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SMALL BUSINESS ENTRY STRATEGIES: AN INTEGRATION OF TECHNOLOGICAL DISCONTINUITY AND INDUSTRY GROWTH POTENTIAL

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ABSTRACT

Technological innovations often create growth and profit opportunities for new firms. Entrepreneurs may find it beneficial to take advantage of these opportunities. A critical decision facing any new venture is selecting a strategy to effectively enter a market or industry. To assist the decision maker in this endeavor, a normative model is offered to help entrepreneurs position themselves to take advantage of technological innovation. Specifically, the model develops four different strategic choices. These strategic choices are contingent on the magnitude of technological change and the growth potential of the industry.

INTRODUCTION

In the recessionary climate of the 1990's, small businesses have increasingly been offered as the panacea for numerous national economic problems ranging from the lack of product innovation (Keats & Bracker, 1988) to unemployment (Hofer & Sandberg, 1987). Despite the anticipation of the apparent benefits that can be gained through accelerated small business growth, the poor survivability record among small firms has continued to overshadow these aspirations. It is well documented that small businesses exhibit a discouraging failure rate. Depending on the sample and industry, these rates have been reported to range from 34 percent (Bates & Nucci, 1989) to 53 percent (Romanelli, 1989) during the first five years of operation. Some industries, like the restaurant industry, are particularly brutal on new entrants, reporting failure rates as high as 90 percent (Kopf & Beam, 1992).

Numerous studies have been devoted to ascertaining the causes of small business failures. The more commonly cited reasons for this lack of continuity are insufficient capital budgeting, poor money management, excessive inventory, inadequate provision for contingencies, lack of formal planning, and inability to cope with growth (Laitinen, 1992; Duchesneau & Gartner, 1990). All of these issues can be attributed to deficiencies in the strategic planning process.

Bracker, Keats, and Pearson (1988) have shown that strategic planning is positively correlated with the financial performance of small businesses. Countless other studies reinforce this contention by showing that small businesses that develop strategic plans outperform those that do not (Ackelsberg & Arlow, 1985; Bracker & Pearson, 1986; Kopf & Beam, 1992; Robinson & Pearce, 1983; Shuman & Seager, 1986; Shuman, Shaw, & Sussman, 1985; Shrader, Mulford, & Blackburn, 1989).

One aspect of *strategic choice* theory suggests that managers of an organization have the ability to proactively select the market in which to operate (Astley and Van de Ven, 1983). This decision of selecting the market or industry to enter is one of the most critical strategic decisions for any new venture. Child (1972) contends that this strategic choice strongly affects performance. Because the success of a small business, or any size enterprise for that matter, is tied to choosing viable business-entry strategies, a normative model has been developed to provide entrepreneurs a framework for making the strategic choice of market/industry entry.

There have been relatively few studies investigating potential small business entry strategies. One of the more noteworthy studies addressing entry strategies is Vesper's (1990), in which 14 different competitive tactics were developed for new ventures trying to enter a market that already had existing competition. This study differs from Vesper's work by developing specific entry strategies based upon technological discontinuity and industry attractiveness.

As stated previously, innovation has been one of the hallmarks of small business growth. Drucker (1986) sees innovation as a key variable in creating entrepreneurial opportunities. He further identifies seven sources of innovation that could encourage a small business venture. Two of these industry sources are innovation based on process needs, and changes in the industry structure. Process needs focus primarily on correcting a weakness in an existing process. Simply stated, an existing process possesses some inherent inefficiency, and the entrepreneur develops a solution to eradicate that deficiency. Changes in industry structure imply the development of a new product or service that undermines the existing industry standard—e.g., the supplanting of the slide-rule by the pocket calculator. To one degree or another, these innovation opportunities involve the displacement of an existing technology by a new one, a phenomenon called technological discontinuity.

This study develops an entry strategy model. This model is offered to fill the void of relevant entry strategy models designed exclusively for small businesses. Currently, no small business entry strategy model considers the impact of technological discontinuities. Given the occurrence of a technological discontinuity, this model should assist small business owners in analyzing and developing appropriate entry strategies. This model is potentially important in light of the high failure rates associated with new ventures, many of which can be attributed to poor entry decisions.

THE ENTRY STRATEGY MODEL

The model developed in this study identifies entry strategies on the basis of two dimensions: technological discontinuity within a particular industry and that industry's potential for growth. The entry strategy model being proposed is presented as a two-by-two matrix in order to facilitate the reader's understanding of the interrelationship between these two environmental factors. In the model, categories of technological discontinuities are represented as the factor on the vertical-axis and industry growth potential on the horizontal-axis.

Technological Discontinuity

Technology discontinuity is a dimension that has profound effects on entry opportunities (Foster, 1986). Consequently, an in-depth understanding of the concept of technology is essential. Technology is broadly defined as developments, tools, and knowledge that mediate between inputs and outputs or that create new products/services (Rosenberg, 1972). Technology is not only new tangible "things" like the PENTIUM microchip, but it can also be an improvement in the way a service is provided, such as the introduction of drive-up windows at McDonald's restaurants.

The introduction of a new technology predictably affects the industry from which it emerges. Sometimes the advent of a new technology affects several industries simultaneously. Tushman and Anderson (1986) show that technology evolves through periods of incremental change punctuated by technological breakthroughs that either enhance or destroy the competence of current firms in an environment. Using case studies, they show that technological progress constitutes a cumulative process interrupted by discontinuous change. These changes often offer extreme improvements over existing technologies. If the technological improvements are very significant, then no increase in scale, efficiency, or design can make older technologies competitive with newer technologies (Mensch, 1979; Sahal, 1981). The old technology becomes a hinderance to those firms still using it. These firms are then confronted with the choice of abandoning the old technology or abandoning the market. Those firms that can make the rapid transition to the new technology are more likely to survive than the late adopters (Ansoff, 1987). Given the success of new ventures in dynamic environments (Hofer & Sandberg, 1987) and the importance of technology as a factor influencing environmental dynamism, the proposed model provides a contextual framework for evaluating an environment sensitive to technological change.

Although no tools exist specifically for the identification of technological discontinuities, potential small business owners can use established environmental scanning techniques to gather the necessary information. Discontinuities may be identified by such simple techniques as reviewing trade association reports (which can be found in the *Encyclopedia of Associations*), trade magazines, and general purpose business magazines. Entrepreneurs may further seek feedback from customers and suppliers. Moreover, a small business owner's experience and expertise within an industry may facilitate this analysis.

Environmental change caused by technological discontinuity presents both threats and opportunities for individual organizations (Tushman & Romanelli, 1985). For those firms that are among the first to exploit this change, discontinuities alter the competitive environment and afford first mover advantages. These first movers enhance their competitive advantage by reaping the benefits of volume and experience (MacMillan & McMaffrey, 1984; Porter, 1985). Consequently, given the flexibility and adaptability of most small businesses, achieving first mover advantages should be a central objective.

However, technological discontinuities pose threats as well as opportunities. As previously mentioned, those firms that are slow in adopting the new technology often find their ability to compete severely diminished. Whether the introduction of a new technology presents an organization with an opportunity or poses a threat is dependent upon how the changes affect the firm's competitive competence. Consequently, discontinuities have been classified as either *competence-destroying* or *competence-enhancing* based on the potential to destroy or enhance

existing organizations in a given environment (Tushman & Anderson, 1986). These discontinuities are not necessarily two ends of a spectrum, but distinct environmental phenomena that collectively encourage the use of innovative, proactive and risk-taking strategies. These are precisely the types of strategies that have been proven to enhance the probability of success for new ventures (Hofer and Sandberg, 1987; Romanelli, 1989). For example, Apple Computer proactively entered the personal computer market. As a result, Apple gained first-mover advantages by establishing its product as the industry standard. Therefore, due to high switching cost, they were able to compete as larger firms entered the marketplace.

Competence-destroying Discontinuities

Competence-destroying discontinuities are characterized by a technological innovation so extreme that the new technology fundamentally alters the set of relevant competencies within a class. Often a shift may occur in the skills and knowledge-base necessary to employ basic technologies (Tushman & Anderson, 1986). These major disruptions in skills and distinctive competence are associated with major changes in the distribution of power and control within the environment (Chandler, 1977; Barley, 1986). Competence-destroying discontinuities are usually initiated by new firms and are associated with increasing environmental dynamism (Tushman & Anderson, 1986). Examples of competence-destroying changes are diesel versus steam locomotive and microchip versus transistor.

Competence-enhancing Discontinuities

Tushman and Anderson (1986) define competence-enhancing discontinuities as improvements in a product or process that build on existing know-how within a product class. Like competence-destroying discontinuities, these developments substitute for older technologies, but do not render obsolete the skills required to master the old technologies. These improvements build on existing knowledge and provide the foundation for subsequent incremental changes (Dutton & Thomas, 1986). Examples of competence-enhancing improvements are electric versus manual typewriter and IBM AT versus IBM XT.

Industry Growth Potential

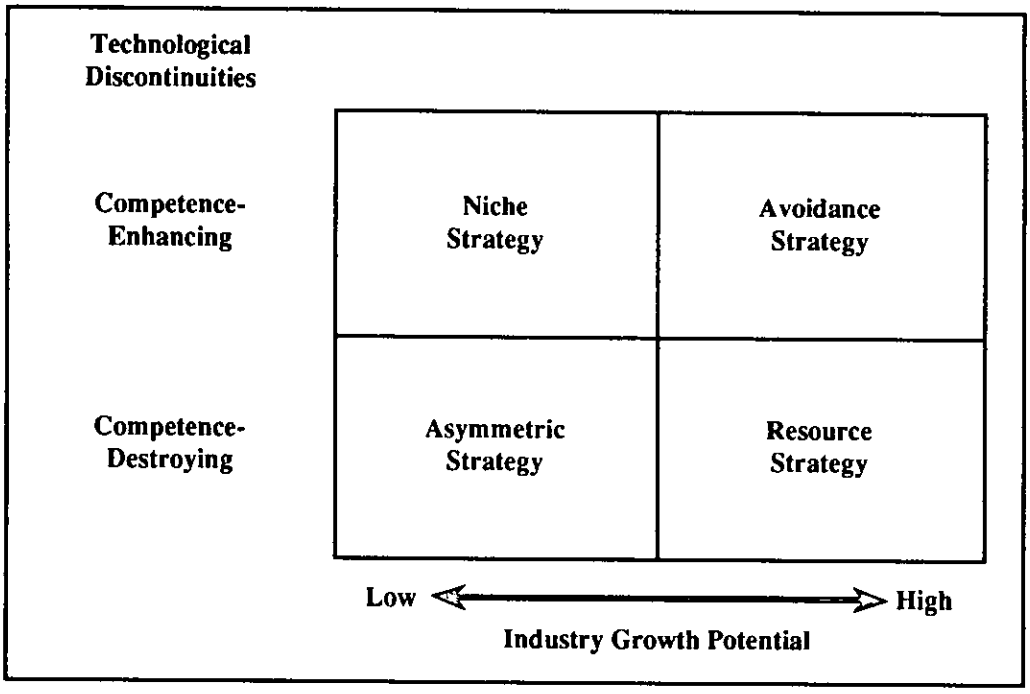
The other dimension in our model, industry growth potential, is defined as a product of munificence and market demographics. Munificence is essentially the extent to which an environment can support growth. An environment with high munificence would be characterized by fewer resource constraints on a new venture, as compared to depleted environments (Dess & Beard, 1984; Starbuck, 1976). An environment with high munificence contains ample resources and demand to facilitate considerable growth. Conversely, an environment with low munificence contains minimal resources and diminished demand which constrain or thwart organizational growth (Tushman, 1977). When an environment is characterized by low munificence, resource scarcity increases the risk to organizations that remain in that environment. Growth and profitability for individual firms become more difficult because firms must compete with each other for resources and customers needed to sustain growth (Porter, 1980). For example, in the early 1970's, munificence in the air express industry was high, allowing firms like Federal Express to realize considerable gains without competing for common resources. As the industry became saturated, munificence declined, thus forcing many firms to leave the market.

Munificence is considered important because it is directly affected by technological discontinuity. When a discontinuity occurs, munificence increases due to an altered environment (Tushman & Anderson, 1986). This point is illustrated by the development of personal computers, which made computer usage possible for wider audiences. The new markets created by this technological improvement or discontinuity resulted in tremendous growth opportunity for the computer manufacturing industry, as well as the computer software industry.

In addition to technological discontinuity, other factors such as population demographics may affect industry growth potential. Specifically, factors such as age, ethnicity, affluence, and other characteristics of the target market in a given industry can affect demand for products/ services in that industry. Population démographics are particularly important because of their impact on the firm's environment, and because such demographic information is readily available to the entrepreneur. For a detailed explanation of calculating munificence for a specific industry, the reader is referred to Dess and Beard (1984).

The proposed strategic choice model integrates the interrelationship between research focusing on the environment and research focusing on the firm. More specifically, the model assists the user in analyzing the possible strategic choices and developing viable strategic alternatives. The model, as depicted in Figure 1, illustrates the different possible strategies given the interrelationship of technological discontinuities and industry growth potential. This model is offered as a general analytical tool and is not intended to give answers in specific situations. It is a means to provide a parsimonious perspective on a complex situation. By providing four broad entry strategies, the entrepreneur is afforded general policy guidance to avoid making market entry decisions that are potentially incompatible with environmental conditions (defined in terms of growth and technological discontinuities).

Figure 1. *Entry Strategy Model*



Niche and Avoidance Strategies

In instances when a competence-enhancing discontinuity occurs, existing firms in the industry are in the best position to exploit the change. This is usually the case because the change caused by the discontinuity is built on existing know-how. Since existing firms already have established resources and expertise in place to take advantage of the new situation, they are more likely to gain advantages than new ventures. Competence-enhancing discontinuities tend to consolidate the industry leaders; as a result, the rich are likely to get richer (Tushman & Anderson, 1986). Additionally, any previous entry barriers that may have made an industry impervious to new ventures may still exist. For instance, the introduction of the steel-belted radial tire is an example of competence-enhancing technological change. This new product technology allowed existing firms in the tire industry to potentially increase profits. However, given the capital investment in plant and equipment required to operate in this industry, entry barriers remained unchanged. Small firms wishing to take advantage of this technological change could not benefit as these high entry barriers still remain and preclude competition in these markets.

One viable alternative for small businesses is the *niche strategy*. This is the logical choice when a competence-enhancing discontinuity occurs and industry growth potential is low. Some of the established firms may not find it attractive to alter their operations to exploit the technological change, especially if this change is costly in upgrading current fixed assets. From a benefit/cost standpoint, the projected sales of the new technology when applied to a specific market segment may not be sufficiently large to justify the entry of the large firm. Under such circumstances, an opportunity may arise for a new venture to focus on a certain market segment, or niche, that may have been abandoned by the competence-enhancing situation. Homebuilding software, used for managing new residential construction, is an excellent example of a successful niche strategy. This software was specifically tailored to the needs of this market by improving on existing technology marketed by major software companies, such as Microsoft and Borland. Since this market does not provide high growth potential, it does not attract the larger software development companies. Smaller companies, such as YARDI Systems, have specifically targeted their improvements for profitable operation in this niche. Consequently, YARDI, by employing these competence-enhancing improvements (homebuilding software), successfully serves this market segment that larger competitors have chosen to ignore.

Conversely, the *avoidance strategy* is intended for the worst possible scenario confronting a new venture. A competence-enhancing discontinuity has occurred, which means existing firms are exploiting their distinctive competence, thereby creating sizable barriers to entry. Because industry growth potential is high, most established firms have a strong incentive to implement the technological change. Moreover, given the nature of a competence-enhancing change, suppliers of the established firms would not be rendered obsolete since the change was built on existing know-how. Therefore, the best strategy for a new venture in this quadrant would be to reconsider other market alternatives. The introduction of the 3.5 inch computer diskette demonstrates the rationale underlying the avoidance strategy. Larger firms in the industry, such as 3M, BASF, and Kodak, were able to use their current expertise, customer base, and existing distribution channels to exploit this competence-enhancing development. Their economies of scale remained in tact as did their barriers to entry. Small firms were precluded from competing effectively, because the introduction of the 3.5 inch computer diskette did not diminish the prohibitive capital required for entry into the market.

Resource and Asymmetric Strategies

As previously mentioned, competence-destroying discontinuities disrupt the existing industry structure (Mensch, 1979). Resources and expertise that assured industry leaders their market share, having become obsolete, are now mobility barriers. Under such circumstances, new ventures founded to take advantage of the new technology will gain market share at the expense of organizations that are burdened with sunken costs, fixed capital investments and outmoded technology (Hannan & Freeman, 1977). As a result of competence-destroying discontinuities, barriers to entry that had previously been considered impenetrable are lowered to new firms (Astley, 1985).

In such situations, the *resource strategy* calls for a small firm to be positioned to be a supplier to a larger, more established firm, or to provide supplemental or support services for an established firm's products. This strategy is a feasible alternative when munificence is high and demand supports new or continued growth in an industry.

Direct competition with a larger firm is generally considered a risky strategy, but considering the fact that previous technology has been discarded, the possibility exists that the interrelated communities, such as the suppliers, have also become obsolete. A viable strategy is to position and differentiate a new venture to become a primary supplier for a larger firm attracted to the new industry, or to provide supplemental or support services for their products.

Resource strategies, however, are not without risk. A threat may emerge as larger, financially stable firms view this as an opportunity to diversify. With their accumulated resources, such firms may be in a position to exploit a technological discontinuity much more efficiently than smaller new ventures.

Implementation of the resource strategy can be illustrated by the opportunities created by the introduction of Computer-Aided Design and Computer-Aided Manufacturing (CAD/CAM) systems. CAD/CAM systems have replaced existing technologies such as digitizers, mechanical drawing, and Numerical Control (NC) tapes. Initially, larger firms, such as McDonald Douglas, became heavily involved in the development of CAD/CAM systems due to its large growth potential. Smaller firms would have been virtually excluded from competing because of the capital and human resources investment needed during the developmental stages. Some small firms were able to exploit this change, by providing support activities for the larger firms. In doing so, the small companies were able to capitalize on the discontinuity opportunities while avoiding direct competition with larger organizations.

Advanced CAD/CAM Systems (ACCS), a small business founded by two engineers is an excellent example of a resource strategy in practice. By customizing existing software, ACCS filled a gap in the services offered by larger companies and also avoided direct competition.

Now assume that a situation has been created by competence-destroying technology in which munificence is low and population demographics do not support industry growth. Under these circumstances, the larger firms looking to implement a diversification strategy may not be strongly attracted to this market due to the growth limitations of that industry. As a result of lower competitive pressures from large firms, the new venture would be afforded the opportunity to adopt an *asymmetric strategy* by entering the industry and competing with firms that possess comparable resources. This strategy is similar to Vesper's (1990) parallel competition entry strategy in which an entrepreneur begins a venture that is similar to existing competitors in an

industry. If the threat of large, resource rich competitors is low as a result of insufficient industry growth potential, a new venture could attempt to establish a distinctive competence over competitors by differentiating its process or ability from similar small rival firms (Stoner, 1987).

One small business to attempt an asymmetric strategy is Genesis Automation. With only five employees, this company developed a robotics system to fill soft drink orders in fast-food restaurants. This technological innovation replaces the manual soft drink dispenser. Since the restaurant equipment industry is a slow growth market and has not attracted large entrants, the lack of attractiveness in this industry has, so far, allowed Genesis Automation to operate without competition from larger competitors.

IMPLICATIONS AND CONCLUSIONS

Given the importance of small businesses to the United States' economy combined with the high failure rates of small businesses, initial assessment of potential growth opportunities and competition is vital when considering what market to enter. The model presented in this study should assist the entrepreneur in making this decision when technological discontinuities occur.

Technological discontinuities create opportunities for growth and profitability for existing firms, as well as new ventures. As has been shown, these resulting opportunities affect industry attractiveness which, in turn, influences whether a new venture's primary competitors will be large or small firms. The framing model proposed in this paper illustrates the interrelationship between industry/market entry choice and industry characteristics, given an environment experiencing technological innovation and helping to predict the size (large or small) of potential competitors.

This model is presented not to prescribe a specific strategy to match a specific situation, but rather to provide entrepreneurs with broad guidance under which a number of viable strategies can be examined and implemented under suitable conditions. As such, the model is not intended to narrowly channel the decision-maker to the "one best strategy," but instead, to assess entry strategies in terms of compatibility with the potential industry's level of competence-enhancing or competence-destroying technological discontinuities, and industry growth potential.

Technological discontinuities provide opportunities for small businesses. Therefore, it can be beneficial for small business owners to utilize scanning techniques to search for these opportunities. The model presented in the paper offers assistance in exploiting these opportunities. By assessing the type of technological discontinuity and potential growth of the market, the small business owner can employ the model to assist in the development of an appropriate entry strategy. Use of the model will encourage small business owners to generate their strategy, taking into account the prominence of competitors, and the long term orientation of the industry.

This model also has practical implications for small business consultants. Often, small business owners need assistance with feasibility studies for new business ventures. This model provides a framework to assist in the feasibility analysis of the new venture, as well as providing a potential entry strategy. Additionally, small business owners may identify an opportunity due to technological change. However, they may not consider the transformation of the competitive structure resulting from the technological changes. Consequently, they may expose themselves to competitive risks by inadvertently pursuing the same market as larger organizations. This model provides the consultant with a framework to make this analysis.

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