of difficulties. Forty-two percent had financial difficulties, 15% percent had marketing difficulties and 11% had production problems resulting from bulk buying, bulk selling or activities of big firms in the industry.

Most of the businesses were financed from personal resources, contributions from relatives, and informal friendly societies (susu). A majority of the respondents had no line of credit. An overwhelming majority indicated that the formal financial institutions have not been helpful to their businesses. About 55% of the respondents financed their operations through personal resources or savings and 19% relied on friendly societies and "susu", with 18% relying on family resources. Twenty-one percent of the respondents indicated that they had credit facilities, while seventy-nine percent said they had no credit facilities. When asked to indicate the types of credit available to them: 38% cited relatives and friends; 13% cited friendly societies; and another 12% percent cited "susu"; 12% cited trade credit . Eighty-four percent felt that these sources of credit have been helpful and 16% did not find the sources helpful. Responding to how easy or difficult it was to obtain credit in general, 30% of the respondents found it easy to obtain credit, and 70% found it difficult to obtain credit.

In-depth interviews revealed that it had been difficult, if not impossible, for these businesses to obtain financing from the formal financial institutions. Most of the businesses operated by the roadside, thus making their products highly accessible to their customers. They tended to use their shops or roadside display of their products as the main channel of distribution. Seventy-five percent of the respondents felt that the location of their businesses offered special advantages.

When asked what would force the respondents to stay in business at a time when most people would leave, the majority said that the expectation of better future conditions and the specialized knowledge acquired during training would force them to stay in business.

Intensity of Rivalry among Firms in the Industry

The intensity of rivalry can result in significant changes in prices and eventually impact on industry or micro-enterprise profitability. Indicators used to gauge industry rivalry were: perceived sense of competition; industry growth; fixed or storage costs; experience curve; capacity; product differences;

distribution channels; types of assets or technology utilized; and a sense of planning or lack of planning.

Most of the respondents felt that there was an element of competition within the industry in their particular line of business as well as within their geographical area. A majority of the respondents produce to satisfy customer orders. Consequently, only a few of them have warehouses or storage facilities. The few that produce items to be placed in storage did so in order to take advantage of lower current costs in anticipation of high seasonal demand, during Christmas and school reopenings.

Ninety-seven percent of the respondents expressed a sense of competition in the industry. About 62% of the businesses produce to fill orders, 15% produce for storage and 23% produce to fill orders as well as for storage. Fifty-five percent said their performance in the current year is better than the previous year, and 31% said the previous year's performance was better. About 65% expect next year's performance to be better than the current year. Twenty-one percent have no idea what to expect during the coming year.

When asked what the businesses offered to customers to get and retain their patronage, a majority of the respondents indicated that quality of their products followed by honest dealings with their customers, competitive pricing and reputation of their firms were important to them.

About ninety-two percent of the businesses in the sample sell their products to individuals, and about 6% sell to business organizations. When asked to indicate who their regular customers were, about 85% said that individuals constituted their regular customers, while about 9% said their regular customers were business organizations. About 15% of the businesses have or use specialized assets that cannot be used in any other business; eighty-five percent did not have or use any specialized assets unique to their business.

Handmade distinction, followed by finish of their products and customer loyalty were cited as the most important means of achieving product differentiation. Most respondents perceived themselves as offering good quality products and competitive prices to their customers.

Seventy-four percent of the respondents sold their products directly to their customers by displaying them by the roadside. In eighty-five percent of the cases, delivery of products was undertaken by the customer. Ninety-four percent indicated that their customers pay for delivery. Sixty-six percent of the businesses said that delivery cost was not added to their product cost and 27% said that the delivery costs added to their product cost was minimal. Ninety-seven percent of the businesses did not own any concessions.

Pressure from Substitute Products

The variables used to determine the extent of this pressure in the Ghanaian furniture industry were: substitute products competing with industry products and whether or not substitute raw materials could be used for the manufacture of the industry's products.

Pressure from substitute products do not appear to be a major problem in this industry in Ghana. Only a few respondents indicated that their products could be made or were being made from either plastics or some kind of metal, namely, plastic chairs and metal beds. Thirty-six percent of the respondents felt that products made from plastics compete with theirs. Forty-one percent said that products made from metals compete with their products. When asked if their products could be made from materials other than wood, 16% said no. Nineteen percent said that their products could be made from plastics, 13% said metals, 12% said leather, 10% said saw dust, and 29% said secondary wood species. Thirty-four percent of the respondents felt that substitute products had affected the profitability of their businesses, and 66% said that substitute products had not affected their firm's profitability. Twenty-six percent said that furniture made from substitute products, and 71% said that other products made from substitute material had affected their firms' profitability.

Bargaining Power of Buyers

The respondents generally did not feel that they had a steady or reliable well-defined customer base, but viewed the random individual customer as their typical patron. It is customary for customers to provide raw materials and/or cash advances to producers when placing their orders. Once the products are sold, the customer becomes responsible for the delivery and the cost of delivery.

Most indicated that their customers prefinanced their orders, and thus influenced the pricing of their products as a result of prefinancing. Eighty-eight percent of the respondents said that their customers prefinanced their orders. About sixty-nine percent of the businesses in the survey provided some discount to their customers, and the remaining 31% did not provide any discount.

Sixty percent of the respondents felt that their customers exerted influence on their products regarding product quality and timeliness of delivery. Seventy-two percent of the respondents viewed their products as standardized. About fifty-seven percent felt that their buyers influenced the pricing of their products, whereas 43% did not feel that buyers influenced the pricing of their products. About ninety-five percent of the respondents indicated that their products had medium to low profit margin. Sixty-five percent of the respondents expressed the opinion that regular customers constituted about 50% to 75% of their annual sales.

Most of the businesses in the sample did not export any of their products. Ninety-seven percent of the businesses indicated that their products were not exported. The main reasons given for not exporting were inadequate finance or financial difficulties, lack of knowledge about and access to international markets. However, ninety-three percent of the respondents said that they were interested in exporting their products.

Bargaining Power of Suppliers

Bargaining power of suppliers in the wood products industry of Ghana was assessed by measures indicating: sources of raw material supply; access to or availability of raw material supplies; number of suppliers; availability of substitutes for raw materials; importance of industry to suppliers; the extent of suppliers' product differentiation; and the threat of suppliers entering the industry.

The respondents clearly indicated that wood was a significant or important input for their products. Hence, the quality of wood and the reliability of supplies become crucial to the success of their operations. Some perceived the threat of their suppliers entering their line of business.

The lumber market and saw mills constituted about 70% of the raw material suppliers to the industry. Fifty-eight percent of the respondents believed they could obtain their raw material supplies from several sources, whereas 42% believed they could obtain their supplies from only a few sources. Thirty-five percent of the respondents felt that the number of suppliers in the industry was insufficient, 52% indicated that there were sufficient suppliers of raw materials and thirteen percent said there were too many suppliers.

Thirty-nine percent of the businesses surveyed had no difficulty obtaining raw materials for their products. Seventy-seven percent of the respondents could not use any substitute raw materials other than wood for their products. Seventy-eight percent considered their firms to be important customers of suppliers. Sixty percent of the respondents indicated that their suppliers' products were different from one another, and sixty-nine percent expressed a sense of loyalty to their suppliers. Sixty-two percent of the respondents did not suspect a possible threat of suppliers of raw materials entering their business; thirty-eight percent felt there was such a threat. Beyond the numerical results it became apparent that the small-scale furniture manufacturers were having difficulties in obtaining good quality wood, even when the necessary funding was in place.

Questions related to subsidy or tax incentives provided to the industry participants as well as concessions were posed and supplemented by in-depth interviews and secondary data.

Miscellaneous

Pollution was seen as a problem in the wood products industry. The respondents did not seem to have a clear notion of how to control pollution of the environment as a result of their operations. Fifty-eight percent of the respondents did not see their operations as contributing to environmental pollution, while 42% viewed their operations as contributing to pollution of the environment. Sixty-five percent took some measures to control pollution of the environment; the other 35% did nothing to control pollution.

Eighty-nine percent of the respondents viewed their operations as not being associated with any rituals, taboos, or idiosyncrasies. However, eleven percent indicated that there were such rituals or taboos associated with their operations. Some examples of rituals and taboos cited were: gender related - i.e. women were not permitted to sit on or touch the work bench or tools; pouring of libation at certain periods; and purification of tools. There was clearly a barrier for women entering the furniture manufacturing industry in Ghana. This was probably due to the male-dominated apprenticeship system. Most master carpenters indicated an unwillingness to accept a female apprentice. Some respondents considered it a taboo for a woman to touch their tools or sit on their work bench. Technical school education can be used to counter this trend and facilitate the entry of more females into the industry.

Factor Analytic Results

Table I contains the eigenanalysis of the correlation matrix. Fifteen components have arbitrarily been retained. The eigenvalues, as well as the proportion and cumulative proportion of the total variance are presented for each of the 15 extracted **principal components**. Because of its voluminous size, the coefficient weights for the 15 **principal components**, also referred to as composite variates, can be found in Table A-II in the Appendix.

TABLE I

EIGENANALYSIS OF THE CORRELATION MATRIX

	PC1	PC2	PC3	PC4	PC5
Eigenvalue	4.1435	2.5594	2.5036	2.3713	2.0926
Proportion	0.064	0.039	0.039	0.036	0.032
Cumulative	0.064	0.103	0.142	0.178	0.210
	PC6	**PC7**	**PC8**	**PC9**	**PC10**
Eigenvalue	2.0060	1.8366	1.7290	1.6140	1.5480
Proportion	0.031	0.028	0.027	0.025	0.024
Cumulative	0.241	0.269	0.296	0.321	0.345
	PC11	**PC12**	**PC13**	**PC14**	**PC15**
Eigenvalue	1.4910	1.4620	1.4155	1.3857	1.3710
Proportion	0.023	0.022	0.022	0.021	0.021
Cumulative	0.368	0.390	0.412	0.433	0.454

From Table A-II, the first component **PC1** can be expressed as

$$\mathbf{PC1} = .004X_1 + .150X_2 + \ldots -0.075X_{65}$$

where, $X_1, X_2, \ldots X_{65}$ *corresponds to the 65 original structural variables.*

The magnitude and sign of the weights for each of the original variables $X_1, X_2, \ldots X_{65}$ give the strength and direction of the relationship between the particular original variable and the newly derived **composite variate, PC1.**

Based on the preliminary results from the principal components analysis, it was decided to seek the extraction of 10 factors. For each of the 65 remaining variables, the highest factor loading was identified. A criterion requiring a communality value of at least 0.40 was used to select the critical variables. The factor analysis resulted in nine factors which may be generally grouped under environmental concerns, respondents' profile, rivalry, bargaining power of suppliers, entry barriers,

and bargaining power of buyers (please refer to Table II below). Variables with communality values of least 0.40 were considered as important in the Ghanaian furniture producing industry. Variables reflecting the bargaining power of suppliers loaded high on factors 1 and 3; variables reflecting the bargaining power of buyers loaded high on factors 5, 8, and 9; rivalry variables loaded high on factors 2, 4, 7, and 10; and variables reflecting entry barriers loaded high on factor 3. Substitution of either product or raw materials did not load high on any factor. Based on the factor selection criteria used, factor 6 was dropped from further consideration.

Table II
FACTOR ANALYSIS SUMMARY

Factor 1: Environmental Concerns/bargaining power of suppliers		
Variables	**Factor Loading**	**Communality**
.Important customer to suppliers	0.553	0.426
.Pollution created by industry	-0.604	0.537
.Measures taken to clean environment	-0.722	0.558
Factor 2: Profile		
Variables	**Factor Loading**	**Communality**
.Age of Respondents	0.861	0.764
.Years Worked	0.899	0.823
.Years in Business	0.853	0.743
Factor 3: Bargaining Power of Supplies/Entry Barrier		
Variables	**Factor Loading**	**Communality**
.Numerous suppliers	0.656	0.474
.No. of suppliers in industry	0.688	0.532
.No. of firms entering industry	0.393	0.421
Factor 4: Profile and Rivalry		
Variables	**Factor Loading**	**Communality**
.Usefulness of Association membership	-0.324	0.423
.Business prospects for Next Year	-0.463	0.436
Factor 5: Bargaining Power of Buyers		
Variables	**Factor Loading**	**Communality**
.Customers Prefinance Orders	0.730	0.554
.Buyers Prefinance Orders	0.704	0.529
Factor 7: Profile		
Variables	**Factor Loading**	**Communality**
.No. of Apprentices	0.570	0.435
Factor 8: Bargaining Power of Buyers		
Variables	**Factor Loading**	**Communality**
.Customers Influence on Products	-0.528	0.533
Factor 9: Bargaining Power of Buyers		
Variables	**Factor Loading**	**Communality**
.Regular Customers	0.334	0.406
Factor 10: Bargaining Power of Buyers (Foreign Markets)		
Variables	**Factor Loading**	**Communality**
.Export of Products	0.655	0.480

VII. DISCUSSION AND RECOMMENDATIONS

Entry barriers within the furniture industry in Ghana are quite low for the smaller and less capital intensive operators, who are numerous; on the other hand, exit barriers tend to be quite high because of family traditions and emotional attachment to the industry. Following Porter's argument, inefficient producers remaining in the industry will tend to drain its profitability. However, the emotional attachment, as well as the family tradition, can be harnessed to the industry's advantage. This can be incorporated into the industry's collective action such as training programs and preparation for export oriented production.

There is not much business planning in the industry. Planning tends to be based on routine, short term operations and ad hoc in nature, rather than long term and strategic.

The majority of the firms in the industry have small, technologically outdated and inefficient equipment and hand tools. This is partly due to the lack of adequate access to capital to finance equipment purchases. The lack of technologically efficient equipments imposes constraints on the industry's ability to develop, process and manufacture higher quality or value-added products that can be competitive in the domestic as well as in the international markets. Capital improvement in the industry coupled with training would in all likelihood result in more efficient utilization of raw materials leading to greater cost advantages and increased profitability.

Almost all firms in the industry have difficulty in gaining access to credit facilities to finance operations and/or to purchase capital equipment. The financial institutions are unwilling to lend to small firms such as those found in the wood products industry. Interest rates are very high, often in the 30% to 40% range, and the borrower is often required to provide collateral equal to the value of the loan, which most members of the industry cannot afford. The research results indicate that the furniture industry in Ghana is fragmented. Fragmented industries are populated by a large number of small-and medium-sized companies, many of them privately held.

Causes of fragmentation are: low overall entry barriers; absence of economies of scale or experience curve; few, if any, economies of scale or experience cost declines; inherently high labor content and high transportation costs; high inventory costs or erratic sales fluctuation; no advantages of size in dealing with buyers or suppliers; highly diverse product line and high exit barriers. These factors impede consolidation in the industry, allow inefficient firms to survive and erode industry profitability.

However, low overhead, crucial to success factors, may be advantageous to small firms unsaddled by employee benefits and other corporate requirements. Close local control and supervision may give small firms an edge.

Industry fragmentation can be overcome through consolidation and cooperation. When technological change leads to economies of scale, then consolidation can occur. Innovations that create economies of scale in production and marketing can lead to industry consolidation and cooperation. Many industries are fragmented, not because of fundamental economic reasons, but because they are "stuck." This seems to be the case in the small scale furniture manufacturing industry in Ghana. Such firms lack resources to make strategic investments, or skills to develop in-house distribution channels, in-house service organizations, and specialized logistical facilities that would promote industry consolidation or cooperation. Also, participants may be emotionally tied to traditional industry practices that support the fragmented structure and overlook or miss opportunities for change.

If the fragmented structure does not reflect the underlying economics of competition, this can provide a most significant strategic opportunity. Since there are no underlying economic causes of fragmentation, minimal investment costs or risks of innovations to change underlying economic structure need be borne, when formulating competitive strategy.

Fragmented industries are characterized not only by many competitors but also by a generally weak bargaining position with suppliers and buyers. In such an environment, strategic positioning is of

particularly crucial significance. In addition to consolidation, there are a number of possible strategic alternatives for coping with a fragmented structure that should be considered when developing competitive strategies for such an industry. Given that the structure of the furniture manufacturing industry in Ghana is characterized by fragmentation, the following recommendations are suggested to help make the industry internationally competitive in accordance with its potential structure.

Recommended Strategies

The small scale furniture manufacturing industry should be accorded an enabling economic environment so that member firms can operate efficiently, with access to adequate good quality capital equipment, and materials, in order to have any hope of becoming internationally competitive. Ba ed on the survey responses, some of the most basic and immediate needs of the industry participants include, but not limited to the following:

- resource base availability, including, adequate kiln dried wood meeting market specifications.
- enabling financial and credit environment for the industry and its potential markets.
- kiln drying facilities at strategic locations near lumber mills and accessible to the industry.
- intensive labor and management training for industry participants.
- improved credit facilities should enable industry participants to acquire much needed technologically improved equipment.
- product and market development assistance for the industry.
- training to sensitize industry members to export market requirements.
- better infrastructural facilities, such as improved roads and transport systems.

It is essential that the causes of fragmentation in the furniture industry in Ghana be clearly identified and that the impact of these causes on the economics of the industry be established and understood by industry participants and the nation's policy makers. This could facilitate the formulation and adoption of strategies to help the industry to realize its competitive potential.

Resource base availability: Lesser known wood species should be promoted for use in the industry. This will reduce the demand for traditional timber species, and thus increase the use of non-traditional abundant timber species(NTATS). If this is combined with kiln drying the wood, it will go a long way toward solving some of the raw material related problems that the industry now faces. This will add value to wood processing as well as conserve timber resources in Ghana. It will also ensure the sustainability of wood supply to the industry.

Credit availability: Most members of the industry have difficulty in gaining access to credit facilities to finance operations and/or to purchase capital equipment. Coupled with the financial institutions' reservations to lend to small businesses such as those comprising the wood products industry, interest rates are high, in the 30% to 40% range and the borrower is often required to provide collateral equal to the value of the loan, which most members of the industry cannot afford. A suitably arranged form of micro-loans to businesses in the industry with the sole purpose of producing for exports could alleviate some of the financial problems facing the industry. For instance, financing small operators through cooperative lending (credit union /susu concept) agreements and/or micro-enterprise loans organized around groups of three to five borrowers using rotation borrowing and peer pressure as well as motivation techniques and group support to collect repayments could be explored.

Labor, capital and technology: Because of limitations imposed by equipment, financial resources, productive capacity, technology, quality and quantity of raw materials, the industry is unable to produce at the quantity, quality and cost structures that are competitive at this time. Thus, the industry is characterized by inadequate resource availability. A favorable credit environment that

will enable businesses in the industry to acquire modern and technologically efficient equipment, together with good training programs could improve the industry's competitive position in this area.

Training and development: The average small scale furniture manufacturer in Ghana has a middle school education and is between the ages of 19 to 45 years. It is thus, possible to train the typical member in the industry at reasonable cost to operate modern manufacturing equipment effectively as well as safely, which will result in the industry's increased efficiency and profitability. Participants in the study asserted their interest in the export market and their willingness to do whatever is required of them to meet the export requirement challenge, provided that a favorable and enabling environment is made available to support the industry's effort to manufacture for exports. Furthermore, they expressed the concern that they lack adequate capital to enable them to produce for the export market; they are uninformed about strategies to enter foreign markets; and that they are unaware of conditions, expectations and relevant information about export standards that will help them become competitive. This brings into very sharp focus, the importance of training and the very special role that the business education units of Ghana's universities could be empowered to play in expanding industry competence in product design, product planning, strategic management and international marketing. However, becoming competitive in the domestic market is a prerequisite to becoming competitive in the international market. For instance, it is highly probable that domestic furniture producers have had a minimal role in addressing the furniture needs of the major new hotels, restaurants, and office buildings, etc in the country.

Fragmentation and industry consolidation and cooperation: High level of discipline is nearly always required for effective competition in fragmented industries. The competitive structure of fragmented industries generally requires focus or specialization in a tightly constrained group of products [Porter 1990]. A combination of consolidation and cooperative strategies may focus on but not be limited to the following:

- disintegration of production that will emphasize producing furniture parts locally with assembling and finishing performed with affiliates located at the foreign market(s)

and/or assembling foreign furniture parts locally. This can be achieved by developing and looking for a market niche for Ghanaian furniture products in the foreign markets. Then connect Ghanaian producers with foreign producers for possible joint ventures, international coalitions and cooperative agreements between Ghanaian firms and firms based in other countries. Such agreements could result in technology transfers that could help Ghanaian producers acquire production techniques and management know-how to improve their efficiency, productivity and industry profitability that will be mutually beneficial to both domestic firms as well as their foreign counterparts. This strategy will create additional jobs in Ghana and abroad.

- strategy should focus on the industry as a whole rather than being firm specific. This will enable the industry to achieve economies of combined operations, such as bulk buying of raw materials, reduced number of stops in the production process, reduced handling costs, reduced transportation and marketing costs and facilitate the development of economic production runs of exportable, high quality, standardized components or finished products at competitive prices for the world market.

International coalition and cooperative agreements will permit industry competitors to team up to deal with the difficulties of implementing global strategies in areas like technology, quality control, market access, and raw material access. It will strengthen the industry's bargaining position with both suppliers and buyers and enhance its productivity and profitability.

Implementation Preparation

The **"Industry and Competitive Analysis (ICA)"** methodology used in this exploratory study has immense potential for the development of a viable private business sector in Ghana. It is recommended that the results and methodology of this study, and if available, the results of other similar studies on Ghana's furniture industry be presented and discussed at a forum or conference in Accra, Ghana. Prospective participants may include Ghanaian furniture manufacturers---both large and small, government representatives whose policies affect the industry, representatives from the timber and forestry sector, representatives from the banking and financial industry, representatives of USAID and TIP contractors, and representatives of other donor agencies in Ghana. invitations could also be extended to representatives of the North Carolina furniture industry. Because of the very critical role that business educators must assume in building and maintaining a sustainable

private business sector, special efforts should be devoted to involve representatives and administrators from the business education units of Ghana's universities.

Clearly, the ideas expressed in this summary cannot be realized without considerable more research and effort. A viable pilot program of production disintegration will as a minimum require additional attention to topics such as:

1. Research on quality standards requirements, consumer preferences, and market opportunities in selected major international markets.

2. Market niches for the Ghana furniture industry in foreign countries.

3. Alternative or creative financial arrangements and approaches to assist the furniture industry in Ghana.

4. Training requirements necessary to help the industry become and remain competitive.

5. Efficient environmental management techniques for Ghana's furniture manufacturing industry.

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APPENDICES

EXHIBIT A-I
VARIABLES USED
IN THE ANALYTICAL PROCEDURES

VARIABLE CODE	VARIABLE DESCRIPTION
Status	Status in firm
Ed.Level	Level of education
Age	Age of respondent
Yrs. Wkd	Number of years in business
Training	Type of training
Trn Yrs.	Years of Training
Bus. Type	Type of business
N. Apprn	Number of apprentices
N. Emp	Number of employees
Reg.	Whether business is registered
Yrs. Bus.	Number of years in operation
Machines	Type of machines used
Assoc.	Trade association membership
Benefit	Benefits of membership
No. Firms	Number of competitive firms
Or. Stk	Production to order or stock
L. Year	Last year's results vs. current results
N. Year	Expected results for next year
Quality	Incentive to buyers
Honesty	Incentive to buyers
Prod Q.	Production levels per week
A. Price	Average price per product
S. Pro.	Customer type

EXHIBIT A-I (CONTINUED)

VARIABLE CODE	VARIABLE DESCRIPTION
Reg. Cus	Regular customer
Assets	Specialized assets during business
Future	Remaining in business in down turn
N. Firms	Numerous firms entering industry
En. Diff	Difficulties when entering industry
H. Made	Product differentiation
Finance	Financing operations
Cred. Fac	Credit facilities
D. Chan	Distribution channels
Deliver	Means of product delivery
Cost. del	Bearer of delivery costs
Raw Mat	Sources of ray materials
G. Sub	Government subsidy
Prefin	Prefinancing by customer
Concess	Concession ownership
Locat	Location advantage of business
Compet	Substitute products
Mat. I	Raw materials substitute
Impact	Impact of substitutes
Individ	Individual customers
Prod. Exp.	Products exported
Why.Not	Reason for not exporting
Exp. In	Interest in exports
Discount	Discounts to customers
Influen	Customers influence price
What.Inf	Type of customer influence

EXHIBIT A-I (CONTINUED)

VARIABLE CODE	VARIABLE DESCRIPTION
Prod.Std.	Products standardized
P. Fin	Customer prefinance
In. Price	Customers influence price
P. Margin	Profit margin on sales
R. Buyers	Percent of regular buyers to sales
Suppl	Suppliers of raw materials
N.Suppl	Number of suppliers in industry
Suppl. N.	Are suppliers numerous
Sub. In	Substitute for inputs
Import	Important customer to supplier
Diff. Sup	Differentiated supplier products
Loyal	Loyalty to supplier
Entering	Threat of suppliers entering industry
Pollute	Pollution of environment
Measures	Pollution control
Rituals	Rituals/taboos unique to industry

Table A-I
EXPORT OF WOOD AND WOOD PRODUCTS
(US$ millions)

YEAR	LOGS	LUMBER	OTHER WOOD	TOTAL
1972	$40.2 (67%)	$15.7 (26%)	$4.2 (7%)	$60.1
1973	$86.5 (63%)	$40.1 (29%)	$11.5 (8%)	$138.1
1974	$47.8 (57%)	$27.8 (33%)	$8.0 (10%)	$83.6
1975	$49.9 (60%)	$27.5 (33%)	$6.4 (7%)	$83.8
1976	$59.0 (61%)	$31.9 (33%)	$6.2 (6%)	$97.1
1977	$52.9 (69%)	$20.0 (26%)	$4.3 (5%)	$77.2
1978	$40.0 (60%)	$21.8 (33%)	$5.1 (7%)	$66.9
1979	$19.7 (42%)	$21.8 (46%)	$5.7 (12%)	$47.2
1980	$13.2 (30%)	$24.7 (56%)	$6.0 (14%)	$43.9
1981	$4.7 (21%)	$12.7 (59%)	$4.3 (20%)	$21.7

Table A-I (CONTINUED)

1982	$3.7 (24%)	$8.9 (59%)	$2.6 (17%)	$15.2
1983	$4.6	$8.3	$2.9	$15.8
1984	$5.1 (27%)	$10.1 (54%)	$3.6 (19%)	$18.8
1985	$8.7 (32%)	$14.6 (54%)	$3.7 (14%)	$27.0
1986	$25.4 (51%)	$18.8 (38%)	$5.5 (11%)	$49.7
1987	$32.2 (42%)	$35.5 (46%)	$9.1 (12%)	$76.8
1988	$43.3 (44%)	$43.2 (44%)	$12.4 (12%)	$98.9
1989	$23.6 (29%)	$43.4 (54%)	$13.3 (17%)	$80.3
1990	$29.5 (24%)	$75.1 (60%)	$20.7 (16%)	$125.3
1991	$31.7 (28%)	$59.7 (52%)	$22.5 (20%)	$113.9
1992	$24.9 (20%)	$72.8 (58%)	$28.3 (22%)[31]	$126.0

[31]"**The Ghana Timber Industry,**" Timber Export Development Board, September 1993. Rounding of the TEDB original figures has slightly altered the data from the exact figures presented.

TABLE A-II
COMPONENT ANALYSIS RESULTS

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MTB > pca c3-c8 c12-c13 c16 c21 c22 c25 c26 c28-c30 c34-c36 c39 c50-c53 &
CONT> c56 c61-c63 c69 c72-c73 c79 c81 c82 c84 c85 c87-c89 c91 c92 c94 &
CONT> c99 c101 c103 c104 c105 c107-c117 c119 c121 c123 c125-c128;
SUBC> ncomp = 15.

Eigenanalysis of the Correlation Matrix
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Eigenvalue	4.1435	2.5594	2.5036	2.3713	2.0926	2.0060
Proportion	0.064	0.039	0.039	0.036	0.032	0.031
Cumulative	0.064	0.103	0.142	0.178	0.210	0.241
Eigenvalue	1.8366	1.7290	1.6140	1.5480	1.4910	1.4620
Proportion	0.028	0.027	0.025	0.024	0.023	0.022
Cumulative	0.269	0.296	0.321	0.345	0.368	0.390
Eigenvalue	1.4155	1.3857	1.3710	1.2841	1.2725	1.2565
Proportion	0.022	0.021	0.021	0.020	0.020	0.019
Cumulative	0.412	0.433	0.454	0.474	0.494	0.513
Eigenvalue	1.2331	1.1908	1.1250	1.1048	1.0753	1.0354
Proportion	0.019	0.018	0.017	0.017	0.017	0.016
Cumulative	0.532	0.550	0.568	0.585	0.601	0.617
Eigenvalue	0.9064	0.9625	0.9488	0.9308	0.9237	0.9052
Proportion	0.015	0.015	0.015	0.014	0.014	0.014
Cumulative	0.632	0.647	0.661	0.676	0.690	0.704
Eigenvalue	0.8809	0.8485	0.8276	0.7892	0.7732	0.7591
Proportion	0.014	0.013	0.013	0.012	0.012	0.012
Cumulative	0.717	0.730	0.743	0.755	0.767	0.779
Eigenvalue	0.7274	0.7127	0.7008	0.6866	0.6695	0.6436
Proportion	0.011	0.011	0.011	0.011	0.010	0.010
Cumulative	0.790	0.801	0.812	0.822	0.833	0.843
Eigenvalue	0.6258	0.5999	0.5961	0.5820	0.5770	0.5487
Proportion	0.010	0.009	0.009	0.009	0.009	0.008
Cumulative	0.852	0.861	0.871	0.879	0.888	0.897
Eigenvalue	0.5415	0.5225	0.5008	0.4572	0.4517	0.4411
Proportion	0.008	0.008	0.008	0.007	0.007	0.007
Cumulative	0.905	0.913	0.921	0.928	0.935	0.942
Eigenvalue	0.4375	0.4312	0.4220	0.3971	0.3763	0.3590
Proportion	0.007	0.007	0.006	0.006	0.006	0.006
Cumulative	0.948	0.955	0.962	0.968	0.973	0.979
Eigenvalue	0.3468	0.3096	0.2881	0.2716	0.1534	
Proportion	0.005	0.005	0.004	0.004	0.002	
Cumulative	0.984	0.989	0.993	0.998	1.000	

Variable	PC1	PC2	PC3	PC4	PC5	PC6
STATUS	0.004	-0.055	-0.001	-0.051	-0.128	-0.092
ED.LEVEL	0.150	0.099	-0.155	-0.159	-0.047	-0.129
AGE	0.203	0.385	-0.206	0.117	0.154	-0.093
YRS.WKD	0.211	0.393	-0.212	0.097	0.191	-0.107
TRAINING	-0.024	-0.008	-0.168	-0.177	-0.210	-0.099
TRN.YRS	0.167	0.109	-0.033	0.027	-0.008	-0.033
BUS.TYPE	0.005	0.045	-0.047	0.119	-0.162	-0.087
N.APPRN	-0.107	0.071	-0.207	-0.075	-0.056	-0.091
N.EMP	-0.015	0.064	-0.138	0.008	-0.172	-0.180

TABLE A-II (CONTINUED)

REG	0.092	-0.146	0.031	0.076	0.228	0.066
YRS.BUS	0.151	0.390	-0.220	0.110	0.212	-0.042
MACHINES	-0.030	0.006	0.163	0.131	0.189	0.083
ASSOC	-0.076	0.114	0.124	0.146	-0.105	-0.068
BENEFIT	0.244	0.018	0.114	-0.119	-0.134	0.007
NO.FIRMS	0.035	0.013	-0.053	0.011	-0.075	0.112
OR.STK	0.112	-0.099	-0.083	-0.147	-0.047	0.114
L.YEAR	0.147	0.035	0.193	-0.005	0.022	-0.090
N.YEAR	0.268	-0.002	0.164	0.021	-0.114	-0.098
quality	0.093	0.068	0.023	0.143	0.015	0.052
HONESTY	0.055	0.106	0.121	0.041	-0.199	-0.148
PROD.Q	0.051	-0.015	-0.227	0.036	-0.221	0.078
A.PRICE	-0.105	0.008	-0.139	-0.156	0.016	-0.111
S.PROD	-0.039	0.026	0.271	0.057	0.136	0.001
REG.CUS	0.071	0.002	0.289	0.054	0.178	0.022
ASSETS	0.100	0.012	0.038	-0.122	0.174	0.198
FUTURE	0.134	0.109	0.192	0.059	-0.134	-0.181
N.FIRMS	0.226	-0.035	0.049	-0.030	-0.167	0.063
EN.DIFF	0.149	-0.157	-0.090	-0.031	0.104	-0.120
H.MADE	0.021	0.090	0.031	0.051	-0.091	0.037
FINANCE	-0.011	-0.045	-0.150	-0.077	0.136	0.061
CRED.FAC	0.054	0.036	0.050	0.001	0.048	0.173
D.CHAN	0.037	-0.123	-0.230	-0.059	-0.037	0.103
DELIVER	-0.064	-0.014	-0.053	0.012	-0.058	-0.001
COST.DEL	-0.068	0.021	0.057	0.047	-0.148	-0.037
RAW.MAT	-0.028	0.012	0.093	0.097	0.093	-0.141
G.SUB	0.070	-0.034	0.024	-0.001	0.075	0.179
PRE.FIN	0.047	-0.101	-0.144	0.252	-0.162	0.107
CONCESS	0.005	0.010	0.081	0.035	0.002	-0.034
LOCAT	0.196	-0.084	0.031	0.031	-0.102	-0.093
COMPET	0.068	0.134	0.136	0.072	-0.213	-0.116
MAT.1	-0.205	-0.034	-0.030	0.163	-0.018	-0.169
IMPACT	0.100	0.028	0.095	0.007	-0.208	-0.090
INDIVID	0.012	-0.032	0.033	0.035	-0.125	-0.079
PROD.EXP	0.036	-0.081	-0.033	0.057	0.188	0.032
WHY.NOT	0.027	0.034	-0.022	0.176	-0.148	0.100
EXP.IN	-0.012	0.020	-0.018	0.197	-0.026	0.114
DISCOUNT	-0.066	0.026	-0.016	0.196	0.011	0.028
INFLUEN	0.057	-0.116	-0.168	0.361	0.023	0.107
WHAT.INF	-0.012	-0.014	0.006	-0.239	0.120	-0.054
PROD.STD	0.186	-0.093	0.001	0.001	0.016	-0.082
P.FIN	0.030	-0.116	-0.112	0.309	-0.162	0.081
IN.PRICE	0.083	-0.161	-0.170	0.238	0.012	0.170
P.MARGIN	0.186	-0.147	0.109	0.020	0.062	-0.091
R.BUYERS	0.056	-0.015	-0.072	-0.056	-0.001	0.102
SUPPL	-0.063	0.020	0.020	0.088	0.049	-0.151
N.SUPPL	0.101	0.108	-0.019	-0.191	-0.197	0.306
SUPPL.N	0.129	0.117	-0.008	-0.246	-0.132	0.284
SUB.IN	0.092	0.128	0.002	-0.049	0.039	0.155
IMPORT.	0.282	-0.132	0.065	0.061	-0.026	-0.086
DIFF.SUP	0.054	0.021	0.070	0.144	-0.052	0.219
LOYAL	0.230	-0.158	0.037	0.028	0.059	0.021
ENTERING	0.122	0.183	0.171	-0.050	-0.012	0.236
POLLUTE	-0.195	0.241	0.190	0.117	-0.087	0.169
MEASURES	-0.273	0.260	0.086	-0.034	-0.063	0.111
RITUALS	-0.075	0.069	0.020	0.060	-0.121	0.226

Variable	PC7	PC8	PC9	PC10	PC11	PC12
STATUS	0.026	-0.003	0.267	0.004	-0.255	-0.203
ED.LEVEL	-0.032	0.030	0.215	-0.021	-0.040	-0.172
AGE	0.011	0.009	0.062	0.035	0.019	0.044

TABLE A-II (CONTINUED)

YRS.WKD	-0.014	-0.010	0.070	0.006	-0.005	-0.049
TRAINING	0.030	0.069	0.153	0.024	-0.106	-0.040
TRN.YRS	0.137	-0.017	-0.203	-0.130	0.125	0.024
BUS.TYPE	0.153	-0.174	-0.099	0.072	-0.055	-0.109
N.APPRN	0.260	0.198	-0.149	-0.037	0.088	-0.028
N.EMP	0.099	0.150	-0.176	0.155	-0.140	-0.054
REG	-0.205	-0.018	-0.067	0.056	0.012	0.129
YRS.BUS	-0.026	0.024	0.058	-0.036	0.013	0.003
MACHINES	0.044	-0.061	-0.126	0.027	-0.118	-0.086
ASSOC	0.076	-0.145	-0.268	0.037	0.021	0.037
BENEFIT	0.022	0.188	0.054	-0.057	0.054	-0.048
NO.FIRMS	-0.072	-0.226	-0.009	0.087	0.169	-0.096
OR.STK	0.007	0.238	0.050	0.056	0.203	-0.085
L.YEAR	0.082	-0.036	-0.073	-0.213	-0.065	0.116
N.YEAR	-0.016	0.044	-0.104	-0.043	0.074	-0.041
quality	-0.268	-0.037	-0.052	0.031	0.051	0.150
HONESTY	0.052	-0.092	-0.098	-0.197	-0.054	-0.069
PROD.Q	-0.089	-0.080	0.147	0.058	0.083	0.174
A.PRICE	0.240	0.102	-0.203	-0.046	-0.074	0.048
S.PROD	0.162	0.096	0.073	-0.154	0.112	-0.231
REG.CUS	0.172	0.161	0.040	0.002	0.155	-0.181
ASSETS	0.027	-0.123	0.146	-0.110	-0.180	0.122
FUTURE	-0.161	0.003	-0.073	-0.264	0.083	-0.006
N.FIRMS	-0.142	0.093	0.009	-0.103	0.030	-0.030
EN.DIFF	0.002	0.045	-0.075	0.219	0.033	0.038
H.MADE	0.059	0.149	0.094	0.114	0.010	0.151
FINANCE	-0.057	-0.189	-0.128	-0.219	-0.102	-0.281
CRED.FAC	0.208	0.110	0.008	0.116	-0.028	0.086
D.CHAN	-0.065	-0.085	-0.162	-0.201	-0.199	-0.139
DELIVER	0.093	-0.016	0.210	-0.350	-0.033	0.152
COST.DEL	0.025	-0.025	0.113	-0.212	-0.065	0.053
RAW.MAT	0.253	-0.039	0.145	0.144	0.101	0.034
G.SUB	0.174	-0.162	0.073	0.172	-0.260	0.105
PRE.FIN	0.234	-0.157	0.167	-0.181	0.200	0.085
CONCESS	0.126	0.046	-0.113	0.174	-0.163	0.007
LOCAT	0.080	-0.039	0.186	-0.039	-0.256	-0.070
COMPET	-0.043	0.068	-0.082	0.017	-0.140	0.075
MAT.1	-0.105	0.078	-0.084	-0.082	-0.159	0.284
IMPACT	0.096	-0.017	-0.007	0.234	-0.010	-0.025
INDIVID	-0.093	-0.215	-0.033	0.106	-0.050	-0.038
PROD.EXP	0.111	0.359	-0.049	-0.280	-0.096	0.080
WHY.NOT	-0.255	0.110	-0.032	0.042	0.024	-0.145
EXP.IN	0.001	0.048	0.018	-0.070	0.147	-0.255
DISCOUNT	0.136	0.039	-0.085	0.054	-0.310	-0.293
INFLUEN	-0.076	0.163	-0.120	0.027	-0.163	-0.023
WHAT.INF	0.052	-0.143	0.183	-0.109	0.020	-0.044
PROD.STD	0.151	-0.064	0.132	0.142	-0.144	-0.028
P.FIN	0.255	-0.135	0.068	-0.063	0.183	0.071
IN.PRICE	0.079	0.060	0.080	-0.058	-0.078	-0.164
P.MARGIN	0.138	-0.025	0.034	0.003	-0.047	0.194
R.BUYERS	0.218	-0.240	-0.233	-0.038	0.199	-0.052
SUPPL	-0.072	-0.225	0.079	-0.024	-0.010	0.073
N.SUPPL	0.081	0.015	-0.125	-0.067	-0.008	0.085
SUPPL.N	0.029	0.028	-0.227	-0.021	-0.087	0.038
SUB.IN	0.148	-0.104	-0.056	0.023	-0.101	0.307
IMPORT.	-0.028	0.070	0.066	0.003	-0.075	0.076
DIFF.SUP	-0.063	0.099	0.004	-0.119	-0.230	0.114
LOYAL	-0.016	-0.043	-0.132	0.021	-0.000	-0.067
ENTERING	-0.038	-0.180	0.048	0.116	-0.082	-0.169
POLLUTE	0.006	-0.019	0.146	0.013	-0.044	-0.053
MEASURES	0.030	0.052	0.064	-0.078	-0.116	0.004

TABLE A-II (CONTINUED)

RITUALS	0.013	0.244	0.146	0.181	0.118	0.026

Variable	PC13	PC14	PC15
STATUS	-0.111	-0.236	-0.001
ED.LEVEL	0.121	0.066	-0.061
AGE	0.036	-0.033	-0.005
YRS.WKD	0.034	0.009	-0.069
TRAINING	0.003	-0.093	0.124
TRN.YRS	-0.171	-0.155	-0.052
BUS.TYPE	-0.186	-0.295	0.100
N.APPRN	0.055	0.072	0.135
N.EMP	0.012	-0.094	0.209
REG	0.138	-0.117	-0.004
YRS.BUS	-0.013	-0.075	-0.062
MACHINES	-0.157	0.130	-0.076
ASSOC	0.044	-0.100	0.034
BENEFIT	-0.080	0.066	0.186
NO.FIRMS	0.101	-0.074	0.266
OR.STK	0.051	-0.004	-0.061
L.YEAR	-0.103	-0.030	0.017
N.YEAR	-0.161	-0.004	0.010
quality	-0.119	-0.127	0.030
HONESTY	0.112	0.305	-0.111
PROD.Q	0.096	0.098	0.252
A.PRICE	-0.125	0.072	-0.012
S.PROD	0.171	-0.250	0.058
REG.CUS	0.172	-0.186	-0.035
ASSETS	-0.019	-0.109	0.006
FUTURE	0.009	0.079	0.051
N.FIRMS	-0.068	0.133	-0.151
EN.DIFF	0.038	0.109	-0.221
H.MADE	-0.036	-0.172	-0.194
FINANCE	-0.152	-0.035	0.003
CRED.FAC	0.175	-0.008	0.307
D.CHAN	-0.058	-0.007	0.077
DELIVER	0.264	-0.183	-0.030
COST.DEL	0.388	-0.022	-0.027
RAW.MAT	-0.267	0.051	0.262
G.SUB	0.112	-0.037	-0.007
PRE.FIN	-0.162	0.074	-0.103
CONCESS	0.113	0.157	-0.125
LOCAT	-0.069	0.148	0.022
COMPET	0.086	-0.161	0.036
MAT.1	-0.005	-0.174	-0.091
IMPACT	0.180	-0.092	-0.311
INDIVID	0.002	-0.233	-0.087
PROD.EXP	0.022	0.145	0.014
WHY.NOT	0.078	-0.026	0.092
EXP.IN	-0.027	-0.067	0.098
DISCOUNT	0.138	0.103	-0.081
INFLUEN	0.030	-0.026	0.059
WHAT.INF	-0.106	-0.159	-0.048
PROD.STD	-0.047	0.078	-0.016
P.FIN	-0.020	0.097	-0.156
IN.PRICE	0.028	-0.135	-0.113
P.MARGIN	-0.158	-0.111	0.021
R.BUYERS	0.160	0.025	-0.007
SUPPL	0.129	0.227	0.018
N.SUPPL	0.036	-0.084	-0.132
SUPPL.N	-0.061	-0.099	-0.111
SUB.IN	0.128	0.045	0.152

TABLE A-II (CONTINUED)

IMPORT.	-0.002	0.049	0.200
DIFF.SUP	-0.152	-0.006	0.044
LOYAL	0.172	-0.009	0.281
ENTERING	0.034	0.169	-0.019
POLLUTE	-0.143	0.164	0.083
MEASURES	-0.084	0.041	0.114
RITUALS	-0.165	0.018	-0.115

TABLE A-III
FACTOR LOADINGS

```
MTB > factor c3-c8 c12-c13 c16 c21 c22 c25 c26 c28-c30 c34-c36 c39 c50-c53 &
CONT> c56 c61-c63 c69 c72-c73 c79 c81 c82 c84 c85 c87-c89 c91 c92 c94 &
CONT> c99 c101 c103-c105 c107-c117 c119 c121 c123 c125-c128;
SUBC> nfactor 10;
SUBC> vmax;
SUBC> correlation.

Principal Component Factor Analysis of the Correlation Matrix

Unrotated Factor Loadings and Communalities
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Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
STATUS	0.009	-0.088	-0.001	-0.079	-0.185	-0.131
ED.LEVEL	0.305	0.159	-0.245	-0.245	-0.068	-0.183
AGE	0.414	0.616	-0.325	0.180	0.222	-0.131
YRS.WKD	0.429	0.629	-0.336	0.149	0.276	-0.151
TRAINING	-0.049	-0.013	-0.266	-0.273	-0.303	-0.140
TRN.YRS	0.340	0.175	-0.051	0.041	-0.011	-0.047
BUS.TYPE	0.011	0.072	-0.074	0.183	-0.235	-0.124
N.APPRN	-0.218	0.113	-0.328	-0.116	-0.081	-0.128
N.EMP	-0.030	0.102	-0.218	0.012	-0.249	-0.255
REG	0.187	-0.234	0.049	0.116	0.330	0.093
YRS.BUS	0.308	0.625	-0.349	0.169	0.307	-0.060
MACHINES	-0.061	0.009	0.258	0.202	0.273	0.118
ASSOC	-0.154	0.183	0.196	0.225	-0.152	-0.097
BENEFIT	0.497	0.029	0.180	-0.183	-0.194	0.009
NO.FIRMS	0.070	0.020	-0.084	0.016	-0.109	0.159
OR.STK	0.228	-0.158	-0.132	-0.226	-0.068	0.161
L.YEAR	0.300	0.056	0.305	-0.008	0.032	-0.127
N.YEAR	0.545	-0.003	0.259	0.032	-0.165	-0.139
quality	0.189	0.108	0.036	0.221	0.021	0.074
HONESTY	0.113	0.170	0.192	0.064	-0.287	-0.209
PROD.Q	0.104	-0.025	-0.360	0.056	-0.320	0.111
A.PRICE	-0.213	0.013	-0.220	-0.241	0.024	-0.157
S.PROD	-0.079	0.042	0.428	0.088	0.197	0.002
REG.CUS	0.145	0.003	0.457	0.084	0.258	0.031
ASSETS	0.204	0.020	0.060	-0.188	0.252	0.281
FUTURE	0.272	0.174	0.303	0.091	-0.193	-0.256
N.FIRMS	0.460	-0.056	0.078	-0.046	-0.242	0.089
EN.DIFF	0.303	-0.251	-0.143	-0.048	0.151	-0.170
H.MADE	0.043	0.144	0.048	0.079	-0.132	0.053
FINANCE	-0.023	-0.073	-0.238	-0.119	0.196	0.086
CRED.FAC	0.110	0.057	0.079	0.001	0.070	0.245
D.CHAN	0.076	-0.197	-0.364	-0.092	-0.053	0.146
DELIVER	-0.129	-0.022	-0.084	0.019	-0.084	-0.001
COST.DEL	-0.139	0.033	0.090	0.073	-0.214	-0.053
RAW.MAT	-0.056	0.020	0.148	0.149	0.135	-0.200
G.SUB	0.142	-0.055	0.037	-0.002	0.109	0.253
PRE.FIN	0.097	-0.161	-0.227	0.388	-0.234	0.151
CONCESS	0.010	0.017	0.128	0.054	0.003	-0.048
LOCAT	0.399	-0.134	0.049	0.048	-0.148	-0.132
COMPET	0.138	0.214	0.215	0.111	-0.309	-0.165
MAT.1	-0.418	-0.055	-0.047	0.251	-0.026	-0.239
IMPACT	0.204	0.045	0.150	0.011	-0.301	-0.127
INDIVID	0.024	-0.052	0.053	0.053	-0.181	-0.111
PROD.EXP	0.073	-0.130	-0.053	0.087	0.272	0.045
WHY.NOT	0.055	0.054	-0.035	0.272	-0.215	0.141
EXP.IN	-0.024	0.032	-0.028	0.303	-0.037	0.162
DISCOUNT	-0.134	0.042	-0.025	0.302	0.015	0.039
INFLUEN	0.115	-0.186	-0.266	0.556	0.033	0.151
WHAT.INF	-0.024	-0.022	0.010	-0.367	0.174	-0.076

TABLE A-III (CONTINUED)

PROD.STD	0.378	-0.148	0.002	0.001	0.023	-0.116
P.FIN	0.062	-0.186	-0.177	0.476	-0.234	0.115
IN.PRICE	0.170	-0.258	-0.269	0.367	0.018	0.241
P.MARGIN	0.380	-0.234	0.173	0.030	0.090	-0.130
R.BUYERS	0.115	-0.024	-0.114	-0.087	-0.001	0.145
SUPPL	-0.128	0.031	0.031	0.135	0.072	-0.213
N.SUPPL	0.205	0.173	-0.030	-0.294	-0.286	0.434
SUPPL.N	0.263	0.187	-0.012	-0.379	-0.191	0.402
SUB.IN	0.187	0.204	0.004	-0.076	0.057	0.219
IMPORT.	0.573	-0.210	0.103	0.094	-0.038	-0.122
DIFF.SUP	0.109	0.033	0.111	0.221	-0.075	0.310
LOYAL	0.468	-0.252	0.059	0.043	0.086	0.029
ENTERING	0.248	0.292	0.270	-0.078	-0.017	0.335
POLLUTE	-0.398	0.386	0.300	0.180	-0.125	0.239
MEASURES	-0.555	0.417	0.137	-0.052	-0.091	0.157
RITUALS	-0.153	0.110	0.031	0.092	-0.175	0.320
Variance	4.1435	2.5594	2.5036	2.3713	2.0926	2.0060
% Var	0.064	0.039	0.039	0.036	0.032	0.031

Variable	Factor7	Factor8	Factor9	Factor10	Commnlty
STATUS	0.035	-0.003	0.339	0.005	0.181
ED.LEVEL	-0.043	0.040	0.273	-0.026	0.355
AGE	0.014	0.012	0.079	0.043	0.764
YRS.WKD	-0.019	-0.014	0.089	0.008	0.823
TRAINING	0.041	0.090	0.195	0.030	0.308
TRN.YRS	0.185	-0.022	-0.258	-0.162	0.280
BUS.TYPE	0.208	-0.229	-0.125	0.089	0.234
N.APPRN	0.353	0.261	-0.189	-0.046	0.435
N.EMP	0.134	0.198	-0.223	0.193	0.331
REG	-0.278	-0.024	-0.085	0.069	0.314
YRS.BUS	-0.035	0.032	0.074	-0.045	0.743
MACHINES	0.059	-0.081	-0.160	0.033	0.236
ASSOC	0.102	-0.191	-0.341	0.046	0.344
BENEFIT	0.029	0.247	0.069	-0.071	0.423
NO.FIRMS	-0.097	-0.297	-0.011	0.108	0.159
OR.STK	0.010	0.313	0.063	0.070	0.283
L.YEAR	0.111	-0.048	-0.093	-0.265	0.297
N.YEAR	-0.022	0.058	-0.133	-0.054	0.436
quality	-0.363	-0.049	-0.066	0.039	0.243
HONESTY	0.071	-0.121	-0.124	-0.245	0.304
PROD.Q	-0.121	-0.105	0.186	0.073	0.324
A.PRICE	0.326	0.135	-0.258	-0.057	0.371
S.PROD	0.219	0.127	0.093	-0.192	0.348
REG.CUS	0.233	0.211	0.051	0.002	0.406
ASSETS	0.037	-0.161	0.186	-0.137	0.304
FUTURE	-0.218	0.003	-0.093	-0.328	0.472
N.FIRMS	-0.193	0.122	0.011	-0.128	0.358
EN.DIFF	0.003	0.059	-0.096	0.272	0.316
H.MADE	0.080	0.197	0.120	0.142	0.131
FINANCE	-0.077	-0.249	-0.162	-0.273	0.291
CRED.FAC	0.281	0.145	0.011	0.145	0.208
D.CHAN	-0.088	-0.112	-0.206	-0.250	0.335
DELIVER	0.126	-0.021	0.267	-0.435	0.309
COST.DEL	0.034	-0.032	0.144	-0.264	0.175
RAW.MAT	0.342	-0.051	0.184	0.179	0.291
G.SUB	0.235	-0.213	0.092	0.215	0.256
PRE.FIN	0.318	-0.207	0.212	-0.225	0.554
CONCESS	0.170	0.061	-0.143	0.217	0.122
LOCAT	0.108	-0.051	0.236	-0.049	0.293
COMPET	-0.058	0.089	-0.104	0.021	0.268

TABLE A-III (CONTINUED)

MAT.1	-0.142	0.102	-0.106	-0.102	0.353
IMPACT	0.130	-0.023	-0.009	0.291	0.275
INDIVID	-0.126	-0.283	-0.042	0.132	0.169
PROD.EXP	0.150	0.472	-0.063	-0.349	0.480
WHY.NOT	-0.345	0.145	-0.040	0.052	0.291
EXP.IN	0.001	0.063	0.023	-0.087	0.134
DISCOUNT	0.184	0.051	-0.109	0.068	0.166
INFLUEN	-0.103	0.214	-0.152	0.034	0.533
WHAT.INF	0.070	-0.188	0.233	-0.135	0.285
PROD.STD	0.205	-0.084	0.167	0.177	0.288
P.FIN	0.346	-0.178	0.087	-0.078	0.529
IN.PRICE	0.107	0.080	0.102	-0.072	0.393
P.MARGIN	0.187	-0.033	0.044	0.004	0.292
R.BUYERS	0.295	-0.315	-0.296	-0.048	0.332
SUPPL	-0.098	-0.296	0.101	-0.030	0.196
N.SUPPL	0.110	0.020	-0.159	-0.084	0.474
SUPPL.N	0.039	0.037	-0.288	-0.027	0.532
SUB.IN	0.201	-0.137	-0.072	0.028	0.199
IMPORT.	-0.038	0.093	0.084	0.003	0.426
DIFF.SUP	-0.085	0.131	0.006	-0.148	0.222
LOYAL	-0.022	-0.056	-0.167	0.026	0.329
ENTERING	-0.051	-0.236	0.061	0.144	0.421
POLLUTE	0.007	-0.025	0.185	0.016	0.537
MEASURES	0.040	0.069	0.081	-0.097	0.558
RITUALS	0.018	0.321	0.185	0.225	0.366
Variance	1.8366	1.7290	1.6140	1.5480	22.4039
% Var	0.028	0.027	0.025	0.024	0.345

Rotated Factor Loadings and Communalities
Varimax Rotation

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
STATUS	0.020	-0.084	-0.109	-0.034	0.081	-0.329
ED.LEVEL	0.147	0.306	0.051	-0.062	-0.083	-0.462
AGE	0.071	0.861	0.056	-0.061	0.023	-0.036
YRS.WKD	0.077	0.899	0.038	-0.066	-0.011	-0.042
TRAINING	-0.049	-0.044	0.021	0.044	-0.018	-0.496
TRN.YRS	0.169	0.249	0.225	-0.082	0.092	0.115
BUS.TYPE	0.006	0.049	-0.002	-0.121	0.235	0.067
N.APPRN	-0.162	0.066	0.068	0.083	0.060	-0.081
N.EMP	0.034	0.069	-0.014	-0.033	-0.038	-0.097
REG	0.307	0.002	-0.092	0.150	-0.113	0.210
YRS.BUS	-0.038	0.853	0.038	-0.005	0.006	-0.003
MACHINES	-0.014	-0.012	-0.019	0.022	0.012	0.465
ASSOC	-0.171	-0.030	-0.027	-0.243	0.046	0.360
BENEFIT	0.296	0.021	0.303	-0.324	-0.086	-0.231
NO.FIRMS	0.004	0.026	0.128	0.066	0.072	-0.022
OR.STK	0.225	-0.074	0.256	0.139	-0.064	-0.268
L.YEAR	0.168	0.045	0.080	-0.443	-0.003	0.142
N.YEAR	0.407	0.044	0.153	-0.463	-0.051	0.008
quality	0.069	0.166	-0.038	-0.081	-0.072	0.086
HONESTY	-0.056	0.013	0.013	-0.521	0.073	0.009
PROD.Q	0.015	0.065	0.067	0.115	0.223	-0.387
A.PRICE	-0.088	-0.029	0.067	0.070	-0.057	0.007
S.PROD	-0.106	-0.079	-0.057	-0.188	0.043	0.275
REG.CUS	0.139	-0.024	0.047	-0.127	-0.026	0.321
ASSETS	0.057	0.104	0.251	0.073	0.017	0.002
FUTURE	0.049	0.075	-0.080	-0.644	-0.102	-0.015
N.FIRMS	0.269	-0.018	0.225	-0.294	-0.016	-0.226
EN.DIFF	0.508	0.050	-0.039	0.164	-0.106	-0.011

TABLE A-III (CONTINUED)

H.MADE	-0.048	0.065	0.078	-0.002	0.045	-0.071
FINANCE	-0.020	0.058	0.046	0.067	0.021	0.047
CRED.FAC	0.055	0.035	0.289	0.123	0.092	0.132
D.CHAN	0.082	-0.050	0.145	0.055	0.124	-0.124
DELIVER	-0.224	-0.035	-0.091	-0.134	0.297	-0.219
COST.DEL	-0.226	-0.106	-0.099	-0.233	0.172	-0.121
RAW.MAT	0.055	0.066	-0.185	0.045	0.143	0.153
G.SUB	0.141	0.021	0.238	0.213	0.165	0.131
PRE.FIN	0.030	-0.000	0.014	-0.039	0.730	-0.102
CONCESS	0.085	-0.032	0.046	0.009	-0.035	0.194
LOCAT	0.343	0.032	0.006	-0.213	0.202	-0.219
COMPET	-0.013	0.037	0.018	-0.392	-0.068	-0.010
MAT.1	-0.243	-0.117	-0.440	-0.019	0.013	0.091
IMPACT	0.182	-0.037	0.107	-0.159	-0.001	-0.059
INDIVID	0.064	-0.078	-0.086	-0.089	-0.007	-0.010
PROD.EXP	0.101	0.030	-0.013	-0.020	0.106	0.091
WHY.NOT	-0.048	0.015	-0.023	-0.046	0.025	-0.054
EXP.IN	-0.096	0.042	-0.017	-0.003	0.247	0.089
DISCOUNT	-0.086	0.033	-0.059	0.065	0.216	0.238
INFLUEN	0.196	0.081	-0.123	0.162	0.339	0.160
WHAT.INF	-0.024	0.009	0.004	0.037	-0.117	-0.169
PROD.STD	0.427	0.081	0.041	0.005	0.129	-0.085
P.FIN	0.076	-0.041	-0.019	-0.007	0.704	0.038
IN.PRICE	0.203	0.027	0.014	0.189	0.486	-0.015
P.MARGIN	0.453	-0.034	0.010	-0.147	0.099	0.065
R.BUYERS	0.092	0.011	0.321	-0.007	0.172	0.188
SUPPL	-0.079	0.069	-0.313	-0.054	0.034	0.057
N.SUPPL	-0.091	-0.033	0.656	-0.098	0.010	-0.124
SUPPL.N	-0.009	0.002	0.688	-0.088	-0.160	-0.054
SUB.IN	0.009	0.184	0.355	-0.003	0.063	0.120
IMPORT.	0.553	0.045	0.019	-0.225	0.067	-0.108
DIFF.SUP	-0.061	-0.020	0.155	-0.100	0.168	0.078
LOYAL	0.510	-0.014	0.136	-0.092	0.027	0.115
ENTERING	-0.042	0.141	0.393	-0.078	-0.082	0.114
POLLUTE	-0.604	-0.014	0.015	-0.041	0.066	0.147
MEASURES	-0.722	-0.020	0.028	0.003	-0.071	0.051
RITUALS	-0.233	-0.074	0.156	0.217	0.064	-0.091
Variance	3.3280	2.6672	2.3391	2.2328	2.0987	2.0695
% Var	0.051	0.041	0.036	0.034	0.032	0.032

Variable	Factor7	Factor8	Factor9	Factor10	Commnlty
STATUS	-0.073	0.128	0.151	-0.033	0.181
ED.LEVEL	-0.016	0.112	0.007	0.010	0.355
AGE	0.032	-0.057	0.065	-0.011	0.764
YRS.WKD	-0.004	-0.030	0.013	0.000	0.823
TRAINING	0.208	0.095	0.031	-0.042	0.308
TRN.YRS	0.158	0.020	-0.104	0.037	0.280
BUS.TYPE	0.234	0.051	0.050	-0.312	0.234
N.APPRN	0.570	0.130	-0.030	0.199	0.435
N.EMP	0.532	-0.084	0.127	-0.079	0.331
REG	-0.261	-0.194	-0.154	0.047	0.314
YRS.BUS	-0.011	-0.072	-0.029	0.073	0.743
MACHINES	-0.129	0.009	0.034	0.031	0.236
ASSOC	0.210	-0.029	0.056	-0.273	0.344
BENEFIT	-0.080	-0.055	0.195	0.174	0.423
NO.FIRMS	-0.113	-0.063	-0.094	-0.327	0.159
OR.STK	0.038	-0.104	0.057	0.224	0.283
L.YEAR	-0.107	0.142	-0.012	0.108	0.297
N.YEAR	-0.047	-0.109	0.118	-0.013	0.436
quality	-0.201	-0.361	-0.043	-0.133	0.243

TABLE A-III (CONTINUED)

HONESTY	0.086	0.044	0.001	-0.118	0.304
PROD.Q	0.003	-0.201	-0.052	-0.243	0.324
A.PRICE	0.492	0.256	-0.133	0.157	0.371
S.PROD	-0.174	0.200	0.207	0.317	0.348
REG.CUS	-0.178	0.139	0.334	0.320	0.406
ASSETS	-0.396	0.199	-0.120	0.102	0.304
FUTURE	-0.106	-0.142	-0.024	0.003	0.472
N.FIRMS	-0.157	-0.264	-0.002	0.048	0.358
EN.DIFF	0.121	-0.003	0.002	-0.025	0.316
H.MADE	0.042	-0.097	0.313	0.044	0.131
FINANCE	-0.047	0.088	-0.518	-0.001	0.291
CRED.FAC	0.004	0.052	0.240	0.138	0.208
D.CHAN	0.089	-0.108	-0.501	0.000	0.335
DELIVER	-0.090	0.158	-0.142	0.204	0.309
COST.DEL	-0.045	0.039	0.007	0.029	0.175
RAW.MAT	0.031	0.309	0.327	-0.014	0.291
G.SUB	-0.164	0.173	0.115	-0.138	0.256
PRE.FIN	-0.031	0.011	-0.054	-0.063	0.554
CONCESS	0.160	0.034	0.211	-0.044	0.122
LOCAT	-0.129	0.085	0.128	-0.027	0.293
COMPET	0.107	-0.173	0.231	-0.116	0.268
MAT.1	0.211	-0.156	-0.082	0.046	0.353
IMPACT	0.128	0.008	0.344	-0.257	0.275
INDIVID	-0.027	-0.029	-0.014	-0.377	0.169
PROD.EXP	0.080	-0.066	-0.096	0.655	0.480
WHY.NOT	-0.054	-0.521	0.056	-0.073	0.291
EXP.IN	-0.049	-0.213	0.032	0.069	0.134
DISCOUNT	0.168	-0.077	0.112	0.014	0.166
INFLUEN	0.104	-0.528	-0.055	0.115	0.533
WHAT.INF	-0.188	0.429	-0.138	0.042	0.285
PROD.STD	-0.058	0.181	0.174	-0.078	0.288
P.FIN	0.077	-0.046	0.034	-0.122	0.529
IN.PRICE	-0.050	-0.226	-0.061	0.146	0.393
P.MARGIN	-0.099	0.167	0.093	0.065	0.292
R.BUYERS	0.142	0.204	-0.248	-0.178	0.332
SUPPL	-0.115	0.115	-0.075	-0.217	0.196
N.SUPPL	0.026	-0.067	-0.059	-0.015	0.474
SUPPL.N	0.052	-0.081	-0.110	-0.017	0.532
SUB.IN	-0.047	0.120	0.009	-0.063	0.199
IMPORT.	-0.149	-0.108	0.111	0.067	0.426
DIFF.SUP	-0.190	-0.304	0.042	0.141	0.222
LOYAL	-0.101	-0.084	-0.099	-0.012	0.329
ENTERING	-0.367	-0.003	0.166	-0.239	0.421
POLLUTE	-0.184	-0.053	0.321	-0.073	0.537
MEASURES	0.025	0.057	0.143	0.055	0.558
RITUALS	-0.011	-0.251	0.386	0.103	0.366
Variance	2.0098	2.0007	1.8992	1.7589	22.4039
% Var	0.031	0.031	0.029	0.027	0.345

Factor Score Coefficients

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
STATUS	-0.000	-0.029	-0.066	-0.010	0.052	-0.182
ED.LEVEL	0.019	0.110	-0.023	-0.010	-0.030	-0.222
AGE	-0.011	0.327	-0.020	0.009	0.004	-0.007
YRS.WKD	-0.012	0.344	-0.032	0.004	-0.010	-0.010
TRAINING	-0.017	-0.018	0.001	0.013	0.000	-0.240
TRN.YRS	0.027	0.073	0.087	-0.129	0.045	0.086
BUS.TYPE	0.010	0.013	0.008	-0.054	0.108	0.048
N.APPRN	-0.031	0.031	0.058	0.005	0.033	-0.018

TABLE A-III (CONTINUED)

N.EMP	0.039	0.019	0.002	-0.013	-0.038	-0.022
REG	0 106	-0.001	-0.053	0.087	-0.078	0.108
YRS.BUS	-0.048	0.331	-0.020	0.019	-0.001	0.005
MACHINES	0.008	0.002	0.009	0.016	0.002	0.223
ASSOC	-0.038	-0.013	0.015	-0.122	0.017	0.187
BENEFIT	0.052	-0.027	0.095	-0.114	-0.035	-0.107
NO.FIRMS	-0.007	0.003	0.056	0.043	0.030	0.000
OR.STK	0.062	-0.047	0.102	0.085	-0.037	-0.119
L.YEAR	0.022	0.000	0.013	-0.204	0.015	0.071
N.YEAR	0.099	-0.020	0.029	-0.180	-0.032	0.019
quality	0.005	0.054	-0.034	-0.018	-0.056	0.042
HONESTY	-0.046	-0.010	-0.004	-0.257	0.049	0.007
PROD.Q	-0.014	0.015	0.018	0.061	0.097	-0.184
A.PRICE	-0.000	-0.005	0.058	-0.003	-0.019	0.031
S.PROD	-0.042	-0.021	-0.020	-0.093	0.045	0.103
REG.CUS	0.043	-0.011	0.015	-0.030	-0.002	0.136
ASSETS	-0.018	0.037	0.095	0.046	0.032	-0.004
FUTURE	-0.027	0.008	-0.069	-0.306	-0.043	-0.014
N.FIRMS	0.039	-0.043	0.065	-0.115	-0.014	-0.103
EN.DIFF	0.191	0.009	-0.038	0.112	-0.078	0.022
H.MADE	-0.019	0.020	0.032	0.025	0.018	-0.046
FINANCE	-0.020	0.026	0.026	-0.010	0.018	0.044
CRED.FAC	0.015	0.005	0.137	0.087	0.047	0.067
D.CHAN	0.007	-0.032	0.071	-0.013	0.055	-0.028
DELIVER	-0.107	-0.004	-0.041	-0.110	0.174	-0.133
COST.DEL	-0.094	-0.037	-0.041	-0.138	0.102	-0.082
RAW.MAT	0.044	0.042	-0.082	0.043	0.077	0.056
G.SUB	0.046	0.004	0.108	0.135	0.084	0.069
PRE.FIN	-0.024	-0.006	0.010	-0.036	0.360	-0.059
CONCESS	0.052	-0.015	0.031	0.026	-0.026	0.103
LOCAT	0.082	-0.006	-0.036	-0.072	0.102	-0.112
COMPET	-0.017	-0.003	-0.004	-0.166	-0.039	-0.005
MAT.1	-0.047	-0.022	-0.170	-0.056	-0.006	0.029
IMPACT	0.067	-0.032	0.035	-0.029	-0.009	-0.020
INDIVID	0.030	-0.034	-0.043	-0.031	-0.012	0.001
PROD.EXP	0.017	0.009	-0.003	-0.039	0.053	0.040
WHY.NOT	-0.029	-0.006	-0.013	-0.012	-0.015	-0.031
EXP.IN	-0.045	0.015	0.002	-0.008	0.112	0.032
DISCOUNT	-0.011	0.019	-0.002	0.026	0.094	0.115
INFLUEN	0.067	0.023	-0.046	0.076	0.119	0.086
WHAT.INF	-0.017	0.016	-0.013	0.007	-0.024	-0.091
PROD.STD	0.136	0.019	-0.013	0.047	0.060	-0.035
P.FIN	0.012	-0.022	0.005	-0.012	0.335	0.015
IN.PRICE	0.049	0.003	0.007	0.088	0.218	-0.008
P.MARGIN	0.140	-0.028	-0.022	-0.040	0.048	0.036
R.BUYERS	0.024	-0.010	0.160	-0.012	0.090	0.131
SUPPL	-0.016	0.045	-0.145	-0.037	0.021	0.013
N.SUPPL	-0.075	-0.046	0.299	-0.038	0.018	-0.032
SUPPL.N	-0.041	-0.036	0.311	-0.027	-0.070	0.014
SUB.IN	-0.018	0.059	0.157	0.019	0.040	0.075
IMPORT.	0.153	-0.011	-0.039	-0.063	0.019	-0.048
DIFF.SUP	-0.055	-0.022	0.071	-0.044	0.077	0.026
LOYAL	0.153	-0.032	0.037	-0.014	-0.004	0.082
ENTERING	-0.047	0.038	0.161	0.013	-0.029	0.055
POLLUTE	-0.203	0.013	0.034	-0.022	0.051	0.029
MEASURES	-0.233	0.017	0.051	-0.032	-0.007	-0.006
RITUALS	-0.073	-0.028	0.088	0.125	0.024	-0.067

Variable	Factor7	Factor8	Factor9	Factor10
STATUS	-0.058	0.073	0.094	-0.013
ED.LEVEL	-0.022	0.065	0.022	0.014

TABLE A-III (CONTINUED)

AGE	0.020	-0.005	0.034	-0.000
YRS.WKD	-0.001	0.008	0.005	0.006
TRAINING	0.079	0.045	0.045	-0.013
TRN.YRS	0.110	0.022	-0.081	0.029
BUS.TYPE	0.121	0.043	0.020	-0.172
N.APPRN	0.282	0.056	-0.000	0.122
N.EMP	0.279	-0.049	0.083	-0.039
REG	-0.113	-0.100	-0.078	0.009
YRS.BUS	-0.010	-0.017	-0.018	0.048
MACHINES	-0.045	0.004	-0.002	0.004
ASSOC	0.124	-0.014	-0.003	-0.151
BENEFIT	-0.008	-0.025	0.091	0.108
NO.FIRMS	-0.062	-0.023	-0.046	-0.188
OR.STK	0.031	-0.060	0.057	0.125
L.YEAR	-0.025	0.080	-0.049	0.068
N.YEAR	0.024	-0.045	0.032	-0.001
quality	-0.091	-0.178	-0.036	-0.074
HONESTY	0.055	0.032	-0.044	-0.046
PROD.Q	-0.024	-0.084	-0.003	-0.127
A.PRICE	0.249	0.114	-0.060	0.090
S.PROD	-0.076	0.102	0.079	0.180
REG.CUS	-0.055	0.071	0.156	0.171
ASSETS	-0.202	0.109	-0.068	0.050
FUTURE	-0.034	-0.067	-0.068	0.024
N.FIRMS	-0.056	-0.127	-0.017	0.039
EN.DIFF	0.087	-0.001	0.032	-0.033
H.MADE	0.025	-0.046	0.172	0.029
FINANCE	-0.036	0.045	-0.281	-0.001
CRED.FAC	0.022	0.030	0.134	0.069
D.CHAN	0.038	-0.052	-0.263	0.007
DELIVER	-0.082	0.095	-0.089	0.136
COST.DEL	-0.044	0.028	-0.018	0.035
RAW.MAT	0.016	0.170	0.181	-0.018
G.SUB	-0.074	0.102	0.075	-0.095
PRE.FIN	-0.038	0.051	-0.031	-0.021
CONCESS	0.104	0.014	0.114	-0.034
LOCAT	-0.057	0.068	0.066	-0.010
COMPET	0.075	-0.087	0.095	-0.051
MAT.1	0.086	-0.089	-0.049	0.035
IMPACT	0.088	0.011	0.185	-0.147
INDIVID	-0.014	-0.010	-0.011	-0.215
PROD.EXP	0.054	-0.036	-0.059	0.376
WHY.NOT	-0.025	-0.262	0.025	-0.031
EXP.IN	-0.029	-0.095	0.008	0.047
DISCOUNT	0.089	-0.031	0.057	0.008
INFLUEN	0.064	-0.251	-0.019	0.066
WHAT.INF	-0.116	0.215	-0.068	0.019
PROD.STD	-0.013	0.112	0.109	-0.055
P.FIN	0.030	0.018	0.017	-0.060
IN.PRICE	-0.029	-0.087	-0.017	0.084
P.MARGIN	-0.021	0.100	0.045	0.028
R.BUYERS	0.088	0.113	-0.141	-0.106
SUPPL	-0.079	0.067	-0.048	-0.123
N.SUPPL	0.030	-0.037	-0.043	0.001
SUPPL.N	0.056	-0.053	-0.070	-0.006
SUB.IN	-0.009	0.070	-0.003	-0.040
IMPORT.	-0.042	-0.036	0.055	0.037
DIFF.SUP	-0.087	-0.145	0.002	0.089
LOYAL	-0.011	-0.032	-0.058	-0.017
ENTERING	-0.168	0.005	0.070	-0.142
POLLUTE	-0.116	-0.028	0.147	-0.031

TABLE A-III (CONTINUED)

MEASURES	-0.020	0.012	0.060	0.045
RITUALS	-0.012	-0.132	0.225	0.060