THE CONCEPT OF INDUSTRY LIFE CYCLE AND DEVELOPMENT OF BUSINESS STRATEGIES

Andrija Sabol
University of Zagreb, Faculty of Economics and Business, Croatia
asabol@efzg.hr

Matej Šander
msander907@gmail.com

Đurđica Fučkan
University of Zagreb, Faculty of Economics and Business, Croatia
dfuchkan@efzg.hr

Abstract:
The situation in which firms are struggling with decreasing demand for their goods and services gives an incentive to explore strategic fractures that have caused it. It is therefore of great importance to search for the system of cause and effect that shapes and defines organizational adaptability and creativity of the firm and/or its parts, which in turn creates value both for the firm and its environment. The appropriate use of specific business strategies highly depends on the phase of the life cycle of the industry in which the firm and/or its parts operate. The purpose of the paper is to understand the significance of the concept of industry life cycle and explore the implications on the process of designing business strategies. The authors familiarise the readers with the most important research that has contributed to the development of business strategies fitted to each phase of the life cycle of an industry. The paper concludes with the notion that business strategies of firms vary depending on the corresponding stage of the industry life cycle, where each phase inherently requires a different, innovative business strategy. Therefore, the main precondition of sustainable development of a strategic business unit and/or firm is the willingness and capability of management to accept new knowledge about the interdependence between business goals and interdisciplinary knowledge required to achieve them.

Key words: industry life cycle, business strategy, interdisciplinary knowledge

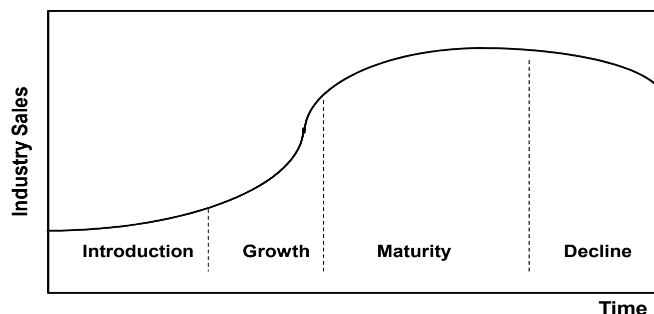
1. INTRODUCTION

The development and selection of an appropriate management technology and planning system is conditioned by the possibility of linking information about the past, present and future development of complex interactions between the company and its environment. The possibility of interactive linking of internal and external environment and their features influences the behaviour of companies and/or its parts. The type, intensity and direction of development of the relationship of internal and external environment define how the firm achieves goals set forth by the chosen strategy of the firm. Therefore, it is of great importance to understand the concept of life cycle, which connects business (especially strategic) decision making with the development of the outer complexity of the firm. Successful products go through four phases of development, and this is the traditional life cycle of an industry (product). Every phase of the life cycle demands a new, innovative business strategy. In order to be able to efficiently monitor different phases in the process of industry development, extensive interdisciplinary knowledge is a requisite for managers.

2. THE CONCEPT OF INDUSTRY LIFE CYCLE

One of the most frequently used models of a life cycle of an industry was presented in 1980 by Michael Porter. Although there is a wide array of research, this model still remains widely regarded as the cornerstone of the life cycle analysis. According to this concept, the industry is the most important part of the environment of a firm. Its properties and power determine the competitive struggle and its structure affects the rules of competitive contest, and thus the necessary strategy for survival and development.

Picture 1: Phases of the industry life cycle



Source: Adjusted according to Porter, 1980, p.156

To explain certain traits of phases of industry life cycle, we will expand the above framework with Abernathy/Utterback model. Abernathy and Utterback (Abernathy & Utterback, 1978) differentiate life cycle of an industry in respect to the degree of dynamics of development of process and product innovations. Criteria for distinguishing changes of individual phases are increase/decrease in product and process innovations. The model describes the industry through three phases. In the first, the fluid phase, the firm is in pursuit of product innovations. The rate of product innovation is highest, aimed at achieving highest technological standards. However, products are being innovated according to ill-defined customer preferences, which in turn demands high production flexibility. High level of manufacturing innovation requires universal equipment and highly skilled workers. Materials used in production are of very broad possible use, and manufacturing plants are small and close to the customers. Transitional phase occurs after reaching the level of dominant design of product(s), by which we mean the achievement of functional and technological standards. The reduction of the number of product variations reduces product innovation, by which time process innovations become the primary interest of managers. Production processes are automated, plants are universal with partly specialised equipment and the materials used in production are partly specialised as well. The main factor of competitive contest become variations of the product accompanied by cost reduction and

increased quality of services. The last phase, the specific phase, is characterised by low level of both product and process innovations with a continuing tendency to decrease. Products are standardized and undifferentiated, while the production process is rigid, automated, capital intensive with high switching costs, materials used are highly specialised. Production is highly inflexible, which makes it very difficult to adapt to changes in the environment of the firm. In turn, this calls for efficient management and control functions. Although the presented differentiation of phases of the industry life cycle is quite intuitive, we further introduce a model which explains how and why industries evolve. The dynamics of development of the industry is defined by two types of threats of obsolescence – threat to core activities and threat to core assets (McGahan, 2004). The threat to core activities refers to a fundamental threat to industrial activities that have realised profits for the industry in the past. The threat to core assets (core competencies) is a threat to resources, knowledge and brand which made the organisation unique in the marketplace.

Industries evolve by one of four different trajectories: radical, progressive, creative and intermediating. The trajectory poses limits on what will generate profits for the business. Radical transformation occurs when core activities and core assets (competencies) are threatened by obsolescence. This usually happens after mass introduction of a new technology. Industry that has moved along this path is completely transformed, but not overnight. Industries that have been modified by radical changes often remain profitable for many years. Intermediating changes are much more frequent than radical changes. More often than not this occurs when customers and suppliers have new market opportunities, gained through unique access to certain information. This change makes principal activities of the industry endangered. However, core assets of these industries, such as knowledge, brands, patents or even specialised factory equipment retain most of their value if they are innovatively used, which is the responsibility of managers. Industries which have experienced creative changes are defined by stable relationships with customers and suppliers on the one side and by unstable assets on the other. McGahan (McGahan, 2004) gives a good example of film industry. The combination of unstable assets (new films), and stable relationships with customers and suppliers provides superior performance in the long run. Progressive change is equal to creative change among customers, suppliers and other industry players who have an incentive to keep the status quo. The difference is that progressive change does not imply the threat of obsolescence to core assets. On the contrary, fundamental resources tend to rise in value over time.

3. BUSINESS STRATEGIES IN DIFFERENT PHASES OF THE INDUSTRY LIFE CYCLE

3.1. Introduction phase of the industry life cycle

Emerging industries are new or reformed industries that originate from technological innovation, changing the relationship between relative costs, new customer needs or other economic and social changes. From the perspective of strategy design, the basic characteristic of this phase of the life cycle is that there are no rules. The competitive issue in the industry lies in harmonising the rules that have to be established for firms to cope and thrive under them. Structural elements that characterize this phase are: 1) technological and strategic uncertainty; 2) high initial (entry) costs; 3) newly established firms entering the industry; 4) customers who are buying for the first time (early adopters); 5) short duration of the phase; 6) subsidies to businesses.

Strategic choice – the moment of entry
The market rewards those who are entering the market first (pioneers), and the main "prize" is the biggest market share (Urban & Carter, 1986). First mover advantages can be achieved in several ways, by designing a new product, using innovative business processes or entering new markets. The initial reward is reduced over time as new firms enter the market, forcing pioneers to take actions to increase and/or defend their market share.

Table 1: First-mover advantages and disadvantages

Advantages	Disadvantages
The opportunity to exploit the positive feedback loop.	The use of “free riding”.
Establishing brand loyalty.	Market and technological uncertainty.
Reducing total costs through control of new technologies, supply and distribution channels.	Unexpected changes in technology or customer needs.
Creating high switching costs for customers, thus making it more difficult for new firms to enter the market (raising barriers to entry).	
Accumulation of valuable knowledge related to needs of customers, distribution channels, manufacturing technologies, etc.	

Source: Compiled according to Hill & Jones, 2010, p. 226-227

Pioneer firms are building competitive advantages by using the fact that they are (amongst the) first to enter a new market. The total size of the pioneers’ competitive advantages depends on the extent to which followers (Varadarajan & Peterson, 1992): 1) benefit from the difference between the cost of innovation and imitation costs; 2) exploit innovation cost-saving; 3) exploit errors of pioneers; 4) benefit from economies of scale. The choice of whether a company should be a pioneer or a follower is without a doubt strategic decision. The correct approach is to determine the current and future internal capabilities of the firm (Kaličanin, 2008). The choice depends on the likely length of the benefits for the first mover. This period is not determined solely on the basis of internal firm resources, but also on the basis of industrial dynamics. The dynamics of the industry creates an interaction between two important factors: the rate of technological development and the pace of market evolution (Suarez & Lanzolla, 2007). Both factors belong to the external environment of the firm and are beyond the control of any management technology. The rate of technological development is related to the number of improved performances over time. Some technologies, such as computer processors, are being developed in a series of incremental improvements. Other technologies, such as digital photography, evolve suddenly, with little or no connection with the earlier prevailing technology set. The pace of market evolution refers to market penetration (the number of customers who have purchased the product in a specific period of time).

The pioneer strategy
A study conducted by the consulting group Booz, Allen & Hamilton (1982) has identified several categories of products based on their novelty perceived by the company that introduces them as well as by consumers of these products. Although more than three decades passed, we can still apply the results of the survey by identifying the following six categories of products: 1) brand new products (10%) – innovations that are a novelty for the company, they create new markets or industries; 2) new product lines (20%) – product category which is a novelty for the company that introduced it, but not new to consumers in the target market; 3) additions to existing product lines (26%) – new products that complement the firm's existing product line. Products are moderately new to the firm and its customers; 4) improvements of existing products (26%) – products that enable improved performance or greater perceived value, introduced to replace existing products; 5) repositioned products (7%) – existing products with the aim of new applications in new market segments; 6) products with the lowest costs (11%) – production modifications that allow a satisfactory ratio of performance of the product and costs needed for its production.

Research suggests that successful pioneers attain and sustain their competitive advantages through both the quality of product(s) and the range of production lines (Robinson & Fornell, 1988). Potential sources of competitive advantages that are available to pioneer firms are (Varadarajan & Peterson, 1992): first choice of market and market positioning; the ability to determine the rules of the game; distribution advantages; economies of scale and experience curve effects; high switching costs for early followers; the possibility of appropriation of rare resources and suppliers.

Late entrant strategy
There are many business situations which essentially force the firm to become a follower by default (e.g. another company managed to introduce their products to the market faster). However, even firms that have the ability to be pioneers sometimes let others to be first-movers and observe how the situation in the market unfolds. The advantages of this strategy include exploitation of mistakes made by the pioneer (in market positioning, marketing, product mistakes) and the ability to use limited resources of the pioneer firms (Walker & Larreche, 1996). Indeed, the late entrant strategy is based on

the hypothesis that the strategy will be effective because followers learn from the experience of the market leader at virtually no cost. Pioneers as innovators invest highly in development of new products, distribution channels and education of consumers (Kotler, 2001). In most cases pioneers are being rewarded for this risk by being the market leader. However, a new firm that will copy or improve the product may enter the market and although this firm most likely will not assume market leadership, it will generate high profits because it cleverly avoided incurring the first-mover costs.

3.2. Growth phase of the industry life cycle

Technological innovations allow the emergence of new industries. With the evolution of new technologies the cost of the product is reduced and quality is improving, demand is increasing, and the industry is growing with their entry and growth in the market. Products are differentiated in terms of technology and of their performance, where reliability becomes a key factor for complex products (Porter, 1980). Marketing investments continue to remain high, yet now in a smaller percentage than in the introduction phase. In this phase of the industry life cycle technology is known, and there is a transition to mass production.

Market leader strategy
In a wide array of industries there is a firm that is recognised as the market leader. This firm has the largest market share, which allows it to press and/or instigate other firms to change their prices, introduce new products or intensify promotion. Position of a market leader represents a kind of orientation point or benchmark for competitors, one which they should challenge, imitate or perhaps avoid. Most firms are planning their business(es) by not only taking into account profit and sales, but also by keeping the market share in mind, which is regarded as key to long run profitability. This is due to the fact that the dominant share of the market is likely to be followed by high profits. However, the firm's goal should not be to maximize the market share, but to achieve optimum market share level (Kotler & Bloom, 1975). For a firm to determine its optimal share of the market it needs to assess the relationship between market share and profitability, assign level of risk associated with each market share and determine the point where the increase in market share (taking on additional risk) will not be compensated any more by an increase in profits. Once the firm determines its optimal market share, to achieve and attain the market leader position the firm should do the following: firstly, the company must find ways to increase the overall market demand; secondly, the company must defend its current market share through effective defensive and offensive actions; and thirdly, the company may try to increase its market share, even if the market size remains unchanged (Kotler, 2001).

Challenger strategy
A firm which is usually placed second in terms of relative market share is fighting fiercely to become market leader. In general, a market challenger can achieve its goal by attacking the market leader and other competitors with the implementation of strategies such as frontal, side or guerrilla attacks (Sahaf, 2008).

3.3. Maturity phase of the industry life cycle

Many industries experience the transition from period of high growth to a more modest growth level. This transition from a phase of growth to maturity is almost always a critical period for firms in the industry. This is the period during which fundamental changes are taking place in the company, induced and also followed by a number of trends, some of which include (Porter, 1980): 1) Slower growth means more competition for market share. Managerial attention is turning towards attacking of competitors; 2) Product is no longer new. Consumer focus moves from whether to buy the product to deciding on different brands; 3) As a result of low growth, increasing consumer knowledge and greater technological maturity, competition is becoming more focused on prices and service quality; 4) Rise of international, global competition; 5) The profitability of the industry is falling.

Changes that often accompany the transition to maturity phase are possible changes in the basic structure of the industry. Every major element of industrial structure is changing: mobility barriers, relative importance of specific barriers, intensity of competition, etc. Structural changes almost always imply that the firm must respond strategically. There are three potentially successful generic strategic approaches: 1) cost leadership, 2) qualitative differentiation, and 3) focus.

Cost leadership strategy

A firm that chose the cost leadership strategy aims to lower its production costs by implementing cost reduction through experience, constant cost control, cost reduction in the areas of research and development, advertising, promotion, etc. Having relatively lower costs than competitors becomes the goal of the strategy, although quality of services and other areas must not be ignored.

In the twentieth century firms have realized the cost leadership strategy through mass production, mass distribution and economies of scale (experience curve). In the twenty-first century, however, the focus of managers switches to lean production, restructuring of the organization and outsourcing. Companies are therefore engaged only in those activities which bring them distinct cost advantages, and the rest is being outsourced (Malburg, 2000).

Qualitative differentiation strategy
Qualitative differentiation strategy is characterized by the creation of a product/service which will be perceived as unique by the customers. This is achieved through design or brand image, superior technology, great customer service or diversified distribution network. This strategy does not allow for ignoring the incurred costs, but they are not the primary strategic objective. Qualitative differentiation is a viable strategy for achieving above than average returns because it creates a defensible position for coping with competitive forces. Differentiation provides protection from competitors in a sense that consumer brand loyalty makes the firm less sensitive to changes in price. This increases the profit margin and avoids the need for setting up a low-cost position in the market. Consumer loyalty and competitors' need to fight the uniqueness of the firm provide entry barriers to potential entrants. Interestingly enough, the realisation of differentiation will sometimes prevent the company from achieving a high market share, which is due to the fact that the products/services are often perceived as exclusive, which is incompatible with a high market share.

Focus strategy
This strategy focuses on specific groups of customers, a segment of a product line or geographic markets. The goal is to apply one the two strategies above, but by focusing on serving specifically targeted areas or niche markets. The strategy rests on the assumption that the firm is in a better position to serve a narrow, strategically vital area of the market. As a result, the firm achieves qualitative differentiation through better solutions for the needs of specific targeted areas, or lower costs in serving these areas.

3.4. Decline phase of the industry life cycle

For the purposes of strategic analysis the industry which is in decline can be recognised by an absolute decrease in sales over a longer period of time. It is characterized by falling profit margins, reductions in production lines, lower investments in research and development and marketing and fewer competitors (Porter, 1980). In this phase of the industry life cycle the strategic choice is the harvesting strategy. Kotler (Kotler, 2001) defines harvesting strategy as a strategic management decision to reduce investment in the business unit with the hope of reducing costs and/or improving cash flow. It entails the elimination of all investments (with possible divestitures) and generation of maximum cash flow from the business in question. This strategy is acceptable when the competitive advantage of the business is in a unstoppable decline, when market conditions worsen and when the firm has a relatively strong competitive position in the market at the beginning of the decline, which makes it likely for current customers to keep the level of their purchases even when the marketing support is highly reduced (Doyle, 2008). In declining industries firms typically focus on harvesting strategy and forget two other alternatives: the strategy of market leadership and the market-nicher strategy. A company that follows the market leadership strategy is trying to achieve above than average profitability in the industry by becoming one of the companies that remain in the industry. The main premise of this strategy is that by winning market leadership, the firm can be profitable because it has the ability to exercise more control in the process of decline and also avoid price wars. Managers execute this strategy by actions such as reducing barriers to exit or forcing other competitors that remain in the industry in additional investment. A market-nicher strategy is commonly associated with small businesses, although it is also used as a strategy of strategic business units of large companies in which the costs of achieving a prominent place in the market are disproportionately high. Benefits of this strategy are significant since it is not only profitable, but also avoids competition and confrontation.

4. CONCLUSION

According to the theory of industry life cycle all industries go through four very different phases, where each particular phase requires a strategy that will effectively absorb specific conditions of the phase. The structure of the industry affects the rules of competition, and thus the necessary strategy for survival and development. Changes in industrial structure, demand and technology requirements through the industry life cycle have important implications for sources of competitive advantage in every phase. This is why understanding the industrial context and finding an attractive competitive position within the industry becomes a strategic goal. It can be noted that different ways of overcoming growing complexity of the environment manifest as a need for different, innovative business strategies. Each of the phases in the industry life cycle requires an appropriate business strategy, which in turn demands innovative knowledge of relationships that link the past, the present and the future of the firm and/or its parts. In managing a firm this implies that, due to increasing complexity of the globalised environment, there is constant need for more interdisciplinary knowledge.

Table 2: The evolution of industry structure and competition over the life cycle

	Introduction	Growth	Maturity	Decline
Demand	Limited to early adopters: high income, avant-garde	Rapidly increasing market penetration	Mass market, replacement/repeat buying. Customers knowledgeable and price sensitive	Obsolescence
Technology	Competing technologies, rapid product innovation	Standardization around dominant technology, rapid process innovation	Well-diffused technical know how: quest for technological improvements	Little product or process innovation
Products	Poor quality, wide variety of features and technologies, frequent design changes	Design and quality improve, emergence of dominant design	Trend to commoditization. Attempts to differentiate by branding, quality, bundling	Commodities the norm: differentiation difficult and unprofitable
Manufacturing and distribution	Short production runs, high skilled labor content, specialized distribution channels	Capacity shortages, mass production, competition for distribution	Emergence of overcapacity, deskilling of production, long production runs, distributors carry fewer lines	Chronic overcapacity, re-emergence of specialty channels
Trade	Producers and consumers in advanced countries	Exports from advanced countries to rest of world	Production shifts to newly industrializing then developing countries	Exports from countries with lowest labor costs
Competition	Few companies	Entry, mergers and exits	Shakeout, price competition increases	Price wars, exits
Key success factors	Product innovation, establishing credible image of firm and product	Design for manufacture, access to distribution, brand building, fast product development, process innovation	Cost efficiency through capital intensity, scale efficiency, and low input costs	Low overheads, buyer selection, signalling commitment, rationalizing capacity

Source: Grant, 2010, p. 277

Therefore, the process of designing and implementing business strategies should be a combination of two mutually reinforcing, complementary views. The first is rational and analytical, which is the source of rational modes of consciousness, while the other is transpersonal and intuitive, as the source of intuitive modes of consciousness. Together they are two extreme poles of human knowledge, and their synthesis into holistic knowledge is the basis of modelling in a variety of strategically essential situations. The first approach to strategic decision making is suited for situations which can be described by static quantitative indicators. Today's economic and business education, which strongly reduces the human intuitive dimension, is guided mainly towards the rational/analytical knowledge. However, nowadays the environment of the firm is highly unstable, which makes it difficult to acquire specific information needed to effectively manage a firm. The growing lack of the transparency of the environment gives incentive to the use and application of not only quantitative, but also qualitative

methods and models of decision making. The necessity of their complementary use is a function of a number of variables, some of which include the increasing pace of entry and exit of firms in an industry, changes in the bargaining power of buyers and suppliers and the emergence of new products and new technologies (Table 2 supports this). The need for interdisciplinary knowledge of management in deciding on the appropriate business strategy depends highly on the knowledge about specific phases of the industry life cycle. A well chosen and effectively implemented business strategy will result in the creation and subsequent sustaining of competitive advantages, which will create value both for the firm and its environment.

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