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**HOME-BASED FAMILY BUSINESSES' NET ANNUAL INCOME AND ITS RELATIONSHIP TO BUSINESS, FAMILY, OWNER-MANAGER AND ENVIRONMENTAL CHARACTERISTICS IN THE UNITED STATES**

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# HOME-BASED FAMILY BUSINESSES' NET ANNUAL INCOME AND ITS RELATIONSHIP TO BUSINESS, FAMILY, OWNER-MANAGER, AND ENVIRONMENTAL CHARACTERISTICS IN THE UNITED STATES

By

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ABSTRACT

HOME-BASED FAMILY BUSINESSES' NET ANNUAL INCOME AND ITS RELATIONSHIP TO BUSINESS, FAMILY, OWNER-MANAGER, AND ENVIRONMENTAL CHARACTERISTICS IN THE UNITED STATES

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This study was designed to analyze and describe influences on home-based family business net annual income in nine U.S. states. Specifically, it examined the effects of four domain characteristics; business, family, owner-manager, and environmental on home-based family business net annual income.

For each domain it was hypothesized that there is a linear relationship between the domain and home-based family business net annual income. Moreover, it was hypothesized that there is a linear relationship between the integrated four domains and net annual income. These five research hypotheses were tested using multiple regression equations such as

$y = b_0 + b_1 (x_1) + b_2 (x_2) + \ldots\ldots\ldots + b_p (x_p)$.

The data used were generated from interviewing 899 household managers by telephone in 1989. Households from nine states participated in the

study: Hawaii, Iowa, Michigan, Missouri, New York, Ohio, Pennsylvania, Utah, and Vermont. The focus was on families in which at least one individual generated income by working at or from the home. This study used a subsample of 620 families who owned and operated a business at home from the 899 household managers that were interviewed.

The study found that three separate domains: Business, Owner-Manager, and Environmental and the integrated business, owner-manager, family and environmental domains were linearly related to home-based family business net annual income. Moreover, the business domain variables had the largest standardized regression coefficients (Betas). However, the owner-manager characteristics domain had the largest coefficient of determination ($R^2$). The following variables were the most relative important in predicting home-based family business net annual income: Categories of occupation, categories of education, hours of work, gender, and marital status. All these variables were statistically significant at the .05 level.

To my parents Luis Alberto and Elma Asuncion.

## ACKNOWLEDGMENTS

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# CHAPTER 1

## INTRODUCTION

Rowe, Haynes, and Bentley (1993) characterize home-based businesses as a special case of family businesses: "Home-based business refers to an enterprise operated either in or from a residence"(p.383). There is a great deal of overlap among the issues and concerns of small business, family business, home-based business and the self-employed. Therefore, this study will draw from diverse bodies of literature to frame the examination of the relationship of home-based family businesses' net income with many domains.

Home-based family business research has gained increasing amounts of attention in recent years (Masuo, Walker, & Furry, 1992). For instance, Masuo et al. list four factors that have contributed to the increased interest in studying work at home: the changing nature of office work, the changing composition of the labor force, the permeable boundaries of economic markets, and the lift of a ban on practically all types of home-based work by the U.S. Department of Labor.

Small family businesses account for more than 80 % of all businesses in the United States today (Kirchoff & Kirchhoff, 1987). Moreover, family

businesses are believed to account for at least half of the U.S. Gross National Product and employment (Pratt & Davis,1985). Furthermore, small business is a major contributor to economic growth and job creation (U.S. Small Business Administration, 1984). Besides, home-based family businesses provide jobs to those who otherwise might be unable to work because of personal handicaps, household responsibilities, or the need to supervise children or elderly members of the household (Heck, Stafford, Winter, & Hennon, 1993).

Home-based family business is often seen as a positive choice for owners who intermix major work and family responsibilities. Some researchers, however, point out problems and challenges when "family" and "business" are combined (Rosenblatt, de Mik, Anderson, & Johnson, 1985). For example, Birch (1987) reported that many small family businesses cease to exist within the first 2 years, and only a few survive beyond 5 years. Studies have reported the causes of small business failure (Larson & Clute,1979; Dickinson,1981); however, prior to 1992, little empirical research has investigated common factors associated with net income generated by home-based family businesses. A review of the literature reveals that most of what has been written about home-based family businesses' net income is anecdotal. Much of what is known is based on circumstantial evidence, word-of-mouth wisdom, and reports in the popular press.

The lack of empirical work may be due to the fact that many problems arise when research in this field is attempted. For instance, income is not the

only measure used by family firm owners to assess their businesses' success. Rosenblatt et al. (1985) pointed out that these owners have many measures of success: customer satisfaction, production of a quality service or product, people's development, or the owner's feelings of personal achievement. Another problem is obtaining a representative sample from which to make generalizations. Moreover, decisions about the unit of analysis and who is or are interviewed may have different effects on studies. Thus, to avoid these problems and to try to discern what variables may be related to home-based family businesses' net annual income, this study will use the most comprehensive home-based enterprise data collected to date. The data were collected by the Cooperative Regional Research Project (North East-167) for the study: "At-home income generation: Impact on management, productivity, and stability in rural/urban families".[1] The data for the at-home income generation study were drawn from nine states: Hawaii, Iowa, Michigan, Missouri, New York, Ohio, Pennsylvania, Utah, and Vermont.

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[1] The Cooperative Regional Research Project, NE-167, entitled "At-Home Income Generation: Impact on Management, Productivity, and Stability in Rural/Urban Families", was partially supported by the Cooperative States Research Service, U.S. Department of Agriculture and the Experiment Stations at the University of Hawaii, Iowa State University, Lincoln University (Missouri), Michigan State University, Cornell University (New York), The Ohio State University, The Pennsylvania State University, Utah State University, and the University of Vermont.

## Problem Statement

Recent research on entrepreneurship, management, and organizations has underscored the importance of understanding better the conditions that promote small business success (Kalleberg & Leicht, 1991). Previous studies, have reported the causes of small business failure (Larson & Clute,1979; Dickinson,1981). However, prior to 1992, little empirical research has examined home-based family businesses for common factors associated with net annual income (Rowe, Haynes et al.,1993).

Furthermore, the review of the literature shows that research on small business financial success has focused on the contributions of two domains only: the small-scale business and the owner (Kepner, 1983). In contrast, current theoretical advancements emphasize the importance of the interaction and influence of three domains: business, family, and owners (Churchill & Hatten,1987) on the financial success of small family businesses. In addition, a fourth domain, the economic and non-economic environment, can have an influence on home-based family businesses' net annual income. Therefore, prior to 1992 empirical studies to investigate small businesses, and specifically home-based family business income, have been scarce, conceptually fragmented, and fraught with sampling problems. Hence, a study to overcome these problems and to investigate the relationship of the four domains on home-based family businesses' net annual income is important.

## Purpose of the Study

The purpose of this study is to explore influences on home-based family business net annual income in nine U.S. states. Specifically, it will examine the relationship among four domain characteristics: business, family, owner-manager, and environmental characteristics and home-based family business net annual income.

## Importance of the Study

A study such as the one proposed here presents many significant potential outcomes. It could help further illuminate knowledge about home-based family businesses. For example, variables that have not been contemplated in previous research, such as certain environmental variables, may be found relevant in explaining home-based family businesses' income generation. This research, on the one hand, could identify variables that impede greater income production of home-based family business. On the other hand, it may identify major variables that positively influence the owner's net income.

Potential findings of this research could have implications for policy makers and economic development practitioners. For instance, if factors that impinge upon home-based family businesses' income generation are identified, then, policy-makers and economic development practitioners could target policies and programs that would allow encouragement of the identified positive factors and the elimination of those negative factors. In other words,

identification of factors either positive or negative can help in a more rational allocation of scarce resources by policy makers and economic development practitioners. Results from this research could indicate to economic development practitioners and policy makers the domain that needs most attention to keep home-based family businesses alive and successful.

Ultimately, the study presents a conceptual advance. Domains which have not previously been studied together will be integrated and a domain, the environment in which the business operates, usually excluded from studies, will be added. This enlarged conceptual framework can improve the understanding of important influences on home-based family businesses' income generation.

## Conceptual Framework

The literature on family business is largely written by management professionals, thus the slant is toward the business domain rather than the family or the owner-manager. All the literature on the family-owned business has been written from the firm's perspective implying a separation of family and business environment. This is an artificial separation because, as Riordan and Riordan (1993) pointed out, it is impossible for the majority of individuals to remove the "business" system from the context of the family and business. Thus, to better understand family businesses, a more holistic approach to include neglected domains is necessary. As Kepner (1983) remarked: "the ecology of the family firm as a whole system can not be comprehended unless

the more neglected half of the system [the family] is placed in the foreground"(p.58).

To understand small family business, many disciplines have contributed with concepts and frameworks. These perspectives come from major fields such as economics, business management, psychology, and sociology. Each field has its own interpretation of the characteristics and dynamics of small family businesses. As a result, different points of emphasis originated from each field. For instance, the economic approach focuses on the financial characteristics and the economic environment in which family businesses operate. Another approach, business management, looks at the managerial characteristics of the firms, i.e., how they are managed, what their planning procedures are like, their technical capabilities, marketing strategies, and other business practices. In contrast, the psychological approach studies the personal characteristics of the entrepreneur. The psychological approach assumes that there are certain personality characteristics which help individuals in being more successful than others in their businesses. Finally, the sociological approach contends that business ownership and success are largely dependent upon social group resources (Fratoe, 1986).

In summary, these different approaches engaged in the study of family businesses have provided a fragmented theoretical framework. Riordan and Riordan (1993) pointed out one major omission of these approaches. They mention that owner-managers of small businesses are usually overlooked.

Hence, there is a need to incorporate this dimension when studying family businesses. In their words:

> ... because owner-managers of small family businesses are key decision-makers in their firms and have the discretion to make choices and override business control systems at all levels, it is critical that the theoretical framework used as a research tool reflect this environmental fact (p.66-67).

Another criticism raised toward the approaches mentioned above is the lack of a system perspective. Kanter (1977) suggested that an integrated system perspective is the only logical theoretical framework within which to study family businesses. These criticisms suggest that when studying small family businesses more inclusive frameworks should be utilized.

This research aims to be more ecological by incorporating the environmental domain and studying the impact of four domains on net annual income. Hence, the research proposed here will examine families in their living settings as the units (organisms), and the domain's impact on net annual income will be under review.

A **Family Resource Management** approach is suitable as a general framework for this study because it sees families as systems within an ecological perspective. That is with the Family Resource Management framework families can be analyzed from an ecosystem perspective.

One fundamental characteristic of the family ecosystem is that it is made up of a collectivity of interdependent parts working together to achieve a

common purpose. Each element (organism and environment) is interrelated. The basic elements of the family ecosystem are: (a) organisms (family members), (b) environments (natural and human-built) and (c) the family organization which functions to transform energy in the form of information into family decisions and actions (Paolucci, Hall, & Axinn, 1977).

## Organisms

Family members, viewed as a set of interacting, interdependent but independent persons working together are the organisms in an ecosystem framework. The family is viewed as a set of mutually interdependent organisms where intimate, transacting, and interrelated persons share some common goals, resources, and commitments to one another over time. Moreover, the family's character is significantly different from that of its individual members. That is, the family characteristics differ from the characteristics of the individual members (Paolucci et al., 1977).

## Environments

Broadly defined, the environment includes anything external to the family that can affect it. There are three components of the environment: biophysical, psychosocial, and technological. The biophysical environment is composed of the sun, land, water, air, space, plants, and animals. The psychosocial component includes kinship, religious, political, economic, productive,

recreative, symbolic, and ideological aspects of the near environment. The technological components, consisting of materials, tools, and techniques of the physical and social environment, are used by families to manufacture objects or alter people and environments. In summary, the environment is the sum total of the physical, biological, social, economic, political, aesthetic, and structural surroundings of the individual or household (Bubolz, & Sontag, 1993).

Organization

According to Paolucci et al. (1977), the family organization is the processing system that transforms matter-energy and information and directs it toward family goal achievement. That is families transform matter-energy and information through key adaptation and activity processes such as management, decision-making, sustenance activities, and so forth.

In the ecological perspective, management is a set of particular responses and adaptations to a certain situation and environment (Deacon & Firebaugh, 1981). The process of adapting and changing within the family can be viewed as the management of environmental and human resources. The family adapts to the environment through a process using inputs, transformations and outputs. Inputs usually consist of energy as matter and information (Paolucci et al., 1977).

For families, inputs are demands from their goals, values, or events that require action as well as human and nonhuman resources. Human resources

include the cognitive, affective, or psychomotor traits or qualities within people, and nonhuman resources include temporal resources which are time and methods of using time, economic resources of money and property, and environmental resources which are both physical and social (Nickell, Rice, & Tucker, 1976).

Transformations are the process of planning and implementing change of input into output. Outputs are met demands and used resources that result from the process of transformation. Information from the environment about the output returns to the family system as feedback (Deacon & Firebaugh, 1981).

Decision-making processes are critical in the family resource management context. The family can be characterized as a decision-making unit. As a decision-making unit, the basic task of the family unit is to choose among competing ends in order to maximize satisfactions (or utility) subject to the limitations of scarce resources. Decision making is essentially a process of evaluation in the choice or resolution of alternatives. When these decisions involve the utilization of means such as information, material goods, or money to find an acceptable solution, they become managerial in nature, involving economic decision processes (Deacon & Firebaugh, 1988).

In summary, families are viewed by the Family Resource Management perspective as part of an ecosystem with two major subsystems: personal and managerial. Inputs as resources are introduced into the family system. Resources are transformed through planning and implementation. Decision-

making is a vital process for the functioning of the system (Deacon & Firebaugh, 1988). Moreover, the systems format in which the Family Resource Management theory is dovetailed provides a frame of reference for analyzing the goal-directed and self-regulating behavior of families as they address their living situations. The family system's context changes partly because of other systems. Viewing these interactions in a dynamic context is a special advantage of the systems approach to family analysis (Deacon & Firebaugh, 1988, p.16).

Ultimately, it is important that the assumptions and implications of this proposed general framework be well understood. For this purpose, following Deacon and Firebaugh (1988); Gross, Crandall, and Knoll (1980); Nickel, Rice, and Tucker (1976); and Paolucci, Hall, and Axinn (1977) a summary of the Family Resource Management theory assumptions is presented.

1. The family in interaction with its environment constitutes an ecosystem.
2. The family manages the biophysical, psychosocial, economic and nurturance needs and functions of its members.
3. All humans are interdependent with one another and with environmental resources.
4. Families are interdependent with other forms of life and the nonliving environment.
5. Families are semiopen, goal directed, dynamic, adaptive systems. They can respond, change, develop, act on, and modify their environment. Adaptation to their environments is a continuous process.

6. All parts of the environments (natural biological-physical, social-cultural, and human built) are interrelated and influence each other.

7. Families are part of and interact with many environments.

8. Families are energy transformation systems that use energy for survival, interaction, and adaptation.

9. Family interactions are guided by physical and biological laws of nature and human derived rules.

10. Environments provide limitations and opportunities for families.

11. Families have varied amounts of control related to environmental interactions.

12. Decision-making is the central control process that families use to attain individual and family goals.

13. Families are complex adaptive systems, capable of elaboration of organization and morphogenetic and reorientation levels of feedback.

14. Families can change values, goals, and rules in response to internal or environmental changes.

15. Families can take action to change environments to serve human purposes as well as react to environmental changes.

16. An ecosystem contains goal-oriented, controlled components, some of which are cooperative and others competitive.

17. Families are composed of two major subsystems: personal and managerial.

18. Inputs are introduced into the family system as resources; they are

transformed via throughput processes (planning and implementation). The process of transformation ends up in outputs (outcome) that can feedback into the system as input.

19. Families are goal oriented. Decision-making is a vital process for the functioning and attainment of family goals.

After reviewing the assumptions, it is also important that the implications of the proposed general framework be understood. For this purpose, a summary of the implications of Family Resource Management theory for this study is presented.

1. For this study the unit of analysis is families with home-based workers. This is consistent with the family ecological approach where the family serves as the primary unit of analysis.

2. A family is a system which is defined as "a set of parts coordinated to accomplish a set of goals" (Deacon & Firebaugh, 1981, p.7). This study focuses on the family components and how they coordinate to accomplish the goal of financial success.

3. This study considers home-based family businesses as part of an ecosystem, that is, the family business in interaction with its physical-biological, social-cultural, and human built environments.

4. Families have needs that must be met to survive. The production process may be considered as the way by which needs are met. The process uses human and material resources.

5. The family ecological approach sees families and individuals in an environmental context which provides many alternative ways to meet their needs. The resources necessary to meet families' basic needs are found within themselves and their environment and are made available through interactions and transactions.

6. The family is considered to be a managerial unit where decision-making is the central control process that families use to attain goals. This leads to the exploration of the effects both family and business managerial processes have on income produced by home-based family businesses.

7. The interdependence between family members with one another, with other nonfamily humans, and with the living and nonliving environments is recognized.

8. This study focuses on the impact of business, family, owner-manager, and environmental characteristics on home-based family business net income.

9. Families have different levels of control about the above mentioned domains. They can have greater control over the personal and microsocial environment than over the macrosocial and wider context.

10. Families can impact or be impacted by their internal dynamics and external environments. That is families change continuously to adapt to their environments and accomplish their goal(s).

11. Families are goal directed. One goal of family business owners is to produce income out of their businesses.

## Conceptual Model to Study Home-based Family Businesses

The theoretical framework proposed here will point out the relevance of integrating systematically four domain characteristics when studying home-based family businesses: business, family, owner-manager, and environmental characteristics. The model follows Churchill and Hatten's (1987) framework which emphasizes business, owner, and family to study family businesses. Moreover, it is in accord with Beckhard's (1983) approach to studying family firms:

> Basically, my own approach to family firms is a system approach. I start by recognizing the existence of three basic components: the firm as an entity with a life of its own, the family as an entity with a life of its own, and the founder[owner-manager]-who has a life of its own and who, typically, heads both of the other two systems. I would argue that, to manage the complex interdependence between them, it is necessary to acknowledge the existence of these three subsystems (p.31).

However, the model of this study incorporates the environmental domain that neither Churchill and Hatter's (1987) nor Beckhard's (1983) models contemplated.

The conceptual framework for this study was also influenced by the framework developed by Owen, Carsky, and Dolan (1992a) for the at-home income generation project. Consistent with family resource management theory, Owen, et al., (1992a) view families as having demands and resources that serve as inputs into decisions about family behavior. Owen, et al. (1992a) arrange these behaviors on an activities continuum as follows: away employment, home-

based work, household production, and propinquous[2] production. From this continuum, Owen, et al., (1992a) studied principally home-based work, which in conjunction with away employment, is identified with money as outcome.

For the cross-sectional research, proposed for this study, a model representing concepts that could be assessed under the restrictions of such analyses needed to be developed. Figure 1 shows the conceptual model that will be used to study the relationship of business, family, owner, and environmental characteristics with home-based family businesses' net annual income.

The model reflects the Family Resource Management framework that constitutes the theoretical perspective of this study. First, a systems structure where four main domains that, according to the literature review, affect home-based family businesses' income is portrayed. Moreover, the selection of concepts that are considered in each domain reflects the theoretical perspective that is behind it. For instance, the ecological perspective can be seen in the selection of variables such as investment, unemployment, population density, and so forth that capture the macrosocial and wider context.

Relationships between the independent and dependent variables are shown by the one way vertical arrows. These vertical arrows show that the variables selected have an impact on net annual income of home-based

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[2] Propinquous activities have properties of relationship, kinship, and affinity. Examples include the care and nurture of family members, preparation of foods with meaning beyond nutritional content (ethnic or favorite foods), and the practice of religion within the home.

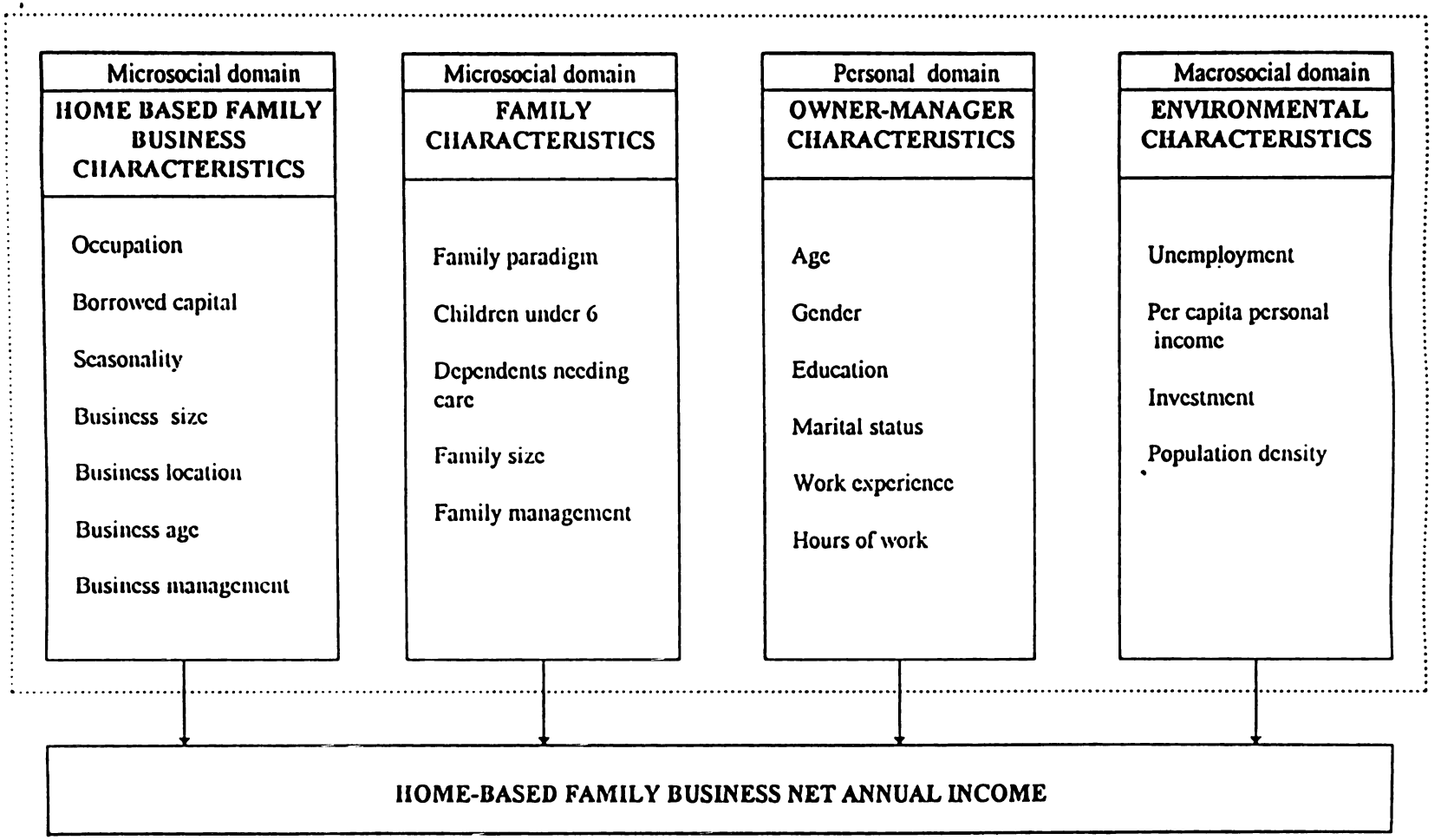


Figure 1. The conceptual model identifying interrelations of domains to home-based family business net annual income.

family business. Ideally, a systems perspective should portray a dynamic two way interaction of interrelated parts as well as a feedback loop. The model presented lacks the characteristics necessary to be a full systemic approach to study home-based family businesses. However, it is expected that this static model will be able to identify which of the four domains is most important in explaining home-based family business net annual income as well as which are the variables and their relative importance from each domain that relate to home-based family business net annual income.

# CHAPTER 2

## REVIEW OF LITERATURE

Literature for this study has been selected from the small business, family business, family firms, self-employment, and home-based family business fields. Although these terms are not equivalent, there is a great deal of overlap among them. Therefore all these fields provide insights that can be cautiously translated to the study of home-based family businesses.

The literature review will start with a presentation of home-based family business financial success. Then, the literature will focus on four main areas of home-based family business: business, family, owner-manager, and environmental characteristics.

### Home-based Family Business Financial Success

The concept of success has different definitions for different people. Rosenblatt et al. (1985) mention that family firm owners have many measures of success such as customer satisfaction, production of a quality product or service, people development, and owner's feelings of personal achievement.

When the literature is reviewed to find out about home-based family business financial success, matters get complicated due to the many overlapping fields of study interested in the success of businesses.

Prior to the 1990s, it was difficult to find empirical studies focusing upon home-based family businesses' financial success. For this reason, the literature reviewed here has to rely upon what other fields of study such as small business, self-employment, and family businesses have to say about success. In the small business literature, small business success has been traditionally defined and measured in terms of gross sales and organizational survival; personal success of the owners is measured by income (Loscocco,Robinson, Hall, & Allen, 1991).

The self-employment literature has addressed the issue of financial success. Earlier studies have examined characteristics of the self-employed, including gender, age, race and ethnicity, education level, occupational distribution, hours worked, and income. Robinson and Sexton (1994) explored the effect of education and experience on self-employment success. For this study they defined success as earning potential for both self-employed and wage and salaried workers. They recognized that:

> success is a subjective experience based on the congruence of one's expectations and the actual outcomes; however, we believe that earnings provides a global indicator of success that is quantifiable relative to the sample used. If, as has often been reported, money is a way of keeping score for entrepreneurs, we can use their scorecard to indicate relative levels of success. While this is a useful measure of success relative to other variables, we would not wish to imply that because the self-employed have greater annual earnings that they are more successful

> than the salaried sector. Again, the subjective evaluation of success must be taken into account (p.145).

Aronson (1991) points out that incomes of the self-employed vary widely with significant number of individuals in both the high and the low income classes. On average they earn less per hour than their wage-earning counterparts and tend to work longer hours for lower wages. The U. S. Small Business Administration (1991) reports that 14% of all business owners earn less than the minimum wage. Self-employment can generate capital gains and wage earnings, however. Some studies report that the self-employed tend to receive a higher rate of return on educational investments, despite their lower earnings (Heck & Walker, 1993).

The family business and family firm literature is largely written by management professionals; therefore, the slant is toward the work domain rather than the economic outcomes of the business. The family business literature focuses on founders of family businesses and the conflicts they have to surpass to succeed. While the narrow focus on the entrepreneur has forced the field to spend much time on succession planning, it has been valuable in expanding the theoretical base of family business studies (Marshack, 1993).

The home-based business literature has studied home-based work since the 1980s. Horvath (1986) suggested that home-based work, including business ownership, allows for more effective combinations of work and family roles. A general profile of home-based workers, including self-employment, has been

provided by Heck (1988, 1991), using household data obtained from the 1984 Panel Study of Income Dynamics.

The literature addressing business practices and economic outcomes of home-based businesses is scant. Rowe, Haynes et al. (1993) studied the factors related to business income, management behavior, and satisfaction. Walker, Furry, and Masuo (1993) studied gender differences in relation to family-owned home businesses. Heck & Walker (1993) examined the number and types of workers utilized by sole owners of family home businesses and the effects of these workers on business income.

In summary literature from several fields has contributed to this study. The small business and self-employment field provided the conceptualization to study home-based family businesses' financial success. The firm and family business fields contributed to the development of the conceptual model to be used. Finally, the home-based business field has provided empirical studies that included variables that are used in this study.

## Home-based Family Business

According to Pratt and Davis (1985), a family business is one in which two or more extended family members influence the direction of the business through the exercise of kinship ties, management roles, or ownership rights. The authors Pratt and Davis contend that there is a good conceptual basis for considering home-based and family-owned businesses together. There is a big

overlap between them (Figure 2). Moreover, by definition, they assume that most sole proprietorships are family-owned businesses.

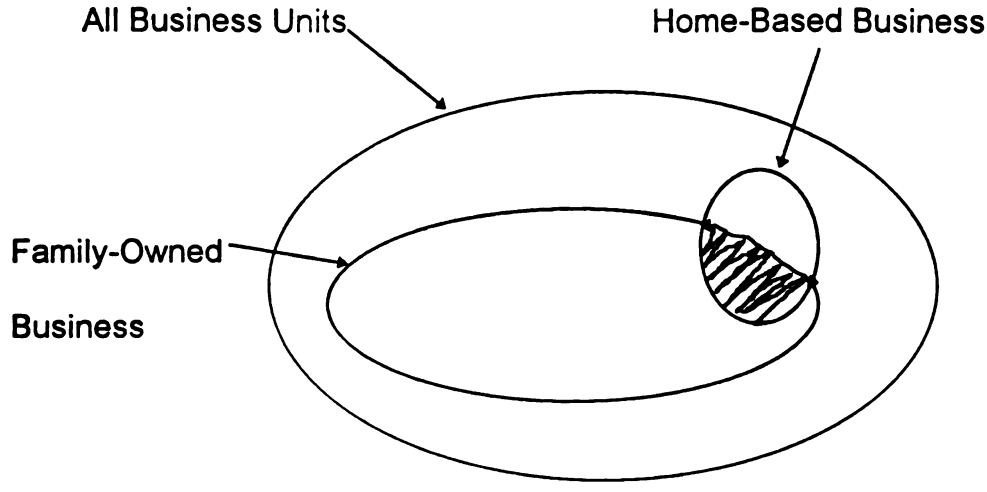


Figure 2. The overlap of the family-owned business and home-based business sectors.

Source: Pratt and Davis (1985).

Dannhaeuser (1993) defines family-operated firms as those firms that not only are owned by a family, but much of the management and some of the work is performed by two or more family members; they have fewer than 50 employees, and the enterprise is a major source of income to the family. Dannhaeuser asserts that among the factors that encourage the existence of family-operated firms, four are frequently mentioned: the need for personalized means to ensure trust, low opportunity costs, diseconomies of scale, and the presence of ethnic plurality.

In another definition Riordan and Riordan (1993) remark that national statistics on the number of small family businesses do not exist; if the data were available, the numbers would depend upon the definitions of "small business" and "family". While measures such as gross sales and number of employees are commonly used to measure business size, there are no commonly accepted definitions of a "small business" or "family". The Riordan and Riordan study defines "small family business" as "a business with 20 or fewer employees in which ownership lies within the family and two or more family members are employed" (counting the owner manager as the first employee and two part-times as one employee). A "family member" is defined as "a spouse, child, parent, grandparent, brother or sister (including step and adopted members), niece or nephew, aunt or uncle and any individual who currently shares the household" (p.71).

Rosenblatt et al. (1985) define family business as " any business in which majority ownership or control lies within a single family and in which two or more family members are or at some time were directly involved in the business" (p4-5). Regarding home-based businesses, Rowe, Haynes et al. (1993) refers to them as a special case of family businesses. Moreover, home-based business "refers to an enterprise operated either in or from a residence" (Rowe, Haynes et al., p.383). Aronson (1991) noted that technological, demographic, social, and political factors have contributed to an increase in the number of individuals

working at home. The nature of office work has rapidly changed: advances in telecommunication equipment such as personal computers, software, laser printers, photocopiers, fax machines, and electronic communication systems have made it possible to transport service-related work from a centralized work site to homes and other locations (Pratt,1993). Home-based employment has also increased in the insurance, banking, and telephone industries, pioneers in the use of computer and telecommunication technologies.

Besides technological forces, many other factors can be seen as potential nontechnological contributors to increased home work: persistent high levels of unemployment in large sections of the country and increasing difficulties for workers in entering the regular labor market; the growing number of dual-earner families; the opportunity to link employment, family time, and leisure; disappointment with the corporate setting; the challenge and autonomy of being one's own boss; and the move toward flatter and more decentralized organizations (Shamir, 1992; Wolfgram, 1984). Furthermore, the labor force today is characterized by an increasing number of women with young children and self-employed workers, two groups that find home-based work to be an ideal arrangement (Masuo et al. 1992). The permeable boundaries of economic markets characterized by strong competition from abroad have pushed U.S. businesses toward a leaner labor force working longer hours to maintain quality and remain viable in the world market (Coates, 1988).

These trends coupled with the elimination of legal restrictions on work at home, that is, the lifting of the ban by the U.S. Labor Department that restricted the operation of almost all types of home-based work, have contributed to an increase in the number of families operating home-based businesses. According to the Census Bureau, the number of home-based business owners increased to 5.6 million in 1991 (Pratt, 1993). However, other estimates assert that the number of home-based workers in the U.S. varies from 8.4 million (Horvath,1986) to 25 million (Silver, 1989). Estimates of the numbers of nonfarm home-based workers depends on how "work at home" is defined.

Although the accuracy in counting the number of families engaged in home-based work is increasing, information about what are the factors that contribute to the understanding of why some home-based family businesses succeed financially while others do not remains elusive.

## Home-based Family Business Characteristics

Researchers have suggested that features of the business itself such as organization context, access to capital and other resources, seasonality, and size are among the factors related to business success (Aronson, 1991; Aldrich & Weiss,1981; Kalleberg & Berg, 1987). This section review literature regarding studies that used business characteristics as explanatory variables for business success.

Occupation

According to Kalleberg and Berg (1987) an organization's industrial context affects the degree of competition, technology, and wage structure for individual firms; therefore it is a key potential determinant of small businesses income. Organizations in highly competitive or low-growth industries have less opportunities for success than those in fast growing and noncompetitive industries. Humphreys and Mc Clung (1981) suggested that retail and service sectors may have lower income because of greater competition and higher labor intensity characterizing such businesses. Information from the U.S. Small Business Administration (1986) emphasized the effect of occupation on women's economic success. Women-owned businesses are concentrated in the least lucrative occupations, which it is argued accounts for lower earnings. Loscocco and Robinson (1991) and Tigges and Green (1994) showed that not only are women owned firms concentrated in the less profitable personal services sector while men-owned firms are concentrated in the more profitable business service sector, but also that within these sectors women are concentrated in specific industries that are less profitable than the ones men dominate.

Rowe and Bentley (1992) found that income from home-based work was affected by the occupation of the home-based worker. They found that the highest earners were in marketing and sales or managerial work. Heck & Walker (1993) found that occupational type is statistically significant at the .01 level on net business income of family-owned home businesses. Heck, at al. (1993) used

the variable occupational rank to study ratios of net business income to total family income. They found that occupational rank was not statistically significant at the .05 level.

Borrowed Capital

According to Bates (1989) loan amount determination is assumed to be a supply-side dominated decision in the case of small business. Lenders such as commercial banks are hypothesized to approve larger loans to borrowers who possess relatively large inputs of equity capital as well as human capital and demographic traits that are associated positively with business viability. Attractive human capital and demographic traits include (a) high education levels, (b) owners who lie in the middle of the age distribution, and (c) managerial experience (Bates,1989); to this list could be added being male.

Information from the U.S. Small Business Administration (1988) provides support for the importance of the role of business capital in explaining gender differences in earnings. The average business receipts of women sole proprietors in 1983 were only about one-third those of men. According to Aronson (1991) one plausible explanation for the low and declining relative earnings of self-employed women is the level of capitalization of their business enterprises. On average, women sole proprietors started their businesses with only half the capital of men and were less likely than nonminority men to have borrowed capital. Information from the U.S. Treasury (1978) based on a six-city

survey showed that women business owners were more likely than men to rely on personal savings and loans from friends and relatives. Regarding differences in access to capital between men and women, Aronson posed the question: Do women choose lower-paying businesses because they are unable to obtain financing for larger-scale and higher paying enterprises, or is the level of financing obtainable, especially from financial institutions, generally lower than that for men because of a propensity among women to establish smaller-scale and financially riskier enterprises?

Some studies, such as that conducted by Rowe, Haynes et al. (1993), used borrowed capital as one variable affecting net incomes of family-owned home businesses. They found that the variable was not statistically significant at the .05 level.

Cooper and Gimeno-Gascon (1992) studied the financing of new firms and its relation to survival. They reported that of eight prior studies that examined relationships between capital and performance, six found that more capital was associated with better performance.

## Seasonality

Seasonality could be related to the income produced by home-based family businesses because it could be assumed that owners with seasonal work engage in work with less motivation than owners who engage in nonseasonal work. Owners with seasonal work may not rely on the seasonal business as the

major family income producer. Hence, they may consider it as a casual or side business. Owners who are not substantially engaged with their work could have less efficiency which in turn could substantially diminish the amount of income made by the business.

Heck (1992) hypothesized that the seasonality of home-based employment adds flexibility in scheduling work activities in relation to family demands or activities such as child care. More important for this study, she found that seasonality of home-based work reduced the total annual work hours spent on home-based work. This in turn, would have a negative effect on the income generated by home-based family businesses. Masuo et al. (1992), in a comparison of home-based business owners to home-based wage workers, found that business owners were more likely to be involved in seasonal work than home-based wage workers.

Heck and Walker (1993) incorporated seasonality as one variable affecting family-owned home businesses' net business income. They found that the variable is not statistically significant at the .05 level. In the study by Heck et al. (1993) of ratios of net business income to total family income, seasonality was found to be nonstatistically significant at the .05 level. That is, in this study, seasonality did not produce higher levels of net home-based income.

Home-based Family Business Size

According to prior research, a major determinant of small business earnings is firm size (Aldrich & Weiss,1981; Loscocco et al.,1991; U.S. Small Business Administration, 1986). Bates (1993) expressed: "whether measured by sales, number of employees, or total assets, it is the larger scale firms that are most likely to survive" (p.41). Success and survival of small firms are related to the produced level of income. In other words, small family businesses that are successful are those that make more income and therefore survive. A growing body of literature about small business firms suggests that the size of the firm is important in determining business income. Jovanovic (1982) concluded that small firms will tend to fail to a higher rate than large firms for firms of the same age and that younger firms will tend to fail at a higher rate than older firms for firms of the same size. Jovanovic claims that firm size and age are important determinants of the financial success of the firm. Thus, the literature supports firm size as an important predictor of small business income.

Heck and Walker (1993) studied the effects of employees and unpaid helpers on family-owned home businesses' net annual income. They found that, contracting family workers and unpaid family helpers increased the net annual business income, as did paid unrelated workers and contracting unrelated workers. They reported that hiring at least one contracting family worker and utilizing at least one unpaid family helper increased net annual business income.

Rowe, Haynes et.al (1993) found that hiring labor was related to net family business income at the .001 level.

Home-Based Family Business Age

Kalleberg and Leicht (1991) reported that the relation between an organization's age and its survival and success diverge. They argued that an organization's age is generally positively related to its survival. They cited Carrol's (1983) conclusion that the most common finding of the major empirical studies of mortality is that the death rate of business organizations declines with increasing age; organizations are more likely to die in the first few years of their operation. However, they did not argue for a positive relation between an organization's age and financial success. Here it is important to note Jovanovic's (1982) conclusion about the relationship between business age and size of the firm: Small firms will tend to fail to a higher rate than large firms for firms of the same age, and younger firms will tend to fail at a higher rate than older firms for firms of the same size.

Heck and Walker (1993) used ordinary least-square to investigate the effect of years engaged in business on net annual income of family-owned home businesses. They found that the variable was not statistically significant at the .10 level.

Heck, et al. and Hennon (1993) studied ratios of net business income to total family income. In their study they found that years engaged in home-based

family businesses were significant and had a positive effect. Based on this finding they suggest that if a home-based business owner had been in business longer, his/her profitability will be higher than owners that were engaged fewer years in their businesses.

Urban/Rural Location

Urban/rural location, for this research, means whether the home-based family business is located in an urban or rural area. The urban/rural variable is included to measure the degree of spatial concentration of local markets, on the assumption that large cities provide greater and more accessible market opportunities via dense concentrations of other firms and consumers with potentially greater purchasing power.

Rowe, Heck, Haynes & Bentley (1993) explored the financial success of family-owned home businesses. They included urban/rural location as one of the explanatory variables. Using ordinary least square regression in a stepwise procedure, they found that the variable urban/rural location was statistically significant at the .05 level. In another study, Rowe, Haynes et al. (1993) found that urban location positively affected net business income.

Business Management

Family resource management framework explicates that families are composed of personal and managerial subsystems. Through the managerial

subsystem, individuals and families strive to accomplish their goals by the acquisition and use of resources. Within this framework, management has been described as a mental process driving a series of goal directed activities that uses existing or obtainable resources to meet individual, family, or organizational demands (Deacon & Firebaugh, 1988).

A system approach with input, throughput, and output is especially useful as a format for presenting managerial concepts. In a managerial subsystem demands and resources (matter, energy and/or information) are considered as inputs, planning and implementing (transformation processes) as throughput, and demand response and resource changes as outputs (Deacon & Firebaugh, 1988).

Demands are either goals or events that require action. Goals are defined as value-based objectives or anticipated outcomes that give direction and orientation to action; specifically, they provide directional criteria for standard setting. Events are unexpected or low-probability occurrences that require action. Resources are means capable of meeting demands; they provide the properties or characteristics through which the goals and events are achieved (Deacon & Firebaugh, 1988).

In management of business affairs, throughput comprises planning and implementing. Planning is a series of decisions concerning future standards, sequences of action or both. Implementing is actuating plans and procedures (standards and sequences) and controlling the actions. Decision making, a

process integral to all aspects of management, involves recognizing that a decision is needed, and the identifying, weighing, and choosing among or resolving alternatives.

As a result of the transformation of matter, energy, information, or all of these by throughput processes, a management system produces outputs (demand responses and resource changes). Demand responses are the output from managerial actions related to values and satisfactions. Resource changes are the outputs from managerial actions relating to the composition of the stock of human means, material means, or both.

Although the concepts underpinning the analysis of managerial behavior are well defined in the family resource management literature (Deacon & Firebaugh, 1988; Gross, Crandall, & Knoll, 1980; Nickel, Rice & Tucker, 1976; Paolucci, Hall, & Axinn,1977), the task of establishing an empirical tie between management practices and outcomes has proved to be difficult ( Rowe, Haynes, et al., 1993). According to Heck, Winter and Stafford (1992), one of the most important reasons empirical research on the nature of managerial behavior and its relation to outcomes is limited has been the absence of a valid, reliable measure of managerial behavior. The concept of management was usually omitted from early research due to measurement problems (Griliches, 1957). Efforts to develop such a measure started at least 50 years ago with the work of Gross and Zwemer (1944). Researchers in the farm management literature relied on proxy variables such as education and experience as a measure of

management (Tauer, 1984). Mefford (1986) examined production and measured management performance in terms of output.

To date, few studies have attempted to delineate managerial processes that are unique to home-based workers and relate managerial capacity to financial outcomes. One of the few studies that tries to make this link was conducted by Rowe, Haynes et al. (1993). They found, contrary to their expectations, that there was not a significant and positive relationship between the net income earned from the business and high scores on the business management scale.

## Family Characteristics

The importance that the family has on the development and financial success of family firms has received little empirical attention. This neglect, however, has recently been attended to by the work of family economists interested primarily in the economic outcomes of family-owned home businesses.

The little information that exists affirms that family situation, especially marital status and presence or absence of young children, is likely to affect the commitment of both time and energy to the business. Specifically, for women owner-managers of small family businesses, family situation can be extremely burdensome. This is so because their family responsibilities may detract from their paid work.

In contrast to the view that family situation can have a negative effect on the business, the minority business literature suggests that family can be an important source of help for the success of the business. For instance, among recent Korean immigrants, Bonacich and Light (1988) note that they effectively use family resources such as unpaid labor to develop successful small businesses.

Family Functioning Type

Kantor and Lehr (1975) defined three types of family systems: closed, random, and open. Constantine (1986) added a fourth, the synchronous family, and elaborated on how the family types fit together. Kantor and Lehr and Constantine have used target and access dimensions to categorize the concepts that they observed to differentiate underlying family constructs. Target dimensions were those objectives that a family seeks to attain as a result of member's interaction. They included control, affect (emotional nurturance), content, and meaning. These outcomes are secured through use of the access dimensions of space, time, matter, and energy.

According to Owen, Rowe and Gritzmacher (1992b) a closed family is one that seeks to maintain the status quo. It engages in activities and attends to ideals and values that maintain continuity with the past. Decisions, direction, and roles are delegated based on how things were done in the past and often replay the structures of the families of origin. Analysis of the systems embedded

in and around closed families shows that the family, not the individual or the community, is the most distinct unit, that is, it has the most definite boundary. "Stability through tradition" is Constantine's (1986) phrase for the closed family.

Constantine (1986) described the "random family" as the antithesis of the closed one. The random family revels in variety and change. It is oriented to the present and seeks a constant influx of new experience. Each member is in charge of his or her own direction and action and usually does not coordinate activities with those of other individual members. The individual has the most distinct boundary and interacts within and outside the family with equal freedom. According to Constantine, "Variety through innovation is the random family's motto".

The "open family" combines aspects of closed and random types. Its members seek to introduce some change into the enduring family unit. In doing so, the open family acknowledges ties with the past and incorporates experience of the present to build a path to the future. Decisions and direction for the family are negotiated among all members. There is little role delineation inside the family, though some delineation based on age may exist. Individual members and the family unit have equivalent boundaries. Members consider the family's identity as important as their own and each other's in determining actions and goals. According to Constantine (1986), adaptability through negotiation is the hallmark of processes observed in open families.

Kantor and Lehr (1975) and Constantine (1986) clearly stated that these family types were not absolute. Families display a mix of types in their everyday activities. However, they are expected to display a propensity to one type or another. Despite the recognition that the intermingling of business and affective activities is a hallmark of family business (Rosenblatt et al.,1985), there is limited literature on the effect of family typology on home based family business income. Rowe and Heck (1995) argue that the ability to classify families by functioning type is useful to studies of home-based working families for several reasons. They maintain that family functioning may affect the satisfaction family members feel with different types of businesses and hypothesize that there may be matches between certain family styles and certain types of businesses. Further, Owen, et al. (1992b) argue that " the high start-up and failure rates of small businesses in the United States may be ascribed, in part, to families undertaking businesses that conflict with the family's composition or interaction style"(p.301). As was stated above, little is known about the influence of family type on financial outcomes; thus, the question is: Does the family type have an influence on home-based family businesses' income? It is expected that this research will shed some light on this issue.

## Family Size

Previous studies tied family size with the amount of time spent on household production. Findings in this regard are consistent across several

studies: the larger the family or the greater the number of children, the more time was spent in household production by houseworkers (Sharpe, 1988; Walker & Woods,1976). Evidently time spent in household production has implications for the income of the home-based business. There are only 24 hours in a day; therefore, time spent on household production will reduce time expended on the home-based business.

In addition, family size could be expected to affect time-management strategies for households with a home-based worker through its effect on the type and amount of family activity required (Winter, Puspitawati, Heck & Stafford, 1993). Coverman (1983) and Shelton and Firestone (1989) found that time spent on housework decreases the earnings of both women and men. But available research indicates that family constraints are more relevant for women's financial success. The fact that family constraints have more relevance to women is due to traditional division of labor in households. Blau & Ferber (1992) based on data from the 1960s and 1970s suggested that the division of labor between husbands and wives remained quite traditional, with women doing considerably more housework and less market work than men. Rowe, Haynes et al. (1993) found that family size negatively affected net business income of home-based family businesses.

Presence of Children Under 6 Years Old

Heck (1992) found that the presence of children younger than 6 had a negative influence on the number of home-based work hours and no effect on annual earnings. Heck found that a child under 6 years of age reduced total home-based work hours by 296 hours over the year. This effect resulted in a loss of 6 hours or about three-quarters of a work day per week during the year. Rowe and Bentley (1992) concluded that women in certain family situations choose work with fewer hours and demands in order to better integrate their paid work with high family demands.

Walker and Haynes (1995) found that the presence of children under 6 years old in the household decreased women's hourly earnings by $ 5.00 and their annual earnings by more than $ 4,000. However, they found that males with children in the household earned more than those with no children. This striking finding supports the notion that women and men behave differently in the presence of children.

Dependents Needing Care.

Rowe and Bentley (1992) explored the impact of the family on home-based work. They believed that the number of hours available to work at income-generating activities was limited by family demands. They examined the issue in relation to family status and gender of the home-based worker. They found that

male home-based workers lived in smaller families with fewer dependent members than did female home-based workers.

Another implication of the presence of dependents needing care is participation in the labor force. The Statistical Abstract of the United States (1994) reported that women with family responsibilities are less likely to be in the labor force than men, especially when children are young.

Heck, et al. (1993) studied ratios of net business income to total family income, contrary to their expectations; they found that the variable presence of children under 6 years old was significant and had a positive effect. Based on this finding they suggest that presence of dependents needing care as children may be associated with the financial demands that children place on the family. That is, the mere presence of children in the family may necessitate having a viable business with higher business income. In another study, Rowe, Haynes et al. (1993) reported that the variable dependents needing care (young children or in-home elderly) positively affected net business income.

Family Management

Studies of time-use patterns have shown that individuals and families do spend time in managerial behaviors (Berk, 1985; Key, 1985; Walker & Woods,1976). Time-use researchers have measured time spent in specific management activities such as planning, scheduling, and budgeting (Berk, Juster & Stafford, 1985; Walker & Woods). Other researchers have found that

families set goals and develop plans, either mental or written, to reach those goals (Fitzsimmons, Larery, & Metzen, 1971). Moreover, researchers have examined the management of specific resources such as time and money. Researchers also have focused their interest on subprocesses of family management such as planning, sequencing and goal setting. However, rigorous examination of the total management process has been limited (Heck et al., 1992).

Deacon & Firebaugh's (1988) family management framework is useful to study total family management. In general, management is a process of setting priorities, assessing resources, and organizing and directing resources to reach goals. Deacon and Firebaugh (1988) define the managerial subsystem as that part of the family's system that deals with planning and implementing the use of resources to meet demands. The internal structure of the managerial subsystems is called throughput and consists of two main components, planning and implementing. Planning consists of two parts, standard setting and action sequencing. Standard setting consists of demand clarification and resource assessment. Planning produces a plan that can be implemented by actuating and controlling behaviors. Controlling consists of checking conformity to a plan and adjusting when needed. The outputs of the management subsystem are met demands and resources that are, in part, derived from the larger environment.

Interactions between families and their environments can be managed. Families with different degrees of managerial skills organize resources to

mediate values and attain specific goals. One of the ways that homeworking families make it all work for them is by managing. Moreover, an important implication of the managerial process is that families can learn to manage resources in order to achieve goals.

## Home-based Family Business Owner-Manager Characteristics

A number of important demographic factors cited by the literature may have an influence on the propensity of individuals to start a home-based family business. Moreover, it is possible that these demographic factors cited in the literature have an impact on home-based family business net annual income. Thus far research has tended to concentrate on four main topics: gender, age, marital status, and education. In this research, work experience and the number of hours owner-managers worked will be added.

### Age

A personal characteristic of the home-based family business owner-manager that may be related to the income produced by the business is his or her age. Usually, in empirical studies it is reported that an individual's age is a catch-all variable for explaining economic status. Age tends to be correlated with the acquisition of financial capital, the accumulation of business and professional acquaintances, associations, and wisdom it is argued. A number of arguments can be made for the positive effect of age, at least to a point, on

business income and ownership. For example, a study of entrepreneurial earnings found that a 47 year old highly educated male has the greatest likelihood of being a high earner of self-employment income The 45-55 age bracket was found to be most strongly associated with business viability, which dropped off sharply for owners beyond age 60 (Bates,1987). Walker & Haynes (1995) studied the determinants of earnings of home-based family business owners. They found that being in the over 55 age group reduced earnings if other factors were equal

Information from the U.S. Small Business Administration (1988) indicated that the most telling, and analytically most important, difference between married and never-married nonminority women business owners is their age: married women tend to be older. This age difference largely explains accompanying differences in educational attainment and the means through which they financed the start-up or acquisition of their businesses. Compared to never-married women, married women: accrue substantially greater annual receipts, have lower levels of educational attainment, start or acquire their businesses with about three times the amount of capital, and are more likely to borrow from banks when they do borrow.

Gender

Some studies have documented that small businesses owned by women are not as successful financially as those owned by men, even when they

operate in the same industry (Loscocco, Robinson, Hall, & Allen, 1991). Blau and Ferber (1992) point out human capital[3] theorists' argument that:

> Most women anticipate shorter and less continuous work careers than men. Thus, women are expected to select occupations requiring less investment in on-the-job training than those chosen by men. Women will avoid jobs in which firm-specific training is important, and employers will be reluctant to hire them for such jobs. Further, women will seek jobs where depreciation of earnings for time spent out of the labor force is minimized (pp. 171).

In line with human capital theory, women owners of small family businesses may have fewer opportunities to develop relevant experience, have fewer contacts who can provide assistance, and have greater difficulty in assembling resources (Sexton & Robinson, 1989).

Kalleberg and Leicht (1991) examined hypotheses about how the survival and success of small businesses headed by men and women are related to industry differences, organizational structures, and attributes of owner-operators, that is, the effects of gender on organizational performance. The authors found that businesses headed by women were not more likely to go out of business nor were they less successful than those owned by men. They used two measures of success: short-term survival and earnings growth. Analyses were conducted based on data collected annually over a 3 year period from an

[3] Human capital theory pioneered by economists such as Gary Becker, Theodore Schultz, and Jacob Mincer postulates that individuals and families make decisions about human capital investments in formal education, on-the-job training, job search, and migration, in the same way physical capital investments are made. The theory also supports the idea that differences in earnings between women and men are due to differences in human capital investments.

initial group of 411 companies in the computer sales and software, food and drink, and health industries in South Central Indiana.

Walker & Haynes (1995) studied differences in hourly and annual earnings, as well as the determinants of earnings, of men and women who own home-based family business. They addressed the following questions: (a) Are the earnings of men and women home-based family business owners similar and (b) if not, what are the differential determinants of these dissimilar outcomes? They found that regardless of the earnings definition used, women's earnings were considerably lower than those of men. They also found that earnings' determinants of men and women are different.

Loscocco and Leicht (1993) investigated the ways in which gender, family, and business characteristics affect earnings among small business owners in three industries: health, food and drink, and computer industry. Their data came from a 3-year Panel Study of Small Business in Indiana collected at three times: in 1985, 1986, and 1987. They found that there was gender similarity in the process through which earnings are determined, although there were differences in the level of many predictor variables. They found that women earned less income than men. They explained that women owners are more likely to be single than men, spend more time on domestic duties, operate smaller, younger businesses, and have less human capital.

Education

Education is one of the most widely studied owner-manager characteristics. Human capital theory postulates that earnings rise with additional education because of the productivity-enhancing effects of education (Blau & Ferber, 1992). Presumably education is related to knowledge, skills, problem-solving ability, discipline, motivation, and self-confidence. These may enable owner-managers to cope with problems and thereby be more successful. On the other hand, more educated owner-managers may perceive a higher opportunity cost in staying with a marginal business.

Prior research has found support for the relationship between education and income. Loscocco and Leicht (1993) reported that earnings are determined largely on the basis of productivity-enhancing investments, such as education and experience. They pointed out that "in the case of small business owners, human capital is likely to play an especially important role in the success of the business, which may then translate into higher earnings." (Loscocco & Leicht,1993, p.880).

Heck, et al (1993) studying family and business income ratios, suggested education may be associated with more expertise and skills in running a profitable home-based business. Thus, greater profitability would enhance the relative contribution of the net home-based business income to the family's total income and increase the ratio of these two income measures.

Rowe, Heck et al. (1993) explored the financial success of family-owned home businesses, they report that education positively affects net business income. In another study, Rowe, Haynes, et al. (1993) found that education influenced net business income. Walker & Haynes (1995) reported that an additional year in school was associated with additional earnings.

Marital Status

The impact of marital status on the financial success (income) of home-based family business is very complicated and may be difficult or impossible to isolate empirically. Loscocco and Leicht (1993) link marital status to the commitment of both time and personal identity to the business. They argue that marital status influences business economic success differently based on gender (Loscocco & Leicht).

Marriage can have impacts on economic success originated by educational achievement differences. Marini (1978) shows that early marriage inhibits women's educational achievement but early marriage has no effect on men's schooling after marriage. On the other hand, married men are less geographically mobil than unmarried men (Long, 1974) and men in dual-career families have less professional success than men with wives who are not employed (Ferber & Huber, 1979).

Some researchers argue that married owners have greater family responsibilities which could be detrimental to business earnings. For instance,

Safilios-Rothschild (1976), and Pleck (1977) argue that family responsibilities constrain men's careers as well as women's. Family responsibilities are argued to be higher for women. Shelton and Firestone (1989) estimate that 8% of the gender gap in earnings is a direct result of women's greater domestic burden.

Cooper, Dunkelberg, Woo, and Dennis (1990) found that "new business owners whose firms survived tended to be 'stable' people. They were more frequently married than peers of the same age and sex"(p. 2). These findings suggest that marital status is important when assessing the success of businesses.

Experience

Blau and Ferber (1992) pointed out that one of the major insights of human capital theory is the observation that individuals can increase their productivity not only through their investment in formal education but also by learning important work skills while they are actually on the job. Bryant (1992) pointed out that in contrast to physical capital that depreciates with use, human capital investments such as experience appreciate with use making them grow larger. Experience, then, augments human capital and raises the productivity of time. Experience, it is argued, is what makes earnings rise the longer an individual is employed.

The literature accounts for differences in years of experience and the type of prior work performed by owners who own small family businesses. Hisrich and

Brush (1984), and Pellegrino and Reece (1982) reported that women small business owners tend to have fewer business skills and less experience than their male counterparts. Women themselves point to their lack of human capital as a roadblock to earn greater income from their businesses.

Some studies have utilized the number of years engaged in the business as a proxy for experience. They present contradictory results in terms of the relationship between years engaged in business and net annual income. For instance, Rowe, Heck, et al. (1993) reported that the variable "years engaged in the home-based business" was significant and had a positive effect on net annual income. On the other hand, Heck & Walker (1993) reports that years engaged in business was not statistically significant at the .05 level.

Robinson and Sexton (1994) studied the effect of education and experience on self-employment success. They defined experience as the number of years an individual has been able to work after completing his or her education. They reported a positive relationship between experience and earnings with the exception of self-employed females whose experience did not significantly impact their earnings.

Loscocco and Leicht (1993) included experience when they studied economic success among small business owners. They defined experience as the number of years a business owner has been in his or her industry. They found that experience was statistically significant in relation to log gross receipts, their measure of business success, for men but not for women.

These studies suggest that experience is defined and measured in different ways. This may be the reason why contradictory results regarding the relationship between experience and income is found. Moreover, despite differences in definitions it seems that experience has a different impact for men and women.

Hours of Work

Loscocco and Leicht (1993) pointed out that research on small business stresses the importance of the owner's commitment to the business. To achieve success, the owner must be willing to work long hours (Pellegrino & Reece,1982; Scase & Goffee, 1982). Differences in earnings depend on differences in the amount of labor supplied. Bureau of Labor Statistics data show that in 1985 the nonfarm self-employed worked an average of 48.3 hours weekly compared with 42.8 hours for full-time wage workers (U.S. Department of Labor, Employment and Earnings, 1986).

Researchers have been interested in how much time men and women spend on housework. These studies can have relevance for this study because the time spent in domestic labor affects the amount of time devoted to business activities. Time is a fixed resource; there are only 24 hours in a day, hence, the time spent on one type of activity will reduce the time expended on another. In other words, the more time owners spend on housework, the less time they can

spend working at the business, affecting the potential earnings of the home-based business.

According to Walker and Haynes (1995) researchers interested in the economic outcomes of working can focus on hourly earnings or on annual earnings. Walker and Haynes pointed out that factors that affect the number of hours worked (and thus annual earnings) may have little or no influence on hourly earnings but be a powerful influence on annual earnings.

Studies have found a positive relationship between hours of work and income. For instance, Rowe, Haynes et al. (1993) reported that hours of work were positively associated with family-owned home-based businesses' net annual income. Also, Heck and Walker (1993) found that total annual work hours were positively associated with family-owned home business net income. Robinson and Sexton (1994) reported that hours worked were positively related to income for all self-employed males and females.

## Environmental Characteristics

Although reliable evidence is sparse, the income of home-based family businesses may vary between states because regional value systems, institutional frameworks, and economic structures confer a distinct character on the environment within which home-based family businesses operate. A particular difficulty this researcher found in exploring relationships between

home-based family businesses' income and environmental characteristics was the vagueness of what it is meant by home-based family business 'environment'. The concept of environment may be conceptualized; however, it cannot as easily be operationalized. This study, in an exploratory way, tried to link variables which are assumed to capture some of the broader environmental conditions and home-based family business income. For this purpose, the concept of environment was reviewed.

In accord with Moyes and Westhead (1990), the concept of environment consists of at least two elements: (a) the web of experiences and contacts within which the new home-based family business owner-manager (founder) is operating previous to start-up; and (b) a wider socioeconomic environment containing those factors which varyingly allow the business, once born, to develop. They assess that it should be necessary to identify territorially-bounded areas where environmental characteristics are present to an extent.

For this study, the first element of the definition is relate to some of owner-manager characteristics. Part two of the definition of environment is more relevant, however. The territorially-bounded wider socioeconomic environment will be captured by linking the respondents' county-level aggregate information from census data to the main data set used here through the use of The Federal Information Population Statistics (FIPS) codes.

Translation of the concept of environment into a useful form to carry out multivariate correlations techniques is not easy. Specific studies which

incorporate environmental variables to account for home-based family businesses' income were not found. The researcher, based on data availability and the range of possible variables that expectedly will capture environmental variables, selected per capita personal income, investment, population density, and unemployment rate as variables representing the environmental domain.

These variables were selected based on previous research (Keeble & Walker, 1993) suggestions that new and small businesses tend to serve restricted geographical markets and are, therefore, influenced by local variations in the level and growth of market demand. Per capita personal income and investment accounted for the influence of local variations in growth and market demands. In addition, the population density measure was included on the assumption that large cities provide greater and more accessible market opportunities via dense concentrations of firms and consumers. Ultimately, the unemployment variable was selected because it was assumed that the higher the unemployment rate, the cheaper it will be to hire employees for home-based businesses.

## Chapter Summary

The review was focused on what has been written about small business, family businesses, self-employment, and home-based family businesses. The review of literature was intended to develop a conceptual model for understanding the relationships among business, family, owner, and environmental characteristics on the net annual income produced by home-based family businesses. Moreover, the literature guided the researcher in selecting the variables to use in examining the relationships of the four above mentioned domains and home-based family business net annual income in nine U.S. states.

Churchill and Hatten (1987), and Beckhard (1983) suggested three major characteristic domains that influence the success of family businesses: business, family, and owner-manager. Kalleberg and Berg (1987) found that among the characteristics of the business that reflect organizational context and structure, occupation in which a business is operating has a major influence on earnings. An organization's product market tends to determine technologies, competition, and business problems thereby affecting the relative chances for business success. Other characteristics of the business mentioned by the literature are size and age. Aldrich and Weiss (1981) pointed out that size and age of small business firms have been emphasized as particularly important features of the economic outcomes. They have shown that firm size is one of the single greatest predictors of income among small capitalists. Furthermore, these

researchers found that very young firms are at a disadvantage because they lack an established clientele and organizational structure.

Loscocco, Robinson, Hall and Allen (1991) found that features of the family characteristics reflecting presence of children under 6 years, size, and management are a second major category of key relationships between home-based family business and earnings. Research suggests that many business owners benefit from tangible and emotional support of family members in running their businesses (Goffee & Scase 1985; Pellegrino & Reece 1982; Scase & Goffee, 1982). On the other hand, heavy family responsibilities may distract the owner's ability to devote time to the enterprise, thereby detracting from business success (Statistical Abstract of the United States, 1994; Rowe, Haynes et al. 1993).

The literature reviewed shows that owner-manager characteristics such as age, gender, education, marital status, experience, and hours of work are factors that may be related to home-based family business net annual income. Bender (1980) emphasized that the more skills and experience the individual brings to ownership, the more likely it is that the business will be successful. Research found that small business owners themselves emphasize the importance of making a strong commitment to the business (Goffee & Scase, 1985; Pellegrino & Reece,1982; Scase & Goffee, 1982).

The literature revealed the importance of three domains in understanding home-based family business financial success: business, family, and owner-

managers. For this study, a fourth domain, environmental characteristics, was added to assess the role that the local environment plays on home-based family business net annual income. This domain has rarely been introduced in previous research; therefore, literature related to possible relationships of the environmental domain variables on home-based family business net annual income was scarce.

# CHAPTER 3

## METHODOLOGY

This study will explore the influences of four domains -- home-based family business, family, owner-manager, and environmental characteristics -- on home-based family businesses' net annual income. The data used were collected for the Cooperative Regional Research Project, NE-167, entitled, "At-home income generation: Impact on management, productivity and stability in rural and urban families,". Support for the at-home income generation study was partially provided by Cooperative States Research Service, U.S. Department of Agriculture, and the Experiment Stations at the University of Hawaii, Iowa State University, Lincoln University (Missouri), Michigan State University, Cornell University (New York), The Ohio State University, The Pennsylvania State University, Utah State University, and University of Vermont.

This chapter includes the description of the data, sample selection, dependent and independent variables, research instruments, research questions and hypotheses, data analysis procedures, generalizability and limitations of the study.

## Data

The data for the study were collected from nine states: Hawaii, Iowa, Michigan, Missouri, New York, Ohio, Pennsylvania, Utah, and Vermont. The focus was on families in which at least one individual generated income by working at or from the home. During spring 1989, 30 minute telephone interviews were conducted with the household manager in 899 households in which there was home-based employment. The unit of analysis was the household and sample observations were weighted to represent the total number of rural and urban households in the nine states. The weighting was done using the total number of rural-urban household in the stratum in 1985 as estimated by the U.S. Bureau of the Census (Stafford, Winter, Duncan, & Genalo, 1992).

## Sample Selection

To identify respondents' households, the study utilized a two-stage area probability sample. That is, a primary stage sample of rural and urban counties in the participating states followed by a stratified random selection of households within sampled area segments was used. The Statistical Department of Iowa State University was selected for data collection, coding, and data entry.

A pilot survey was conducted to estimate the prevalence of working telephone numbers on the list and the prevalence of eligible households in rural and urban strata. Considering the results of the pilot survey, a stratified random sample of 18,956 phone numbers was drawn.

In April 1988, each number was called to determine if someone in the household was a home-based worker and if he or she fulfilled the requirements to be interviewed. This process was conducted with the aid of a telephone screening questionnaire. To qualify for inclusion, a household had to contain at least one member, 18 years or older, who had received income from home-based work in 1988, had engaged in this work for at least 312 hours annually, and had been in business for at least the previous 12 months. The total sample for the study contained both home-business owners (home-based workers who owned their own business and were responsible for all the business's activities) and wage workers (individuals who worked at home for wages provided by outside employers). After the screening, during spring 1989, 30 minute telephone interviews were conducted with the household manager, defined as the individual who took care of most of the meal preparation, laundry, cleaning, scheduling of family activities, and child care, in 899 households in which there was home-based employment.

For this study, a subsample of 620 families who owned and operated a business at home was used. The 620 families were obtained by two steps. First, based on responses to whether the home-based worker was a business owner or paid by an employer, 670 business owners were selected. This procedure eliminated 229 wage workers. Second, the family designation rested on the respondent's answer to a screening question about family functioning. This procedure eliminated 50 business owners ending up with 620 home-based

family business owners. The 620 selected families include informal families. Informal families are those that have unrelated individuals who share a household and define themselves as families.

## Dependent Variable

### Home-based Family Business Net Annual Income

Conceptual definition. Home-based family business net annual income is defined as the net total annual income earned by a home-based family business in 1988. While small family business owner-managers may not use income as the only way to assess the state of their businesses, income does provide one indicator of differences in outcome that can be objectively measured (Aldrich & Weiss, 1981; Kalleberg & Leicht, 1991).

Operational definition. Home-based family business income will be measured by the total net 1988 annual income earned by the home-based family business. To compute this variable, question 26 from the study questionnaire (What was the net income your household received from the home-based worker's work in 1988?) was used. Twenty-eight percent of the respondents did not provide data on net business income. Therefore, home-based worker income was estimated with a regression equation that included hours worked, sex, and education of the home based worker, and eight dummy variables representing occupation (Stafford, et al. 1992).

Home-based family business net income will be measured by the log of the net annual income produced by the business in 1988. This logarithmic transformation was used because the distribution of net annual income was skewed with several outlying values. The assumption of homoscedasticity, or equal variance, underlying the regression model is best met by using this logarithmic transformation (Tufte, 1974).

## Independent Variables

### Business Characteristics

Occupation. Conceptually, occupation refers to the job titles provided by the respondents according to the major business activity in which the home-based family business was engaged.

Operationally, job titles will be classified into one of nine occupational categories based on the Standard Occupational Classification Manual (U.S. Department of Commerce,1980). The categories are marketing and sales, contracting, mechanical and transportation, services, professional and technical, crafts and artisans, clerical and administrative support, managers, and agricultural products and sales. Based on the literature reviewed, this researcher expects to find that the owners' occupations will influence the income they are making. Specifically, it is expected that owners in occupations such as contracting marketing will make more income than owners in agricultural

products sales and services. Below are the dummy variables that will be computed:

Occ1=1 if business in Professional/Technical; otherwise 0.

Occ2=1 if business in Marketing and Sales; otherwise 0.

Occ3=1 if business in Clerical and Administrative support; otherwise 0.

Occ4=1 if business in Mechanical and Transportation; otherwise 0.

Occ5=1 if business in Crafts and artisans; otherwise 0.

Occ6=1 if business as Managers; otherwise 0.

Occ7=1 if business in Services; otherwise 0.

Occ8=1 if business as Contractors; otherwise 0.

Occ9= if business in Agriculture and Sales (this category will be omitted in the regressions).

Borrowed capital. Conceptually, this refers to whether or not the business used borrowed capital to start operating.

Operationally, respondents were asked to indicate if they had borrowed money to start the business. Specifically, responses to question 16 from the study questionnaire (Did the home-based worker have to borrow money or find an investor to start this business?) were used. Responses were coded as a dummy variable. This research expects that owners who were able to borrow credit at the start up stage are more prone to earn more income than home-based family businesses owners who did not borrow to start the business.

Borrcap=1 if yes; 0 otherwise.

Seasonality. Conceptually, seasonality refers to the nature of the work. Specifically, seasonal work is work performed only during specific months or at a certain time of the year. Snow removal, outside contracting, sales of vegetables and fruit plants, and lawn care services are examples of seasonal home-based work.

Operationally, respondents were asked to indicate if the family business operates during the whole year or if it is seasonal. Specifically, responses from question 8 of the screening questionnaire (Is this work seasonal?) were used. Responses were coded as a dummy variable. This research expects that owning a seasonal business will have a negative influence on income.

Seaswor=1 if business is seasonal; otherwise 0.

Home-based family business size. Conceptually, this refers to the total number of people besides the owner-manager who worked for or helped out in the business. Paid or unpaid family members, other relatives, independent contractors and employees are included.

Operationally, respondents were asked to indicate how many people besides the owner-manager such as paid employees, independent contractors, and nonpaid employees worked for the business.

The questionnaire in question 14 asked: (a) How many paid employees were there in 1988?, (b) How many independent contractors, such as accountant, bookkeeper, or electrician? and (c) How many people did some work for the business and were not paid? To compute home-based family business size, responses to these questions were added. It is expected that business size will be statistically related to income; the larger the business size, the higher will be the business annual income.

Hbfbsize= household business size (continuous variable).

Urban. Conceptually, this refers to whether the home-based family business was located in a rural or urban area.

Operationally, question 2 of the questionnaire asked, do you live (a ) on a farm; (b) in a rural area, but not a farm; (c) in a small town, under 2,500 inhabitants; or (d) in a town or city larger than 2,500.

Responses were recoded so that responses a, b, and c become 0, and d becomes 1. Thus, Urban=1, if home-based family business was located in a town or city larger than 2,500; otherwise Urban= 0. Location can influence the market size and the customers' purchasing power. It is expected that businesses located in urban areas will make more income than business located in rural areas.

Home-based family business age. Conceptually, this refers to the number of years the home-based family business had been operating.

Operationally, responses to question 7 of the screening question (How long has the home-based worker been doing this work from home?) were used. Thus, Hbfbage= Continuous variable.

Because with age, businesses can form their clientele, streamline their operations, and learn to solve day-to-day business problems, this researcher expects that business age will be related to income: the older the business, the higher will be the income produced.

Business management of home-based business owners. Conceptually, business management refers to the management process used by owners in conducting work related to the business including goal and standard setting, resource valuation, planning, implementing and resource changes.

Operationally, business management of home-based family businesses' owners was measured using the Business Management instrument (Heck, Winter & Stafford, 1994). This instrument includes statements which represent major concepts of the Deacon and Firebaugh (1988) depiction of family management. These statements were included in the study questionnaire (question 36, items a through j). The leading question asked was: Which number, (1=not at all;3=somewhat; 5=exactly) describes how much the statement is like you? The management concepts thought to be represented by

each of these questions are: goal setting, standard setting, demand clarification, resource assessment, action sequencing, actuating, checking, adjusting, demand responses, and resource changes. Appendix A (question 36 items a through j) shows the actual statements posed to the respondents. One question from these statements (When there is work to be done, you wait until the last minute) was reverse coded. To compute the business management variable, responses to questions 36a through 36j were summed. High scores indicate behavior most closely aligned with what is assumed to be better management practices. Busmngt= continuous variable. (Range 10 to 50).

Managerial ability implies that owners are able to plan, manage their time, and make good decisions. Therefore, this researcher expects that business management will be statistically related to income. Moreover, it is expected that the higher the owners' score in the business management scale, the higher will be the income produced by their businesses.

Family Characteristics

Open family functioning type. Conceptually, open family functioning type refers to families who present a mix of time orientation; that is, they are not past nor future oriented. In open families, decision, direction, and role of individual members are negotiated. The motto that best describes open families is "Adaptability through negotiation" (Constantine, 1986).

Operationally, the questionnaire includes statements to determine the family's functioning type. Respondents were asked to rate their family on five statements about how they used time and space (i.e. access dimensions) and what their decision making style and family patterns (i.e. target dimensions) were. Question 11, items (b, h, e, j, l,) in appendix A, shows the actual statements posed to the respondents. The leading question asked was: Which number, (1=not at all; 3=somewhat; 5=exactly) describes how much the statement is like you? Responses were used to categorize families as open (Owen et al., 1992b). Based on the research of Owen et al. it was hypothesized that families that are flexible in decision making, space and time use, are more likely to be successful in business. Due to the scarcity of previous research that incorporated the operationalization of family functioning type concepts, this researcher has no expectation about the direction the "open" variable will take in the analysis. The use of this variable is exploratory.

Open= 1 if 11b,11h and 11l are greater than 3, and 11e and 11j are less than or equal to 3. Otherwise=0.

Presence of children under 6 years old. Conceptually, this refers to the presence of children under 6 years old in the family with home-based family business.

Operationally, respondents were asked age information about each member of the household. To operationalize this variable, question 4, item d, of

the questionnaire was used: How old was (person) on his/her last birthday? Thus, Kidund6=1 if anyone of questions q4d2 through q4d11 is less than 6; otherwise=0.

The literature reviewed indicated that presence of children has a greater effect for women owners. Because this research is not gender specific, presence of women and male owners in the sample could offset the significance of this variable. Hence, there is no expectation about the direction presence of children will present in the analysis.

Dependents needing care. Conceptually, this refers to the number of people needing care in the family.

Operationally, respondents were asked: How many people in the household require care or supervision on a daily basis, like children, or disabled or elderly family members? (question 5a). Presence of family members who need care can detract from the business time commitment of owners. Therefore, this researcher expects that there will be a negative relationship between dependents needing care and business income.

Dncare= continuous variable.

Family size. Conceptually, family size refers to the total number of people (blood related or not) who share the residence and are defined by the respondent as a family member.

Operationally, respondents were asked information about each member of the household. To operationalize this variable, question 4 of the questionnaire was used. Specifically, the number of people provided by the respondents was added to compute family size. Thus, Famsize=continuous variable. Larger families imply that there will be more labor available for the business. Hence, this researcher expects to find that the larger the sizes of families who own home-based businesses, the larger will be their income.

Family management. Conceptually, family management refers to the managerial processes used by the respondents in conducting household work. In general, management is a process of setting priorities, assessing resources, and organizing and directing resources to reach goals (Deacon & Firebaugh, 1988).

Operationally, the Family Management Instrument (see Heck, Winter, & Stafford, 1995) was used to measure family management. Similar to the Business Management Instrument, it is composed of 10 statements included in the questionnaire. Statements from this instrument represent major concepts of the Deacon and Firebaugh (1988) depiction of family management. The leading question asked was: Which number, (1=not at all;3=somewhat; 5=exactly) describes how much the statement is like you? The management concepts represented by the statements are: goal setting, standard setting, demand clarification, resource assessment, action sequencing, actuating, checking,

adjusting, demand responses, and resource changes. Appendix A (question 10, items a through j) shows the actual statements posed to the respondents. From these statements, two statements 10a and 10h will be reverse coded. That is, 1=exactly; 3=somewhat; 5=not at all. Ultimately, to compute the family management variable, all the responses from the instrument were summed. High scores indicate behavior most closely aligned with what is assumed to be better management practices. Families with different degrees of managerial skills organize resources to mediate values and attain specific goals. One of the ways that homeworking families make it all work for them is by managing. Hence, the assumption is that families with more managerial capabilities will produce more income from their businesses.

Fammngt= continuous variable (Range 10 to 50).

Owner-manager Characteristics

Age. Conceptually, this is the home-based family business owner-manager's current age.

Operationally, respondents were asked to provide information about each member of the household (question 4 ). From those responses the owner-manager was identified. Item 4d was how old was (person) on his/her last birthday? Hbwage= continuous variable.

This researcher expects that age of the owner-manager has some explanatory power on the net annual income produced by home-based family

businesses. This researcher expects that the older the owner of the business is, the lower will be his/her business income.

Gender. Conceptually, this is the home-based family business owner-manager's gender.

Operationally, item 4b asked, is (person) male or female?

Male=1 for male owners; otherwise, male=0.

The literature reviewed pointed out that women owners have several barriers to achieve business success. For instance, they are less able than their male counterparts to access financial capital and to enter into high paid occupations. Hence, the expectation of this researcher is that women owners will make less income than male owners.

Education. Conceptually, education is the number of years of school attended by the home-based family business owner-manager.

Operationally, respondents were asked to provide information about the owner. Item 4f was, what is the highest grade of school (person) has completed? Responses include college, vocational, professional, or technical training. From the responses, education will be recoded into four dummy variables as shown below.

NOTGrad=1 If owner-manager's education less than12 years;otherwise, 0.

HSGrad=1 if owner-manager's education equals 12 years; otherwise, 0.

SomeCOLL=1 if owner-manager's education greater than 12 but less than 16 years; otherwise=0.

College=1 If owner-manager's education equals at least 16 years; otherwise=0. (College will be the omitted category on the regressions).

Several studies reviewed found that level of education is positively related to business financial outcomes. In line with these studies, this researcher hypothesizes that level of education will be significant and positively related to income.

Marital status. Conceptually, this is the home-based family business owner-manager's current marital situation.

Operationally, respondents were asked the owner-manager's marital status (question 4e). In the analyses, marital status will be coded as a dummy variable as shown. Married=1 for owners who are married; otherwise 0.

Previous small business research found that marital status is significantly and positively related to income. Based on these findings, it is assumed that this variable will have the same behavior for home-based family businesses.

Work experience. Conceptually, this is the number of years that the home-based family business owner-manager had worked in any job outside the home prior to owning his/her home-based family business.

Operationally, respondents were asked to indicate if the owner had worked in any job position outside the home prior to owning his/her business. Question 35c of the questionnaire [How many years in total did (he/she/you) work outside the home?] will be used to compute this variable.

This researcher expects that years of experience will be significant and positively related to income.

Workexp= continuous variable.

Total hours of work. Conceptually, this refers to the total annual number of hours worked by the owner in the home-based family business.

Operationally, respondents were asked to indicate the total number of hours worked by the owner in home-based business work and whose work was covered by the survey interview. Specifically, question 6, items a and b of the screening questionnaire were used. That is, how many hours in an average day, week, or month does the home-based worker work at this job? And, how many (days, weeks, months) did she/he work at this job last year?

To obtain the total annual number of hours the owner worked during 1988, the number of hours will be multiplied the number of days, weeks, or months worked in 1988. Thus, Hours= continuous variable.

The literature reviewed indicates that findings about the relationship between hours of work and earnings is consistently positive. Based on these

findings this researcher also expects to find a significant and positive relationship between hours of work and home-based family business income.

Environmental Characteristics

Data on environmental characteristics taken from the Census of Population and Housing County Statistics in various years (U.S. Bureau of the Census) have been appended to the data set. The Federal Information Population Statistics (FIPS) codes enabled the NE-167 researchers to link county location of the respondent with county-level aggregate information from census data.

Unemployment rate 1988. Conceptually, all civilians 16 years old and over are classified as unemployed if they are not currently working for pay but actively looking for work or persons temporarily laid off from a job to which they expect to return.

Operationally, the unemployment rate in 1988 for the county in which the business was located was used. Unemp88=continuous variable. It is expected that the higher the unemployment rate of the county, the lower will be the income produced by home-based family businesses.

Per capita personal income for 1988. Conceptually, per capita personal income refers to the total money income received by persons in a particular year divided by the number of persons.

Operationally, per capita income is the mean income computed for every man, woman, and child in the county where the home-based family business was operating. Per capita income was derived by dividing the total income received by persons 15 years old and over in 1988 by the total population of the county. Total income is the algebraic sum of the amounts reported separately for wage or salary income; net nonfarm self-employment income; net farm self-employment income; interest, dividend, or net rental or royalty income; Social Security or railroad retirement income; public assistance or welfare income; retirement or disability income; and all other income. "Earnings" are defined as the algebraic sum of wage or salary income and net income from farm and nonfarm self-employment. "Earnings" represent the amount of income received regularly before deductions for personal income taxes, Social Security, bond purchases, union dues, and Medicare deductions.

Receipts from the following sources were not included as income: money received from the sale of property (unless the recipient was engaged in the business of selling such property); the value of income "in kind" from food stamps, public housing subsidies, medical care, employer contributions for persons; withdrawal of bank deposits; money borrowed; tax refunds; exchange of money between relatives living in the same household; gifts and lump-sum

inheritances, insurance payments, and other types of lump-sum receipts. Thus, pcpi88=continuous variable.

It could be assumed that greater levels of per capita personal income give greater purchasing power to potential customers of the home-based family businesses. Hence, it is expected that higher per capita personal income of county residents will translate into higher incomes for businesses.

Investment 1988. Conceptually, investment 1988 refers to the total amount of interest, dividend, and net rental income of persons in the county where the home-based family business was operating.

Operationally, the total amount of interest, dividend , and net rental or royalty income of persons from the county where the home-based family business was operating will be added. Investment is expressed in thousands of dollars. Thus, invest88=continuous variable. It is expected that the greater the level of investment, the greater will be the income level.

Population density. Conceptually, this refers to the number of persons per square mile.

Operationally, population density per square mile was calculated by dividing the total population of the county by the square miles in the county area. Thus, popdens=continuous variable.

Population densities presumably translate into greater markets for businesses. Hence, this researcher expects that population density will be significant and positively related to income.

## Research Questions

Considering the Family Resource Management framework, the conceptual model as described in Chapter One, and the review of the literature, five research questions are stated.

1. Is there a relationship between home-based family business net income and business characteristics variables?

2. Is there a relationship between home-based family business net income and family characteristics variables?

3. Is there a relationship between home-based family business net income and personal characteristics of the owner-managers variables?

4. Is there a relationship between home-based family business net income and environmental characteristics variables?

5. Is there a relationship between home-based family business net income and the combined business, family, owner-manager, and environmental characteristics variables?

## Research Hypotheses

The following hypotheses, stated in the null form, are formulated to contribute to answer the research questions stated above.

Null hypothesis 1. There is no linear relationship between home-based family business characteristics variables and home-based family business net annual income.

Null hypothesis 2. There is no linear relationship between family characteristics variables and home-based family businesses net annual income.

Null hypothesis 3. There is no linear relationship between owner-manager characteristics variables and home-based family business net annual income.

Null hypothesis 4. There is no linear relationship between environmental characteristics variables and home-based family business net annual income.

Null hypothesis 5. There is no linear relationship between business, family, owner-manager, and environmental characteristics variables and home-based family business net annual income.

## Research Instrument

The research instrument utilized for this study was an interview schedule (questionnaire) developed by the committee members of the Cooperative Regional Research Project, NE-167, entitled, "At-home income generation: Impact on management, productivity and stability in rural and urban families". Additionally, a screening questionnaire was also used. The screening and research schedule questionnaires represented the interests and expertise of the various researchers as they related to the overall project. Items included in the interview schedule were: (a) socioeconomic and demographic information about the household and its members including age, sex, and relationship to the respondent for each member of the household; marital status, education, and employment status for each individual over 18 years; (b) information about the nature of the work and the work environment; and (c) data on family functioning, the management of household tasks, and the interface between the worker, the family, and the work.

An initial draft of the interview schedule was assembled, and pretest interviews were conducted. The schedule was revised and refined based on the pretests (Stafford et al.,1992). Appendix A contains selected questions of the study screening and questionnaire.

Management Instruments

This study used selected questions from the screening and interview schedule questionnaires developed by the study. Specifically, questions (2, 4, 5a, 10, 11, 14, 16, 26, 35c, and 36) from the interview schedule were utilized. Questions (6, 7, 8) from the screening questionnaire were also used. The interview schedule of the study included two multiple-item instruments to measure management. One is the Business Management Instrument, and the other is the Family Management Instrument (see Heck, Winter & Stafford, 1994, 1995).

The reliability of both management instruments was assessed by Rowe, Haynes et al. (1993). For that purpose, they used Cronbach's alpha and a standardized item alpha (Cronbach,1951). Alphas for the additive scales were .71 for the business management scale and .60 for the family management scale. The reliability of both scales is considered reasonable and sufficient given the number and correlation of items that compose each scale. The standardized-item alphas of the two scales were similar to the alpha measures (.73 for the business management scale and .64 for the family management scale).

Regarding validity of the instruments, one piece of evidence that supports the construct validity of the instruments was presented by Heck, Winter, and Stafford (1992). They used confirmatory factor analysis to identify the set of major factors underlying management practices. Using this method, the resulting dimensions or factors were interpreted as representing the main subgroups of

management behaviors. These main subgroups were then compared to the major concepts in the Deacon and Firebaugh (1988) management framework. The extent of overlap was suggestive as partial confirmation of the Deacon and Firebaugh management conceptualization, providing support for the instruments.

## Data Analysis Procedures

The aim of this research is to determine if there is a linear relationship between separate and combined selected independent variables derived from four domains and net annual home-based family business income. The data analysis procedure follows. First, descriptive statistics (frequencies, percentages, and means) will be used to contribute to the understanding of the home-based family businesses studied. Second, multiple regression analysis will test the proposed hypotheses. Multiple regression will be used because, as pointed out by Lewis-Beck (1980), with multiple regression it is possible to incorporate more than one independent variable into an equation. This is useful in two ways. First, it offers a fuller explanation of the dependent variable, since few phenomena are products of a single cause. Second, the effect of a particular independent variable is made more certain, for the possibility of distorting influences from the other independent variables is removed.

In multiple regression, the value of the dependent variable ( y ) is estimated from those of two or more independent variables ($x_1$, $x_2$, ....., $x_p$). This is achieved by the construction of a linear equation of the general form

$y = b_0 + b_1 (x_1) + b_2 (x_2) + \ldots\ldots\ldots + b_p (x_p)$. In this equation, the parameters $b_1$, $b_2$, ...., $b_p$ are the partial regression coefficients, and the intercept $b_0$ is the regression constant.

To answer the research questions and test the study hypotheses, five multiple regression equations will be used. The first four equations examine separately the influences of each domain on home-based family businesses' net annual income. The fifth equation examines influences of all the variables pertaining to four domains on home-based family business net income. The full specified research questions and hypotheses, the equations' statistical models developed to test the hypotheses, and how results will be interpreted are shown below.

In the regression models, variables pertaining to each domain were entered into different regression equations to assess their relationship with home-based family business net annual income. For example, business characteristics variables were entered into an equation to assess their relationships with home-based family business net annual income. Family characteristics variables were entered into another equation to assess their relationships to income. The same procedure was followed for the owner-manager and environmental characteristics. Finally, all the variables from each domain were entered into an equation simultaneously to assess their total effect while controlling for other effects. This strategy allowed the researcher to uncover the net effect of each domain separately; and , in the last regression, to

assess all possible influences from all domains holding constant all relevant variables.

**Research Question 1.** Is there a linear relationship between home-based family business net annual income and business characteristics variables?

The null hypothesis related to question 1 stated that there is not a linear relationship between variables corresponding to the home-based family business domain and net annual income after statistical control. In other words, the null hypothesis is whether there is a linear relationship between the dependent variable (home-based family business net annual income) and the entire set of independent variables of this particular domain. The regression equation for home-based family business characteristics is $y_1 = b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + \ldots\ldots\ldots\ldots + b_{13} X_{13} + e_i$ where the dependent variable is $y_1$= Home-based family business net business income and the Independent variables are:

$X_1$= Occupation; $X_2$= Occupation2; $X_3$= Occupation3; $X_4$= Occupation4; $X_5$= Occupation5; $X_6$= Occupation6; $X_7$= Occupation7; $X_8$= Occupation8; $X_9$= Borrowed capital; $X_{10}$= Seasonality; $X_{11}$= Home-based family business size; $X_{12}$= Urban; $X_{13}$= Home-based family business age; $e_i$= Error term.

The null hypothesis can be written as: b1=b2=b3.....bn = 0.

To accept or reject the null hypothesis, the F test associated with the analysis of variance of the regression equation was used. If the probability associated with the F statistic was $p < .05$, the null hypothesis was rejected.

For the above equation, partial regression coefficients ($b_1, b_2, b_3, \ldots, b_{13}$) of the independent variables were computed using the statistical program SPSS 6.1 for Windows. Coefficients obtained express the increase in the log of the dependent variable that is produced by a positive increase of one unit in the independent variable concerned. That is, the regression coefficients obtained are not the dollar change in the dependent variable resulting from a change in an independent variable and are therefore difficult to interpret.

This researcher focused attention on standardized coefficients. Hence, coefficient scores on all the independent variables obtained in the multiple regression equations were standardized to a mean of 0 and a standard deviation of 1; that is, they were expressed in Z score form.

With standardization, the intercept ($b_0$) of the regression equation disappears and regression coefficients -- denominated Beta weights-- are obtained. Beta coefficients express the change in the dependent variable (log net annual income), expressed in standard deviation units, that would be produced by a positive increment of one standard deviation in the independent variable considered. Beta coefficients allow comparisons between variables with different units of measurement and are helpful in identifying the relative

importance of variables. Beta coefficients values are contingent upon the other independent variables in the equation, however (Norusis, 1993).

Finally, to assess the goodness of fit of the equation proposed, the coefficient of multiple determination adjusted ($R^2$) was used. The adjusted $R^2$ indicates the proportion of variation in the dependent variable (y) that is explained by all the independent variables considered in the equation. A high adjusted $R^2$ implies a more complete explanation of the phenomenon under study. To obtain a high adjusted $R^2$ was not the single goal of this study. A high adjusted $R^2$ can be obtained simply by adding more independent variables. Rather than entering independent variables in the equation to increase the adjusted $R^2$, the goal of this study was to test a model guided by previous research findings and theoretical considerations.

This researcher was particularly interested in determining the relationship of the variable business management and income. However, data about the business management variable were collected only for respondents who were simultaneously family and business managers. Hence, the number of observations available for this variable is only N=304. This data limitation impeded the inclusion of the variable into the regression equations. Therefore, only descriptive statistics will be reported for this variable.

**Research Question 2**. Is there a linear relationship between home-based family net annual income and family characteristics variables?

To answer question 2, it was hypothesized that family characteristics variables are not linearly related to family net annual income. To test this hypothesis, multiple regression was performed. The regression equation for family characteristics is $y_2 = b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + e_i$ where the dependent variable is $y_2$=Home-based family business net annual income and the independent variables are: $X_1$= Open (Family functioning type); $X_2$= Children under 6; $X_3$= Family size; $X_4$= Dependents needing care; $X_5$= Family management; $e_i$= Error.

To accept or reject the null hypothesis, the F test associated with the analysis of variance of the regression equation was used. If the probability associated with the F statistic was $p < .05$, the null hypothesis was rejected. Regression coefficients ($b_1, b_2, b_3, b_4, \ldots\ldots b_5$), beta coefficients, and adjusted $R^2$ were interpreted as in equation one.

**Research Question 3.** Is there a linear relationship between home-based family business net annual income and personal characteristics of the owner-manager variables?

To answer question 3, it was hypothesized that personal owner-manager characteristics' variables are not linearly related to net annual home-based family business income. To test this hypothesis, multiple regression was performed. To accept or reject the null hypothesis, the F test associated with the

analysis of variance of the regression equation was used. If the probability associated with the F statistic was $p< 0.5$, the null hypothesis was rejected. The regression equation for owner-manager characteristics is $y_3= b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + e_i$ where the dependent variable is $y_3$=Home-based family business net annual income and the independent variables are: $X_1$= Age of the owner; $X_2$= Male; $X_3$= Not high school graduate; $X_4$= High school graduate; $X_5$= Some college; $X_6$= Married; $X_7$= Work experience; $X_8$= Hours of work; $e_i$= Error

Regression coefficients ($b_1$, $b_2$, $b_3$, $b_4$, .....,$b_8$), beta values, and adjusted $R^2$ were interpreted as in equation one.

**Research Question 4**. Is there a linear relationship between home-based family business net annual income and environmental characteristics variables?

To answer question 4, it was hypothesized that environmental characteristics' variables are not linearly related to home-based family business net annual income. To test this hypothesis, multiple regression was performed. To accept or reject the null hypothesis, the F test associated with the analysis of variance of the regression equation was used. If the probability associated with the F statistic was $p< 0.5$, the null hypothesis was rejected. The regression equation for environmental characteristics is $y_4= b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + e_i$ where the dependent variable is $y_4$=Home-based family business net annual

income and the independent variables are: $X_1$=Unemployment; $X_2$=Per capita income; $X_3$=Investment; $X_4$=Population density; $e_i$=Error term

Regression coefficients ($b_1$, $b_2$, $b_3$, and $b_4$), beta values, and adjusted $R^2$ were interpreted as in equation one.

**Research Question 5**. Is there a linear relationship between home-based family business net annual income and business, family, owner-manager, and environmental characteristics variables?

To answer question 5, it was hypothesized that business, family, owner-manager and environmental characteristics variables are not linearly related to home-based family business net annual income. To test this hypothesis, multiple regression was performed. To accept or reject the null hypothesis, the F test associated with the analysis of variance of the regression equation was used. If the probability associated with the F statistic was $p< 0.5$, the null hypothesis was rejected. The regression equation for variables from all domains is $y_5= b_o + b_1 X_1 + b_2 X_2 + \ldots\ldots\ldots\ldots\ldots + b_{29} X_{29} + e_i$ where the dependent variable is $y_5$= Home-based family business net annual income and the independent variables are: $X_1$=Occupation1;$X_2$=Occupation2; $X_3$=Occupation3; $X_4$=Occupation4; $X_5$=Occupation5; $X_6$=Occupation6; $X_7$=Occupation7; $X_8$=Occupation8; $X_9$=Borrowed capital; $X_{10}$=Seasonality; $X_{11}$=Home-based family business size; $X_{12}$=Urban; $X_{13}$=Home-based family business age;

$X_{14}$=Open; $X_{15}$=Children under 6; $X_{16}$=Family size; $X_{17}$=Dependents needing care; $X_{18}$=Family management; $X_{19}$=Age of the owner; $X_{20}$=Male; $X_{21}$=Not high school graduate; $X_{22}$=High school graduate; $X_{23}$=Some college; $X_{24}$=Married; $X_{25}$=Work experience; $X_{26}$=Hours of work; $X_{27}$=Unemployment; $X_{28}$=Per capita personal income; $X_{29}$=Population density; $e_i$=Error term.

Regression coefficients ($b_1$, $b_2$, $b_3$, .....$b_{29}$), beta values, and $R^2$ were interpreted as in equation one. The statistical package SPSS 6.1 for Windows has two approaches to multiple regression, simultaneous and stepwise. In simultaneous multiple regression, all the independent variables are entered in the equation directly. In stepwise multiple regression, independent variables are added or taken away from the equation one at a time, the order of entry or removal is determined by statistical considerations.

For this study, simultaneous (Enter) multiple regression was chosen as the most appropriate tool for the five equations. Simultaneous multiple regression was selected because it has greater validity than stepwise multiple regression (Cohen & Cohen, 1975). In stepwise regression the significance test of the contribution of an independent variable to multiple R-square proceeds in ignorance of the large number of other tests being performed at the same time for the other competing variables. That is, in stepwise regression, there can be serious capitalization on chance. Therefore, neither the statistical significance

tests for each variable nor the overall tests on the multiple R-square at each step are valid (Cohen & Cohen).

## Generalizability

One aim of this study is to be able to generalize its findings to the nine states (Hawaii, Iowa, Michigan, Missouri, New York, Ohio, Pennsylvania, Utah, and Vermont) from which the sample was drawn. However, to obtain a sample of home-based family business which includes desirable characteristics to allow generalization to the nine states is difficult. With the data set to be used for this study, four problems were identified. First, home-based businesses include an array of occupations that have to be taken into account. Second, this study wanted to account for rural and urban home-based businesses which presented a problem for the findings' generalization because urban and rural home-based businesses are unevenly distributed. Third, major metropolitan counties are heavily represented; hence, they are problematic for inclusion in the study. Finally, state's populations were numerically different; consequently, if included as is, some states would be more heavily represented than others.

Many strategies will be followed to avoid all the above mentioned problems. First, a stratified random sample was selected. Second, each state included in the sample was divided into rural and urban strata for sampling. This was done designating counties with a population of 25,000 or more as urban, and the remaining counties as rural. Third, five major metropolitan counties

comprising New York City; Philadelphia County, Pennsylvania; and three counties in the Detroit metropolitan area were excluded from the sampling. Fourth, the data were weighted to represent the combined and respective state populations. It is assumed that with these data collection procedures and modifications, generalization to the nine participant states could safely be done.

## Limitations of the Study

This study used secondary data obtained through telephone interviews. Telephone interviews limit responses to the questions asked; as a result, it is difficult to assess what the respondents were perceiving in relation to the total situation that may affect the income earned by the business. Consequently, it is not possible to account for factors other than those identified by the interview schedule that may affect the results.

There are other limitations to these data. For example, when generalizations to a larger universe of family firms is attempted, the exclusion of family businesses located away from the household and the criterion of having the work take place at or from the home resulted in the exclusion of businesses that started in homes and subsequently moved away. These characteristics of the sample impeded generalizations to all family businesses.

The person interviewed, the household manager, was self-selected and only one person could be designated as such. Interview with the family

manager, who was not necessarily the business' owner, is a limitation of this study.

There is concern also about the accuracy and low response rate for the financial information question. This required that financial information be calculated for those cases when respondents did not provide this information. Moreover, the fact that truly unsuccessful home-based family businesses --those businesses that closed during the first few years or those whose owners were only marginally engaged-- are not included in the sample which may constitute a limitation.

Additionally, the time frame involved poses limits to the results of this study. Cross-sectional studies permit analysis of events at one point in time. The data for this study were collected in 1989; therefore, generalization inferences will be made for that particular year. In other words, it will not be possible to assess the evolution of home-based family businesses' income through time.

Finally, data for the environmental characteristics were collected from various years from a secondary source: The Census of Population and Housing. This county level data may not reflect accurately the economic and noneconomic environmental characteristics in which the home-based family businesses were embedded.

# CHAPTER 4

# ANALYSIS AND RESULTS

The study analysis and results are presented in this chapter. First, the statistical procedures performed to check for multiple regression assumptions are presented. Second, descriptive results of the owner-manager, business, family, and environmental characteristics of home-based family businesses in the nine states are presented and discussed. Finally, findings are presented in five sections corresponding with the research questions posed in Chapter 3. Research questions were answered in the light of the regression results. Null hypotheses were rejected at the .05 level of significance. Regression results of log total net annual income are presented on business characteristics, family characteristics, owner-manager characteristics, environmental characteristics, and finally on all four characteristics considered together.

## Checking Multiple Regression Assumptions

Multiple regression assumes that none of the independent variables is perfectly correlated with another independent variable or linear combination of other independent variables. When two independent variables, or a linear

combination of independent variables are highly correlated, the relative effects of an individual variable can be obscured and parameter estimates become unreliable (Lewis-Beck, 1980). To satisfy this multiple regression assumption, Pearson correlation coefficients were calculated. Correlation coefficients can be seen in Appendix B. Only two variables, investment and population density, were highly correlated, $r=.94$ , $p<.05$.

Linearity assumptions were also checked. The variable home-based family business net annual income violated multiple regression's linearity assumption. Hence, to achieve linearity it was converted into a logarithmic form.

## Descriptives

### Home-based Family Business Net Annual Income

Home-based family business net annual income is defined as the net total income earned by a home-based family business in 1988. Twenty-eight percent of the respondents did not provide data on net business income. Therefore, home-based worker income was estimated with a regression equation that included hours worked, gender, education, and occupation of the home-based worker. Table 1 shows the distribution of home-based family businesses net annual income.

**Table 1**

**Distribution of Home-based Family Business Net Annual Income**

| Net Annual Income | Number | Percentage |
|---|---|---|
| 0 | 64 | 10.3 |
| 10.58-10,000 | 259 | 41.8 |
| 10,001-20,000 | 122 | 19.7 |
| 20,001-35,000 | 127 | 20.5 |
| 35,001-50,000 | 16 | 2.6 |
| 50,001-75,000 | 20 | 3.2 |
| 75,001-100,000 | 6 | 1.0 |
| 100,001-150,000 | 6 | 0.9 |
| Total | 620 | 100 |

Owner-Manager Characteristics

In this section the owner-manager characteristics in the regression model are individually described.

Age. Age refers to the biological age of owner-managers. The mean age of home-based family business owners was 44.09 years; owners' ages ranged from 21 to 85 years old. The distribution of owner-managers by age categories is shown in table 2.

**Table 2**

**Distribution of Owner-Managers by Age Category (N=620)**

| Age category | Number | Percent |
|---|---|---|
| Youngest to 29 years | 55 | 8.7 |
| 30 to 39 years | 219 | 35.1 |
| 40 to 49 years | 145 | 23.7 |
| 50 to 59 years | 137 | 22.1 |
| 60 to 69 years | 42 | 6.8 |
| Over 70 years | 22 | 3.6 |
| Total | 620 | 100.00 |

As is shown in table 2, the greatest proportion of owner-managers (35.1 %) was between 30 and 39 years old. Only 10.4 % of the owners were over 60 years old, and 8.7% were 29 years or younger. These results indicate that most home-based family business owner-managers are in the middle age range; around 81 % of them were between 30 and 59 years old. This finding contradicts Horvath's (1986) hypothesis that home-based work may be more attractive to older people who find daily commuting burdensome. Furthermore, this finding dissents from popular beliefs about home-based family businesses as "mom and pop" shops owned by older persons.

Gender. The distribution of owner-managers by gender is shown in Table 3.

**Table 3**

**Distribution of Owner-Managers by Gender (N=620)**

| Gender | Number | Percent |
|---|---|---|
| Female | 262 | 42.3 |
| Male | 358 | 57.7 |
| Total | 620 | 100.00 |

Around 58 % of the owners were male. This finding contradicts the popular notion that home-based family businesses' owners are dominated by females. According to Table 3 results, home-based family businesses appear to be an income generating option not only for women but also for men.

Education. Respondents were asked to indicate what was the highest grade of school completed by the owner-manager. The distribution of the owners' education level is shown in Table 4.

**Table 4**

**Distribution of Owner-Managers by Educational Level (N=620)**

| Years of education | Number | Percent |
|---|---|---|
| Less than 12 years (Not graduated) | 47 | 7.60 |
| 12 years (High school graduated) | 225 | 36.30 |
| 13-15 years (Some college) | 185 | 30.00 |
| 16 years and over (College) | 163 | 26.10 |
| Total | 620 | 100.00 |

More than half (56.10%) of the home-based-family business owners had more than high school education (13 years and over); that is, they had some college or a college degree. Only 7.6 % had not graduated from high school. Home-based family business owners, on average, had 13.63 years of formal education, with a median of 13.0. Table 4 suggests that home-based family business owners are a relatively well educated population.

Marital status. Marital status refers to whether or not the home-based family business owner-manager was married. The distribution of owner-managers by marital status is shown in Table 5.

**Table 5**

**Distribution of Owner-Managers by Marital Status (N=620)**

| Marital status | Number | Percent |
|---|---|---|
| Married | 567 | 91.4 |
| Not married | 53 | 8.6 |
| Total | 620 | 100.00 |

Around 91 % of home-based family business owners were married. This result confirms the view that home-based work is an ideal way to combine employment and family life.

Work experience. Work experience refers to the total years the owner-manager had worked in any job position outside the home before owning his/her business. The distribution of owner-managers by categories of years of work experience is shown in Table 6.

**Table 6**

**Distribution of Owner-Managers by Years of Work Experience (N=620)**

| Years of work experience | Number | Percent |
|---|---|---|
| 1 to 12 years | 334 | 53.9 |
| 13 to 24 years | 181 | 29.2 |
| 25 to 36 years | 69 | 11.1 |
| 36 and more years | 36 | 5.8 |
| Total | 620 | 100.00 |

Around 54% of home-based family business owner-managers had between 1 to 12 years of experience. This finding is important because many studies of small business, and especially those of women owned businesses have linked low income with lack of work experience.

Table 6 suggests that home-based family business owners possess substantial years of work experience previous to establishing their home-based family businesses. Owners' years of experience ranged from 1 to 56. The mean years of work experience was 14.92 years. This human capital investment of

home-based family business owner-managers may be an asset that contributes to earning greater incomes.

Hours of work. Hours of work refers to the total annual number of hours worked by the owner-manager in the home-based family business. Table 7 shows the distribution of home-based family business owner-manager by hours of work categories.

**Table 7**

**Distribution of Owner-Managers by Hours of Work (per week) (N=620)**

| Hours of work | Number | Percentage |
|---|---|---|
| Less than 20 hours | 221 | 35.7 |
| 20 to 35 hours | 98 | 15.8 |
| 36 to 50 hours | 137 | 22.1 |
| 51 to 65 hours | 78 | 12.5 |
| More than 65 | 86 | 13.9 |
| Total | 620 | 100.00 |

Large variations in weekly hours of work exist among owners. Approximately 36% of the owners worked in their home-based businesses work less than 20 hours weekly. Furthermore, around 51% of the owners worked less than 35 hours per week. Based on the Bureau of Labor Statistics definitions, they would be considered part-time workers. The weekly mean hours of work was 36.44 hours.

Home-based Family Business Characteristics

Occupation. Occupation refers to the job titles provided by the respondents according to the major business activity in which the home-based family business was engaged. Job titles provided by respondents were classified into one of nine occupational categories based on the Standard Occupational Classification Manual (U.S. Department of Commerce,1980). The top three occupations by proportion were: services, clerical and administrative support, and managers, each with more than 15% of the sample. Three of the occupational categories mechanical and transportation, crafts and artisans, and agricultural products and sales each account for fewer than 5% of the owners. The distribution of home-based family businesses by occupations can be seen in Table 8.

**Table 8**

**Distribution of Home-based Family Businesses by Occupations (N=620)**

| Category | Occupation | Number | Percent |
|---|---|---|---|
| 1. | Professional and technical | 92 | 14.8 |
| 2. | Marketing and sales | 66 | 10.7 |
| 3. | Clerical and administrative support | 97 | 15.7 |
| 4. | Mechanical and transportation | 26 | 4.3 |
| 5. | Crafts and artisans | 18 | 2.8 |
| 6. | Managers | 114 | 18.4 |
| 7. | Services | 97 | 15.7 |
| 8. | Contracting | 89 | 14.4 |
| 9. | Agricultural products and sales | 20 | 3.2 |
| | Total | 620 | 100.00 |

Borrowed capital. Borrowed capital refers to whether or not the owner-manager had borrowed capital to start the business. Table 9 shows the distribution of home-based family businesses by whether owners borrowed or not.

**Table 9**

**Distribution of Owners who Borrowed or not Capital (N=620)**

| Borrowed capital | Number | Percentage |
|---|---|---|
| Yes | 129 | 20.8 |
| No | 491 | 79.2 |
| Total | 620 | 100.00 |

Around 79% of home-based family businesses' owners rely on their own sources of capital to start their business. This result confirms previous findings that small business owners use personal or family sources of capital to start their businesses.

Seasonality. Seasonality refers to whether or not the business operates only during a few specific months or a certain time of the year. Snow removal, outside contracting, sales of vegetables and fruit plants, and lawn care services are examples of seasonal home-based work. Table 10 shows the distribution of home-based family businesses by seasonality of work. Around 84% of home-based family businesses are not seasonal as can be seen on Table 10.

**Table 10**

**Distribution of Home-based Family Businesses by Seasonality (N=620)**

| Seasonality | Number | Percentage |
|---|---|---|
| Seasonal | 101 | 16.4 |
| Not seasonal | 519 | 83.6 |
| Total | 620 | 100.00 |

Home-based family business size. Table 11 shows the distribution of home-based family business by size, which is defined as the number of employees.

**Table 11**

**Distribution of Home-based Family Businesses by Size (N=620)**

| Number of employees[a] | Number | Percentage |
|---|---|---|
| 0 | 241 | 38.9 |
| 1 | 70 | 11.3 |
| 2 | 61 | 9.9 |
| 3 | 65 | 10.4 |
| 4 | 34 | 5.5 |
| 5 | 21 | 3.4 |
| 6 | 31 | 4.9 |
| 7 | 21 | 3.3 |
| 8 and more | 76 | 12.4 |
| Total | 620 | 100.00 |

Note. [a] Includes paid and unpaid, either family, related, or unrelated employees.

Table 11 confirms the notion that home-based family businesses are very small businesses in terms of number of employees. Approximately 39% of the

home-based family businesses studied have no employees. Furthermore, around 70% of the home-based family businesses have a maximum of three employees. The mean was 3.71 employees.

Urban/rural location. The location of home-based family businesses was arranged by four categories: (a) on a farm; (b) in a rural area, but not a farm; (c) in a small town, under 2,500 inhabitants; or (d) in a town or city larger than 2,500. Table 12 shows the distribution of home-based family businesses by location.

**Table 12**

**Distribution of Home-based Family Businesses by Residence (N=620)**

| Residence | Number | Percentage |
|---|---|---|
| On a farm | 49 | 7.9 |
| In a rural area | 125 | 20.1 |
| In a small town<2500 | 120 | 19.4 |
| Town or city > 2500 | 326 | 52.6 |
| Total | 620 | 100.00 |

There is a predominance (52.6%) of home-based family businesses operating in towns or cities with populations larger than 2,500. The other 47.4% lived in rural communities and towns with populations under 2,500. Farm households accounted for only 7.9% of the sample. It is appropriate to recall that

farm businesses were not included in the sample unless they added value to their farm products.

Home-based family business age. Home-based family business age refers to the number of years the home-based family business has been in operation. The distribution of home-based family business by years of operation can be seen on Table 13. Business years of operation varies from less than 5 to more than 15 years. All the businesses included in the sample had been operating at least one year. According to Table 13, around 37% of the businesses studied are relatively new with less than five years of operation. Table 13 also shows that approximately 22% of the businesses had been operating for 15 years of more. The average years of operation was 9.48 years.

**Table 13**

**Distribution of Home-based Family Business by Business Age (N=620)**

| Years of operation | Number | Percentage |
|---|---|---|
| Less than 5 years | 228 | 36.8 |
| 5-9 years | 149 | 23.9 |
| 10-14 years | 104 | 16.8 |
| 15 years or more | 139 | 22.5 |
| Total | 620 | 100.00 |

Business management. Business management scores are presented for 304 business owners who were simultaneously family and business managers. Data limitations impede presentation of business management scores for the whole sample of 620 businesses. Due to this data limitation, business management was excluded from the regressions. The distribution of owners' management scores is shown in Table 14. High scores for Business Management indicate behavior most closely aligned with what was assumed to be better management practices.

**Table 14**

**Distribution of Home-based Family Business Owners by Business Management Scores (N=304)**

| Business management scores[a] | Number | Percentage |
|---|---|---|
| 21-30 | 23 | 7.60 |
| 31-40 | 160 | 52.60 |
| 41-50 | 121 | 39.80 |
| Total | 304 | 100.00 |

Note. N=304, respondents who were not business owners were excluded.
[a] Scores could range from 10 to 50.

Table 14 shows that only 7.60% of home-based family business owners scored between 21 and 30. The remaining 92.4% scored 31 or above. No owner manager scored below 21. These scores suggest that home-based families have no problems in managing their business activities.

To explore the relationship between the business management scores and the 304 owners' net business incomes, the researcher performed a correlation analysis. Results showed that r=-.08 , p=.02 , indicating that there is a weak but significant and negative correlation between the business management variable and the log net annual income of home-based businesses.

Family Characteristics

Open family functioning type. The distribution of families by their functioning type is shown in Table 15. The majority of the families with home-based businesses included in this study are not open. Around 90% of the business families were categorized as other. From the 620 families studied only 9.7% were open.

**Table 15**

**Distribution of Families who Own a Home-based Business by Functioning Type (N=620)**

| Family functioning type | Number | Percentage |
|---|---|---|
| Open | 60 | 9.7 |
| Other | 560 | 90.3 |
| Total | 620 | 100.00 |

Children under 6. The distribution of owners who had children under 6 years old in the family is shown in Table 16.

**Table 16**

**Distribution of Owners with Children Under 6 Years Old (N=620)**

| Presence of children under 6 years old | Number | Percentage |
|---|---|---|
| With children under 6 | 182 | 29.3 |
| Without children under 6 | 438 | 70.7 |
| Total | 620 | 100.00 |

Around 71% of the home-based family business owners studied do not have children under 6 years old. This finding contradicts the idea that owners with young children prefer home-based work to other types of work because it provides an alternative way of taking care of young children while generating income at home. The notion that home-based business provides jobs to families with young children appears to be applicable to only around 30% of the owners studied.

Dependents needing care. Dependents needing care refers to the number of people in the family that require care or supervision on a daily basis, like children, or disabled or elderly family members. The distribution of home-based family businesses by the number of people needing care in the family is shown in Table 17.

**Table 17**

**Distribution of Home-based Family Businesses by Number of Dependents Needing Care (N=620)**

| Number of dependents needing care | Number | Percentages |
|---|---|---|
| 0 | 324 | 52.2 |
| 1 | 110 | 17.7 |
| 2 | 119 | 19.3 |
| 3 | 46 | 7.4 |
| 4 | 15 | 2.5 |
| 6 | 2 | 0.3 |
| 7 | 3 | 0.6 |
| Total | 620 | 100.00 |

Note. [a] Includes children, disabled, and elderly persons.

More than one half of home-based family business owners have no dependents needing care. Moreover, around 37% have one or two dependents needing care and 10.8% have three or more. This finding challenges the notion that the major reason why people engage in home-based family business is because they need to take care of dependents while producing income.

Family size. Family size refers to the total number of people (blood related or not) who share the residence and define themselves as a family. Table 18 shows the distribution of home-based family businesses by family size.

**Table 18**

**Distribution of Home-based Family Businesses by Family Size (N=620)**

| Family size | Number | Percentages |
|---|---|---|
| 2 | 172 | 27.7 |
| 3 | 133 | 21.5 |
| 4 | 159 | 25.7 |
| 5 | 111 | 17.8 |
| 6 | 29 | 4.7 |
| 7 and more | 17 | 2.6 |
| Total | 620 | 100.00 |

Only 7.3 % of the owners have family sizes with six or more members. Around 47% have three or four persons. Moreover, Table 18 shows that 27.7% of the families are composed of just two persons. Family size was considered important in regards to income because it can be assumed the larger the family size the larger the quantity of workers it could provide to help with the business.

Family management. Family management refers to the score obtained on the instrument Family Management (see Heck, Winter & Stafford, 1994). The distribution of family management scores of home-based family business owners is shown in Table 19. High scores indicate behavior most closely aligned with what was assumed to be better family management practices.

**Table 19**

**Distribution of Home-based Family Business Home Managers by Family Management Scores (N=620)**

| Family management scores[a] | Number | Percentage |
|---|---|---|
| 10-20 | 6 | 0.9 |
| 21-30 | 77 | 12.6 |
| 31-40 | 438 | 70.7 |
| 41-50 | 99 | 15.8 |
| Total | 620 | 100.00 |

Note. [a] Scores could range from 10 to 50.

Around 83% of the home managers scored between 21 and 40. Approximately 16% of the home managers scored between 41 and 50. Expectations of this researcher were that the higher the family management score, the larger will be the income generated by the business.

Environmental Characteristics

Unemployment rate, 1988. All civilians 16 years old and over were classified as unemployed if they were not currently working for pay but actively looking for work or persons temporarily laid off from a job to which they expect to return. Table 20 shows the distribution of home-based family businesses by the unemployment rate of their respective counties of residence in 1988.

**Table 20**

**Distribution of Home-based Family Businesses by Unemployment Rate of County of Residence (N=620)**

| Unemployment rate 1988 | Number | Percentage |
|---|---|---|
| 1.70 to 5.40 | 368 | 59.3 |
| 5.41 to 6.60 | 128 | 20.5 |
| 6.61 to 9.00 | 88 | 14.3 |
| 9.10 to 16.30 | 36 | 5.9 |
| Total | 620 | 100.00 |

In 1988 the annual average national unemployment rate was 5.40 (U.S. Department of Labor, 1990). Table 20 shows that around 60% of the counties in which home-based family businesses were located had unemployment rates below the 1988 national average. The remaining 40% had unemployment rates above the national average. Counties' unemployment rates in which home-based family businesses were located range from 1.70 to 16.30.

Per capita personal income, 1988. Per capita personal income refers to the money income received by persons 15 years old and over living in the county where the home-based family business was residing. Total income is the algebraic sum of the amounts reported from wage or salary income; net nonfarm self-employment income; net farm self-employment income; interest, dividend, or net rental income; social security or railroad retirement income; public

assistance or welfare income; retirement or disability income; and all other income. Table 21 shows the distribution of home-based family businesses by per capita personal income of county residents where the home-based businesses were located.

**Table 21**

**Distribution of Home-based Family Businesses by Per Capita Personal Income of County Residents where the Business is Located (N=620)**

| Per capita personal income 1988 | Number | Percentage |
|---|---|---|
| ($) 8021.00 - 11618.00 | 63 | 10.1 |
| ($)11652.00 - 12926.00 | 61 | 9.9 |
| ($)13033.00 - 14648.00 | 124 | 20.0 |
| ($)14695.00 - 16527.00 | 124 | 20.0 |
| ($)16561.00 - 19419.00 | 172 | 27.7 |
| ($)19420.00 - 29124.00 | 76 | 12.3 |
| Total | 620 | 100.00 |

In 1988, the national average per capita income for all earners (part-time and full-time workers) was $ 19,419 (U.S. Department of Labor, 1990). Around 88% of the home-based family businesses were residing in counties with per capita personal incomes lower than the national per capita income average. Hence, only about 12% of the counties in which home-based were located have per capita personal incomes above the national average in 1988.

Investments 1988. Investments refers to the total amount of interest, dividend, net rental or royalty income of persons in the county where the home-based family business was operating. Table 22 shows the distribution of home-based family businesses by the county residents' investments. Table 22 also shows that there is a great variation in investments of county residents in which home-based family business were residing.

**Table 22**

**Distribution of Home-based Family Businesses by County Residents' Investments (N=620)**

| Investments 1988 ($1000)[a] | Number | Percentage |
|---|---|---|
| 4973.00 - 96295.00 | 124 | 20.0 |
| 101062.00 - 235748.00 | 124 | 20.0 |
| 236882.00 - 840020.00 | 124 | 20.0 |
| 885131.00 - 2416225.00 | 124 | 20.0 |
| 2751735.00-7621690.00 | 124 | 20.0 |
| Total | 620 | 100.00 |

Note. [a] Includes dividends, interests, and rents.

Population density. Refers to the number of persons per square mile in the counties in which home-based family businesses were residing. Table 23 shows that from the 620 home-based family businesses studied, around 36.3% of them were located in counties with population density between 0.77 and 150 persons per square mile. More than 39% were residing in counties with population densities between 151 and 1,000 persons per square mile and 25%

were residing in counties with population densities of over 1,000 persons per square mile. Population density may be related to business income because it could be assumed that counties with larger populations will provide a larger market size; that is, a larger number of business customers.

**Table 23**

**Distribution of Home-based Family Businesses by County Population Density (N=620)**

| Population density | Number | Percentages |
|---|---|---|
| 0.77- 150 | 225 | 36.3 |
| 151 - 300 | 94 | 15.1 |
| 301- 450 | 55 | 8.9 |
| 451- 600 | 33 | 5.3 |
| 601-1,000 | 61 | 9.8 |
| over 1,000 | 152 | 24.6 |
| Total | 620 | 100.00 |

## Summary of Descriptives

Since the quantitative study of home-based family business is relatively new, it was thought that full display of descriptive statistics would be useful to characterize this type of business. Describing and characterizing the home-based family businesses studied can provide insights to understand better the relationships that might emerge in the regressions run on home-based family net annual income. Table 24 summarizes the descriptive statistics presented in this chapter.

**Table 24**

**Means, Standard Deviations and Percentages of Selected Variables (N=620)**

| Variable | Mean | SE | % distribution |
|---|---|---|---|
| Net annual income | 15,881 | 832.13 | |
| Owner-manager | | | |
| Age (years) | 44.09 | .48 | |
| Education (years) | 13.63 | .09 | |
| Work experience (years) | 14.92 | .46 | |
| Hours of work (1 year) | 1822.25 | 52.98 | |
| Business | | | |
| Occupation | | | |
| Professional and technical | | | 14.8 |
| Marketing and sales | | | 10.7 |
| Clerical and administrative | | | 15.7 |
| Mechanical and Transportation | | | 4.3 |
| Crafts and artisans | | | 2.8 |
| Managers | | | 18.4 |
| Services | | | 15.7 |
| Contractors | | | 14.4 |
| Agricultural products and sales | | | 3.2 |
| Borrowed capital (yes) | | | 20.8 |
| Not seasonal businesses | | | 83.6 |
| Business size (number employees) | 3.71 | 8.11 | |
| Business age (years) | 9.48 | .36 | |
| Business management score | 38.78 | .30 | |
| Family | | | |
| Open | | | 9.7 |
| Without children under 6 | | | 70.7 |
| Dependents needing care | .94 | .05 | |
| Family size | | .06 | |
| Family management score | | .20 | |
| Environmental | | | |
| Unemployment rate | | .09 | |
| Investments (in $1000) | 1328879.2 | 71987.69 | |
| Per capita personal income | | 157.61 | |
| Population density (pop/mi) | | 36.71 | |

## Regression Results

Regressions were modeled to answer the research questions and test the hypotheses posed in Chapter 3. What follows are the answers to the research questions in the light of the regression results. Regression coefficients from all analyses reflect the change in log net annual income earned by home-based family businesses.

**Research Question 1.** Is there a relationship between home-based family business net annual income and home-based family business characteristics variables?

The null hypothesis related to question 1 stated that there is not a linear relationship between variables corresponding to the home-based family business domain and home-based family business net income. That is, $R^2$ is 0. To answer question one and test its related null hypothesis, a multiple regression equation model was developed as shown below. Table 25 presents the regression results. The regression equation used was: $y_1 = b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + \ldots\ldots\ldots\ldots\ldots + b_{13} X_{13} + e_i$ where the dependent variable is $y_1$= Home-based family business net business income and the independents variables are: $X_1$= Occ1 (Professional/technical); $X_2$= Occ2 (Marketing and sales); $X_3$= Occ3 (Clerical and administrative support); $X_4$= Occ4 (Mechanical and transportation); $X_5$= Occ5 (Crafts and artisans); $X_6$= Occ6 (Managers); $X_7$= Occ7 (Services);

$X_8$= Occ8 (Contractors); $X_9$= Borrowed capital; $X_{10}$= Seasonality; $X_{11}$=Home-based family business size; $X_{12}$=Urban;$X_{13}$=Home-based family business age; $e_i$=error term.

**Table 25**

**Regression of Log Net Annual Income on Business Characteristics (N=620)**

| Variable | B | SE B | β |
|---|---|---|---|
| OCC1 | 3.21 | .77 | .32* |
| OCC2 | 4.03 | .75 | .45* |
| OCC3 | 4.24 | .88 | .28* |
| OCC4 | 3.32 | .73 | .39* |
| OCC5 | 2.88 | .75 | .33* |
| OCC6 | 1.02 | 1.01 | .06 |
| OCC7 | 2.02 | .75 | .24* |
| OCC8 | 4.07 | .73 | .51* |
| BORRCAP | .36 | .31 | .05 |
| SEASWOR | -.07 | .33 | -.01 |
| HBFBSIZE | .06 | .02 | .17* |
| URBAN | .01 | .27 | .00 |
| HBFBAGE | .02 | .01 | .04 |
| (Constant) | 4.54 | .73 | |

Note. Occ9=Agricultural products and sales(omitted).
F=6.57, p=.00.
$R^2$=.12; adjusted $R^2$=.11
*p< .05.

The analysis of variance from the regression results indicate that F=6.57 p=.00. Therefore, the null hypothesis 1 is rejected. That is, there is a linear

relationship between the business characteristics variables and home-based family business net annual income.

Based on a decision rule of $p<.05$, eight of the variables in the model were statistically significant. These variables were: Occ1(Professional/technical), Occ2(Marketing and sales), Occ3( Clerical and administrative support), Occ4 (Mechanical and transportation), Occ5 (Crafts and artisans), Occ7( Services), Occ8(Contractors), and HBFBSIZE.

In terms of relative importance, the standardized coefficients (Betas) show that when considering variables from this domain, all the occupational variables are positive. Occ8 (Contractors) $\beta=.51$ is relatively the most important predictor of home-based family business net annual income. Following in importance are Occ2 (Marketing and sales) $\beta=.45$, and Occ4 (Mechanical and transportation) $\beta=.39$. Occ5 (Crafts and artisans) and Occ1 (Professional/technical) with $\beta=.33$ and $\beta=.32$ respectively are also important variables. Occ3 (Clerical and administrative support) $\beta=.28$, and Occ 7( Services) $\beta=.24$ are of less relative importance among the occupation variables. Business size was also significantly and positively related to income ($\beta=.17$). That is, as the size of the business is larger, the higher the net income. The remaining variables: Occ6 (managers), borrcap, seaswor, urban, and hbfbage were not statistically significant at the .05 level.

Because most of the occupation variables had important and positive effects on net income, the researcher investigated the job titles that described

the occupations. Table 26 illustrates selected job titles for each of the occupations. Results from the business domain regression show that Occ 8 (contractors) is the most relatively important variable. That is, occupations such as road construction, house painting, and home maintenance contractors are jobs which are making more income compared to jobs such as egg sales or meat processing which pertain to Occ 9 (agricultural products and sales), the basis for comparisons. Recall that in the regression model, Occ 9 was the category omitted.

Regression results from the business domain also indicate that marketing and sales was the second most important occupation in terms of producing income. That is, owners in real estate, insurance, auto leasing, sales representatives and so on are, on average, making more income than the beauticians, barbers, and child care providers in the service occupations; and both groups, on average, have higher business incomes than those in agricultural sales, holding constant relevant variables.

Finally, business regression results from Table 25 show that the amount of variation in home-based family business net annual income explained by the business domain itself for the total sample was adjusted $R^2$=.11. That is, 11 % of the variation on home-based family business net annual income was accounted for by variables in the business domain.

**Table 26**

**Examples of Jobs for Nine Occupations**

| Occupational category | Job title examples |
|---|---|
| 1. Professional and technical | Computer consultants; computer programmers; consulting engineers; teachers of piano, art, music; college tutors. |
| 2. Marketing and sales | Fleamarket sales; real estate, insurance, auto leasing agents; sales representatives. |
| 3. Clerical and Administrative support | Secretaries; bookkeepers; computer label makers; computer workers; office managers; real estate appraisers; tax preparers; data processing workers. |
| 4. Mechanical and transportation | Truck drivers; bus drivers; building service repairs; structural and electrical inspectors. |
| 5. Craft and artisans | Crafts; potters; blacksmiths; T-shirt painters; musicians; graphic designers. |
| 6. Managers | Garbage collection, cleaning businesses, property maintenance, and motels; rental property managers. |
| 7. Services | Beauticians; dog groomers; barbers; day care and child care providers; private duty nurses; housekeepers; house and office cleaners; caterers. |
| 8. Contracting | Road and other construction; carpentry; house painting; home maintenance contractors. |
| 9. Agricultural products and sales | Herb, flower, and egg sales; fishermen; meat processing workers; boarding and training dogs. |

**Research Question 2.** Is there a relationship between home-based family business net income and the family characteristics variables?

To answer question 2, it was hypothesized that family characteristics are not linearly related to home-based family business net income. To test this hypothesis, multiple regression was performed. For that purpose, an equation model was developed as shown below. Table 27 shows the regression results. The regression equation used was $y_2 = b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + e_i$ where the dependent variable is $y_2$=Home-based family business net annual income and the independent variables are: $X_1$= Open (Family functioning type); $X_2$= Children under 6; $X_3$= Family size; $X_4$= Dependents needing care; $X_5$= Family management; $e_i$=error

**Table 27**

**Regression of Log Net Annual Income on Family Characteristics (N=620)**

| Variable | B | SE | β |
|---|---|---|---|
| OPEN | .72 | .42 | .07 |
| KIDUND6 | -.09 | .34 | -.01 |
| FAMSIZE | -.01 | .12 | -.01 |
| DNCARE | .15 | .15 | .06 |
| FAMMNGT | -.05 | .02 | -.08* |
| (Constant) | 10.01 | .96 | |

Note.
F=1.85 p= .10
$R^2$=.01; adjusted $R^2$=.01; *p< .05.

The analysis of variance from the regression results indicate that F=1.85 p=.10. Therefore, there is no linear relationship between the family characteristics variables and home-based family business net annual income, contrary to the research hypothesis.

As pointed out in the literature review, the family functioning types concepts have not been well operationalized. Furthermore, recall that this analysis is not gender specific. A gender specific analysis would probably yield different results than the one found in this study since the other four variables (KIDUND6, FAMSIZE, DNCARE, and FAMMNGT) may be influences on women's net income. This researcher may be finding no significance because the presence of male and female owners could cancel them out. Hence, the effect of family variables turned out not to be related to income.

**Research Question 3.** Is there a relationship between home-based family business net income and personal characteristics of the owner-managers' variables?

To answer question 3, it was hypothesized that owner-manager characteristics are not linearly related to home-based family business net income. To test this hypothesis, multiple regression was performed. For that purpose, an equation model was developed as shown below. Table 28 presents the regression results. The equation used was $y_3= b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + e_i$ where the dependent variable is $y_3$=Home-

based family business net annual income and the independent variables are: $X_1$= Age; $X_2$= Male; $X_3$= Not graduates; $X_4$= High school graduates; $X_5$= Some college; $X_6$= Married; $X_7$= Work experience; $X_8$= Hours of work; $e_i$ = error.

**Table 28**

**Regression of Log Net Annual Income on Owner-Manager Characteristics (N=620)**

| Variable | B | SE | β |
|---|---|---|---|
| HBWAGE | .03 | .01 | .10* |
| MALE | 1.64 | .27 | .26* |
| NOTGRAD | -2.73 | .52 | -.22* |
| HSGRAD | -1.42 | .31 | -.22* |
| SOMECOLL | -1.22 | .32 | -.18* |
| MARRIED | .84 | .42 | .08* |
| WORKEXP | -.04 | .01 | -.14* |
| HOURS | .00 | .00 | .26* |
| (Constant) | 5.69 | .66 | |

Note. College is omitted.
F=16.87 p= .00.
$R^2$=.20; adjusted $R^2$=.19
*p< .05

Analysis of variance from the regression indicates that F=16.87, p=.00. Therefore the null hypothesis 3 that there is not a linear relationship between the owner-manager characteristic variables and home-based family business net annual income is rejected.

Regression results in Table 28 show that all the variables from this domain are statistically significant. In terms of relative importance, the standardized coefficients (Betas) show that being male (β=.26) and hours of work (β=.26) are the most relatively important variables; the second most relatively important variables are the educational categories notgrad (β=-22), hsgrad (β=-22) and somecoll (β=-18). The variables with less relative importance were work experience (β=-.14), hbwage (β=.10), and married (β=.08).

These results indicate that within this domain there are variables that are positively and negatively related to income. The positively related are: HBWAGE, MALE, MARRIED, and HOURS. These suggests that owners who are older, male, married, and working more than average hours make more net income than owners who are young, female, nonmarried and work less than average hours. Table 28 shows negative regression coefficients for educational dummy variables. These negative signs should not be interpreted in the sense that educational categories have negative effects on income. Regression coefficients for educational dummy variables estimate the net difference in expected log income for each educational group relative to the reference group, controlling for other independent variables in the equation. College education, the variable left out, was selected as the reference group for comparisons. Therefore, the regression coefficient for NOTGRAD tells that, on average, it should be expected that owners who have not graduated from high school earn 2.73 (in logarithmic terms) less than college graduate owners. Owners who have

graduated from high school expectedly will earn 1.42 less than college graduate owners; and owners with some college education will earn 1.22 less than owners who have graduated from college. In other words, the less education owners has, it is expected that, on average, they will make less income relatively to owners who have college education.

These regression results from the owner-manager domain can be helpful in understanding better the relationship between owner-manager characteristics and net annual income. For instance, it is possible to profile home-based family business owners with the highest income. Based on these results, males who worked more hours and with a college degree are the ones who, on average, are making more income. On the other hand, an owner with low net business income would be a woman who work less hours and who has not graduated from high school.

Regression results are also instrumental in clarifying that some characteristics such as work experience, owners' age, and marital status are relatively less important in relation to income. From these variables, work experience was negative. This result indicates that the more experience a home-based business owner has, the less the income produced by the business. To further explore the variable HBWAGE it was squared and reintroduced into the equation. It was found that HBWAGE was statistically significant. This suggests that age of the owner is curvilinear. Moreover, all the other variables remain statistically significant and the $R^2$ did not change.

Table 28 also reveals that the amount of variation in home-based family business net annual income explained by the owner-manager domain for the total sample was adjusted $R^2$=.19. That is, 19% of the variation in home-based family business net annual income was accounted for by the variables that pertain to the owner-manager characteristics domain.

**Research Question 4.** Is there a linear relationship between home-based family business net income and environmental characteristics variables?

To answer question 4, it was hypothesized that environmental characteristics are not linearly related to home-based family business net income. To test this hypothesis, multiple regression was performed. For that purpose, an equation model was developed as shown below. Table 29 shows the regression results. The equation used was $y_4 = b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + e_i$ where the dependent variable is $y_4$=Home-based family business net annual income and the independent variables are: $X_1$=Unemployment;$X_2$=Per capita income; $X_3$=Population density; $e_i$=error term.

**Table 29**

**Regression of Log Net Annual Income on Environmental Characteristics (N=620)**

| Variable | B | SE | β |
|---|---|---|---|
| UNEMP88 | -.11 | .07 | -.08 |
| PCPI88 | -.00 | .00 | -.07 |
| POPDENS | .00 | .00 | .17* |
| (Constant) | 9.18 | .98 | |

Note: F= 5.26, p= .00
$R^2$=.02; adjusted $R^2$=.02
*p<. 05.

Previous checking of assumptions demonstrated that there was a high correlation between the variables investment and population density (r=.94, p=.00) see Appendix B. Therefore the investment variable was excluded from the regression of log net income on environmental characteristics.

Analysis of variance from the regression shown in Table 29 indicates that F=5.26, p=.00. Hence, the null hypothesis 4 that there is not a linear relationship between environmental characteristics variables and net annual home-based family business income is rejected.

Based on the regression results of the environmental domain, it seems that a high population density is the only variable within the model which is conducive to higher levels of income. That is, home-based businesses located in counties with higher than average population densities make higher incomes than businesses located in counties with low population densities.

Overall the domain was linearly related to income. These results indicate that the environmental domain is a promising one which can be helpful in explaining income differences. It would be important to continue the search for more and better measured variables within this domain.

Table 29 also indicates that the amount of variation in home-based family business net annual income explained by the environmental domain for the total sample was adjusted $R^2$=.02. That is, 2% of the variation in home-based family business net annual income was accounted for by the variables that pertain to the environmental characteristics domain.

**Research Question 5.** Is there a relationship between home-based family business net income and business, family, owner-manager, and environmental characteristics variables?

To answer question 5, it was hypothesized that business, family, owner-manager, and environmental characteristics variables are not linearly related to home-based family business net income. To test this hypothesis, multiple regression was performed. For that purpose, an equation model was developed. Table 30 shows the regression results. The equation used was: $y_5 = b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + \ldots\ldots\ldots\ldots + b_{29} X_{29} + e_i$ where the dependent variable is $y_5$= Home-based family business net annual income and the independent variables are: $X_1$= Occ1 (professional/technical); $X_2$= Occ2( marketing and

sales); $X_3$= Occ3( clerical and administrative support); $X_4$= Occ4(Mechanical and transportation); $X_5$= Occ5(Crafts and artisans); $X_6$= Occ6(Managers); $X_7$= Occ7(Services); $X_8$= Occ8(Contractors); $X_9$= Borrowed capital; $X_{10}$= Seasonality; $X_{11}$= Home-based family business size; $X_{12}$= Urban; $X_{13}$= Home-based family business age; $X_{14}$= Open; $X_{15}$= Children under 6; $X_{16}$= Family size; $X_{17}$= Dependents needing care; $X_{18}$= Family management; $X_{19}$= Age; $X_{20}$= Male; $X_{21}$= Notgrad; $X_{22}$= Hsgrad; $X_{23}$= Somecollege; $X_{24}$= Married; $X_{25}$= Work experience; $X_{26}$= Hours of work; $X_{27}$= Unemployment; $X_{28}$= Per capita personal income; $X_{29}$= Population density; $e_i$= Error term.

The analysis of variance from the regression results indicate that F=6.25, p=.00. Therefore, the null hypothesis 5 is rejected. That is, there is a linear relationship between business, family, owner-manager, and environmental characteristics variables and home-based family business net annual income.

Based on a decision rule of p<. 05 the following variables were found to be statistically significant: Occ1, Occ2, Occ3, Occ4, Occ5, Occ7, Occ8, FAMMNGT, MALE, NOTGRAD, HSGRAD, SOMECOLL, MARRIED, WORKEXP, and HOURS.

In terms of relative importance, the standardized coefficients (Betas) show that in the full model, that is, considering all the variables together from the four domains, Occ8 (Contractors) is the most important predictor of home-based family business net annual income ($\beta$=.40); following in importance are Occ4(Mechanical and transportation), Occ5(Crafts and artisans), and

**Table 30**

**Regression of Log Net Annual Income on Business, Family, Owner-Manager and Environmental Characteristics (N=620)**

| Variable | B | SE | β |
|---|---|---|---|
| OCC1 | 2.32 | .84 | .23* |
| OCC2 | 3.52 | .81 | .37* |
| OCC3 | 4.12 | .95 | .26* |
| OCC4 | 3.24 | .81 | .38* |
| OCC5 | 3.24 | .79 | .38* |
| OCC6 | 1.99 | 1.06 | .11 |
| OCC7 | 3.16 | .81 | .38* |
| OCC8 | 3.25 | .81 | .40* |
| BORRCAP | -.21 | .32 | -.03 |
| SEASWOR | .44 | .35 | .05 |
| HBFBSIZE | .02 | .02 | .04 |
| URBAN | -.17 | .30 | -.02 |
| HBFBAGE | .01 | .02 | .03 |
| OPEN | .51 | .46 | .04 |
| KIDUND6 | -.23 | .36 | -.03 |
| FAMSIZE | -.19 | .12 | -.09 |
| DNCARE | .20 | .15 | .08 |
| FAMMNGT | -.06 | .03 | -.09* |
| HBWAGE | .02 | .02 | .08 |
| MALE | 1.52 | .37 | .24* |
| NOTGRAD | -3.09 | .57 | -.25* |
| HSGRAD | -1.63 | .37 | -.25* |
| SOMECOLL | -1.28 | .35 | -.19* |
| MARRIED | 1.05 | .44 | .10* |
| WORKEXP | -.03 | .02 | -.11* |
| HOURS | .00 | .00 | .25* |
| UNEMP88 | -.06 | .07 | -.04 |
| PCPI88 | -.00 | .00 | -.05 |
| POPDENS | .00 | .00 | .02 |
| (Constant) | 6.10 | 1.82 | |

Note. Categories omitted are: Occ9 (agricultural products and sales); and college.
F=6.25, p=.00.
$R^2$ = .27;
Adjusted $R^2$= .22
*p<. 05.

Occ7(Services) with (β=.38) respectively. Occ2 (marketing and sales) β=.37, Occ3 (clerical and administrative support) β=.26, and Occ1 (Professional/technical) β=.23, were the less important occupations. Occ6 (Managers) was the only occupation that was not statistically significant at the .05 level.

Other important variables are: educational categories notgrad (β= -25), hsgrad (β=-25), somecollege (β=-19), hours (β=.25), and male (β=.24). Other significantly related variables, in descending order of their Betas were: work experience (β=-.11), married (β=.10), and family management (β=-.09).

Useful inferences can be derived from the full model results. For instance, changes in the pattern of the variables' behavior seen in the domain-by-domain regressions are noticeable in the full model. When looking at the variables belonging to the business domain, it is noticeable that for the occupations the pattern of significance is the same with occupation 6 (managers) being the only nonsignificant variable. From this, it is possible to conclude that the relationship of occupations as important variables connected to income is very strong and that the addition of variables from other domains did not change the importance of occupations. In contrast, HBFBSIZE was no longer significant when the full model was considered. That is, HBFBSIZE is not related to income.

In the full model, family management was the only variable that was significant from the family domain. Contrary to expectations, family management was negative. This implies that greater management efforts result in lower

income. There is one plausible explanation for this surprising result. First, the type of analysis used, that is, multiple regression, assumes a one-way causation model. But, the direction of effects may be opposite to those assumed by regression. Perhaps lower levels of income require more management. Presumably, owners with lower income levels will need more goal setting, planning, organizing, and directing of resources to make ends meet goals than owners with higher income levels.

Regarding the owner-manager domain, results found in the domain-by-domain analysis and the overall analysis differ. When the owner-manager domain was considered by itself, all the variables from the domain were statistically significant. In the overall regression, HBWAGE was not statistically significant. Some variables from the owner-manager domain are important and statistically related to income, for instance, NOTGRAD, HSGRAD, HOURS, MALE, SOMECOLL, WORKEXP, and, MARRIED.

Finally, in the overall regression, none of the variables from the environmental domain were statistically significant. The only variable, population density, which was significant in the domain-by-domain analysis, turned out to be not significant in the overall regression. This result suggest that variables from the environmental domain are very weak; hence, there is a need to further explore other variables within this domain.

All in all, four main variables emerged as important to explain home-based family businesses' net annual income: the occupation in which the home-

based family business owner is engaged, the hours of work the owner-manager put into the business, the owner-manager gender, and his/her educational level.

Other less important variables that emerged as related to home-based family business net income are: owner-manager's work experience, marital status, and family management. These variables were expected to have a positive relationship with income; however, work experience and family management were significant and negatively related to income.

To further explore the relation between work experience and income, years of work experience was squared and introduced again in the equation. Experience squared was found to be nonsignificant. This fact suggests that years of experience, as measured in this study, is not curvilinear. Moreover, the betas of the variables remain the same as well as the $R^2$.

The last overall regression is useful to see the behavior changes and strength of all the variables placed together. The strength of a multiple regression model is that it makes it possible to see the behavior of specific variables while at the same time holding constant other variables. One practical use of the results from the overall regression would be that certainly the occupation, the hours of work, and gender of home-based family business owners are powerful in explaining who will make more or less income. That is, on average, an owner who is a contractor, with a college degree, male, and working more hours will make considerably more income than an owner who

sells agricultural products, has not graduated from high school, is female, and work fewer hours than average.

Finally, regression results from table 30 indicate that the amount of variation in home-based family business net annual income explained by the variables that pertain to the four domains for the total sample was adjusted $R^2$=.22. That is, 22 % of the variation in home-based family business net annual income is accounted for by all the variables from the four domains considered.

# CHAPTER 5

## DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

In this chapter, results of the study will be discussed and conclusions summarized within the context of the literature reviewed. As mentioned in Chapter 1, specific studies related to home-based family business income are scarce; therefore, the study referred to findings from fields such as small business, self-employment, and family firms to formulate comparisons and generalizations.

What follows is the findings' discussion and conclusion organized according to the four domains studied. Ultimately, implications of these conclusions for education, policy, and research are presented.

### Business Domain

Results from the business domain indicate that business is a sphere which contains important variables related to income. For instance, the **occupations** in which home-based family businesses owners are engaged were predominant predictors of income.

At least two plausible explanations why occupations are so predominant in predicting home-based family businesses' income can be mentioned. First,

there may be differences in levels of competition for different occupations. For example, agricultural products and sales occupations operate in rural areas where the competition is great. This is a disadvantage in comparison to other occupations where the competition is less marked. Moreover, it is known that occupations providing services have greater competition and higher labor intensity than others (Humphreys & Mc Clung, 1981). In addition to higher competition, certain occupations such as those in the service sectors may impose geographical limitations that, aggravated with lack of capital, impede growth and consequently the income of the business.

Second, certain occupations may be more flexible in responding rapidly to market incentives in the short run. For instance, an increase in demand could promptly be responded to by certain occupations. However, responses to market incentives may be limited by biological and intellectual capacity for other occupations. For instance, personal service occupations such as beauticians, barbers, caterers, and so forth can respond only up to a point to demand increases due to biological limitations; that is they can serve only a limited number of clients.

Descriptives from this study suggest that home-based businesses have a tendency to stay small. Around 39% of them, with an average of 9 years of operation, have no employees. Hence, as is the case with self-employment, home-based family businesses appear to be a case of near-perfect inelasticity of labor supply. The owner-worker can alter the firm's labor supply by improving the

quality and productivity of his/her own labor. However, at the limit of the home-based family business capacity, output can be increased only by adding capital or by employing others. This implies changes in scale and technology representing a long rather than a short-run response.

Finally, to account for income differences in occupations, customers may place greater value on products or services provided by certain occupations (i.e., technology-driven services) rewarding them more than those supplied by other occupations.

This study found that **size of the business** was statistically significant. The Beta was small, however. This result is in contradiction to small business findings which suggest that firm's size is very important in determining business income (Aldrich & Weiss, 1981; Loscocco et al.,1991).

Differences in results may be due to the scale used to measure business size. The Small Business Administration generally uses employment data as a basis for size comparisons, with firms having fewer than 100 or fewer than 500 employees defined as small. This business scale is much larger than the scale of most home-based businesses. Descriptives from this research indicate that home-based family businesses' average size is near four. Moreover, around 39% of the home-based family businesses studied have no employees, and approximately 70% of them have a maximum of three employees. Thus, by comparison these home-based businesses could be considered

microbusinesses. These differences in scale may explain, in part, differences in findings.

Another important implication in relation to size of the business is that most of the home-businesses studied were not new, averaging over 9 years in the marketplace. This fact and its relation to size suggests that home-based family business owners may purposely keeping their enterprises small. The motivation for this fact can not be explained by this research. Cromie (1987) argued that starting and growing a business could be motivated by a number of reasons. Some people start their own business because they want the freedom to be their own bosses, others because they have a strong need for personal achievement or to express their creativity.

Therefore, if home-based businesses only hire one or two employees it seems reasonable that the size of the business will not be a big influence on income. Understandably, bigger firms gain more from size because they are able to streamline, standardize, and program their operations. However, it seems that home-based family businesses do not reach the point where increases in the scale of operation result in increased output at decreasing incremental cost. In other words, economies of scale may be more applicable to small businesses than to micro-home-based businesses. It is possible that home-based businesses that grow to benefit from economies of scale have to move out of the home. Space constraints could be a limitation home-based businesses have to grow forcing them to move out of the home.

These conclusions should be taken carefully, however. First, the measure of business size did not distinguish differences between family, unrelated, paid and nonpaid employees. Heck and Walker (1993) reported that not all workers increase business outputs. This could be a reason why increased business size does not yield increased incomes. Heck and Walker suggested that if the highest level of output is to be achieved, family business owners need to select their employees carefully and may fare better by utilizing paid and contracting family workers and unrelated workers, not by utilizing unpaid family workers or unpaid helpers.

Another variable considered within the business domain was borrowed capital. Contrary to expectations, this study found that borrowed capital was not significant. Descriptives of this study show that around 79% of the respondents reported that owners did not borrow capital. Assuming availability of capital to borrow, the low percentage of owners who borrowed capital may result from a variety of factors. Among those factors high information costs, underestimation of the capital required to sustain the enterprise beyond its infancy, and owner's limited managerial and technological capacity to utilize capital can be mentioned.

Small business research indicates that more capital is associated with better performance. The U.S. Small Business Administration (1988) provides substantial support for the importance of the role of business capital in explaining differences in earnings, especially for women. They report that, on

average, women sole proprietors started their businesses with only half the capital of men and were less likely than men to have borrowed capital, partly because a larger proportion of women reported that no capital was required.

For small businesses, the amount of initial capital is related to the initial strategy that might be pursued. More initial capital permits a business to carry a broader mix of merchandise or to undertake more ambitious projects. More initial capital also buys time, while the entrepreneur learns to overcome problems (Cooper & Gimeno-Gascon, 1992).

While levels of capitalization are very important for small businesses, descriptive and regression results from this study appear to indicate that the same conclusion is not applicable to home-based family businesses. Scale differences between small businesses and home-based family businesses can account for these contrasting findings. Home-based businesses' fixed and operational capital could be assumed to be lower than small businesses' volume of capital needs. Moreover, as was already pointed out, home-based businesses tend to stay small. Home-based owners, at the beginning of their businesses, may have a clear idea of the business size and volume they can handle and have no intention to operate beyond that size and volume.

The conclusion that home-based family businesses may not need as much capital as other small businesses has to be taken cautiously, however. This research conclusion about the influence of borrowed capital on net income is based on a yes/no question: Did you(home-based worker) have to borrow

money or find an investor to start this business? Limitations of the data precluded more in-depth analysis of this variable. For instance, issues such as capital availability and financial institutions' discrimination against home-based business owners could not be investigated with the data available; nor could the amount borrowed.

Another variable included for analysis within the business domain was **seasonality**. The rationale for including seasonality into the equation was that seasonal work may be less efficient than nonseasonal work. Also, it was thought that seasonal workers will care less about the economic outcomes of their enterprises due to marginal engagement with the business. Furthermore, if seasonal work does not provide the main income for the family, the lack of care and efficiency would be aggravated resulting in less income than nonseasonal work. Contrary to these views, no statistical relationship at .05 level between seasonality and income was found. This result indicates that holding constant the hours worked and other relevant variables, the assumptions about seasonal work were not correct.

Another variable studied was the influence of the **urban/rural location** on income. The rationale for inclusion of this variable within the business domain was that businesses located in urban areas will have bigger markets than businesses located in rural areas. In addition, higher incomes of urban residents in comparison to rural area residents will translate into greater purchasing power for urban residents. Contrary to these expectations, urban residence was not

statistically significant at the .05 level. Based on this finding, this researcher reached the conclusion that businesses located in urban areas are not earning more income than businesses located in rural areas. This conclusion contrasts with the results of Rowe, Haynes et al. (1993). They found that urban location positively affects net business income. Differences in findings may be due to differences in operationalization of the dependent variable and the urban variable.

**Age of the business** was studied within the business domain also. It was thought that businesses with more years of operation would have better organization, clientele formed, and operations systematized. Based on these presumptions, old firms would have greater incomes compared to younger firms. Findings contradict this expectation; age of the business was not statistically related to income. One plausible explanation for this finding is that the sample of this study is composed of home-based family business with at least 1 year of operation. Furthermore, these businesses have been, on average, operating 9 years. Hence, the sample did not capture new businesses where the liabilities of inexperience could be greater.

## Family Domain

Results indicate that the family domain is not linearly related to home-based family business income. There are at least two plausible explanations for this finding. First, the variables included within this domain do not reflect the

power of the domain and its relation to income. Second, the family domain included variables such as open-not open family functioning type and a family management scale. The way these variables were measured and operationalized may not be capturing the strength of the underlying concepts and their relationship to income.

One interesting finding, however, is that the variable **family management** was statistically significant when included in the overall regression. The relationship between family management and income was negative, however. That is, higher scores in family management were associated with less net annual income. This finding contradicted the researcher's expectation regarding this variable. This puzzling finding could have at least two explanations. One related to the statistical model used by the researcher. The multiple regression equation model assumes a one way causation. In this case, it was assumed that higher levels of income result from higher levels of family management. However, the direction of causation may be contrary to what was assumed. In other words, it may be the case that low levels of income require higher levels of management.

Another plausible explanation is that family businesses located in the home may demand high levels of family managerial effort. Home-based businesses' great family managerial needs may divert owner's efficacy to manage their businesses. This may create a business management deficit affecting negatively the net business income.

All the other variables such as **children under six years old, family size, and number of dependents needing care** studied within the family domain were found to be not statistically significant when included in the overall regression. This finding seems to discredit the notion that family businesses are burdened by family responsibilities which inhibit higher incomes.

## Owner-manager Domain

Results from this study indicate that within the owner-manager domain all the variables considered were statistically significant. Owner's educational category, being male, and married were important variables in explaining income variation. In terms of relative importance, hours of work and being male were the most important variables.

When exploring this domain, many questions could be asked: Does the age of the owner influence income earnings of the business? Does the gender of home-based family business owners affect the net income generated by the businesses? Do home-based family business owners with less education earn less income than those owners with more education?

Regarding the influence of the age of the owner-manager, this study found that owner's age is not a strong predictor of income. Moreover, it was found that gender does matter in explaining variation in net income. Evidence from this study indicates that on average home-businesses owned by males earn more income than those owned-managed by women. This finding is

consistent with a cumulative body of literature. For instance, Walker and Haynes (1995) found that regardless of the definition of earnings, women's earnings are considerably lower than those of men. Losccoco and Leicht (1993) also found differences between women's and men's economic success among small business owners. It seems that gender earnings differences are well documented in the small business field.

Although differences in income between women and men appear to be well documented, the factors that account for these differences are still elusive. Human capital theory posits that women earn less income than men because they invest less in their human capital. This study, however, controlled for education and years of work experience and still earnings differences by gender exist.

Another plausible explanation is the theory which poses that women select lower paying occupations than men. Human capital theory posits that women choose to invest less in their education based on a rational cost/benefit decision. That is, women do not expect to regain their investment costs because they usually stop working due to pregnancy, family, or other responsibilities. Consequently, women are less educated and trained than men deterring their access to high paid occupations. Findings from this study have already pointed out the importance of occupations in earnings. Therefore, this rationale seems to be more tenable in explaining income variation between women and men. Nevertheless, as will be seen in the last regression, where variables from all

domains were included, after controlling for occupations, differences in incomes remained. Hence, one question still needs to be investigated: What factors account for income differences between male and female owners?

Another question posed is: Do home-based family business owners with less education earn less income than those owners with more education? **Educational categories** were statistically related to net annual income after controlling for age, gender, marital status, work experience, and hours of work. Taking college graduate owners (dummy variable not included in the equation) as the basis for comparison, the data revealed that educational categories were related to income in the following order: College graduate owners earn more income than owners with some college; owners with some college education earn more than owners who graduated from high school; and owners who graduated from high school earned more income than owners who did not graduate from high school. In other words, the greater the education the owner possesses, the greater will be his/her income.

This finding is partly consistent with Loscocco and Leicht (1993) who argued that earnings are determined largely on the basis of productivity enhancing investments, such as education and experience. In contrast to Loscocco and Leicht, this study did not provide evidence that **years of work experience** was positively related to income. In fact, this study found that additional years of work experience decreased income. This contrasting finding is presumably due to differences in the definition of experience. Loscocco and

Leicht defined experience as the number of years a business owner has been in his/her industry. On the other hand, this study defined experience as the number of years a business owner had worked in any job prior to opening his/her own business. Moreover, in this study, the question related to years of work experience did not distinguish what type of experience owners had outside the home previous to starting their own businesses. It is plausible that certain types of work experience have more influence than others on income.

Finally, the effect of **marital status** on net income was explored. Results show that owners who are married are making more income than those who are not. This finding is consistent with Cooper et al. (1990) who studied new small businesses in America. They found that married business owners tend to be more successful than single business owners. Many plausible explanations could be suggested for this finding. One is that married owners are more stable than nonmarried owners. Moreover couples can share business and family responsibilities, alleviating the burden of merging family with business.

## Environmental Domain

This study introduced the environmental domain to study home-based businesses. It was rationalized that broader environmental factors such as characteristics of a geographical region in terms of population density and income of the region could influence the income generated by home-based family businesses.

A linear relationship between the environmental domain and home-based family business income was found. However, results also indicated that the environmental domain by itself was able to explain only 2% of the variation in home-based family businesses' annual income. Furthermore, from the three variables that were studied in this domain, only **population density** was statistically significant.

These results suggest that the theoretical model is correct in including environmental variables to account for influences on income. Nevertheless, further exploration for variables within this domain is needed. Here it will be useful to remember that this study utilized secondary data. This fact prevented considering the effects of environmental variables such as local zoning, taxation, licensing, and the physical structure such as availability of water, electricity, sewage capacity and roads on home-based income.

## Business, Family, Owner-manager, and Environmental Domains

All variables from the four domains considered, regardless of previous statistical significance, were entered in a final regression. Results from this final regression show that, in general, variables which were related to income in the domain-by-domain analyses are also significantly related to income in the overall regression. For instance, from the **business domain variables**, occupations continue to be the most relatively important variables related to income in the overall regression.

Among the occupations **contractors** (occupation 8), was the most important occupational category. Following in importance were: **mechanical and transportation** (occupation 4), **crafts and artisans** (occupation 5), and **services** (occupation 7). Recall that the importance is relative to **agricultural products and sales** (occupation 9) which was not included in the regression. **Professional/technical** (occupation 1), **clerical and administrative support** (occupation 3), and **marketing and sales** (occupation 2) were also related to income but were less important.

However, the order of relative importance of occupations is different from the order found when they were analyzed separately within the business domain. This finding suggests that there are forces other than occupations per se which influence the relative importance of occupations; however, these forces are not strong enough to weaken the significant relationship between occupations and income.

From the **family domain variables**, family management had a negative influence on income. As was already pointed out, this striking finding that the more the family manages, the lower is the income, may be due to higher family management requirements for low income owners.

Looking at the variables pertaining to the **owner-manager domain**, the final overall regression shows that except for the age of the owner-manager and work experience all the other variables remain significant at the .05 level. This

pattern of significance is similar to that encountered when they were analyzed separately.

In terms of relative importance, owner-manager variables show higher betas than the family and environmental domain variables, but lower than business domain variables. For instance, variables such as Hsgrad (β=-25) (dummy categories for education), hours of work (β=.25), and male (β=.24) are found to be important.

Considering the Betas of the overall regression it can be seen that after occupations, owner's education, owner's gender, and hours of work remain important variables related to income. Also, the relative importance of marriage has increased from (β=.08) to (β=.10). Ultimately, the pattern of significance for the environmental variables changed. In the overall regression none were significant.

## Conclusions

After reviewing the results of this study, the following conclusions can be mentioned:

1. Three of the four domains hypothesized as spheres of important variables: business, owner-manager, and the environmental domain, were linearly related to home-based family business net annual income. This, to some extent, validates the theoretical framework proposed for this study.

2. The business domain contributes with the most relatively important variables. Occupations are the most relatively important variables related to business income.

3. The owner-manager or personal domain is the domain with the largest coefficient of determination ($R^2$) explaining the largest proportion of variation in income. Moreover, important variables related to income emerged from this domain such as **categories of education**, **hours of work**, **gender**, and **marital status**.

4. Opposite to expectations, the variables family management and years of work experience negatively influence income.

5. The environmental domain is linearly related to income; however, all the variables pertaining to the environmental domain were found not statistically significant.

6. From a research standpoint, results from this study suggest that owners' occupation, education, and gender are extremely important determinants of income. This has been documented in general labor force literature for years and it seems to also be true for owners of micro-businesses.

## Implications

This section attempts to draw out some implications of the findings from this study, address the gaps in knowledge about the relationship between home-based family business and its relationship to net annual income. Also, the

questions left out due to data limitations, and translate this information for researchers, educators, and policy makers.

## Implications for Research

This research made an effort to measure and incorporate the elusive concepts of family and business management as income predictor variables. Family management was found to have a negative and statistically significant relationship to net annual income. However, the fact that the direction of the variable was contrary to expectations has implications for future research. The negative sign of the family management variable may indicate that reciprocal causation exists. Hence, it will be useful that future research studies incorporate more sophisticated statistical models such as multiequations or simultaneous-equations to gain more insights about the relationship of the management variable and income. Data limitations prevented inclusion of the business management variable into the regressions. However, descriptive statistics provided some insight regarding this variable. Future research needs to incorporate this variable to further understand its relationship to income.

Moreover, this study made a first attempt to introduce a measure of family functioning type to test its relationship to income. The study found that the category open, is not related to income. Theoretically, the concepts are well defined. Family functioning types such as closed, open, random, and synchronous are well defined as mutually exclusive concepts by the literature.

Conceptually, family functioning types are consistent and may be useful in relation to the satisfaction family members experiment with different types of businesses. For example, open families may enjoy businesses that bring new experiences, putting them in contact with new persons and situations. It could be suggested that if families are content with the type of business they are doing, this could be important in the running of the business, which would translate in better incomes.

Despite the conceptualization and seeming usefulness of the family functioning types, in reality, many families present mixed characteristics which make them difficult to type. Moreover, the instrument used in this study allowed the types to overlap. Hence, the operationalization of family functioning types needs further measurement refinement in order to gain empirical knowledge regarding their relationships to income.

One theme that needs further study is the effect of technological change on home-based family businesses and how this change affects income. Today, home-based family businesses are probably using a lot of technical equipment such as computers, faxes, and modems. Data used for this study did not include information relating to the levels of technological sophistication used by the home-based family businesses and how the utilization of more technology affects income. It would be worthwhile for future research to look at the effect of technological use and changes in use on the income of home-based family businesses.

This study found that owners who borrowed capital did not systematically have higher net business income. However, issues related to the availability of financial capital were not addressed directly. More investigation is needed in relation to financial institutions' willingness to lend money to very small businesses, especially those owned by women whom lenders may see as high risk. This investigation is necessary to shed light on the question posed by Aronson (1991): Do women choose lower-paying businesses because they are unable to obtain financing for larger-scale and higher paying enterprises, or is the level of financing obtainable, especially from financial institutions, generally lower for women than for men because of a propensity among women to establish smaller-scale and financially riskier businesses?

This research confirmed previous findings that there are differences between the earnings of women and men home-based business owners. Human capital theory suggests that differences in educational level, work experience, occupational choice, and family responsibilities intermingle to create these gender income differences. This study held constant levels of education, work experience, occupations, number of children less than 6 years old, and other important variables; however, differences in income between women and men remained. Therefore, the search for factors that account for gender differences in income should continue. Finding out what factors account for these gender differences in income will be very important for home-based family businesses

considering that approximately 42% of the home-based family business owners from the nine states studied are owned and managed by women.

One theme omitted by this study, due to data limitations, was the effect of ethnic background on incomes. Previous small business studies have indicated that minorities are at disadvantage in terms of education and access to financial sources. This study found that education is related to income. That is, the more education owners have, the more income they will make. Therefore, it is important to investigate the educational level of minorities groups such as African Americans, Hispanic Americans and Asian Americans who own home-based businesses.

Literature on minority-owned businesses cites characteristics of the business owners as factors mitigating against business success (Enz, Dollinger, & Daily, 1990; Green & Pryde, 1989). Moreover, the literature emphasizes the low rates of business participation by African Americans. An enlarged framework as the one utilized by this study could be useful to investigate not only owners but also family, business, and environmental factors as possible influence on the success of minority home-based businesses.

Many studies dealing with small businesses, family businesses, or home-based businesses ignore issues of the wider economic and noneconomic context in which businesses are embedded and the impact of that broad domain on the potential business earnings. This study examined a number of environmental factors to determine relationships with net annual income. For

that purpose an enlarged theoretical framework including the environmental domain was developed. The study found the environmental domain to be related to income when family, business, and owner variables were excluded. However, the environmental domain variables had no explanatory power in the full model. This may be due to the limited selection of environmental variables imposed by secondary data. The fact that the environmental domain is related to income suggests that future research should continue searching within this domain for variables that may influence income. It could be suggested that variables that measure counties' money flow, level of industrial capacity, and even an overall measure such as gross county product could be related to home-based net annual income.

## Implications for Education

This study found that occupational category variables are the most important variables related to income. Hence, occupations with higher income potential were identified. This finding implies that training programs and technical education should be developed around these occupations to prepare future workers with the knowledge and skills necessary to facilitate their entry into those occupations.

A very strong finding from this study was the importance of educational categories in predicting incomes. It was found that more education represents higher incomes for home-based family business owners. As pointed out by the

literature reviewed, education is probably related to knowledge, skills, problem solving ability, discipline, motivation, and self-confidence. These may help home-based family business owners to deal and cope with the many problems encountered in their business. The study descriptives show that around 44% of home-based family business owners had no college education. Therefore, it will be important to develop educational programs targeted towards these owners with lower educational levels.

Ultimately, due to data limitations, this study could not assess the effect of vocational education on income. However, it is assumed that educational programs that include training in developing business plans, advertising and marketing strategies, bookkeeping courses, legal advice, and computer training would be helpful.

## Implications for Policy

This study found that occupations were the important variables in explaining variation in income. Hence, if the goal is to increase the level of income earned by home-based family businesses, the policy recommendation that emerges from this finding is that policy makers should through legislation eliminate entry barriers to more lucrative occupations. This is especially important for women who are producing less income from their labor than their male counterparts. Moreover, selection of occupations is based on a rational decision; that is, owners assess available human and nonhuman resources to

decide to venture into specific occupations. Policy-makers could intervene by facilitating the access to human and nonhuman resources enabling owners to enter into occupations with higher income prospects. For example, providing information to avoid legal conflicts can assist potential home-based workers regarding legal and regulatory issues, thereby reducing the barriers to entry.

This study also found that the owner-manager domain contains the second most relatively important variables in explaining net annual income. Those variables are: educational categories, hours of work, male, and marital status. From these variables, educational categories and hours of work can be influenced by policy. Hence, policies to help the educational and training needs of entrepreneurs should be written. Today, however, policy trends are directed toward cutting funding that supports education programs. This trend should be reversed, taking into account that higher levels of owners' education pay.

In terms of gender differences this study found that women are earning less than male owners. Therefore, it seems critical that the policy environment give more attention to the empowerment of women entrepreneurs. Women may lack specialized knowledge related to business such as marketing, developing financing, and management of employees. Hence, it is recommended that the real needs of women business owners be assessed and addressed by policy makers.

Finally, one significant finding in this study was that there was a strong relationship between the number of hours worked and net annual income. This

finding suggests that differences in earnings depend on differences in the amount of labor supplied. According to the descriptives, around 51% of the owners work less than 35 hours per week; that is, they are part-time workers. In line with findings about self-employment, this suggests that home-based workers are choosing to work less hours. Aronson (1991) asserts that there has been a change in the role of self-employment. He argues that self-employment has declined as the primary job between 1955 and 1980; however, it has shown an increase as the secondary job. Moreover, he suggests that increases in women's self-employment has encouraged this development. These changes are posing time constraints to owners who have to combine to combine multiple jobs and family responsibilities. The policy implication of these developments is that policy makers should work toward policies that redefine flexible time. If today home-based workers are combining jobs, it is essential that time flexibility be reconsidered to allow the primary/secondary work combination. Moreover, it will be important to determine the time flexibility single-parent families need to allow the benefits of home-based work. This policy implication is important for policy-makers who want to reduce the number of persons on aid by training them to set up home-based enterprises.

Ultimately, no one study can provide all answers, particularly for such a complex entity as home-based business. There is still much unknown about home-based businesses' net annual income and its relationship to different domains. However, it is hoped that this study be useful conceptually and

methodologically. It incorporated many domains and variables not studied together in previous research. It is thought that the model presented is a contribution toward studying home-based business more ecologically. Moreover, the study made an effort to indicate questions that were not asked and difficulties in the operationalization of some variables; hence, it is expected that these indications will enable future researchers to design and implement better-informed surveys. Finally, the use of a random data set drawn from many states and multivariate analysis give strong statistical validity to make generalizations about what was found.

# APPENDICES

# APPENDIX A

# APPENDIX A

**Home-based worker study (selected questions from screening and instrument used for this study).**

From screening

**q6.**

**How** long has (name) been doing this work from home? (From screening)

..... 1=months

..... 2=years

(number)

**q7.**

a. **How** many hours in an average day, week or month does (name) work at this job?

..... 1=Day

Hours 2= Week

3= Month

b. **How** many (days, weeks, months) did he/she work at this job last year?

..... 1=Day

Hours 2= Week

3= Month

**q8.**

**Is** this work seasonal?

1=Yes --> What months does he/she work? .....(Months)

2=No

From questionnaire

**q2.**

**Do you live . . .**

**1= On a farm**

**2= In a rural area, but not a farm**

**3= In a small town, under 2,500 or**

**4= In a town or city larger than that?**

**q4.**

**Now we'd like to know a little bit about each member of the household. I'd like to know the first name of each household member. Let's begin with you, then list your spouse, followed by any children, oldest to youngest, and finally, anyone else who lives here and has no other home.**

**a) What is (person's) first name?**

**b) Is (person) male or female?**

**c) What is (person's) relationship to you?**

**d) How old was (person) on his/her last birthday?**

**e) Is he/she married?**

**f) What is the highest grade of school (person) has completed? Include college, vocational, professional or technical training.**

**g) Is person employed full-time (35 hours or more per week); part-time; unemployed, but looking for work; unemployed, not looking for work; retired; disabled; or a full-time student?**

**q5a.**

**How many people in the household require care or supervision on a daily basis, like children, or disabled or elderly family members.**

**.....(number).**

**q10.**

One the things we are interested is learning about is how households operate with a home-based worker. These questions are about how you manage your household. Think of the scale from 1 to 5. The one (1) means the statement is not at all like your family, a 3 means it is somewhat like your family, and a 5 means it is exactly like your family. Tell me which number from 1 to 5 describes how much that statement is like you. Here is the first one.

(a) When there is chore to be done at home, you wait until the last minute.

1 2 3 4 5

(b) You think about when to do a job, and not just how much time it will take.

1 2 3 4 5

(c) Each week you decide some way you can improve your life.

1 2 3 4 5

(d) When planning a job you think the plan through so that your goal is clear before you actually begin doing the job.

1 2 3 4 5

(e) Before you begin a job, you figure out how much of your time, money and energy that you can devote to this particular task.

1 2 3 4 5

(f) Before starting a job, you have a firm idea about how to judge the outcome.

1 2 3 4 5

(g) As you work, you check whether things are going as you want them to.

1 2 3 4 5

(h) You are pleased if the work just gets done; you do not spend time thinking about how effectively it was done.

1 2 3 4 5

(i) When things are not going well, you figure out another way to do it.

1 2 3 4 5

(j) When a job is done, you think about how well you like the results.

1 2 3 4 5

**q11.**

Now I am going to read another series of statements. Would you tell me how closely each statement describes your family? Again think of the scale from 1 to 5. The one (1) means the statement is not at all like your family, a 3 means it is somewhat like your family, and a 5 means it is exactly like your family. Tell me which number from 1 to 5 describes how much that statement is like your family. Here is the first one.

(b) Your family enjoys the variety of people and activities the home based work brings to your life.

1 2 3 4 5

(h) Your family is open to new ideas if they seem practical.

1 2 3 4 5

(l) In your home, friends often drop by and are easily included in whatever your family is doing.

1 2 3 4 5

(e) Your family makes decisions by rules you have always used.

1 2 3 4 5

(j) Your family usually does things the same way time after time.

1 2 3 4 5

**q14.**

This section is about the people who worked for the business or helped out during 1988.

(a) Did anyone besides (hbw) work for or help out with this business during 1988?

1=Yes

2=No

(b) Were there (type of worker)?

(c) How many were there in 1988?

(d) How many were household members?

(e) How many were relatives who did not live in the household?

| Type of worker | (a) Have in 1988 Yes | (a) Have in 1988 No | (b) How many | (c) Household member | (d) Other relatives |
|---|---|---|---|---|---|
| Paid employees? | 1 | 0 | | | |
| Independent contractors (accountant, bookkeeper, electrician?) | 1 | 0 | | | |
| People who did some work for the business and were not paid? | 1 | 0 | | | |

**q16.**

Did (home-based worker) have to borrow money or find an investor to start this business?

1=Yes

2=No

**q26**

What was the net income your household received from your business in 1988?

$ ----------

**q35c.**

How many years in total did (he/she/you) work outside the home?

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**q36.**

This section includes general questions on how (type of work) is planned and done. Think on the scale from 1-5. Remember that 1 means not at all like you, the 3 means somewhat like you, and the 5 means it is exactly like you. Which number most closely describes you and how you work. Here's the first one.

(a) Each week you decide how much work you will do.

1 2 3 4 5

(b) When planning a job you think the plan through so that your goal is clear before you actually begin doing the job.

1 2 3 4 5

(c) Before starting a particular job, you figure out what you need, like tools, supplies, time, etc.

1 2 3 4 5

(d) Before starting a job you have a firm idea about how to judge the outcome.

1 2 3 4 5

(e) Although you are flexible, you make work schedules.

1 2 3 4 5

(f) When there is work to be done, you wait until the last minute.

1 2 3 4 5

(g) As you work, you check whether things are going as planned.

1 2 3 4 5

(h) You change how you are doing a task when the results are not as planned.

1 2 3 4 5

(I) When finished, you ask whether people and equipment have been used to the best advantage.

1 2 3 4 5

(j) When you finish a job, you think about whether the results meet your standards as well as your client's or employer's.

1 2 3 4 5

Table 31

Intercorrelations between log income and business characteristics variables (N=620)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. LGINC | -- | -.00* | .13* | .08* | .03 | -.06 | -.04 | -.19* | .14* | -16* | .05 | .00 | .13* | -.01 | .07 |
| 2. OCC1 | | -- | -.14* | -.07 | -.15* | -.14* | -.06 | -.15* | -.16* | -.06 | .01 | -.10* | -.03 | .06 | -.08 |
| 3. OCC2 | | | -- | -.09* | -.18* | -.17* | -.07 | -.18* | -.19* | -.07 | .15* | -.11* | -.02 | -.00 | -.07 |
| 4. OCC3 | | | | -- | -.09* | -.09* | -.04 | -.09* | -.10* | -.04 | -.07 | .01 | .04 | -.00 | .12* |
| 5. OCC4 | | | | | -- | -.18* | -.07 | -.19* | -.20* | -.08 | .12* | .12* | -.02 | -.02 | .21* |
| 6. OCC5 | | | | | | -- | -.07 | -.18* | -.20* | -.08 | -.01 | -.01 | -.10* | .07 | -.05 |
| 7. OCC6 | | | | | | | -- | -.07 | -.08* | -.03 | .04 | -.02 | .44* | -.06 | -.03 |
| 8. OCC7 | | | | | | | | -- | -.20* | -.08 | -.15* | -.11* | -.13* | .06 | -.11* |
| 9. OCC8 | | | | | | | | | -- | -.09* | -.13* | .14* | .03 | -.07 | -.01 |
| 10. OCC9 | | | | | | | | | | -- | .11* | .12* | .08 | -.11* | .06 |
| 11. BORRCAP | | | | | | | | | | | -- | .13* | .02 | -.06 | .07 |
| 12. SEASWOR | | | | | | | | | | | | -- | .02 | -.14* | .03 |
| 13. HBFBSIZE | | | | | | | | | | | | | -- | -.13* | .07 |
| 14. RESIDEN | | | | | | | | | | | | | | -- | -.03 |
| 15. HBFBAGE | | | | | | | | | | | | | | | -- |

Note. *p<.05

Table 32

Intercorrelations between log income and family characteristics variables (N=620)

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. LOGING | -- | .07 | .03 | .03 | .06 | -.08* |
| 2. OPEN | | -- | .03 | -.02 | .04 | .03 |
| 3. KIDUND6 | | | -- | .48* | .61* | -.02 |
| 4. FAMSIZE | | | | -- | .67* | -.02 |
| 5. DNCARE | | | | | -- | -.02 |
| 6. FAMMNGT | | | | | | -.06 |
| | | | | | | -- |

Note. *p<.05

Table 33

Intercorrelations between log income and owner-manager characteristics (N=620)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. LGINC | -- | .01 | .27* | -.14* | -.04 | -.04 | .17* | .08 | -.01 | .30* |
| 2. HBWAGE | | -- | .14* | .10* | .08* | -.03 | -.12 | .02 | .53* | -.04 |
| 3. MALE | | | -- | .04 | .05 | -.04 | -.04 | .03 | .38* | .18* |
| 4. NOTGRAD | | | | -- | -.22* | -.19* | .08 | .04 | .07 | .04 |
| 5. HSGRAD | | | | | -- | -.49 | -.07 | -08 | .08 | .01 |
| 6. SOMECOLL | | | | | | -- | -.04 | .07 | -.12* | .01 |
| 7. COLLEGE | | | | | | | -- | -.04 | -.01 | -.05 |
| 8. MARRIED | | | | | | | | -- | .09 | .01 |
| 9. WORKEXP | | | | | | | | | -- | -.08 |
| 10. HOURSCOR | | | | | | | | | | -- |

Note. * p<.05

Table 34

Intercorrelations between log income and environmental characteristics variables (N =620)

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. LOGINC | -- | -.09* | .09* | .13* | .14* |
| 2. UNEMP88 | | -- | -.55* | -.34* | -.29* |
| 3. PCPI88 | | | -- | .79* | .70* |
| 4. INVEST88 | | | | -- | .95* |
| 5. POPDENS | | | | | -- |

Note. p<.05

**Table 35**
Intercorrelation between log income and business, family, owner-manager, and environmental variables (N=620)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | . | -.00 | 13* | 08* | 03 | -.08 | -.04 | -.19* | 14* | 16* | 05 | 00 | 13* | -.01 | 07 | 07 | 03 | 03 | 08 | -.08* | 01 | 27* | -.14* | -.04 | -.04 | 17* | 08 | -.01 | 30* | -.09* | 09* | 13* | 14* |
| 2 | | -- | -.14* | -.07 | -.15* | -.14* | -.08 | -.15* | -.16* | -.06* | 01 | -.10* | -.03 | 08 | 08 | 0 3 | -.03 | -.02 | -.00 | 07 | -.00 | 12* | -.10* | -.23* | -.07 | 39* | -.00 | 18* | -.11* | -01 | -.03 | 04 | -.07 |
| 3 | | | -- | -.09* | -.18* | -.17* | -.07 | -.18* | -.19* | -.07 | 15* | -.11* | -.02 | -.00 | -.07 | -0 4 | -.04 | 03 | -.03 | 07 | 03 | 01 | -.07 | 04 | 01 | -.01 | 05 | 07 | 14* | -.06 | 04 | 07 | 10* |
| 4 | | | | -- | -.09* | -.09* | -.04 | -.09* | 10* | -.04 | 07 | 01 | 04 | -.00 | 12* | -.08 | -.00 | 00 | -.01 | 05 | 08* | -.10* | -.06 | -.01 | -.04 | 09* | 02 | 01 | 01 | -.12* | 14* | 11* | 08 |
| 5 | | | | | -- | -.18* | -.07 | -.19* | -.20* | -.08 | 12* | 12* | -.02 | -.02 | 21* | -.08 | -.10* | -.17 | -.13* | -.11* | 18* | 31* | 16* | 13* | -.08 | -.18* | -.06 | 18* | -.05 | 04 | 02 | 07 | 07 |
| 6 | | | | | | -- | -.07 | -.18* | -.20* | -.08 | -.01 | -.01 | 10* | 07 | -.05 | -.05 | -.07 | -.07 | -.08 | 01 | -.05 | -.20* | -.03 | -.12* | 01 | 14* | -.08* | -.08 | -.09* | -.10* | 12* | 09* | 09* |
| 7 | | | | | | | -- | -.07 | -.08* | -.03 | -.04 | 02* | -.44* | -.06 | -.03 | -.03 | 02 | -.00 | 04 | -.08* | 01 | -.08 | -.00 | 407 | 0 4 | 05 | -.02 | 08 | 03 | -.03 | 01 | -.03 | -.04 |
| 8 | | | | | | | | -- | -.20* | -.08 | -.15* | -.11* | -.13* | 06 | -.11* | -.06 | 12* | -.18* | 20* | -.01 | -.17* | -.50* | 02 | 08 | 0 7 | -.15* | 01 | -.29* | -.06* | 12* | -.12* | -.17* | -.15* |
| 9 | | | | | | | | | -- | -.09* | 13* | 14 | 03 | -.07 | -.01 | -.04 | 13* | 08 | 04 | -.01 | -.07 | 38* | 05 | 12* | 01 | -.18* | 07 | -.03 | 16* | 05 | -.07 | -.02 | -.02 |
| 10 | | | | | | | | | | -- | 11* | -.12* | 06 | -.11* | 06 | -.04 | -.07 | -.07 | -.06 | 02 | 06 | -.07 | -.03 | -.02 | 07 | -.02 | 01 | -.04 | -.02 | 04 | -.08* | -.09* | -.10* |
| 11 | | | | | | | | | | | -- | 13* | 02 | -.06 | 07 | 04 | -.02 | -.01 | -.03 | -.09* | 04 | 09* | -.01 | 01 | -.05 | 04 | -.01 | -.04 | 09 | 02 | -.10* | -.08 | -.06 |
| 12 | | | | | | | | | | | | -- | 02 | -.14* | 03 | -.07 | -.07 | 02 | -.06 | -.03 | 05 | 05 | 09 | 09 | -.05 | -.10 | 01 | 08 | -.08 | 02 | -.09* | -.04 | -.08* |
| 13 | | | | | | | | | | | | | -- | -.13* | 07 | -.02 | -.05 | 14* | 17* | -.16* | -.02 | -.00 | -.03 | -.07 | -.08* | 17* | 05 | -.02 | 19* | -.01 | 02 | 04 | 04 |
| 14 | | | | | | | | | | | | | | -- | -.03 | 02 | -.01 | -.12* | -.02 | -.01 | 02 | 02 | -.05 | -.18* | 12* | 11* | -09* | 04 | -.04 | -.20 | 27* | 27* | 26* |
| 15 | | | | | | | | | | | | | | | -- | 01 | -.25* | -.18* | -.21* | -.03 | 50* | 13* | 15* | 04 | -.01 | -.12* | -.03 | 08 | 12* | 02 | 01 | -.02 | -.05 |
| 16 | | | | | | | | | | | | | | | | -- | 12* | 04 | 08* | 10* | -.00 | 02 | -.08 | -.03 | 09* | -.01 | -.03 | -.09* | 01 | 03 | 02 | -.04 | -.04 |
| 17 | | | | | | | | | | | | | | | | | -- | 48* | 61* | -.02 | -.47* | -.04 | -.06 | -.04 | 02 | 06 | 14* | -.27* | 02 | -.04 | -.05 | 01 | 07 |
| 18 | | | | | | | | | | | | | | | | | | -- | 67* | -.02 | -.35* | -.09* | -.04 | -.01 | 04 | 00 | 18* | -.24* | 14* | 04 | -.10* | -.04 | 00 |
| 19 | | | | | | | | | | | | | | | | | | | -- | -.08 | -.45* | -.09* | -.08 | -.10* | 04 | 11* | 04 | -.33* | 06 | -.03 | -.06 | 00 | 06 |
| 20 | | | | | | | | | | | | | | | | | | | | -- | 01 | -.01 | -.11* | 01 | 01 | 05 | 02 | 12* | 02 | 08* | -.06 | -.03 | 02 |
| 21 | | | | | | | | | | | | | | | | | | | | | -- | 14* | 10* | 08 | -.03 | -.12* | 02 | 53* | -.04 | 06 | 03 | 04 | 03 |
| 22 | | | | | | | | | | | | | | | | | | | | | | -- | 04 | 05 | -.04 | -.04 | 03 | 38* | 18* | 03 | 02 | 15* | 14* |
| 23 | | | | | | | | | | | | | | | | | | | | | | | -- | -.22* | -.19* | -.17* | 04 | 07 | 04 | 05 | -.03 | -.04 | -.05 |
| 24 | | | | | | | | | | | | | | | | | | | | | | | | -- | -.49* | -.45* | 08* | 08* | 01 | 18 | -.18* | -.19* | -.18* |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | -- | -.39* | -.07 | -.12* | 01 | -.05 | -.16* | 05 | 05 |
| 26 | | | | | | | | | | | | | | | | | | | | | | | | | | -- | -.04 | -.01 | -.05 | -.16* | 16* | -.18* | 18* |
| 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | -- | 09* | 01 | 03 | -.02 | -.03 | -03 |
| 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | -- | -.08 | 05 | 01 | 08 | 03 |
| 29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -- | 01 | 04 | 07 | 10 |
| 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -- | -.55* | -.34* | -.29* |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -- | 79* | 70* |
| 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -- | -.94* |
| 33 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -- |

Note * p< 05

# APPENDIX B

# REFERENCES

## REFERENCES


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