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Relationship of Public-Private Partnership
Activities in the Small Business Incubator
in Michigan to Small Business Success

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ByungSu Kang

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**RELATIONSHIP OF PUBLIC-PRIVATE PARTNERSHIP ACTIVITIES
IN THE SMALL BUSINESS INCUBATOR IN MICHIGAN
TO SMALL BUSINESS SUCCESS**

By

ByungSu Kang

A DISSERTATION

Submitted to

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ABSTRACT

RELATIONSHIP OF PUBLIC-PRIVATE PARTNERSHIP ACTIVITIES IN THE SMALL BUSINESS INCUBATOR IN MICHIGAN TO SMALL BUSINESS SUCCESS

By

ByungSu Kang

The success of small businesses had been identified as one of the most important elements in the creation of employment and local economic development. Most previous studies had treated the success of small businesses from an entrepreneurial perspective. However, the factors, identified by previous studies and which influenced small business success, could not fully explain the level of success firms in business incubators experience. This study examined the success factors affecting the success level of current tenants from a public-private partnership (PPP) perspective, with six PPP activities as independent variables. These variables were: (1) community & incubator's leadership; (2) management services; (3) property tax exemptions; (4) loans; (5) shared services; and (6) low rent. In addition, five structural variables were considered as independent variables to test whether the success level of current tenants might vary from incubator to incubator for reasons other than level of PPP activities. Structural variables included incubator age, location, size, staff size, and the industrial types of current tenants.

The study was conducted by mailing a questionnaire survey

to the subjects of 108 current tenants in small business incubators in Michigan. Six PPP activities with the five structural variables were entered into a multiple regression equation to test the hypothesis of this research: PPP activities are positively related to small business success in small business incubators. The research hypothesis was tested by performing an analysis of variance and a multiple regression stepwise analysis at the significance level of $p < .05$.

In this study, four PPP activities, shared services, property tax exemptions, loans and low rent positively related to the success level of current tenants in the small business incubators. However, no statistical significance was found regarding the leadership and management service variable. In terms of relative importance, PPP activities were found to be much more significant than the structural variables in explaining small business success in small business incubators.

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Dedicated to

**My grandfather, the late DaeJin Kang
My grandmother, GyeSoon Lee-Kang**

**My father, HanKyu Kang
My mother, YoungSoo Park-Kang**

My mother-in-law, KyungAe Bae-Kim

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CHAPTER 1: INTRODUCTION

1. Brief Description of the Study

This research sought to identify and analyze the relationship between activities of public-private partnerships (PPPs) and the success level of small businesses in small business incubators in Michigan. Included were all current tenants of small business incubators within Michigan operated by PPP.

In recent years there had been increasing interest in various forms of public-private partnerships (Committee for Economic Development [CED] 1982, 1983, 1985). Many organizations, including governments, businesses and industries, were involved in partnerships with job creation, urban development, and job training objectives as a means of local economic development.

To help small businesses get public incentives through the implementation of PPP, the small business incubators might be an important part of local economic development, and the success of each small business was viewed as the most critical to secure jobs in local economic development (CED 1982, 1983, 1985). The Committee for Economic Development (1982) noted that much remained to be learned about the value to firms of the different forms of financial incentives.

Prior research has supported the contention that the small business incubator was crucial for the success of small

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businesses (Birch 1979; Doescher 1988). Research on the success of small businesses has shown that the small business incubator has been instrumental to the success of small businesses, and that there has been a positive relationship between the small business incubator and the success of small businesses.

Although there was much research on the success of small businesses with the small business incubator as a dependent variable, no research has attempted to examine relationships between PPP activities and the success of small businesses in the small business incubator.

The primary research question to be addressed in this study was "Do PPP activities help to explain the success level of each firm in the small business incubator?" The challenge of this research was the identification of key success variables and their relative importance.

Because of the newness of the fields of both the small business incubator and the PPP for local economic development, This author did a comprehensive review of these subjects to provide the context.

2. Statement of Problem

The success of small businesses had been identified as one of the most important elements in the creation of employment and local economic development (Birch 1979). The high failure rate of small businesses, however, represented a

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sizeable loss in funds and opportunity and a large drain on the economy. A review of previous studies on the success of small businesses indicated a positive relationship between the success of small businesses and entrepreneurial characteristics, business organizations, and the business environment (Feesser, 1987; Cooper, 1979; Schendel, 1979; Porter, 1980, etc.). PPP activities were also viewed as one of the most important element in the job creation and local economic development (CED, 1982, 1983, 1985).

However, the factors which influenced the success of small businesses as identified by previous studies could not fully explain the level of success firms in business incubators experienced (herein, growth in sales).¹ Such research has not identified PPP activities and had ignored the importance of the relationship between the success level of

¹ There are several definitions of business success in the small business incubator. According to Allen (1985), business success in small business incubator means a firm moving out of the incubator. Smilor and Gill, Jr. (1986) define business success in terms of two strategies. When the strategy focuses more on providing entrepreneurs with access to space, success is defined as the entrepreneur's ability to meet monthly expenses. When the focus is on developing firms, success is defined as growth of company in terms of tenant company expansion and ability to eventually stand on its own. Growth is perceived by many as the ultimate yardstick of business success. In this research the word "growth" is synonymous with success whether it is growth in employment or growth in sales. This research assumes that as the number of sales multiply, so do the number of employees. Business growth is simply an overcoming process of change and evolution that presents a variety of business challenges. In the case of a start-up business, under the first few years, business growth is critical to survival and growth. Small business incubator seeks to speed company growth through an innovative approach.

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each firm and the PPP activities in the business incubator. No empirical studies have been accomplished to determine whether there is a linkage between the success of small businesses and small business incubator in terms of PPP. Literature reviews and incubator manager interviews, seem to indicate that the most important PPP activities include leadership, management services, tax exemptions, loans, subsidies (grant), shared services and low rent.

3. Purpose of the Study

The purpose of this study was to investigate the relationship between PPP activities and the success rate of individual tenants in the small business incubators within Michigan. Tenants are the current small businesses within the small business incubator operated, or sponsored by PPP.

More specifically, this study had a twofold purpose:

First, to learn what, if any, relationship existed between PPP activities and the success of small businesses in the small business incubator.

Secondly, to discover what, if any, difference existed between different PPP activities and the success level of the current tenants in terms of structural variables. Structural variables will be explained in the methodology chapter. The operating hypothesis of this study was: PPP activities are positively related to small business success in small business

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incubator. The elaboration of, derivation of, and methods for testing this hypothesis were delineated in Chapter 3.

This study is significantly different from most previous studies made on the success of small businesses.

In context, most previous studies had treated the success of small businesses from an entrepreneurial perspective (Cooper 1979; Porter 1980; Feeser 1987, etc.). There had been no studies to investigate the success of small businesses from a partnership perspective. This study examined the success of small businesses from a PPP perspective, with seven major independent variables. These variables were (1) community & incubator's leadership; (2) management services; (3) tax exemption; (4) loans; (5) subsidy (grant); (6) shared services; and (7) low rent.

4. Rationale for the Study

This study is important in three ways:

First, prior research had backed that the success of small businesses was one of the most important elements in securing jobs (Birch 1979; Doescher 1988, etc.). In local economic development, PPP activities were also viewed as one of the most important elements in helping businesses participate and succeed in local economic development (CED 1982, 1983, 1985). But no empirical studies had been accomplished to determine whether different PPP activities

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positively related to the success of small businesses in the small business incubator. Determining whether there was a relationship between PPP activities and the success of small businesses might lead to building a new theory of PPP effectiveness on the success of small businesses in the small business incubator.

Secondly, the relationship between PPP activities, including non-financial activities and financial activities, and the tenant's success might be an important factor in examining the effectiveness of the small business incubator in helping state, or local governments in their incubator development. The small business incubator in Michigan was one opportunity for public and private sector involvement. Therefore, it was important to investigate the effect of PPP activities in small business incubator to enhance the job opportunity, which was one of the ultimate aims of economic development planning.

Finally, an examination of the relationship between PPP activities and the success of small businesses might prove significant in public sector policy-making. The finding might be important information to theorists, policy-makers and economic development planners in local economic development.

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CHAPTER 2: REVIEW OF RELATED LITERATURE

1. Introduction

During the last several years much of the discussion in the United States about local economic development has revolved around the concept of a public-private partnership between local government and other organized groups within a community (Fosler and Berger 1982; Clyde Weaver and Marcel Dennert 1987) because of increased recognition of the inability of one sector of the economy for urban development.

On the other hand, for many years, urban economics concentrated on macro-level activities and the physical development aspects of economic expansion, such as land use, land values, optimum city size, etc. Little attention was focused on local productive activities. Yet, it has been argued that the major role of local decision makers in the area of economic development is to facilitate new job creation and more competitive production. Thus, local communities seek institutions, tools, strategies, and techniques that will further these aims (Weaver and Dennert 1987, pp.431-433; Lyons 1990, p.5).

In this context, an economic development tool, such as the small business incubator, operated by PPPs is one very important way of the articulation of two concepts to evolve local economic development within resource constraints. As a

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result, such an incubator development through PPP has a high possibility to overcome financial constraints of local government, create jobs in local areas, help the local unemployed and low- and moderate income neighborhoods, and in the long run enhance the local tax base.

Because of the newness of the fields of both the small business incubator and the PPP, an extensive background will be provided. In order to provide a context about PPP and small business incubator for local economic development, this research will comprehensively review these subjects in two major areas that are pertinent to this study: A) public private partnerships and B) small business incubators.

2. Public Private Partnership

1) Definition of PPP

There have been numerous attempts to define the PPP, some (Weaver and Dennert 1987) emphasizing the expansion of the role of government into areas traditionally reserved for the private sector ("neocorporatism"), and others emphasizing the expansion of the private sector into those areas, such as the development of infrastructure, traditionally occupied by public entities ("third party government").

PPP is a special form of third-party government, in that they set and carry out public policies; they promote local

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economic development. The action space for PPPs, as the name implies, lies someplace between volunteerism and national government intervention (Clyde Weaver and Marcel Dennert 1987, p.435). Since they exist in the boundaries between organizations, such partnerships would appear to develop as a product of interdependency between the partners (Thompson 1974).

The Committee for Economic Development (1982, p.2) defines PPP as follows:

PPP means cooperation among individuals and organizations in the public and private sectors for mutual benefit. Such cooperation has two dimensions: the policy dimension, in which the goals of the community are articulated, and the operational dimension, in which those goals are pursued. The purpose of public-private partnership is to link these dimensions in such a way that the participants contribute to the benefit of the broader community while promoting their own individual or organizational interests.

So the fact that the PPP arrangement attempts to balance self-interest with the public interest makes it all the more attractive in a democratic society. Furthermore, the term 'partnership' implies that the effort to develop the objectives of the public-private partnership, as well as the effort that goes into its implementation, is an active one by all partners. In addition, PPP development implies commitment of resources, whether in time, effort, equipment, or money by partners (Waddock 1985,p.5). Gunyou (1985) regards key elements of partnerships as mutual interests, roles and responsibilities, feasibility evaluation and plan development,

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and implementation. Davis (1987) states that partnerships will be able to solve more problems and generate success as defined by jobs, profits, downtown revitalization, and generally improved urban life.

In this research for finding the effective factors of PPP in small business incubators, public-private partnership involves the coming together of two organizations, one private, one public, for mutual benefits. In addition, while government creates improved market conditions for private investment, private sector assumes public or community-wide goal or purpose.

2) Historical Perspective of PPPs

i) Federalism and Privatization

Present federal policies, which have reduced direct financial assistance to local governments, require new approaches to economic development in metropolitan areas. Responsibility for public problems is shifting from the federal to local government level and from public to private sectors under the "new federalism" of the Reagan administration (Gunyou 1985,p.3).

McCraw (1984) noted that at America's birth, one of the traits that differed from older western nations was the obvious absence of established institutions. The distinction

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was meaningless. Separation of public and private activity had begun late in the 19th century. For approximately the last century, Americans have been especially concerned about having a clear demarcation between public and private activities. During this same period, Americans have developed certain abiding criteria for legitimacy that apply to both public and private behavior (McCraw 1984, pp.31-32).

The Great Depression of the 1930s was seen largely as a failure of the private sector. The remedies proposed and implemented over the next half century were federal interventions to correct both the inequities and the inefficiencies perceived to be the result of market failure (Brooks 1984, p.3). Accordingly it must be disciplined by the public sector.

By contrast the economic crisis of the late 1970s and early 1980s tends to be viewed as a failure of the public sector, indeed as product of the inefficient pre-emption of too large a fraction of the productive resources of the major industrial countries by their public sectors (Brooks 1984, p.3). There have been attempts to rely more heavily on deregulated free markets for the allocation of resources. It is the revival of neoclassical economics which focuses on market exchange because of Keynesian economics' failure. At the same time, the reason that privatization - the shifting of government functions into the private sector - has aroused such interest recently is that it seems to offer a solution to

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the problem that confronts any politician seeking to reduce government spending (Quinn and Olstein 1985; Poole 1985; Savas 1985).

In particular, there has been a significant move toward privatization and the private provision of so-called public infrastructure and services. Privatization has become fashionable in the United States at the state and local level because of reduced transfers of funds from the federal level, voter disapproval for new bond issues, and growing hostility to increased taxes (Hanke 1985).

However, of course, there are some disadvantages of privatization such as loss of operating control over a facility and of the government's ability to regulate variable expenses.

Hence the issue arises whether the government goals can be sought and left in the hands of the private sector alone. To the degree that one believes that there are government goals at stake here, then there needs to be a continued government presence - through sanctions and grants, as well as through incentives, credits, and delegations to the private sector. Otherwise, the objectives and strategies necessary to achieve them may be accorded so low a priority on private sector scales that they can be considered to have been abandoned.

As a result, the question is one of public choice. John J. Kirilin and Anne M. Kirilin (1985) dealt with privatization

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as bargaining (public choice) between local government jurisdictions and developers. Yet they do not suggest the specific choice criteria between public sector activities and private sector activities. They are broadly concerned with the historical and political approach.

However, there is a practical study of privatization which is not government's politics but strategic decision making approach. Larry J. Scully and Lisa A. Cole (1985) suggest that the analysis for making the privatization decision consists of five steps:

- . Define Project Scope,
- . Develop Options,
- . Define Engineering and Financing Assumptions,
- . Estimate costs, and
- . Analyze Management and Risk Factors.

And they suggest the project options as follows:

- . The publicly owned facility using conventional development techniques,
- . The publicly owned facility using private development techniques, and
- . The full service contract with private ownership and private development.

The approach makes it possible for government to develop options and select the most effective privatization option requiring a comparison of the cost and risks associated with full government development, full privatization and several

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partial privatization options corresponding to government's politics. As a result, privatization is concerned with both government politics involving issues, goals, and benefits and strategic decision-making at each time period.

ii) Federalism and PPPs

PPPs are not a new phenomenon. One hundred and fifty years ago, Alexis de Tocqueville cited extragovernmental associations as America's legacy to democracy. Donald Haider points out in his essay on partnerships in Chicago that the very look of that city reflects a plan designed by a PPP in 1909. However, the PPP (Lyall 1987) was developed as a policy tool during Carter administration. Traditionally, the business community sees city hall as a tax collector and semi-efficient provider of municipal services (Davis 1986, pp.1-2). In addition, cities in the United States relied upon the federal government for assistance in effecting the development of urban areas, such as the urban programs of the Roosevelt Administration's New Deal, the urban renewal programs of the 1940s, Johnson's Great Society programs of the 1960s, and the Community Development Block Grant and Revenue-Sharing programs of the Nixon era.

However, government becomes more than just a tax collector and service provider: it serves as a real estate developer, business lender, labor-pool enhancer (Davis 1986, p.2). Because of the term stagflation which describes

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inflation with underlying economic stagnation during the Carter administration, the solution (Lyall 1987; Fosler and Berger 1982) articulated most clearly in National Urban Policy² - the President's Urban and Regional Group Report in 1978 - was to target existing federal programs more precisely to areas and individuals with the greatest need; to leverage federal monies with state and local funds and, where possible, with private-sector support as well; and to develop PPPs to advance specific economic development and downtown redevelopment revitalization projects in which business was perceived to have an essential interest.

Since its first appearance in the 1978 National Urban Policy, the idea of the PPP as a policy tool has changed substantially. Originally conceived as a mean to supplement scarce public resources in meeting pressing national needs, the concept has evolved into the idea of substituting private for public efforts in a wide range of areas. The Carter Administration thought of partnerships as joint efforts in which government created improved market conditions for private investment, but the Reagan administration has advanced the idea of privatizing public services so that federal support can be cut back in these areas. In the Reagan Administration, partnerships were less a tool for meeting

² National Urban Policy called for the transformation of many of the existing private-sector organizations and the creation of many new ones to include membership from both the public sector and the private sector (Lyall 1987, pp.6-7).

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certain needs and more a means of realigning various social responsibilities³ between government and the private sector (Lyall 1987, pp.12-13).

However, the government has recognized that there are certain things that the private sector appears to accomplish more easily and efficiently than public organizations do. Combined with decreasing federal and state dollars, this has meant that the public sector has increasingly looked to the private sector for input into what were formerly government efforts, including employment and housing, economic development, and many others. Often these efforts emerge in the form of public-private partnerships. Hence, the Reagan Administration largely emphasized on developing pump-priming and seed money programs that offer incentives for private sector investment and corporate philanthropy. As the result, in 1982 the Job Training Partnerships Act attempted to pull together public and private actors around the issue of employment and training.⁴

³ On the business side, this recognition has developed into the notion of social responsibility or social responsiveness, which some claim (Brooks, Liebman, and Schelling, 1984; Carrol and Hoy, 1984) has now become an accepted element of corporate strategy. Other private organizations, both profit-making and not-for profit, including hospitals, universities, and private agencies, have also developed initiatives in cooperation with both business ventures and government agencies as one mechanism for achieving their own organizational ends.

⁴ In 1982, the Job Training Partnerships Act (JTPA) replaced the Comprehensive Employment and Training Act (CETA) program. The two most important features of JTPA are its

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Thus, PPPs are still recommended as an approach to helping local governments deal with Reaganomic cutbacks in federal programs, resistance to local tax increases, the current recession, and other dismal aspects of the urban crisis (Krumholz 1986, pp. 180-181). PPP has been developed as a concept to fill the void or gap between the federal government's financial cutback and the public facility and service need.

3) Beneficiary of PPP

There are two perspectives on the effects of urban development policy by PPP.

Supporters of urban development policy by PPP (Hamlin and Lyons 1989; Fosler and Berger 1982, Peterson 1981, etc.) maintain that the community as a whole objectively benefits from urban development policies that promote local business interests and thereby strengthen the local economy, enhance the local tax base, and generate additional resources that can be used for the community's welfare.⁵ In this perspective,

delegation of decision making authority to the Private Industry Councils (PIC) and the requirement for 51% private sector representation. The main purpose of JTPA is to draw true partnership by forming these councils on a local employment and training activities.

⁵ According to Lurcott and Downing's study on Pittsburgh's support system for neighborhood organization (1987), positive impacts of PPPs include increased and more widely-dispersed investment, enhanced development of neighborhood leadership, increased public and private support,

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the PPP brings together a wide range of talents and resources of both public and private sector, producing an "everybody wins" result consistent with the complex goals and broader problems of society as a whole. PPPs assume a democratic society. The private sector is voluntarily tied through an enlightened self-interest to social welfare.

However, Levine (1989) argues that research on urban redevelopment clearly suggests that the traditional PPP approach has done little to improve living conditions for the majority of urban dwellers and, in fact, has exacerbated inequality and urban dualism.⁶ He continues to argue that the kind of jobs created in downtown corporate centers are unlikely to provide employment opportunities for urban poor and minorities. The chief beneficiaries of urban economic development by PPP have been developers and advanced services professionals; it has been these groups, along with pro-business policy entrepreneurs, who have dominated typical PPP (Levine 1989, pp.26-28).

Furthermore, the downtown services sector tends to be isolated from the local component of a city economy; limited linkages to small and medium-sized local firms mean that there are few ripple effects in neighborhood economic development

increased accountability and evaluation of organizations, and expanded technical assistance.

⁶ See the studies of Fainstein' New York City (1989), Bartelt' City Philadelphia (1989), Bennett' Chicago (1989), etc.

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Even though local governments know these effects of PPP, as cities and state governments slide deeper into crisis they will be less and less likely to deal with business as equals and more likely to pile on public inducements in the hope of encouraging business to invest so that employment and growth can be maintained (Krumholz 1986, P.181). Another reason to reduce the effectiveness of urban policy is that firms can withdraw capital investment. Capital mobility is a tool used by business firms to extract concessions from the state and local governments. They can also shift the tax burden and other cost to the consumers. In this perspective, PPP is described as a threat to municipal democracy. The PPP is described as inherently inequitable and as a means for the private sector to "get itself off the hook" by placing the responsibility for the broader economic or community problems on the private sector.

In this context, such policy tools as small business incubators operated by the PPPs is one way of articulating the two perspectives. Small business incubators established by the PPPs among government, private, and community-based organizations can effectively help the city's unemployed and low- and moderate income neighborhoods, where market forces have not resulted in reinvestment. Thus, incubator development promises greater social benefits and neighborhood benefits, such as the realization of democracy, the local tax

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4) Organization and Activities of Public-Private Partnerships

The primary characteristic that distinguishes partnership from other forms of organization is its interorganizational character (Gricar, 1984). PPP formed, not within a single organization, but outside of, or, on the boundaries and interfaces between organizations. The action space for PPPs, as the name implies, lies someplace between volunteerism and government intervention (Clyde Weaver and Marcel Dennert 1987, p.435). Furthermore, public-private partnerships form as the result of the convergence of interests around a goal, purpose, or benefit that arises out of the interdependency of the partners on that issue. Since the area between organizations has no inherent authority structure (Brown, 1984), as formally structured organizations have, other means for shaping the relationships among partners must exist.

Waddock (1985) states that partnership, as an organization, is, in a sense, at the mercy of the partners. Should the linkage binding the partners together break down, the very existence of the partnership is in peril. This fragility is in sharp contrast to a corporation or a government agency, which can be formally structured independently of any external actors and can continue even

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without the guidance of a founding member. Depending on the nature of the partnership, the withdrawal of a partner may mean the end of the arrangement.⁷ A PPP, like any alliance focused on action, is never a completed, or static, form, but rather, a changing set of interactions requiring time, trust, perseverance, commitment, and a range of skills.

According to Hamlin and Lyons (1989), the benefits brought to such a partnership by the public sector include the legislative, political, and large-scale service-provision advantages not available to the private sector, working alone. For its part, the private sector brings the needed investment in labor and capital sought by the government. In many ways, this relationship is simply a matter of each entity carrying out the tasks for which it was created in a harmonious concert for mutual, and hopefully community-wide, benefit. In this respect, public-private partnerships represent democratic and capitalistic principles in their purest form (Hamlin and Lyons 1989, pp.45-46).

Key to the establishment of these partnerships is local initiative, which includes "strong civic foundations," (Fosler and Berger, 1982)⁸ and both the city's top corporate and

⁷ Hamlin and Lyons (1989) suggest three kinds of specific PPP forms to be useful urban revitalization tools in a variety of circumstances. These include mixed partnerships, limited partnerships, and condominiums.

⁸ The elements of a strong civic foundation include: community-wide concern; openness to public participation in the decision-making process; community vision; awareness of local strengths and weaknesses; effective civic groups;

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public leadership (Brooks 1982; Claggett 1982; Lyall 1982). Waddock (1985) classifies the activities forming and enhancing PPPs into mandate, networks, brokering organizations, crises, common vision, and leadership.

Government often uses public leadership and other public resources to create incentives for new businesses and business expansion. In order to induce and enhance such a PPP, government needs effective activities of PPP. The most common approaches used by the PPP are leadership, tax exemption, loan, and subsidy (grant).

The following is a more detailed discussion of four activities for inducing development derived from the literature review: Leadership, tax incentives, direct subsidy, and debt capital.

i) Leadership

Leadership - the willingness to step in and take responsibility for solving a problem or overcoming an obstacle - is much touted as the key to success in both the public and the private sector (Lyall 1982, pp.18-19). Government reports on these forms of partnership have consistently highlighted the need for leadership in forming PPPs (see, e.g., the Committee for Economic Development 1982; President's Task Force 1982), especially for what they have termed "civic

networking among community leaders; a nurturing environment for civic entrepreneurs; and continuity and flexibility in policy (Fosler and Berger 1982, p.10)

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In the case of Baltimore (Lyall, 1982), civic entrepreneurs from both sectors have played critical roles in establishing a tradition of the PPP in Baltimore. Yet Tobin (1983,p.479) maintains that the leadership roles of the public sector planners is very important in understanding the partnership arrangement. It is a critical factor in the dynamic of the redevelopment process because the private sector respondents reveal no special talent, nor show any general consensus on predicting, or assessing, neighborhood ascent or decline. They fully expect the public sector to provide the lead in public improvements, efficient planning and administration, etc.

It is conceivable that some form of leadership is always necessary for PPP formation, however, the forms of leadership required in forming partnerships may be vastly different than those needed in the hierarchical organization. In the structured organization "leadership" can be (and often is) taken to reside in the formally structured "leadership" positions. A key problem with partnership in this regard is the lack of such hierarchy.

As a result, leadership must be more carefully defined for use in this context than it usually is. Leadership in the context of partnership has two forms: visionary leadership, which is itself a linking mechanism, and other forms of leadership activity, more appropriately called managerial

leadership, including building coalitions, negotiating, implementation and day-to-day management, promoting, and relationship management, which exist in the day-to-day activities of partners and are part of the other linking mechanisms (Waddock 1985).

In summary, leadership activities are integral to the success of partnership in two ways: as a linking mechanism in and of itself in its visionary form and as an integral aspect of the other linking mechanisms. Case studies (Lyall, 1982; Weiss and Metzger, 1987; Cafferty and McCready, 1982; Stewman and Tarr, 1982; Barbour, 1982; Brandl and Books, 1982; Claggett, 1982) demonstrate that such two way leadership can give a community the decisive edge needed to improve conditions.

ii) Tax Incentives

Tax incentives, like debt and equity capital, are financial inducements to private development. They are aimed at reducing the cost of doing business by decreasing the tax burden on firms that invest in the targeted renewal area. These incentives provide exemptions, moratoriums, or abatements on the many forms of taxation faced by American businesses, including corporate income taxes; sales taxes; use taxes; property taxes on land, plant, equipment and machinery; payroll taxes; and excise taxes (NASDA, CUED and the Urban

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Institute 1983, p.12; Hamlin and Lyons 1989, p.54).

Even the use of tax incentives as a major instrumentality of national urban policy is not novel. The Section 235-236 (of the 1968 Housing Act) programs introduced by President Johnson, as well as the Section 8 housing program of President Carter, are primarily tax devices. It was the returns of tax shelter that induced the private sector to invest in or to build moderate- and low-income housing. Exclusive reliance on tax devices for urban development policy provides a politically easy source of federal funding but neglects the need for improving public facilities and services. Moreover, it does not sharpen the public policies to be furthered by such incentives (Haar 1984, pp.70-71).

Hamlin and Lyons (1989) note that since most planning involves projects in areas that have been bypassed by the real estate market, it is reasonable to conclude that it is in the public interest to allow tax advantages for attracting developers. In the case of Chicago's development (Cafferty and McCready 1982), tax incentives had reduced the tax rate on new construction from 40 percent to 16 percent of assessed valuation for a thirteen-year period. They argued that it was successful because the tax incentives were flexible and could be used for rehabilitation.

However, the limited research now available yields a negative response. Location decisions are not made on a tax basis. Small retail, wholesale, and service firms are more

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concerned with start up and operating capital, markets, sources of raw materials, and labor supplies than they are with taxes, either income or property. Furthermore, quality of life considerations, rather than tax incentives, are what attract job-generating businesses (Haar 1984,p.71). Harr (1984) argues that the tax revenues lost may be far more expensive than a grant or subsidy, and in addition, there is no continuous supervision of tax expenditure programs.

iii) Debt Capital

One of these activities involves the attempt to induce private investment by lowering the cost of debt capital, the money a private firm or developer must borrow to finance a new venture. The intention is to make investment capital easier for private investors to acquire by making it more readily available and by reducing its cost (Hamlin and Lyons 1988, p.46). Debt capital permits firms to borrow money directly from the state, local government or its agents ,such as economic development corporations or financial authorities.

Several incentive types may be employed to accomplish this. These include direct loans, direct loans from tax exempt bonds, second position loans, government induced purchase of debt instruments in the secondary market and loan guarantees. Direct loans are the most important tool among debt capital. Direct loans are made by the government (state or local) or its intermediaries, financial authorities or

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economic development corporations, directly to private investors (Hamlin and Lyons 1988, p.46).

Interest rates on these loans are usually below market rates (Weiss and Metzger 1987; Cafferty and McCready 1982). The size of the loan (Cafferty and McCready 1982) depends on the company because the low interest is keyed to smaller Companies.

iv) Direct Subsidies

Sometimes local and state governments or private foundations will offer direct subsidies to private firms to encourage their investment in a renewal area. A direct subsidy⁹ is a grant of money made to a private entity, with no provision for repayment. In most cases such subsidies are tied to efforts by the government to leverage private investment in the area targeted for redevelopment. Economic leveraging, like the word from which it is derived, means making large-scale investment happen with a smaller initial, or "seed", investment (Hamlin and Lyons 1989, p.58) which was one of the major developmental methods under the Reagan Administration.

⁹ According to Hamlin and Lyons (1989,p.58), direct subsidies for urban revitalization generally come in two forms: government grants and private foundation grants. These grants are made in an effort to influence firm behavior with regard to investment in new and existing facilities within the renewal area.

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The federal programs (e.g., the UDAG program and the CDBG), as well as many state and local programs, can be direct capital grants or interest subsidies which help to ease the financing costs of development. All of these work on the same principle of leveraging public funds for private investments (Catanese 1984, pp.159).

Brooks (1984) suggests two criteria to determine the appropriate public subsidy in a public-private joint venture. The first is to enhance a return on the investor's investments. The second is to provide a contribution to the value of social or collective benefits which can not be captured by the entrepreneur from the market. And he argues the size of the subsidy should be fixed so that the discrepancy is not too large.

A common method of raising such subsidies is through the issuance of general or revenue bonds by state or local governments, as well as other forms of borrowing. In some cases, local governments use general revenues for subsidies to make private participation both attractive and feasible.

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3. Small Business Incubators

1) Entrepreneurship, Small Business Incubators, and Local Economic Development

Urban economics mainly dealt with land use, urban land values, labor markets, public services, optimum city size, and local welfare economics, not with creation of local productive activities. Local economic development efforts have not really centered on stimulating the actual processes of producing goods and services but rather on land development, expanding retailing, and attracting firms to the locality (Clyde Weaver and Marcel Dennert 1987,p.432).

Recent research on the importance of small business suggests that, especially in central cities, firms with fewer than twenty employees may account for as much as 80 percent of all new employment generated in these areas (U.S. Small Business Administration 1984). There is also an apparent shift of the private-leadership role from a few elite big businesses to smaller firms and neighborhood organizations. In part, this parallels the maturing of such an elite organization as GBC (Greater Baltimore Committee) and its merger with the Chamber of Commerce, whose members are less concerned with monumental improvements in the central business district and more concerned with smaller-scale improvements in neighborhood commercial opportunities (Lyall 1982,pp.45-52).

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However, Dun and Bradstreet (1986) reported that in 1985, 57,067 businesses failed; 14.5% in the first year, 14.1% in two years, 11% in three years, 16.7% 4-5 years (53.6% first five years), and 23.5% 6-10 years. Only 20.2% lasted more than ten years. The new venture failure rate is also greater than the rate of creation. In this situation, proponents of the incubator concept (Nelton 1984, etc.) believe it has the potential of significantly reducing new business failures, generally about 50% in the first 5 years.

The basic concept behind the new business incubator is to leverage entrepreneurial talent. Cooper (1979) notes that firm growth results from a successful combination of the entrepreneurial "mix." He posts three broad factors that may influence the entrepreneur's decision to launch a new venture.

First comes the entrepreneur, including the many aspects of his or her background affecting perceptions, skills, knowledge, and motivations. The background includes family, formal education, age, experience at founding, teams, and psychological makeup (Thorne and Ball 1981; McQueen and Wallmark 1984; Cooper 1986; Cooper and Bunkelberg 1981).

Secondly, there is the organization for which the entrepreneurs had previously been working, whose characteristics influence the location and the nature of new

firms (Cooper 1986).

Thirdly, there are the various environmental factors both internal and external to the individual and the previous organization, making the climate more or less favorable to the starting of a new firm. Environmental factors include competitors, suppliers, location, climate, and so forth (Schendel 1978; Sandberg 1986; Cooper 1986).

The general goals of incubators are to develop the various environment favorable to new firms and to stimulate entrepreneurship. Consequently, according to Smilor and Gill, Jr. (1986), a new business incubator is a facility for the maintenance of controlled conditions to assist in the cultivation of new companies. They note that the primary driver of new business ventures is the entrepreneur. Business incubators seek to maximize the potential of entrepreneurial talent within a community by providing entrepreneurs with the services and support that complement their natural talents and enable them to expand their potential.

As a matter of fact, according to Allen's (1985) explanation of the role of a small business incubator, the small business incubator is more an effective tool for growing of small business than for starting a business. He notes more than nine out of ten firms in his research sample would have started even without the facility. He says this figure suggests that incubators do not induce latent entrepreneurs to start a business, rather they assist those who already have

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started a business. Thus, business incubators have been organized to bring new businesses together to increase their probability of success (Doescher 1988, p.12).

According to Carroll (1986), the business incubator is an instrument for stimulating entrepreneurship and small business development, where the goal is job creation. In addition to the job-creation potential of smaller businesses (Gumpert 1985), the incubator, itself, is viewed also as a mean of renovating an old building and revitalizing depressed areas (Nelton 1984). Many cities promote incubators since small businesses create employment and aid municipal tax bases (Bekey 1988).

As a goal of economic development, the incubator adds new jobs, resulting in growth of the community. As a process of economic development, the incubator is a basic ingredient for development success in terms of a long-term commitment-persistence.¹⁰ In addition, when some of firms in a small business incubator grow over the long-run, employment multipliers, capital inflow and other development outcomes have a noticeable impact (Allen 1985, pp.16-17). These are the reasons for nurturing small businesses and small business incubators as an effective method of economic development.

¹⁰. Michael Conboy and Marin Oshiro define economic development as both a goal and a process.

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2) Definition, Organizations and Objectives of Small Business Incubator.

In the United States, business incubators began in the early 1980s and have gained popularity in the recent years. In the U.S., the most national survey of business incubators reports that nearly ninety percent of those surveyed have opened since 1983 (Smilor and Gill 1986). Doescher (1988 p.12) found that between 1986 and 1988, the number of business incubators in the U.S. has increased by 250%. There are now 300 business incubators, from more than 60 in 1984 in the U.S. (NBIA 1990), and it is estimated that there will be 1,000 by 1992 (Demuth 1984). "The business incubator" is used to refer to a variety of activities in which the incubator houses a number of new, small businesses that share space and administrative support that would be out of the financial reach of most starting companies.

According to Allen (1985), small business incubators are facilities that support new and small firms by providing affordable space, shared office services and management assistance. He suggests that the incubator concept must include four dimensions, such as a local network, multi-tenant space, shared services and management consulting assistance. He continues to note that these space and services requirements distinguish incubator facilities from office centers, mini warehouses, professional buildings, research and industrial parks, one-stop human services centers, and other

multi-tenant commercial and industrial properties (Allen 1985 p.18). Besides the common term "incubator," other terms referring to this concept are "enterprise centers," "business and technology centers," and "innovation centers" (Allen 1985 p.3).

Major types of incubators are sponsored by: 1. public and non-profit organizations, 2. private corporations, and 3. university (Smilor and Gill, Jr. 1986).¹¹ In 1988, Doescher found that about 47% of business incubators are non-profit businesses established by community development groups, state or local governments to promote job development. But an increasing number of incubators are for-profit operations run by property management firms. A study of 50 business incubators (Campbell 1984) also indicates that most are publicly owned or operated. He found that most arose from a collaboration (PPPs) between local government, universities, and private corporations. Because these PPP incubators are not attempting to operate at a profit and seek to create jobs, diversify the economy, and expand the tax base, they tend to provide space, business assistance, and support services at below-market rate whereas privately sponsored incubators tend to charge at market rate.

¹¹ Kuratko and LaFollette (1987) identify four organizational types of incubators: public entities, non-profit organizations, university, and private corporations. Allen and Dougherty (1987) also notes that the incubator is comprised of public, private, academic and hybrid-type facilities.

Universities have been involved in the study of economic development for years (Gibson 1988). University-sponsored incubators serve as a link between innovations developed by universities and the businesses that market them to the general public, with a definite preference for those in high technology and light manufacturing. Brooks (1986) emphasizes an active connection with a university.

Some of the earliest private incubator operators, including Control Data Corporation¹² and Technology Center International, stressed the desire to create jobs and to foster the entrepreneurial spirit. However, Private companies (Demuth 1984) usually build small business incubators to receive such benefits as:

1. the chance to make money by investing in new companies,
2. profits from real estate appreciation,
3. management or franchise fees.

As the sponsors of incubator facilities are quite diverse, their objectives often differ. Private sector sponsors, such as corporations and investor groups, are primarily interested in property development, transferring innovative technology, and investment opportunities in tenant firms. Public sector sponsors, such as non-profit development

¹² The first Control Data incubator opened in St. Paul, Minnesota, in 1979.

organizations and local governments, are primarily interested in job creation and economic diversification. Education sector organizations, such as universities and vocational-technical schools, are primarily interested in training opportunities for students and commercial outlets for faculty research.

To achieve different organizational objectives, sponsoring groups pursue different management policies. For example, in admitting tenants, publicly-sponsored incubator facilities are more likely than others to consider job creation potential and local ownership. Private facilities are often more concerned with obtaining full occupancy than with selecting a particular type of tenant. To avoid challenges of undue benefit to private entities, universities and public facilities are more likely than private ones to place a time limit on tenant residency.

3) Roles and Activities of Small Business Incubator

Lumpkin and Ireland (1988) note that business incubators have been organized to bring new businesses together to increase the probability that after they start up, they will survive. Advocates and detractors (MacDonld 1985, etc.) of the concept both agree that incubators are most valuable to marginal companies that may, or may not fail; many entrepreneurs believe incubators are helpful to success.

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Proponents (Nelton 1984, Smilor and Gill, Jr. 1986, etc.) of the concept believe it has the potential to significantly reduce new business failures, generally by about 50% in the first 5 years.

Small firms may often have the talent and ideas to launch a new venture. However, although entrepreneurs may have the specialized knowledge, they often lack a full array of business skills (Allen and Rahman 1985,p.13) and capital. This is where the incubator facility plays a key role (Allen and Rahman 1985; Vesper 1983; Campbell 1984).

According to the Humphrey Institute's research (1988), the factors which appear to be important to business success are as follows:

1. below-market rents,
2. shared services,
3. available space,
4. professional business image,
5. flexibility.

Smilor and Gill, Jr. (1986) found that a number of critical success factors are common to the development and operation of all incubators. They classified critical success factors into two categories in terms of both the incubator perspective and the tenant company perspective. The critical success factors in terms of the incubator perspective include on-site business expertise, access to financing and

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capitalization, in-kind financial support, community support, entrepreneurial network, entrepreneurial education, perception of success, selection process for tenants, tie to a university, and concise program milestones with clear policies and procedures.

On the other hand, the critical success factors in terms of the tenant company's perspective refer to developing credibility, shortening the learning curve, solving problems faster, and providing access to the business network. They argue that the more extensively these factors are incorporated into the incubator, the greater the chance of success is for the tenant companies.

As a result, affordable and flexible space, management assistance, shared support services, and financial support, together with the supportive public leadership, create an environment conducive to successful enterprise creation and growth.

Fry (1987) emphasizes the need for management assistance. Incubator managers can aid tenants by encouraging and assisting them in their business planning efforts. He found the amount of planning by tenants appeared to be a function of the amount of planning that is required or encouraged by incubator managers. He argues that incubator managers should see part of their role as a planning facilitator. The study found that 93% of incubator managers have planning services available for tenants. Other important management assistance,

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such as accounting and marketing, is mostly provided through incubator's networking between tenants and consultant companies, lending institutes, etc.

In addition to general management issues, Campbell (1987) notes that the inability to judge market potential and to anticipate cash flow problems are among the most critical determinants. Management consulting assistance¹³ related to business success are as follows: Business taxes, risk management & insurance, government grants & loans, government procurement process, government contract preparation, equity & debt finance arrangements, export development assistance, preparation of business plans, employee relations, advertising & marketing, government regulation, health & benefit packages, relocation plans, research & development, legal counseling, legal representation, patent assistance, accounting, computing & information services, bookkeeping, and venture capital fund.

In addition to management assistance, financial assistance is frequently cited as a critical factor for the success of small businesses. According to Hartman (1987), the main problem in the incubator business remains the difficult task of raising "seed" capital at a time when bank failures have prompted more stringent lending requirements. Smilor

¹³ According to Allen and Dougherty (1987), the types of management assistance reported as used most often by tenants were business plans, marketing, and accounting. Business plan assistance is more apt to be offered in-house than any other business development service. Yet both accounting and marketing are most provided through an external network of professionals.

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(1987) stated that access to financing, capitalization and in-kind financial support emerged as relevant to the effective management of the incubator system. On the one hand, the financial assistance in the small business incubator is accomplished by bringing tenants together under a single roof and making shared services available to them (Lyons 1990). On the other hand, this is also done by the initial and operational investment of both the public and private sectors. The types of financial assistance include below-market rent, direct and revolving loan, direct subsidy (grants), and property tax exemption.

The following activities are also related to business success. Shared services¹⁴ necessary for the success of small businesses, investigated by Allen and Rahman (1985), are as follows: Audio-visual equipment, shipping & receiving, mail service, copier, clerical service, receptionist, off-hours answering service, inventory, word processing, telex, conference room, cafeteria, building security, vehicle rental, furniture & equipment rental, library, and telephone service.

¹⁴ Allen and Dougherty (1987) found that the most frequently used shared office services are photocopier, receptionist, and conference room.

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4. Relationship of PPP to Small Business Success in Small Business Incubator

The use of business incubators as a redevelopment tool continued in the early 1980s as city and county governments and non-profit organizations in declining urban, small town and rural areas started business incubators either on their own or in partnership with other local public and private organizations (Campbell 1988,p.14).

A study of 50 business incubators (Campbell 1984) indicates that most are publicly owned or operated. However, despite their ownership or sponsorship, he found that most arose from a collaboration between local government, universities, and private corporations. The reasons are that they are not attempting to operate at a profit but seek to create jobs, diversify the economy, and expand the tax base. The Humphrey Institute study (1988) maintained that business incubators were a new and adaptable form of public private partnership. The study showed that almost all incubators had been received some form of public grant or tax incentive in order to acquire or rehabilitate the property which was vacant or abandoned buildings.

In the small business incubator, such cooperation had a two step dimension: the first dimension, in which the small business incubator was formulated, and the second dimension, in which the incubator was operated. In the second dimension,

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we could identify the PPP activities that this research examined.

In the first dimension, many organizations, including state governments, local governments, foundations, businesses, and universities were taking an interest in helping small businesses survive and succeed through the foundation of the small business incubator. In the second dimension, the incubator sponsors, or manager and each firm interacted with the other through the implementation of PPP activities. In particular, a business incubator acted in the role of a broker for the new firms, providing certain services, finding suppliers of services, renting at below-market rates, and financing, thus underwriting the start-up costs of the business.

Likewise, the success of small businesses had derived from the formation of PPPs to the foundation of small business incubators, and then from activities of PPPs to the success of small businesses. As the purpose of the business incubator was to bring new businesses together in order to increase the probability of start up, survival, and growth, so government assumed that PPP activities significantly affected the success of small businesses in small business incubator. For the purpose of this paper, success was defined as growth in sales. The business success was accomplished by the activities of PPP in the operation stage. Major PPP activities in small business incubators included community &

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incubator's leadership, management services, tax exemptions, loans, subsidies (grants), shared services, and low rent.

5. Contribution of This Study

In light of the above literature review, it appears that the contribution of this study will be two-fold: First, it will initially provide an estimate of the impact of PPP activities on the success rate of each firm in the small business incubator.

Secondly, the contribution of this study is that it will supply government policy-makers, planners, and incubator staffs with knowledge about the value of the success factors for the businesses in small business incubators, at least in terms of the value of a partnership. This knowledge will help them to prepare for the future development or management of small business incubators.

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CHAPTER 3: HYPOTHESIS AND METHODOLOGY

1. The Hypothesis

The hypothesis of this research was: PPP activities are positively related to small business success in small business incubator. The following sections of this chapter described the development of the resulting estimating equation, and other aspects of the research methodology.

2. Research Question and Hypothesis Development

1) Complementary effect of PPP activities

The impact of incubator activities on the success of small business in the small business incubator is dependent upon an important relationship. The investment by public and private sector actors in small business incubators may have an impact on the demand by tenants for capital and labor (Hamlin and Lyons 1989). For example, if a rise in the services and capital provided by a small business incubator enhances the productivity of small businesses, then less of this input would be required of the small business to produce a given level of output. Likewise, a reduction in services and capital investment in small business incubators may cause a rise in the investment by tenants. Namely, tenant firms may have to make investments if services and capital provided by

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the incubator are not available or are insufficient. The relationship would indicate that the PPP activities enhance the productivity of tenants' capital and labor.

This relationship depends upon the magnitude of complement between the incubator's services and capital (activities of PPP) and the tenants' capital and labor. If the incubator enters into a complementary relationship with both the tenants' capital and its labor, then PPP net investment will lower the variable cost of production as firms spend less on private capital and labor expansion. This may enable firms to lower the price of their output which will enhance the competitive position of the firms in local, national, and international markets. Or alternatively, it will allow them to reinvest more of their revenues.

As a result, they will have a better chance to survive and grow, by minimizing the cost of production and maximizing the services and capital of the small business incubator. Thus, more of these PPP activities would be required in cases of undercapitalized small businesses, or poorly managed start-up firms. The seven PPP activities are designed to meet the needs of small business entrepreneurs and reduce the costs and risks which all new businesses face.

The intent of this study was to estimate the impact of the PPP activities on tenant firms' success. To do this, an overall model of the relationship between incubator investment and tenant firm growth was developed. The model that was used

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to investigate the relationship between the incubator investment and the success of small businesses was simple. This research paper hypothesized that PPP activities would be related to the growth of small businesses in a small business incubator.

2) A PPP success framework

Based on the complementary effect of PPP activities, the major objective of this study was to gain a more complete understanding of the relationship, if any, between the level of PPP activities and the success of each firm in a small business incubator. Is the success level of each firm related to the level of PPP activities? The degree of success is statistically captured by the growth in sales. This study postulated a conceptual framework illustrated by the simple model:

Table 3.1: Simple Small Business Success Model

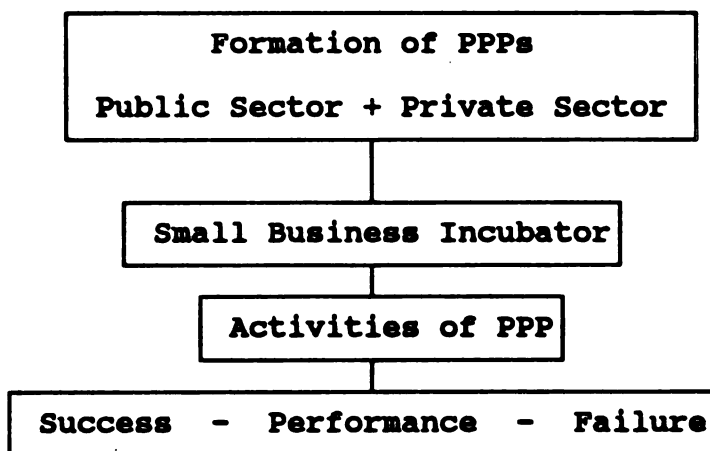
$$\left[\begin{array}{l} \text{Small Business Success In} \\ \text{Small Business Incubator} \end{array} \right] = f [\text{PPP Activities}] + \text{error term}$$

A theoretical background and a case study had already been provided. In this respect this research paper raised the following basic questions on the basis of the postulated model: Do PPP activities help explain the success of each firm in a small business incubator? Can part of the small business success be explained by the 7 independent variables

such as (1) leadership (LE); (2) management services (MS); (3) tax exemptions (TE); (4) loans (L); (5) subsidies (grant) (S); (6) shared services (SS); and (7) low rent (LR)? If indeed there are particularly important PPP activities, which are they and how do they differ? The challenge of this research was to identify the key PPP success variables and to identify their relative importance.

In seeking an answer to these questions, this research began with the success framework from which the hypothesis was developed in order to shed light upon the basic question posed. At this section's end, the study establishes the rationale for the hypothesis upon which the empirical research was based. The flow diagram below broke the success framework down into component parts. It includes the formation of PPPs for the start-up and operation of a small business incubator, and PPP activities and small business success as follows:

Figure 3.1: A PPP Success Framework



i) Formation of PPPs in a small business incubator

As stated in the theoretical background section of this dissertation, in addition to being something that occurred between organizations, any given partnership, once established, becomes an organization itself. On the other hand, a partnership, as an organization, is, in a sense, at the mercy of the partners. The fragility of the linkages among the partners may mean that PPP, as an organization, is not typical of either private or public organizations. Depending on the nature of the partnership, the withdrawal of a partner may mean the end of the arrangement (Waddock 1985).

In spite of these facts, public-private partnerships take on several forms¹⁵ and are useful tools for development of small business incubators. In order to develop and enhance public-private partnerships in a small business incubator, we have the most appropriate organizational structures of public private partnerships.

Mixed partnerships (Hamlin and Lyons 1989) can involve the public sector, the private sectors, and other non-profit organizations for founding small business incubators. Both government and private sector actors agree to work

¹⁵ Hamlin and Lyons (1989) classified them into three organizational structures of public private partnerships, such as mixed partnerships, limited partnerships, and condominiums.

cooperatively to found small business incubator for mutual benefits. It is a mutual commitment to succeed with a new venture. The most appropriate model for a public-private relationship in the world of the small business incubator development stage is that of mixed partnerships, because public goals, for example, local economic development, job diversification, or job creation, should be inserted into the partnership arrangement. On the other hand, private sectors can deal with promoting their marketing potentials of the area or by accomplishing their social responsibility.

ii) Activities of PPP and small business success

PPP means cooperation among individuals and organizations in the public and private sectors for mutual benefit. In the small business incubator, such cooperation has a two-step dimension: the first dimension, in which the small business incubator is formulated, and the second dimension, in which the incubator is operated. In the second dimension, we could identify the PPP activities that this research examined.

In the first dimension, many organizations, including state governments, local governments, foundations, businesses and universities are taking an interest in helping small businesses survive and succeed through the formation of the small business incubator. In the second dimension, the incubator sponsors, its manager and each firm interact with

each other through the implementation of PPP activities. In particular, a business incubator acts in the role of a broker for the new firm, providing certain services, finding suppliers of services, renting at below-market rates, and financing, thus underwriting the start-up costs of the business.

As Lumpkin and Ireland(1988) note, business incubators have been organized to bring new businesses together to increase the probability to start up, survive, and grow. This research defined success as growth in sales. The success is accomplished by the activities of PPP in the operation stage. PPP activities in small business incubators include leadership, management services, tax exemptions, loans, subsidies (grant), shared services, and low rent.

3) Derivation of the estimating equations

Specifications and derivations of the actual equations used to investigate the relationship between the PPP activities and the success of each tenants are designed to approximate the simple success model developed in the previous section. A formalization of the PPP activities in a small business incubator could be achieved through the specification of the short run impact-at most 3 years-because of the newness of the incubator concept and the incubators' graduation policy

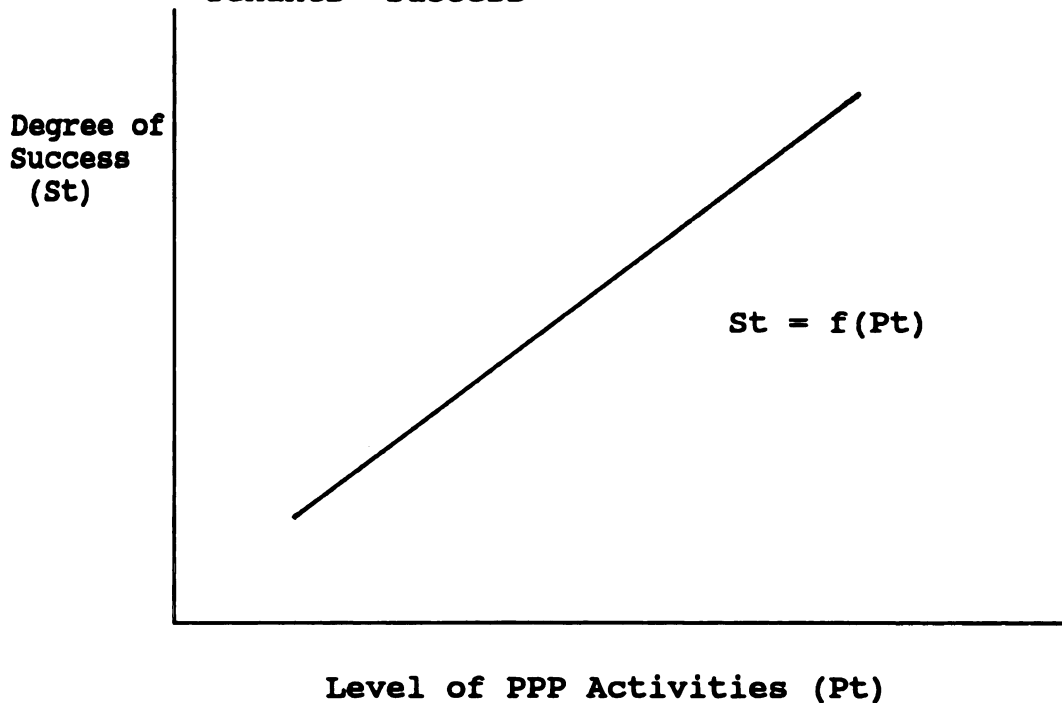
on their tenants.

Only the short run success equations for the relationship between the PPP activities and the success of each tenants were employed in the empirical analysis. The justification for this was twofold. First, the primary aim of this study was to examine the short run impact of the PPP activities on the success of each tenants during the incubator stage. Secondly, given the sample employed in this study, there were no available data with which to estimate the graduates over 3 years which was usually considered as the long term in the field of economic development.

The relationship between the level of PPP activities and the degree of the current tenants' success can be diagrammatized in the two dimensions using an aggregate function. Figure 3.1 shows the two-dimensional aggregate function represented by the set $\{ (St, Pt) : St = f(Pt) \}$.

The independent variable has seven components which are aggregated into the variable Pt . The relationship between the dependent variable, St , and the composite independent variable Pt is shown in figure 3.1. Because the independent variable, Pt , exists in 8 dimensional space it is required that the components be aggregated in order to describe the relationship graphically.

Figure 3.2 Hypothesized Relationship between the Level of PPP Activities and the Degree of Current Tenants' Success



The general form of the aggregate function for the short run impact employed by this study is given by the following equation:

$$St = f(Pt)$$

'St' is the degree of success attained by each firm in a given period of time, and 'Pt' is a vector showing the level of PPP activities¹⁶.

¹⁶ This study contains two parts of the model: one which is the mixed model, the other which is the magnitude model. In the mixed model, the "level of PPP activities" means the subject's perception of the helpfulness of PPP activities. On the other hand, in the magnitude model, the actual magnitude of PPP activities is represented.

Because we have both financial PPP activities and non-financial PPP activities, and because they must be treated differently in the equation, these are broken out. Therefore the equation becomes as follow:

$$S_t = f(F_t, N_{Ft}, t)$$

Where, 'Ft' is a vector of the financial PPP activities, 'Nft' represents the non-financial PPP activities, and 't' captures shifts in the underlying success function over time. 'Ft' and 'Nft' determine the position of this success curve in the S (the degree of success) and P (the level of PPP activities) space.

Looking at it in another way, there are two parts of the model: one which addresses the perceived relationship between the level of 'Ft' and 'Nft' and the success of current tenants, the other which looks at the actual magnitude of St, Ft, and Nft. The main reason why this study uses two parts of the model is to test impact of PPP activities for which the actual dollar magnitude is hard to find. Part one is served as a surrogate for part two. In other word, part one of the model attempts to measure the impact of public - private partnership activities on small business success using small business owners' perception of that impact as a surrogate. Part two uses the actual magnitude of PPP activities rather than perceived owner's perception on both sides of the

equation.

The success level of tenants was expected to be positively related to the level of PPP activities within both parts of the model. Tenants were expected to express a perception that PPP activities promoted their success. Furthermore, the actual magnitude of the PPP activities composed of financial PPP activities¹⁷ and non-financial PPP activities¹⁸ was expected to be related to actual measures of success. Solutions to the equation for the short term impact depended upon the exogenously determined level of the PPP activities which consisted of both financial and non-financial activities.

This short term success curve was expected to be positively sloped in S-P space. Hence, it was hypothesized that the level of PPP activities could result in an increase in the degree of success of tenants in the small business incubators. However, nobody had empirically tried to find this relationship. The model allows the PPP activities to

¹⁷ Small business incubators support tenant companies for at least three years, in which they either help the companies obtain financing sources or use their venture capital, subsidiaries, tax exemptions, low rent, and loan to fund them. Peterson (1985) maintains that incubators have been most successful when they are integrated with other sources of business and financial assistance in the company.

¹⁸ As a matter of fact, non-financial activities are also types of seed-capital financing that incubators provide to tenant companies. Smilor and Gill, Jr. (1986) state that this is in-kind financial assistance because the incubator may provide a relatively low or subsidized price to the tenant company.

ave a positive short term impact on tenant's success through the short run success equation. The degree of tenants' success as measured by growth in sales may rise due to an enhanced competitive position in local, national, and international markets. Thus, an increase in financial and non-financial PPP activities will bring about an increase in the growth rate of tenants because the cost of producing this higher level of output ought to be minimized and benefit from the PPP activities ought to be maximized.

The short term impact of the PPP activities on the growth of each tenant is not a priori obvious. The above equation formed the framework for the derivation of the estimating equations that was used to determine the exact nature of this short term relationship. According to the firm owner's perception of the helpfulness of PPP activities and the real magnitude of PPP activities, this research paper discussed the different specifications and derivations of the actual equations used to estimate the relationship between the PPP activities and the success of each tenants.

i) Success equation - mixed model

All tenants in small business incubators received the benefits of three PPP activities, shared services, leadership, and low rent. In the case of these three PPP activities, this study used a rating system of 1 to 5, to measure small business owners' perception of the degree of impact. However,

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some tenants received each of the four PPP activities, management services, property tax exemptions, grants, and loan services. The others did not. This research split the whole sample into two parts - corresponding to whether tenants received or did not receive each of four PPP activities, which indicated the subject's magnitude perception. Namely, these four PPP activities were split into each of two groups: one - "Yes" group - which received each of the PPP activity, the other - "No" group - which did not. This study calls this model, being one of two models, a "mixed model" is to include both the subject's magnitude perception, which indicated "Yes" or "No" group, and the impact perception using rating system 1 to 5.

One characteristic of this success model was the tenant's perception of the link between the three PPP activities - leadership, shared services, and low rent - and tenant firm's success. In reality, though, this perception may or may not be accurate. For example, it is possible the tenant misperceives the effect of the three PPP activities on his/her firm's growth. Some reasons for possible misperception are as follows: 1) tenants may not realize the strength of the impact of the three PPP activities on their firms' success, and 2) the tenants may underestimate or overestimate the relationship between the three PPP activities and their firms' success.

The relationship between firm owners' perception and reality may also be weak because of the time lag involved with

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respect to the realization of helpfulness. Namely, the firm owners' perception of the effect of the three PPP activities on the tenant firm's success may occur after his/her graduation.

Despite these caveats, the mixed model assumes that the link between the three success factors and the tenant's success is fully perceived by the entrepreneur. In addition, this model also used three independent variables, management services, property tax exemptions, grants and loan services. These served as dummy variables and corresponded to their existence or nonexistence in small business incubators.

This research expected that an increase in the firm owners' perception of helpfulness level of the PPP activities could capture an increase in the tenant's firm's success. In seeking an answer to the question of small business success in terms of both the firm owners' perception and the existence or nonexistence of PPP activities, this research broke the small business success model down into its component parts.

Within this theoretical framework, the small business success level were assumed to be a function of LE, MS, SS, TE, L, S, and LR as indicated;

$$St = f(LE, MS, SS, TE, L, S, LR)$$

where, LE= leadership, MS= management service,

TE= tax exemption, L= loan, S= subsidy (grant),

SS= shared service, and LR= low rent

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The small business success is the result of many factors which operate independently but most often are found in combinations. The tenants' perception of the impact of both financial and non-financial activities on their firm success may be related to the actual success of the tenant firms. The mixed model serves as surrogate for the magnitude model. This is a good test of the impact of PPP activities for which the dollar magnitude is hard to find. The main reason why this study used the mixed model is to test impacts of PPP activities for which the actual dollar magnitude is hard to find. The mixed model is served as a surrogate for the magnitude model. Thus, the effects of various factors on the small business success were regressed. This functional form leads itself easily to multiple regression techniques. The theoretical model was estimated as a linear function:

$$St = A + b_1LE + b_2MS + b_3SS + b_4TE + b_5L + b_6S + b_7LR + E$$

where, MS = 1 if management services exist, otherwise 0.

TE = 1 if property tax exemptions exist, otherwise 0.

L = 1 if loan services exist, otherwise 0.

S = 1 if subsidies exist, otherwise 0.

LE = perceived helpfulness level of leadership.

SS = perceived helpfulness level of shared services.

LR = perceived helpfulness level of low rent.

E = error term

ii) Success equation - magnitude model

Governmental incentives-federal, state, and local aids-are highly aggregated. However, a disaggregation of these is possible, which would be necessary if the model is to take into account the separate effects on the success rate of businesses.

In the search for an answer to the question of small business success in terms of magnitude, this research broke the small business success model down into its component parts according to the financial PPP activities. Within this theoretical framework, the small business success rates, in terms of magnitude in real financial data, were expected to be a function of TE, L, S, and LR as follows;

$$St = f(TE, L, S, LR)$$

where, TE = tax exemption, L = loan,
S = subsidy (grant), and LR = rent

The theoretical model was estimated as a linear function:

$$St = B + b_1TE + b_2L + b_3S + b_4LR + E$$

where, E= error term

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Based on the literature review and the incubator manager's interview, this research had chosen 7 PPP activities related to the incubators sponsored, or operated, by the PPP as being relevant and of interest herein. These were specifically delineated in the following paragraphs:

(1) Leadership

Leadership-the willingness to step in and take responsibility for solving a problem or overcoming an obstacle - is touted as the key to success in both the public and the private sector (Lyall 1982, pp.18-19). The form of leadership required in forming and enhancing partnerships, however, may be vastly different than those needed in the hierarchical organization. Leadership, in the context of public-private partnership, is the ability to nurture "civic entrepreneurs," i.e., leaders whose knowledge, imagination, and energy are directed toward enterprises that benefit the community (CED 1982, p.3). According to Waddock (1985), such leadership is deemed managerial, and represents the day-to-day activities that need to be competently performed in the partnership in order to achieve it and, thus, keep it smoothly functioning. Another form of leadership is that of the civic entrepreneur. It is the civic entrepreneur that has been viewed as the visionary role of leadership, which is itself a linking

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mechanism.¹⁹ If the resources necessary for the establishment and the growth of the new businesses in small business incubator can not be provided by the community itself, this leadership becomes crucial to the survival of the small business incubator. Most of the incubator managers will also act as brokers between the new businesses and their potential investors, or suppliers by making introductions to key people.

Government's two forms of leadership in small business incubators are embodied through the tenants' identification of government and the incubator.

Visionary leadership is represented, specifically, as follows:

- . the firm owner's perception level of the degree of helpfulness of a small business incubator's attraction of the tenant firm's supplier, or buyer and;

- . the firm owner's perception level of the degree of helpfulness of the incubator's ability to access capital for the tenant's firm as a brokering organization.

¹⁹ Linking, or networking, of leadership may bring high probability of the tenant's success. Smilor and Gill, Jr. (1986 pp.28-30) maintain that the stronger, more complex, and more diverse the web of relationships, the more the entrepreneur is likely to have access to opportunities, the greater the chance of solving problems expeditiously, and ultimately, the greater the chance of success for a new venture. Such a leadership establishes important links with suppliers and customers, accountants, lawyers, and financiers. According to Peterson (1985), incubators have been most successful when they are integrated with other sources of business and financial assistance in the community. This mechanism is also crucial in gaining additional assistance from private sector in the community.

Managerial leadership in a small business incubator includes the following:

- . the firm owner's perception level of the degree of helpfulness of the business incubator manager's (or staffs') understanding of the tenant firm's objectives and ways of doing business, and;

- . the firm owner's perception level of the degree of helpfulness of incubator's minimization of paperwork requirements and regulation of activities of tenant firms (streamlining of regulation).

(2) Management Service

Management determines how emerging companies will respond to changes in the marketplace, and, especially, how effectively they will deal with growth. Managing human, financial, and technological resources demands skills that entrepreneurs very often have to learn and then hone through experience (Smilor and Gill, Jr. 1985,p.25). Many small businesses fail from the cumulative effects of sub-standard performance and unanticipated set-backs resulting from poor management. Management issues related to business success are as follows: Business taxes, risk management & insurance, government grants & loans, government procurement process, government contract preparation, equity & debt finance arrangements, export development assistance, preparation of business plans, employee relations, advertising & marketing,

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government regulation, health & benefit packages, relocation plans, research & development, legal counseling, legal representation, patent assistance, accounting, computing & information services, bookkeeping, and venture capital fund. Some of the management services offered by incubators which address these issues include one - on - one management consulting, training workshops and conferences.

Among them, most researchers (Allen and Dougherty 1987; Fry 1987; etc.) maintain that business plans, marketing, risk management, and accounting services will be crucial to small business success in a small business incubator because of poor management ability of small business. In this research paper, the management variable was measured by the firm owner's perception of the degree of helpfulness of business plan services, marketing services, risk management, and accounting services as proxy variables of the management service.

(3) Low Rent

Low rent is a kind of financial assistance, or in-kind financial support, frequently cited as a critical factor for small business success. Incubator leases may be uniformly structured with pre-specified rents, or handled case-by-case according to the individual firm's circumstances and needs. Most small firms in small business incubators are able to save 50 percent or more on overhead costs (IDCCA, 1986). The most attractive aspect of a small business incubator to small firms

is affordable rents. By offering rent below the market rates, undercapitalized firms may make their dollars stretch farther. The firm owner's perception level and the magnitude of this low rent may be important to small business success in small business incubators.

(4) Tax Exemption

Every for-profit business pays some form of state and local taxes. These include state corporate income taxes, municipal income taxes, property taxes on land, structure, equipment, and inventories, state sales and use taxes, excise taxes, local payroll taxes, etc. In order to identify whether tax incentives are the success factors of small businesses in small business incubators, this research used property tax exemption as a proxy variable of tax incentives. While some incubators, themselves, absorbed property tax, others transferred it to their tenants. From the business perspective, the greatest tax incentive is the absence of a tax. Tax incentives are aimed at reducing the cost of doing business by decreasing the tax burden on firms. However, all tax rates except the property tax exemption were the same as those of firms outside small business incubator. The firm owner's perception level and the magnitude of this tax may be important to small business success in small business incubators.

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(5) Loan

Loans for small businesses in a small business incubator is a means of financial support used to leverage capital of private entrepreneurs. Loans permit firms to borrow money directly from the state government, the local government, or their agents such as economic development corporations, or financial authorities. Small firms in small business incubator can utilize low-interest loans through public or non-profit agencies.

There are also several types of small business loan programs and financial packaging services. For example, fixed asset financing through the SBA 503 program and working capital loans through the SBA 7(a) program can be used by some incubator firms. Some localities have revolving loan funds or lender participation programs for small business (Peterson 1985, p.19)

On the other hand, one of the PPP activities involves the incubator's or government's role as a referral or a broker, in order for tenants to make a loan from bank or private lending institute. The reason is that, according to Lurcott and Downing (1987), the commitment to a partnership approach clearly gives comfort to individual funding agencies and enhances the likelihood of extended participation.

According to the literature review, three most important tools among debt capital are direct loans, loan guarantees from the incubators, or government, and private loans from the

incubator's or local government's referral. Direct loans are made to small businesses by the government (state or local) or by its agents, such as, financial authorities or economic development corporations. Loan guarantees feature the backing of loans made by private lending institutions with the "full faith and credit" of the government. With this protection, private lenders experience less risk, thus they are more likely to lend to small businesses (Hamlin and Lyons 1989, pp.46-49). Interest rates on these loans are usually below the market rate (Weiss and Metzger 1987; Cafferty and McCready 1982).

Loan was measured by the firm owners' perception level and the magnitude of the tenant's sum of total loans including direct loans from the government, or its agents, loan guarantees, and private loans from the incubator's, or local government's, referral. The firm owner's perception level and the magnitude of the loan may be important to small business success in small business incubators.

(6) Shared services

In addition to management assistance, shared services are a type of financial support, and are frequently cited as critical factors for small business success. One of the most attractive aspects of small business incubators to the small firms is their availability of shared services. Shared

services available to the new businesses help to reduce their overhead costs. Small businesses usually can not get these services for themselves, and they utilize the economy of scale of the business incubator. Shared services, necessary for small business success, were investigated by Allen and Rahman (1985), and are as follows: Audio-visual equipment, shipping & receiving, mail service, copier, clerical service, receptionist, off-hours answering service, inventory, word processing, telex, conference room, cafeteria, building security, vehicle rental, furniture & equipment rental, library, and telephone service.

Among them, most researchers (Allen and Dougherty 1987; Lyons 1990; etc.) found that the most frequently used shared services are photocopiers, receptionists, telephone services, clericals (secretary/word processing), Faxing, and conference rooms. These shared services would be crucial to the success of current tenants in small business incubators because of poor financial ability of small business. In this research paper, the shared service variable was measured by the firm owner's perception level of the degree of helpfulness of photocopiers, receptionists, telephone services, faxing, and conference rooms as proxy variables of shared service.

(7) Subsidy (Grant)

Direct subsidies involving government grants and private

foundation grants provide direct transfers of state and local or private financial resources to the recipient firms. One of the PPP activities involves the incubator's or government's role as a referral, or a broker, who help tenants to get grants from private foundations. Firms view subsidies (grants) as the most desirable type of business assistance because they carry no pay-back obligation. Many emerging companies finance their early development through government grants. The existence and magnitude of this grant may be important to the success of small businesses in small business incubators.

In this research paper, direct subsidy was measured by the firm owner's perception level of and the magnitude of the tenant firm's sum of total grants, including government grants and private foundation grants, from the incubator's, or local government's, referral.

It may be worthwhile to examine the seven major variables in identifying the effectiveness of the PPP activities in the small business incubators.

4) Derivation of final equations

There may be other sources of variations in addition to the level of PPP activities. Some of these variations may be

structural differences which include incubator location, size, age, and staff size. In addition, the level of PPP activities may have varying degrees of impact on the tenants' success among the different types of industries. These refer to manufacturing, service, and research and development (R & D).

This research tried to include the incubator's structural variables, as well as industrial variables acting as dummy variables. In order to accurately estimate the relationship between the level of PPP activities and the success of current tenants, dummy variables were an effective way to incorporate industrial and structural factors into the small business success model because they were discrete variables.

Checks were made for significant dummy variables. When a significant dummy variable was found, it was analyzed further using comparative analysis. To perform the comparative analysis, the data was broken into groups corresponding to the number of levels in the dummy variable. Then, different regression models were generated for the separated groups. This made it possible to find out the different impact of each PPP activity on the tenant success among different models. The result of the comparative analysis could provide policy decision makers with the insight of successful incubator development in the future.

The two final models were as follows:

i) Final mixed model

$$St = A + b_1LE + b_2MS + b_3SS + b_4TE + b_5L + b_6S + b_7LR + b_8D_1 + b_9D_2 \\ + b_{10}D_3 + b_{11}D_4 + b_{12}D_5 + b_{13}D_6 + b_{14}D_7 + E$$

where, MS = 1 if management services exist, otherwise 0.

TE = 1 if property tax exemptions exist, otherwise 0.

L = 1 if loan services exist, otherwise 0.

S = 1 if subsidies exist, otherwise 0.

LE = perceived helpfulness level of leadership.

SS = perceived helpfulness level of shared services.

LR = perceived helpfulness level of low rent.

D₁ = 1 if suburban towns, otherwise 0.

D₂ = 1 if rural areas, otherwise 0.

D₃ = 1 if small size of incubator, otherwise 0.

D₄ = 1 if long-term incubator age, otherwise 0.

D₅ = 1 if big size of incubator staff, otherwise 0.

D₆ = 1 if service industry, otherwise 0.

D₇ = 1 if R & D industry, otherwise 0.

ii) Final magnitude model

$$St = B + b_1TE + b_2L + b_3S + b_4LR + b_5D_1 + b_6D_2 + b_7D_3 + b_8D_4 + b_9D_5 \\ + b_{10}D_6 + b_{11}D_7 + E$$

In order to consider other sources of variations, this research had chosen 5 structural variables related to the

incubators as being relevant and of interest herein. These were specifically delineated in the following paragraphs:

(1) Incubator Age

National Business Incubator Association (NBIA) found that older incubators tended to experience more tenant failures than more recently established incubators (NBIA 1990,p.22). The average age of Michigan incubators was about five years. About 77.8% of current tenants belong to the incubators which were less than 5 years old. Twenty-two percent were operating in incubators which are more than 5 years old. This research placed incubator age into two categories: 1) short term age group (less than 5 years old), and 2) long term age group (more than 5 years old).

(2) Incubator Location

The incubator location variable was divided into large urban community and suburban towns, and rural areas. About 42.6% of current tenants were located in large urban communities. Thirty-two percent of current tenants were operating in suburban towns, and 25.9% in rural areas.

(3) Incubator Size

There were considerable variations in the size of incubators in Michigan. This research gave a breakdown by size categories: 1) small size group (less than 40,000

11

sq.ft.), and 2) large size group (more than 95,000 sq.ft.). About 72.2% of current tenants belonged to incubators which were less than 40,000 sq.ft. Twenty-eight percent were operated in the large size group.

(4) Incubator Staff Size

With regard to incubator staff size, this research divided it into two categories: 1) small staff size incubator (less than 3 employees), and 2) large staff size incubator (more than 4 employees). While about 56% of current tenants belonged to the small staff size incubators, forty-four percent were operated in large staff size incubators.

(5) Type of Business

This research broke down current tenants by business types. They included manufacturing, service, and research and development (R & D). The largest percentage, 66%, of current tenants are engaged in service businesses. The next largest group is manufacturing firms, with 24% of the total. The last group, at 10%, is research and development (R & D) businesses.

3. Context of the Study

Michigan state and its local economic development has heavily relied on the automobile industry through its direct and indirect job creation and the development of small

suppliers for big automobile companies. As foreign competitors put tremendous pressure on the domestic automobile industry, and the Michigan economy was recessionary since the early 1980's, the state government came to realize the need for the diversification of its industrial structure and job creation. One of the ways to diversify the industrial structure and create jobs has been to encourage the growth and development of small businesses. Hence, the development of small business incubator has been promoted as a way of the diversification of its industrial structure and the creation of jobs by the state government. Likewise, business incubators have developed both in response to a decline in manufacturing employment due to auto industry recession and overall economic depression.

Upon the recognition for the need of small business incubators, Michigan passed the "Michigan Business Incubation Act" in 1984 to encourage and assist in the establishment and expansion of small businesses in the state through the creation of business incubation centers. Under section 3 of the 1989 Act, the Michigan Department of Commerce (MDOC) can designate up to 10 vacant buildings as business incubators if they meet certain criteria. There are also several financial incentives provided either by the State government or by the community, e.g. Michigan Economic Development Authority, State Employees Retirement Fund, State Wide Certified Development Corporation, Local Investment Program Using Small Cities

Community Development Block Grant Funds, etc. It is worthy to note that one of the main reasons for the proliferation of small business incubators throughout the state is the economic policy of the Democratic Party-led State government in 1980's.

As recently as 1990, Michigan continued to experience an auto industry recession, a depression, and lose its population and tax base. Thus small businesses have a difficult time obtaining financial support from their communities or lending financial institutions. Coping with the difficult situation of small businesses, state government and communities have accelerated the development of small businesses as a way to diversify their industrial structure, create jobs and the heighten the tax base. This was accomplished in a number of ways. One solution was the small business incubator.

As of March 1990, 17 small business incubators existed in Michigan. Among these, 11 business incubators-which are either sponsored, or operated, by the PPP, comprised the population of the study. Small business incubators at Jackson, Albion, Niles, Downriver, Detroit, North Oakland, Monroe, Southfield, Lapeer, Flint, and Soo, Michigan were operated by the PPP activities for the success of small business. Eligible current tenants were all small businesses, which had stayed more than 1 year until 1990, in 11 small business incubators in Michigan. They were composed of 173 current firms in the business incubators.

The data was used to statistically test the research

hypothesis. The research hypothesis was tested at a significant level of $p < .05$ via an analysis of variance and multiple regression stepwise analysis by using the Statistical Package for Social Sciences.

4. Generalizability

The focus of the study was on small business incubators designed for the success of current tenants in a public-private partnership setting in Michigan. With respect to generalizability, the results are applicable to small business incubators similar to one's examined in this study. Such small business incubators have the following characteristics:

- 1) The purpose of the incubator should be to encourage local economic development, such as job creation or job diversification.

- 2) The public sector and the private sector, together, must participate in fund-raising for founding or operating small business incubators.

- 3) As a result, the current tenants should receive services at a lower cost (i.e. low rent) from their small business incubator.

- 4) The PPP activities should be found in the small business incubators.

5. Assumptions

This study was based on the following assumptions:

- 1) Current tenants' responses were honest. The actual data about the financial PPP activities were accurate.
- 2) The growth rate of sales was an effective means of measuring the success of small businesses.
- 3) The questionnaire was an effective tool for investigating current tenants' responses to the PPP activities and actual data. An attempt had been made to consider this limitation through the use of dummy variables.
- 4) The tenant's perception of the link between the success factors-the PPP activities- and the tenant's success was fully perceived by the entrepreneur.

6. Limitations

This study had the following major limitations:

- 1) It was impossible to control every activity and event of the current tenants which might affect the success of small business; especially entrepreneur characteristics, business strategy, and environment except for the PPP activities which occurred

outside the small business incubators.

- 2) Applicability of findings to other kinds of PPP oriented economic development program could not be assured.
- 3) There might be possible statistical differences between incubators because of their location, size, age, staff size, etc.
- 4) The assumption might be wrong because the tenant's perception of the link between the success factors- the PPP activities- and the tenant's success might not be fully perceived by the entrepreneur.

7. Procedures

1) Description of Overall Design

The purpose of this study was to examine whether different activities of PPP affected the success level of individual firms in small business incubators within Michigan. This research administered a questionnaire to determine whether PPP activities, as independent variables, were related to the success of small businesses as a dependent variable. A sample questionnaire can be found in the Appendix. The unit of analysis for this research was the business incubator tenant. This research design involved correlative and ex post facto empirical research and hypothesis testing.

2) Selection of Data, with a Rationale

Michigan had 17 small business incubators. Among them, the population of the study consisted of 11 business incubators-which are either sponsored, or operated, by the PPP. Small business incubators at Jackson, Albion, Niles, Downriver, Detroit, North Oakland, Monroe, Southfield, Lapeer, Flint, and Soo, Michigan were operated by the PPP activities for the success of small business.²⁰ Eligible current tenants were all small businesses in 11 small business incubators operated by PPP within Michigan. They were composed of 173 current firms in the business incubators and had 98 graduates.

To be eligible for inclusion in this study, the following criteria for the PPP had to be met: 1) The purpose of the incubator should be to encourage local economic development, such as job creation or job diversification, 2) The public sector and the private sector, together, must participate in fund-raising for founding or operating small business incubators, 3) As a result, the current tenants should receive services at a lower cost (i.e. low rent) from its small business incubator, and 4) The seven PPP activities should be found in the small business incubator.

The sample consisted of 108 current firms who completed and returned the questionnaire. Collection of data was accomplished through personal communication (face-to-face) and

²⁰ These incubators sponsored, or operated, by the PPP are primarily interested in job creation.

mailing administration of the selected instruments at each of the respective incubators.

3) Data Processing

This section was subdivided into two parts: 1) administration of the test instruments, and 2) scoring and treatment of the data.

1) Administration of the Test Instruments

I interviewed most business incubator managers to inform them about the nature of study before administering the test instruments. After that, the questionnaire was distributed to the tenants and they were asked to fill out the tenant firms' perceptions and the magnitude of the PPP activities. The instruments used to collect the data were as follows: 1) Scale of Activity, and 2) Financial Data Questionnaire. The Scale of Activity used a Likert Scale and assessed the firm owner's perception in varying degrees from least to most important or helpful, indicating the degree of the activities of partnership perceived as each firm entered its incubator.

Each of the items was rated on a subjective 1 to 5 scale, anchored by 1-meaning "very unimportant and very unhelpful", and 5-meaning "very important and very helpful." The Financial Data Questionnaire assessed the amount of financial PPP activities of different firms. A sample questionnaire is displayed in the Appendix.

A questionnaire was developed as follows:

1) To gather location factors

(Question Numbers: A)

2) To collect financial data of the current tenant firms

(Question Numbers: C)

3) To assess the current tenants' perception to

a. public leadership.

(Question Numbers: B-17, 18, 19, 20)

b. management service.

(Question Numbers: B-6, 7, 8, 9)

c. low rent.

(Question Numbers: B-10)

d. tax exemption.

(Question Numbers: B-11)

e. loans.

(Question Numbers: B-12, 13, 14)

f. shared service.

(Question Numbers: B-1, 2, 3, 4, 5)

g. subsidy (grant).

(Question Numbers: B-15, 16)

ii) Scoring and Treatment of the Data

The scores were represented by a number 1 to 5 in each of the seven activity categories. The seven PPP activities consisted of leadership, management service, shared service, tax exemption, loan, subsidy (grant), and low rent. The seven defined activities were the independent variables which were

to be manipulated by the experimenter. The dependent variable in this study represented the level of success of each firm. The criteria for success was defined by the manner in which each firm increased its sales. Measuring the ratio of sales in the first year to sales in the year 1990 in the business incubator determined the level of success. In addition, the success level of each firm was divided by the number of years that the current tenants did their business in the business incubators in order to avoid a categorical bias of years. The dependent variable was the measure that the researcher observed but did not manipulate or control. Changes in the dependent variables were brought about by the different values of the independent variables used in the study. In order to avoid categorical biases of the size and term of the independent variables, treatment of data of financial activities assessed by dollar term was as follows:

Tax variable = sum of the total property tax paid by each
firm / (the number of years * square feet)

Loan variable = sum of the total loan made to each firm
/ (the number of years * square feet)

Rent variable = sum of the total rent fee of each firm
/ (the number of years * square feet)

Subsidy variable = sum of the total public subsidy of
each firm / (the number of years * square
feet)

4) Description/Rationale of Statistical Testing

Parametric tests are the most powerful, and should be used only when the necessary conditions are met. For hypothesis verification, this research tested at a significant level of $p < .05$ via an analysis of variance and multiple regression stepwise analysis by using the Statistical Package for Social Sciences. The study checked several assumptions for the reliability of the estimated regression equations. Multiple regression stepwise analysis provides a quantitative indication of the extent and nature of the relationship between the various independent variables' scores or quantities and the success of each tenant. This analysis method was conducted in order to extract influential factors affecting the success level of small businesses in small business incubators.

5) Research Hypothesis

The hypothesis at the beginning of chapter 3 is restated in bold face. The null hypothesis is underlined.

HYPOTHESIS. PPP activities are positively related to small business success in small business incubator.

Null Hypothesis: There is no significant relationships between PPP activities and small business success in small business incubator.

CHAPTER 4: DATA ANALYSIS

1. Introduction

The initial task was to examine the relationships between PPP activities and the success level of individual tenants, and to identify the differences in significant activities depending upon the settings of each structural variable. The subject consisted of 108 current firms in the business incubators in Michigan. The data of this study was based on the subjects' magnitude perception or its impact perception and actual magnitudes. In the first section of this chapter, the mean scores of the attraction factors are compared in order to find what factors were important for the tenants to do business in the particular incubators. The second section is a description of the results of an analysis of variance and multiple regression with the stepwise method which was conducted in order to analyze the relationships between the dependent and the independent variables of perceptions and magnitudes of PPP activities. In the final section, all the findings are summarized.

2. Comparisons of Attraction Factors

The first set of questions were designed to test perceptions on what factors might affect the decisions of individual small businesses to enter a particular business incubator. Twenty factors were listed, and the business

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owners were told to "rate the following as very important, important, neutral, unimportant, or very unimportant" with regard to why they applied for the present business incubator. The study compared the mean scores of the variables which were the averages of the factors. The results are presented in Tables 4.1 - 4.3.

As shown in Table 4.1, respondents listed "low cost space; below market rent" as very important. A majority of the respondents also listed five factors, such as incubator's photocopier service, receptionist service, telephone service, fax service, and conference room service, as being important. These factors would be categorized into shared service as one of the important variables among the seven variables in the study. Most of the other variables were checked as "neutral".

The factors of the leadership variables, such as the business incubator's visibility to their suppliers or buyers, the incubator's ability to provide financial capital to their firm, the business incubator manager's (or staffs') understanding of their firm's objectives and ways of doing business, and the incubator manager's help in dealing with governmental paperwork and regulation, were found as "neutral".

**Table 4.1 Average Mean Scores of Attraction Factors of
The Whole Sample**

Variable	Mean Score	Factor	Mean Score
Leadership	3.051	Visibility	2.981
		Financial Capital	2.759
		Manager's Understanding	3.296
		Manager's help	3.167
		Business Planning	3.185
Management Services	2.838	Marketing	3.019
		Risk Management	2.630
		Accounting	2.519
Rent	4.481		
P. Tax Exemptions	3.296		
Loan	3.154	Direct Loans	3.296
		Loan guarantees	3.130
		Loan Referral	3.037
Shared Services	3.670	Photocopier	3.722
		Receptionist	3.630
		Telephone Service	3.500
		Fax Service	3.704
		Conference Room	3.796
Subsidies (grants)	2.833	Government Grants	2.889
		Foundation Grants	2.778

The management service variable, listed by respondents as "below neutral", includes the incubator's business planning service, marketing (technical) assistance service by the incubator or incubator's referral, risk management service by the incubator or incubator's referral, and an accounting service by incubator or incubator's referral. "Below neutral" means that the firm owners feel a specific variable is unimportant. The grant variable checked as "below neutral" refers to government subsidies (grants) and private foundation grants through incubator's or government's referral. The loan variable and property tax variable were listed as "not being important" but as "above neutral". They were important parts

of the financial PPP activities even if they ranked below another financial variable -rent variable- on the rating scale. The loan variable included direct loans made by the government (state or local), or its agents, such as financial authorities, economic development corporations, and/or the incubator, loan guarantees (i.e. loans made by private lending institutions backed with the full faith and credit of the government or the incubator), and private loans from the incubator's or government's referral.

Several points were important in assessing the PPP in the small business incubator. The respondents believe that the single most important activity concerns low cost space. In addition to shared services and property tax exemptions, these three variables were believed to have far more importance than any other variable. Therefore, we may say that shared services, rent variable and property tax were important factors in explaining why small businesses entered the business incubator.

**Table 4.2 Comparisons of Mean Scores of Attraction Factors
among Urban, Suburban, and Rural Areas**

Variable	Urban Community	Suburban Town	Rural Area
Leadership Management	3.435	2.838	2.679
Services	3.337	2.632	2.268
Shared Services	3.426	3.953	3.729
Loans	3.493	2.961	2.833
Grants	3.326	2.559	2.357
P.Tax Exemption	3.130	3.235	3.643
Rent	4.348	4.588	4.571

In Table 4.2, the mean scores of all the variables were aligned in the three columns according to the settings of the location variable. From this table, rent and shared services were still shown as important variables across all areas. Property tax was regarded as the third most important variable for suburban and rural groups, but it was found to be the least important for the urban group.

Table 4.3 Comparisons of Mean Scores of Attraction Factors
among Manufacturing, Service, and R & D

Variable	Manufacturing	Service	R & D
Leadership Management	3.058	3.042	3.100
Service	2.654	2.958	2.450
Shared Services	3.754	3.650	3.600
Loans	3.308	3.037	3.600
Grants	2.846	2.917	2.200
Property Tax	3.462	3.417	2.000
Rent	4.385	4.556	4.200

Rent and shared services, in Table 4.3, were again found to be the most significant variables across three different industrial groups. Property tax was regarded as a relatively important variable for both manufacturing and service industry groups, but it was the least important variable for the R & D industry group. Tenants of the R & D industry group, whose room size was relatively small compared to those of the other industry groups, would think property tax was not important since tenants usually had to pay property tax by percentages of the total building.

3. Regression of PPP Activities on Business Success in Small Business Incubator

1) Overview

As a second step, the study used the multiple regression stepwise techniques in order to extract influential factors related to the small business success in the business incubator. Regression equations were derived for the seven PPP activities chosen from the theoretical background. However, the grant variable among them was excluded from the study because only four firms among the samples received some grants. Five structural variables were also considered as independent variables. These were used to test whether the success level of current tenants might vary from incubator to incubator for reasons other than level of PPP activities. The variables included incubator age, location, size, staff size, and industrial types of current tenants as chosen in the previous chapter. All of those were coded as dummy variables.

The stepwise method of variable selection process was performed to test the hypothesis. The method also was used to illustrate the relative importance on small business success of the changes in the level of PPP activities.

All tables for the regression analysis contain the multiple regression coefficient, the standardized regression coefficient (beta), the multiple correlation coefficient (R), the coefficient of determination (R square), the R square change, and the T value. The multiple regression coefficient

is "a measure of association showing the amount of increase or decrease in a continuous dependent variable for a one-unit difference in the independent variable, controlling for the other independent variable(s)" (George W. Bohrnstedt and David Knoke 1986, p.365). The relative importance of the independent variables on the success of current tenants can be determined by using the standardized regression coefficients (beta). The multiple correlation coefficient (R) is "a measure of the magnitude of relationship between a criterion variable and a predictor variable or some combination of predictor variables" (Borg and Gall 1983, p.600), and the coefficient of determination (R square) is "the amount of variation in the dependent variable explained or accounted for by the independent variable(s) in a regression equation" (Bohrnstedt and Knoke 1986, p.247). The larger the multiple correlation coefficient, the better the explanation. Using the stepwise multiple regression, the significance of the model automatically was tested by evaluating a F value, and the significance of the effect of independent variables on the dependent variable was tested by evaluating a T-value. The results of the regression analysis were compared with those of the mean score analysis of attraction factors. A brief analysis of assumptions for regressions and possible violations of assumptions was also tested.

2) Checks of Possible Violation of Regression Assumptions

This study used the multiple regression stepwise method to find major factors related to growth in sales of current tenants in small business incubators. As a result, several assumptions for the reliability and the validity of the estimated regression equations had to be checked. The estimated regression results should meet certain assumptions as follows:

i) Measurement Errors

Broadly speaking, the accuracy of measurement refers to reliability. In this research study, both the independent and dependent variables were designed by a well-prepared questionnaire. The data was collected in a uniform and consistent manner to strengthen the test of statistical significance. The reliability of the independent and dependent variables was maximized.

ii) Specification Errors

Specification errors refer to the omission of relevant variables from the equation, inclusions of irrelevant variables in the equation, and specifying that the regression is linear when it is curvilinear (Elazar J. Pedhazur 1982, p.35).

The model in the study was derived from a theoretical frame of reference, and no specification errors had been

committed. In case of checking the linearity of the model, the multiple correlation coefficient indicates the strength of the linear relationship between the dependent variable and independent variables. The coefficients for all equations were very high, ranging from .50 to .81. The linear specifications of the regression equations appeared not to violate the assumption.

iii) Multicollinearity

The independent variables in the models might be correlated linearly. The default option in SPSS-PC packages sets the minimum acceptable tolerance at .01. According to Hair, Anderson, and Tatham (1987, p.75), this allows quite a bit of redundancy or multicollinearity in the predictors. In the study, however, the tolerance level of each of the independent variables included in the equations were over .80. This means that the predictors have the high level of independence from other predictors already in the model.

iv) Error Term

(1) Normality

In order to test normality of the error terms, the study used three procedures, such as histograms of the residuals, the percentages of the residuals, and the cumulative standardized residuals. The residuals in the histogram for each of the equations appeared to have a normal distribution.

The procedure of the cumulative standard residuals was done by plotting the cumulative standard residuals on normal probability paper. According to these plots, the standard residuals are closely distributed above and below the straight line representing the perfect normal distribution. The percentages of the residuals consistently fell within +2 and - 2 SE. Standardized residuals for all cases were close to a mean of 0 and a standard deviation of 1.

(2) Constant Variance of The Error Term

The assumption that error terms have a constant variance was tested by plotting residuals against each predicted criterion variable. All cases displayed a hypothetical random distribution of residuals. Thus, the variance of the error term is constant and a linear regression model was appropriate.

(3) Autocorrelation

The study used the Durbin-Watson test to detect serial correlation between residuals. The results of each equation were within the test statistic D (Neter, Wasserman, and Kutner, pp 450-454) at a significant level of $p < .05$, and we found that there are no significant serial correlations.

The study passed all of the above assumption tests. It can be concluded that there are no cases where assumptions were violated, so the models in this research were quite acceptable.

3) Mixed Model

All tenants received three PPP activities, shared services, leadership, and low rent. Likewise, Three PPP activities had all answered "Yes" on the second and third pages of the questionnaire. These three Activities were rated on a subjective 1 to 5 scale, anchored by a 1 - meaning "harmful to firm growth," and 5 - meaning "very helpful to firm growth."

However, the other three PPP activities, management services, property tax exemptions, and loan services, split into either "Yes" or "No" answers on the second and third pages of the questionnaire, served as dummy variables. In order to secure the sufficient number of cases and include all subjects for analysis, these three PPP activities had to be split into two groups: the "Yes" group - which received each one of the PPP activities and, the other, the "No" group, which did not. As a result, the mixed model included both the subject's magnitude perception, which indicated the "Yes" or "No" group, and its impact perception using the rating system from 1 to 5.

In the mixed model, the following steps were necessary to follow for analysis:

(1) First, this research analyzed the whole sample. In the analysis of the whole sample, two PPP activities, shared services and property tax exemptions were significant. As far as the structural variables were concerned, the tenants in

small incubators and urban communities, were respectively more successful, than those in large incubators and suburban towns.

(2) Secondly, in order to further investigate the differences between the sub-groups of the two significant structural variables - incubator size and location - in the whole sample, this study divided the whole sample into each of the following sub-groups' urban communities versus suburban towns and, small incubators versus large incubators.

Likewise, regarding the incubator location variable, this research divided the whole sample into two sub-groups: urban communities and suburban towns. In the case of incubator size, the whole sample was divided by two sub-groups: small incubators and large incubators.

(3) Finally, this study found the significant variables in each sub-group. In urban communities and small incubators, shared services was the only significant predictor. In suburban towns, shared services and property tax exemptions were the significant variables and were useful in explaining the amount of variation of the success level of current tenants. On the other hand, in large incubators, property tax exemptions and low rent were both significantly influential variables in predicting the success of the current tenants.

The results of these stepwise multiple regression procedures for current tenants' success, corresponding to each variable, are presented in Tables 4.4, 4.5, 4.6, and 4.7, respectively.

i) Mixed Model of the Whole Sample

Considering growth in sales as a dependent variable (see Table 4.4), the study included the four variables in the final regression equation with .25 of R^2 value - shared services, property tax exemptions, incubator location, and incubator size. The regression analysis yielded a multiple correlation coefficient (R) of .50. The R^2 value (.25) indicates that nearly 25% of the variability of growth in sales can be explained by these four variables. When the whole sample was analyzed, the perception of the impact of shared services was the most influential variable in explaining the amount of variation of growth in sales ($R^2=.12$).

"Property tax exemptions" and "incubator location" were the second most important, leading each with a 5% increase in the amount of variance in growth in sales accounted for in the new regression equation. "Property tax exemptions," serving as a dummy variable, was shown to have a positive sign ($b=+72.87$). This revealed that the current tenants, who received property tax exemptions, were more successful than those who did not. This goes a long way in explaining their growth in sales.

As far as the incubator location variable was concerned, it was shown to have a negative sign of the suburban towns variable. This result indicates that the tenants in large urban communities were more successful than tenants in suburban towns.

One remaining variable -incubator size- contributed a 3% increase in the amount of variance in the growth in sales accounted for by the equation. It was shown to have a negative sign ($b=-49.19$). This result indicates that the current tenants in small incubators have been more successful than those in large incubators.

The variable, shared services, had the highest beta coefficient ($B=.36$), which showed that it is the most effective variable on the growth in sales of current tenants compared with the property tax exemptions ($B=.32$), incubator location ($B=-.32$), and incubator size variable ($B=-.20$).

Table 4.4 Summary of The Whole Sample of Stepwise Multiple Regression on PPP Activities towards Growth in Sales

	b	B	p	R ² (R ² change)
Shared Services	48.45	.36	.0001	.12
P. Tax Exemptions	72.87	.32	.0013	.17
				(+.05)
D ₁	-77.95	-.32	.0029	.22
				(+.05)
D ₅	-49.19	-.20	.0467	.25
				(+.03)
(Constant)	-16.28			
Final R=.50, R ² =.25				

* Numbers in parentheses, for example, +.05 indicates an 5% increase in the amount of variance in growth in sales of current tenants accounted for in the new regression equation.

ii) Incubator Size

A more specific analysis was performed to investigate the difference between small incubators and large incubators. In

small incubators (see Table 4.5), the perception of the impact of shared services was the only significant predictor with .17 of R^2 value.

On the other hand, in large business incubators (see Table 4.6), property tax exemption ($R^2=.14$) and the perception of the impact of low rent ($R^2=.19$) were both significantly influential variables in predicting the success of the current tenants with .33 of R^2 value.

Table 4.5 Summary of Incubator Size Group of Stepwise Multiple Regression on PPP Activities towards Growth in Sales

	b	B	p	R^2 (R^2 change)
<u>Small Incubator</u>				
Shared Services	68.42	.41	.0003	.17
(Constant)	-93.75			
Final $R=.41$, $R^2=.17$				
<u>Large Incubator</u>				
P. Tax Exemptions	76.14	.64	.0017	.14
Low Rent	16.99	.51	.0095	.33
				(+.19)
(Constant)	51.14			
Final $R=.57$, $R^2=.33$				

All the variables shown within the two incubator size groups, shared services ($b=+68.42$) in small incubators and property tax exemption ($b=+76.14$) and low rent ($b=+16.99$) in large incubators, have positive relationships to growth in sales.

iii) Incubator Location

A more specific analysis was performed to investigate the difference between urban communities and suburban towns. In urban communities (see Table 4.6), only one variable - the perception of the impact of shared services- turned out to be a significant predictor of success with .10 of R^2 value.

Table 4.6 Summary of Incubator Location Group of Stepwise Multiple Regression on PPP Activities towards Growth in Sales

	b	B	p	R^2 (R^2 change)
<u>Urban Community</u>				
Shared Services	29.84	.32	.0292	.10
(Constant)	42.31			
Final $R=.81$, $R^2=.66$				
<u>Suburban Towns</u>				
Shared Services	147.96	.57	.0004	.30
P. Tax Exemptions	216.21	.69	.0002	.56
				(+.26)
D_6	-114.55	-.37	.0271	.65
				(+.09)
(Constant)	-421.91			
Final $R=.81$, $R^2=.65$				

In suburban towns, however, the perception of the impact of shared services ($R^2=.30$) and property tax exemptions ($R^2=.26$) were the only two significant variables in explaining the amount of variation of the success level of current tenants. Unlike the current tenants in urban communities, the dummy variable for service industries was shown to have a negative sign ($b=-114.55$). This finding suggests that

manufacturing industries tend to be more successful than service industries in small business incubators in suburban towns. The narrow range and depth of the market area in service industries, when compared with manufacturing industries, result in low niche markets and a low level of demand. This may explain the differences.

4) Magnitude Model

i) Magnitude Model of the Entire Sample

The results of these stepwise multiple regression procedures for the effects of the actual magnitude of PPP activities on current tenants' success are presented in Table 4.7 and 4.8, respectively. When the entire sample was analyzed (see Table 4.7), the regression analysis yielded a multiple correlation coefficient (R) of .80. In the analysis, four variables were found to be significant, and were included in the final equation with .64 of R^2 value. They were loans, incubator location, rent and type of business. The R^2 value (.64) indicated that nearly 64% of the variability of growth in sales could be explained by all four variables. Loan services was the single best predictor ($R^2=.22$). Loan services, as a dummy variable, appeared with positive regression coefficients ($b=+2.40$), which indicates that current tenants who received the loan service were more successful than those who did not receive it in terms of growth in sales. The variable loan also has the highest beta

coefficient ($B=.91$), which shows that it is the most effective variable on growth in sales of current tenants compared with incubator location ($B=-.45$), industrial type ($B=-.68$) and rent variable ($B=-.32$).

The incubator location variable was the second important, leading with a 19% increase in the amount of variance in growth in sales accounted for in the new regression equation. The result displayed that there was a significant difference between urban communities and suburban towns in terms of the growth in sales, which is shown to have a negative sign of the suburban dummy variable ($b=-90.63$). We may interpret this result in that those who did business in a small business incubator in urban areas tend to be more successful than those located in a small business incubator in suburban towns.

The next strongest predictor was the type of business, which increased R^2 by .14. It was also shown to have a negative sign of the service industry dummy variable ($b=-165.75$). There was a significant difference between manufacturing business and service business in terms of growth in sales. This result suggests that manufacturing businesses in the small business incubators tend to be much more successful than service businesses in the small business incubators.

The remaining variable -rent- contributed a 9% increase in the amount of variance in the growth in sales accounted for by the equation. However, there was a negative relationship

with growth in sales ($b=-1.95$). The result implied that the lower the rent rate, the higher the level of success of the current tenants in a small business incubator.

Table 4.7 Summary of The Entire Sample of Stepwise Multiple Regression on the Actual PPP Activities towards the Growth in Sales

	b	B	p	R ² (R ² change)
Loan Services	2.40	.91	.0000	.22
D ₆	-165.75	-.68	.0000	.36 (+.14)
D ₁	-90.63	-.45	.0012	.55 (+.19)
Rent	-1.95	-.32	.0053	.64 (+.09)
(Constant)	153.00			
Final R=.80, R ² =.64				

ii) Loan Service Group

In order to confirm the effect of loan service variables on small business success, this research divided the sample into two sub-groups according to whether the current tenants received a loan service or not. The subject of this study is the group which received a loan service. In the case of the group that received a loan service (see Table 4.8), using growth in sales as a dependent variable, only the two variables - loan services and industrial types - were found to be significant with .30 of R² value.

As expected, the best predictor was the loan services, explaining 17% of the variance accounted for. There was a

positive relationship between the level of loan services and growth in sales ($b=+1.73$). The result implies that the more tenants in small business incubators received loan services, the more they experienced growth in sales. As seen in the entire sample (see Table 4.7), the variable loans within the loan service group also have the highest beta coefficient ($B=.53$), which shows that it is the most effective variable on growth in sales of current tenants.

The next strongest predictor was the type of business as a dummy variable, which increased R^2 by .13. The result showed that there was a significant difference between R & D industry and manufacturing industry in terms of the growth in sales ($b=-115.3$). This result suggests that manufacturing industries within loan service group are more successful than R & D industries in the small business incubator.

Table 4.8 Summary of Loan Service Group of Stepwise Multiple Regression on PPP Activities towards Growth in Sales

	b	B	p	R^2 (R^2 change)
Loan Services*	1.73	.53	.0004	.17
D ₇	-115.30	-.38	.0083	.30
				(+.13)
(Constant)	130.55			

Final $R=.55$, $R^2=.30$

* means the variable that included in Table 4.8.

5) Comparisons of the Two Models with the Analysis of Attraction Factors

The analysis of the attraction factors was designed to identify perceptions on what variables might affect the individual small business' decision in doing business with a particular business incubator. Three variables -rent, shared services, and property tax exemptions- were believed to have far more importance than any other variable.

On the other hand, in the mixed model using the entire sample, the two most important variables on growth in sales were the perception of the impact of shared services and property tax exemptions. In suburban towns, property tax exemptions were the most significant variable and the perception of the impact of shared services was the next. When regarding large incubator, the perception of the impact of the low rents was the most significant variable in explaining the current tenants' growth in sales. In the case of the magnitude model overall, loan service was the most important variable and rent was the second one, in explaining the growth in sales. Although there was some difference in important variables between the mixed models and magnitude models, the variation was more likely due to the difference in the number of subjects involved due to the missing values.²¹

However, the results of the analysis of attraction

²¹ Due to the difference in the number of independent variables between two models, the missing cases in both models were different.

factors was the same as the findings of the mixed model. In both analyses, this research found the same significant variables, rent, shared services, and property tax exemptions.

Comparing the attraction factor analysis with the magnitude model, the study found some gaps between the perceptions of attraction factors and the actual phenomena of their business operations. According to the analysis of attraction factors, rent, shared services, and property tax exemptions some variables were regarded as more important than the others. In the magnitude model, property tax exemptions were not found to be significant and, instead, the loan service was found to be the most important factor. The magnitude model for those tenants who had received loans showed that the higher the loan the tenants received, the greater their growth in sales. Furthermore, in the magnitude model, this research study found that tenants of the manufacturing industry were more successful than those of the R & D industry. The study also found that the tenants located in an urban incubator were more successful than those in the suburban towns.

Combining the analysis of both mixed and magnitude models with the attraction factor analysis, this research concludes that the success factors for the tenants were the provision of shared services and financial support through more loan services, property tax exemptions, and low rent. As previously shown in Chapter 2, and past research (Allen 1985,

Allen & Dougherty 1987, Fry 1987, Temali & Campbell 1989, Lyons 1990, etc.) was revealed, all of the seven PPP activities were important factors on the success of current tenants in small business incubators even though the factors had ranks in the level of importance.

However, there were gaps between the results of this research and that of past studies. The main reason for this might be that the previous studies did not use the real magnitude of financial activities in order to find the important success factors in a small business incubator. Furthermore, the past studies did not use the growth rate of sales as their dependent variable.

4. Hypothesis Test and Summary

1) Hypothesis Test

The hypothesis in chapter 3 is restated in bold face. Null hypothesis form of hypothesis is underlined.

HYPOTHESIS. PPP activities are positively related to small business success in small business incubator.

Null Hypothesis: There is no significant relationship between PPP activities and small business success in small business incubator.

In testing the research hypothesis it was found that the perception of the impact of shared services and property tax exemptions in the mixed model of the entire sample had a

statistically significant relationship (at the .05 level) with growth in sales of current tenants. The perception of the impact of shared services variable was the most significant variable, with $p=.0001$, and next in line was property tax exemption variable.

As far as the incubator size group was concerned, perception of the impact of shared services within small incubators were statistically significant. Within the large incubator, the two variables -property tax exemptions ($p=.0017$) and perception of the impact of low rent ($p=.0095$)- were found to be significant.

With regard to the location of the incubator, in large urban communities, the perception of the impact of shared services variable was the most significant variable, with $p=.0292$. In the case of suburban towns, both perception of the impact of shared services ($p=.0004$) and property tax exemptions ($.0002$) were statistically significant at the .05 level.

It was also found that both loan services and the rent rate in the magnitude model of the entire sample had a statistically significant relationship with growth in sales. Loan service variable was the most significant one, with $p=.0000$, and the low rent variable followed ($p=.0053$). Within the loan service group, loan services ($p=.0004$) were still statistically significant.

Therefore, the Null Hypothesis of the study was rejected

at the .05 significance level. In the mixed model, a statistically significant relationship was found between the success of current tenants and the three PPP activities, namely, shared services, property tax exemptions, and rent variable in a small business incubator operated by PPP in Michigan. On the other hand, the two PPP activities in the magnitude model, loan services and rent variables, were statistically significant at the significant level of $p < .05$.

2) Summary

In sum, in the mixed model of the study, the three PPP activities, 1) the perception of the impact of shared services, 2) property tax exemptions, and 3) the perception of the impact of the rent variable, were positively related to the success level of current tenants in the small business incubators operated by PPP in Michigan. On the other hand, the two PPP activities in the magnitude model, i.e., loan and rent variables, were also positively related to the success level of current tenants. However, no statistical significance was found regarding loan, leadership, and management variables in the mixed model and property tax variable in the magnitude model.

According to the analysis of attraction factors, rent, shared services, and property tax exemptions; certain variables were regarded as more important than others. The

results of the analysis of attraction factors was the same as the findings of the mixed model. However, comparing both the analysis of the attraction factors and the mixed model with the magnitude model, the study found some gaps between them. The analysis of attraction factors and the mixed model did not take into account the most significant variable, the loan services, as in the magnitude model.

As far as the structural variables were concerned, those tenants in small incubators and urban communities, were respectively more successful, than those tenants in large incubators and suburban towns. In addition, manufacturing industries in small business incubators tended to be more successful than both service and R & D industries in small business incubators.

However, no statistical significant differences were found with respect to the other structural variables, for example, incubator age and incubator staff size in the mixed model and incubator age, incubator staff size, and incubator size in the magnitude model. In general, public - private partnership variables were far more important than structural variables in explaining small business success. This further supports the hypothesis.

CHAPTER 5: SUMMARY AND CONCLUSION

Chapter four, of this study, reported the results and tested the hypothesis. This final chapter will initially summarize the entire research, discuss the findings of the previous chapter, their implications for incubator policy, and then make recommendations for further research.

1. Summary

1) Background, Problem, Literature, and Purpose of the Study

Small business success had been identified as one of the most important elements in the creation of employment and local economic development. The average high failure rate of small businesses, however, represented a sizeable loss in funds and opportunity and, a large drain on the economy. In recent years many government, business and industrial organizations were involved in forming partnerships with a view to job creation possibilities and for mutual benefits. In some way this has affected the incubator business as a way of local economic development.

A review of previous studies on small business success indicated a positive relationship between small business success and entrepreneurial characteristics, business organizations, and the business environment. However, the factors which influenced small business success, as identified

by previous studies, could not fully explain the level of success firms in business incubators experienced. Such research had not identified public-private partnership activities, and had ignored the importance of the relationship between the success level of each firm and the activities in small business incubators.

This research reviewed literature in two major areas that are pertinent to this study: 1) public-private partnerships and 2) small business incubator. From the literature review, this study found seven incubator activities to have the potential to influence small-business success. These activities were: (1) community & incubator's leadership; (2) management services; (3) property tax exemptions; (4) loans; (5) shared services; (6) grants and (7) low rent. Each of these activities was precisely defined in Chapter 3.

The purpose of this study was to find the relationship between PPP activities and the success level of individual firms in small-business incubators within Michigan. To fulfill that purpose, the following research hypothesis was examined: PPP activities are positively related to small business success in small business incubators.

2) Methodology

This research was conducted in small business incubators in Michigan between the months of January and March in 1991. It was done mainly through questionnaire surveys, and

partially through interviews. The sample consisted of 108 current tenants in eleven small business incubators.

The seven defined activities were the independent variables which were to be manipulated by the experimenter. The dependent variable in this study was the level of success of each firm. Level of success was determined by measuring growth in sales. In addition, five structural variables were used to measure whether the success level of current tenants might vary from incubator to incubator for reasons other than level of PPP activities. Structural variables included incubator age, location, size, staff size, and the industrial types of current tenants. Primary statistical techniques adopted were comparison of the mean scores, an analysis of variance, and a multiple regression stepwise analysis.

For hypothesis verification, this research tested at a significant level of $p < .05$. The study checked several assumptions for both reliability and validity of the estimated regression equations. Multiple regression stepwise analysis provided a quantitative indication of the extent and nature of the relationship between the various independent variables' scores or quantities and the success of each tenant.

In this study, there were two parts of the model: one which addressed the perceived relationship between the level of PPP activities and the success of current tenants, the other which investigated the actual magnitude of PPP activities. In other word, part one of the model attempted to

measure the small business owners' perception of the impact of PPP activities on their level of success. Part two used actual magnitude of PPP activities rather than perceived owner's perception on both sides of the equation.

3) Findings

Using the theoretical notions developed in the literature review, the study identified seven independent variables. These variables are leadership, management services, property tax exemptions, loans, grants, shared services, and below market rent. However, the grant variable was excluded from this research due to an insufficient numbers of cases. In addition, this research used five dummy variables: incubator age, incubator location, incubator size, incubator staff size, and industrial types of current tenants.

From the multiple regression stepwise method using these eleven variables, the research hypothesis was supported by the results of the statistical analysis at a significant level of $p < .05$. In other words, the findings supported the hypothesis: PPP activities are positively related to small business success in small business incubators. Summary of the significant variables of the regression equations are presented in Table 5.1.

i) Mixed Model

In the mixed model, when the whole sample was analyzed,

the "perception of the impact of shared services" was the most influential variable in explaining the amount of variation in the growth in sales. This result was consistent with the finding when the sub-sample of small incubators was regressed. The sub-sample of incubators in large urban communities and in rural areas produced the same results.

"Property tax exemption," was the second most important variable. As a dummy variable, it was shown to have a positive sign. This displayed that the current tenants, who received the property tax exemptions, were more successful than those who did not, and this does go a long way in explaining their growth in sales. This finding was also consistent with results when both large incubator and suburban town incubator subsets were investigated. One more PPP activity, low rent, was found to have a positive relationship with growth in sales.

The step-wise regression within the mixed model indicated that the activity variables discussed above are more important than the structural variables in explaining small business growth in sales. This result supports the hypothesis. It suggests that the activities and services provided in incubators truly affect success of the current tenants. The results demonstrate the possibility that success is caused by intermediate factors such as the size and location of an incubator. The inclusion of structural variables also allow for more detailed analysis of which activities are most

significant.

As far as the incubator location variable was concerned, the tenants in urban communities were more successful than tenants in suburban towns. A more specific analysis was performed to investigate this difference between the two groups. In urban communities, only one variable - the perception of the impact of shared services- turned out to be a significant predictor of success. On the other hand, in suburban towns, the perception of the impact of shared services and property tax exemptions were the only two significant variables in explaining the amount of variation in the success level of current tenants.

Unlike the case of current tenants in urban communities, the dummy variable for service industries was shown to have a negative sign. This result suggests that manufacturing industries tend to be more successful than service industries in small business incubators in suburban towns.

One remaining variable -incubator size- was shown to have a negative sign. This result indicates that the current tenants in small incubators have been more successful than those in large incubators. A more specific analysis was performed to investigate the differences between the two groups. In small incubators, shared services was the only significant predictor. In large incubators, however, low rent and property tax exemptions were both significantly influential variables in explaining the amount of variation of

the success level of current tenants.

ii) Magnitude Model

Magnitude Model investigates the relationships between actual magnitudes rather than perceptions. When the entire sample was analyzed, four variables were found to be significant. They were loans, incubator location, rent, and type of business. Loans, as a dummy variable, appeared with positive regression coefficients, which indicates that current tenants who received the loans were more successful than those who did not receive it in terms of growth in sales.

In order to confirm the effect of the loan variable on small business success, this research divided the sample into two sub-groups corresponding to whether current tenants received the loans or not. In the case of the group that received the loan service, only the two variables - loans and type of business - were found to be significant. As expected, the best predictor was the loans. There was a positive relationship between the level of loans and growth in sales. The result implies that the more tenants in the small business incubators received loans, the more they experienced a growth in sales.

In the magnitude model, the results demonstrate the possibility that success is caused by intermediate factors such as the location and type of an incubator. The result

showed that those who do business in small business incubators in urban areas tend to be more successful than those who are located in small business incubators in suburban towns.

It was also shown to have a negative sign in service business dummy variable. There was a significant difference between manufacturing industry and service industry in terms of growth in sales. This result suggests that manufacturing businesses in the small business incubator tend to be much more successful than service businesses in the small business incubator.

This finding remains consistent with the group received loans. Within the group received loans, there was a significant difference between the R & D industry and manufacturing industry in terms of the growth in sales. This result suggested that manufacturing industries within the group received loans were more successful than R & D industries in the same sample.

According to Campbell's (1988) findings, when compared with small businesses who were not located in small business incubators, these results are not consistent. According to his research, the highest success rate belongs to R & D industries. The next highest success rate is among manufacturing firms, with retail and service businesses possessing the lowest rate of success.

The remaining variable -rent- revealed a negative

1

relationship with to growth in sales. The result implied that the lower the rent rate, the higher the level of success of the current tenants in small business incubators.

Table 5.1 Summary of Significant Variables

<u>Models</u>	<u>Significant Variables</u>
Mixed Model	
<u>Whole Sample</u>	Shared Services, Property Tax Exemptions, D ₁ , and D ₃
<u>Subsample</u>	
Small Incubator	Shared Services
Large Incubator	Property Tax Exemptions and Low Rent
Urban Community	Shared Services
Suburban Towns	Shared Services, Property Tax Exemptions, and D ₆
Magnitude Model	
<u>Whole Sample</u>	Loan Services, Rent, D ₆ , and D ₁
<u>Subsample</u>	
Loan Service Group	Loan Services and D ₇

iii) Comparisons of the Two Models with the Analysis of Attraction Factors

The analysis of the attraction factors was designed to identify perceptions on what variables might affect the individual small business' decision in doing business with a

particular business incubator. In the analysis of the attraction factors, three variables - rents, shared services, and property tax exemptions - had far more importance than any other variables.

In the mixed model of the study, the three PPP activities, 1) perception of the impact of shared services, 2) property tax exemptions, and 3) perception of the impact of the rent variables, were positively related to the success level of current tenants in the small business incubators. On the other hand, the two PPP activities in the magnitude model, i.e., loans and rent variables, were also positively related to the success level of current tenants.

The results of the analysis of attraction factors were the same as the finding of the mixed model. In both analyses, this study found the same significant variables, rents, shared services, and property tax exemptions explaining the success of the current tenants. However, comparing both the analysis of attraction factors and the mixed model with the magnitude model, this research found some gaps between them. Namely, both the analysis of attraction factors and the mixed model could not find the most significant variable - the loan services - in the magnitude model.

Combining the analysis of both mixed and magnitude models with the attraction factor analysis, this study concludes that the success factors for the tenants were the provision of shared services and financial support through more loan

services, property tax exemptions, and low rents.

2. Policy Implications

The following recommendations are offered for practical applications: Namely, in order to secure jobs in the local economic development without a financial drain, it is necessary to know what kind of PPP activities and structural variables help the current tenants successfully manage their businesses. Government policy-makers, planners, and incubator managers are encouraged to use this information in managing the current small business incubators or in preparing for the future development of small business incubators.

According to Allen (1985), small business incubators are facilities that support new and small firms by providing affordable space, shared office services and management assistance. He suggests that the incubator concept must include four dimensions, such as a local network, multi-tenant space, shared services and management consulting assistance. He also notes that these space and service requirements distinguish incubator facilities from office centers, research and industrial parks, one-stop human services centers, and other multi-tenant commercial and industrial properties (Allen 1985 p.18).

Although the tenants in small business incubators enjoy managerial and financial services as large corporations do,

the findings of this study shows that financial services were the significant success factors for the tenants in Michigan through more loan services, property tax exemptions, low rent, and the provision of shared services. Shared services might relate to symbolic image of small business incubator. In this study, shared services is the most important factor to distinguish small business incubator from incubators without walls, such as office centers, research and industrial parks, etc. Incubators without walls may enjoy all incubator services except shared services. As a result, shared services is the main reason why small business incubators are necessary compared with those without walls. Shared services is also a type of financial support. Shared services available to the small businesses can help to reduce their overhead costs. Small businesses usually cannot obtain these services for themselves because of their poor financial ability. Thus, they utilize the economy of scale of the business incubator.

In addition to shared services, rent below the market rate is also considered to be a kind of financial assistance, or in-kind financial support. By offering rent below the market rate, undercapitalized firms may make their dollars stretch farther. As a result, the significant success factors for the tenants were financial PPP activities. Consideration could be given in recommending that incubators at least should provide the four basic financial services.

The result of this survey reveals the idea of shared

services and rent below the market rate that are not now being provided completely by the majority of Michigan incubators. Furthermore, financial assistance, such as loan services and property tax exemptions, were not available to many current tenants.

Considering the government's financial constraints, loan services will be one of the most effective means to help small businesses. The incubator's, or government's, role as a referral or a broker, and one of the PPP activities, could be emphasized for those tenants wanting to take a loan from bank or private lending institute. As Lurcott and Downing (1987) argue, the commitment to a partnership approach clearly will bring comfort to individual funding agencies and enhance the likelihood of extended participation.

Business incubators, offering affordable rents, convenient services, and financing in supportive environment appeared to be logical approach to support new small businesses. However, before this study was done, whether this activities would have a positive impact on small business success was a more important question.

The next concern is the matter of entry criteria. The vast majority of incubators possess entry criteria. However, they do not have any mandatory entry criteria for the type of business. Manufacturing industries usually create many more jobs than service industries and R & D industries. Especially in Michigan, only 26% of all current tenants were

manufacturing industries. In Michigan, business incubators have been developed both in response to declines in manufacturing employment due to auto industry recession and overall economic recession. In this circumstance, the entry criteria for more manufacturing industries might be helpful to both the diversification of industrial structure and job creation in Michigan. The result of this study indicates that manufacturing industries in the small business incubators tend to be much more successful than both service industries and R & D industries.

Finally, this research indicates that tenants in the small incubators were much more successful than those in large ones. In this condition, it is not necessary for the incubators to initially have excessive amounts of square feet. Instead, the most favorable alternative is to develop the small incubators at an early stage, and then to enlarge the small incubators according to the success of the small incubators.

3. Recommendations for Future Study

(1) Due to so many missing values, the study lost valuable information about the impact of some PPP activities on the success level of current tenants corresponding to some of the structural variables, especially the incubator location

and the industrial type in the magnitude model. The grant variable was excluded from the model due to the lack of enough cases. By increasing the number of cases, a similar study should be conducted in the future to further examine the effects of the variables.

(2) A similar study should be conducted in private business incubators, to compare the results and findings with those of this study. A comparative study between the two kinds of business incubators may reveal important factors that this study may have overlooked. The results of this study might not be applicable to the private business incubators.

(3) Michigan state and its local economic development has heavily relied on the automobile industry. As foreign competitors put tremendous pressure on the domestic automobile industry, and the Michigan economy was recessionary since the early 1980's, the state government came to realize the need for the diversification of its industrial structure and job creation. Hence, the development of small business incubator has been promoted as a way of the diversification of its industrial structure and the creation of jobs by the state government. Likewise, the business climate might vary from country to country. So a similar study should be conducted in another country or countries to examine whether the model developed in this research can be applied in a different business climate.

(4) An analysis with more qualitative data, such as the

quality of the PPP activities that tenants actually received, should be conducted to further support these findings.

In comparing growth in sales across the structural variables, the demand for the PPP activities may vary from tenant to tenant. The quality of PPP activities may also vary from incubator to incubator. The quality level of PPP activities might have an influence upon the level of success of the current tenants. Due to the limited size of population and lack of information, quality indications were not included in this study. The issue needs to be addressed in future research, and the addition of these factors could increase the explanatory power of the model.

APPENDIX

QUESTIONNAIRE FOR FIRM IN THE SMALL BUSINESS INCUBATOR

Dear firm owner:

The primary objective of this questionnaire is to advance our understanding of the utility and effectiveness of small business incubators in Michigan. We feel that many small business owners such as yourselves have benefitted from the existence of small business incubators. We would like to gain knowledge about those characteristics of an incubator which are most helpful. This information will be given to incubator managers and local governments. For this study to be more meaningful, it is very critical for you to fill all questions out completely and accurately. Your participation in this study will help to promote an understanding of current incubator tenants and, hopefully help to produce better future government and incubator policies for current businesses in the small business incubators.

The information which you provide for us on this questionnaire is completely confidential and will be used only for research purposes. To maintain this complete confidentiality, please do not write your name anywhere on the questionnaire. No one will see them except the research personnel. We request that you take a few minutes to fill out the questionnaire. If you come across a question for which you do not have a precise answer, please give us your best estimate. If you have other questions, please call one of the people listed below collect at 517-353-9055.

Your participation in this important study will be greatly appreciated. Please return the questionnaire in the envelope provided by February 2, 1991 to expedite the study. In addition, all participants will receive a copy of the results of this study.

Sincerely,

Byung Su Kang	Dr. Hamlin	Dr. Lyons
Graduate Assistant	Professor	Assistant Professor
Small Business Incubator Study		
Urban Planning Program		
Michigan State University		
Urban Planning & Landscape Architecture Building		
East Lansing, MI 48824		

A. Attraction Factors (Why did you locate in the incubator?).

There might be many reasons why you applied to the business incubator. Please indicate how important you perceived the following factors to be before your firm entered the business incubator.

	5) very important				
	4) important				
	3) neutral				
	2) unimportant				
	1) very unimportant				
1. Business incubator's visibility (to your suppliers or buyers)	1	2	3	4	5
2. Incubator's ability to provide financial capital to your firm	1	2	3	4	5
3. Business incubator manager's (or staffs') understanding of your firm's objectives and ways of doing business	1	2	3	4	5
4. Incubator manager's help in dealing with governmental paperwork and regulation	1	2	3	4	5
5. Incubator's business planning service	1	2	3	4	5
6. Marketing (technical) assistance service by the incubator or incubator's referral	1	2	3	4	5
7. Risk management service by the incubator or incubator's referral	1	2	3	4	5
8. Accounting service by incubator or incubator's referral	1	2	3	4	5
9. Low cost space; below market rent	1	2	3	4	5
10. Property tax exemptions	1	2	3	4	5
11. Direct loans made by the government (state or local), or its agents, such as financial authorities, economic development corporations, and/or the incubator	1	2	3	4	5
12. Loan guarantees (i.e. loans made by private lending institutions backed with the full faith and credit of the government or the incubator)	1	2	3	4	5
13. Private loans from the incubator's or government's referral	1	2	3	4	5
14. Incubator's photocopier service	1	2	3	4	5
15. Incubator's receptionist service	1	2	3	4	5
16. Incubator's telephone service	1	2	3	4	5
17. Incubator's fax service	1	2	3	4	5
18. Incubator's conference room service	1	2	3	4	5
19. Government subsidies (grants)	1	2	3	4	5
20. Private foundation subsidies (grants) through incubator's or government's referral	1	2	3	4	5

B. Services Received

In the table below, many services which were received after your firm entered the business incubator are listed.

The following questions will let us know more about your firm and the way you feel about the services you are receiving from the incubator. Please answer all the questions by circling the number which indicates how helpful each of the following factors has been during you stay in the incubator.

<u>Services Received ?</u>		<u>The degree of helpfulness to your firm growth</u>				
yes	no	5) very helpful	4) helpful	3) neutral	2) unhelpful	1) harmful
1. Incubator's photocopier service	1 2	1	2	3	4	5
2. Incubator's receptionist service	1 2	1	2	3	4	5
3. Incubator's telephone service	1 2	1	2	3	4	5
4. Incubator's fax service	1 2	1	2	3	4	5
5. Incubator's conference room service	1 2	1	2	3	4	5
6. Incubator's business planning service	1 2	1	2	3	4	5
7. Marketing (technical) assistance service by incubator or incubator's referral	1 2	1	2	3	4	5
8. Risk management service by incubator or incubator's referral	1 2	1	2	3	4	5
9. Accounting service by incubator or incubator's referral	1 2	1	2	3	4	5
10. Low cost space; below market rent	1 2	1	2	3	4	5
11. Property tax exemptions	1 2	1	2	3	4	5
12. Direct loans made by the government (state or local), or its agents, such as financial authorities, economic development corporations, and/or the incubator	1 2	1	2	3	4	5

<u>Services Received ?</u>		<u>The degree of helpfulness to your firm growth</u>				
yes	no	5) very helpful	4) helpful	3) neutral	2) unhelpful	1) harmful
13. Loan guarantees (i.e. loans made by private lending institutions backed with the full faith and credit of government or incubator)	1 2	1	2	3	4	5
14. Private loans from incubator's or government's referral	1 2	1	2	3	4	5
15. Government subsidies (grants)	1 2	1	2	3	4	5
16. Private foundation subsidies (grants) through incubator's or government's referral	1 2	1	2	3	4	5
17. Business incubator's visibility (to your suppliers or buyers)	1 2	1	2	3	4	5
18. Incubator's ability to provide financial capital to your firm	1 2	1	2	3	4	5
19. Business incubator manager's (or staffs') understanding of your firm's objectives and ways of doing business	1 2	1	2	3	4	5
20. Incubator manager's help in dealing with governmental paperwork and regulation	1 2	1	2	3	4	5

C. Financial Data For Current Tenants

- When did you start this business?
month/ year _____
- When did your firm move to an incubator?
month/ year _____

3. What is the nature of your business ? (circle one)

- a. manufacturing
- b. services
- c. R & D (research and development)
- d. Others: Please list _____

4. We would like to ask you a few questions about employment and total annual sales of your firm.

- 1) How many persons did your firm employ (including founder(s) and founder's spouse)?
 - a. First year after moving to the incubator
full-time _____ part-time _____
 - b. The year 1990
full-time _____ part-time _____
- 2) What has been the percentage growth in sales between the first year moved to incubator and the year 1990 ?
_____ %

5. What were the amounts of the following items since you enter the incubator: property taxes, loans, subsidies (grants), and rent? If you do not know the precise total amount, please estimate the total amount for each item.

1) Did you pay property tax?

Yes _____ No _____

If yes, what was the average annual amount of property taxes paid?

\$ _____

2) Have you taken out loans ?

Yes _____ No _____

If yes, please provide the total amount of all loans taken out in the blanks below. Please provide the information for each year of your stay in the incubator and for each of the four kinds of loans listed.

- a) Direct loans made by the government (state or local), or its agents, such as financial authorities, economic development corporations, and/or the incubator

1st year \$ _____ 2nd year \$ _____
3rd year \$ _____ 4th year \$ _____

- b) Loan guarantees (i.e. loans made by private lending institutions backed with the full faith and credit of the government or the incubator)

1st year \$ _____ 2nd year \$ _____
3rd year \$ _____ 4th year \$ _____

c) Private loans through incubator's or government's referral

1st year \$_____ 2nd year \$_____

3rd year \$_____ 4th year \$_____

d) Private loans through personal contacts

1st year \$_____ 2nd year \$_____

3rd year \$_____ 4th year \$_____

3) Have you received any subsidies (grants)?

Yes_____ No_____

If yes, what was the total amount of the subsidy (grant) received while located in the incubator, for each of two kinds of subsidies (grants)?

a) Government subsidies (grants)

\$_____

b) Private foundation subsidies (grants) through government's or incubator's referral

\$_____

4) How much did you pay for rent per square foot (sq.ft.) per month?

a) First year moved to incubator \$_____

b) The second year \$_____

c) The third year \$_____

d) The fourth year \$_____

6. How many square feet did you occupy ?

a) First year moved to incubator _____sq.ft.

b) The second year _____sq.ft.

c) The third year _____sq.ft.

d) The fourth year _____sq.ft.

B I B L I O G R A P H Y

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