Strategy in High Volatility Market Environment: Conceptual framework for the study of the strategy formation in technology intensive companies.

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Abstract

Small technology intensive companies function in very rapidly changing and hence challenging business and marketing environments. In such environments companies will have to survive many overlapping and nested, even simultaneously arising strategic and operational problems. Issues emerge and progress with great intensity as well inside as outside companies. Organisations must adapt through their decisions to constantly changing circumstances over which they themselves very seldom have influence. The core question of the study is how strategy formation happens in such a situation.

Introduction

One can argue, that every acting company constantly builds functioning relationship to its environment. Relationship functions well only at the precise moment and with special prerequisites characteristic and essential to each situation. In rapidly changing circumstances as well as in so called discontinuous situations companies are required both will and ability to constant change in relationship with their networks. If company lacks either it drifts possibly first unnoticed but later more and more clearly into a stage of serious incompatibility with its focal network and broader environment, which will eventually lead into insurmountable difficulties.

It is important for a high-tech -company to secure not only its competitiveness in its current functional environment, (in order not to drift to the serious incompatibility -situation illustrated in Figure 1) but also its competitive ability in the future environment. Figure 2 is an attempt to illustrate how high-technology firms also build the future and the future market.

Purpose of the study

The purpose of the study is to deepen our understanding on how the strategies of small and medium sized enterprises operating in the field of high technology are generated and carried out. The research is thus outlined to the rapidly changing and growing field of high-technology activity. Furthermore the study focuses to companies in their early stages of life cycle. Badly predictable tendency of development, hectic and cyclic character of these markets and
obvious discontinuations of environment offer serious challenge to so called traditional planning systems.

Change in company

Figure 1: Company in changing focal network

Change in network

Figure 2: Future competitive advantage of a high tech company

High Technology

High technology (also: high-tech, hi-tech) is a general term used (in a very wide meaning) to describe the products and/or services produced with the latest available technology. Although the concept is familiar and widely used, it lacks a general and unambiguous definition (e.g. Shanklin and Ryans 1987, Rajala 1997). The characteristics, such as size, industry, degree of specialisation, and marketing strategies, of high tech companies vary greatly within the industry. Therefore a more exact definition of the concept 'high technology' is needed, because in its widest meaning, the concept is probably too general. Generally, typical features of high tech companies are: the technical issues, the great competence of the employees in often narrow areas, advanced research and development, and a learning and flexible organisation. Characteristic of high tech industry is that (Shanklin and Ryans 1987, 60):

1. it requires a strong scientific and technological competence of the company,
2. new technologies can rapidly replace the old ones,
3. new technologies create new markets and change the existing ones.

Rajala defined high technology as “the leading edge technology involving a high level of knowledge intensity, which enhances the value of the product or process to the customer in the sense that it provides better quality, or it makes the use of the object easier compared to the old technology” (1997, 15).

A significant feature of high technology is that it is here, today and now. It will be here also tomorrow but definitely in a different form than today. The temporal sensitivity of information in high technology is great, which means that a considerable part of the value of knowledge and competence is often lost already in the near future (Glazer and Weiss 1993). The high technology of today is commonplace tomorrow. A strong dynamic touch and ‘the state of art’ or ‘up to date’ -features are characteristic of innovative high technology (LaPlaca and Punj 1989, 95). Understanding the dynamic nature of operating in this industry as well as investing in it seem to be a common feature of successful high tech companies.

Strategic planning and formalisation

The characteristics of strategic planning are described in this study through the concept of formalisation which is seen as an attempt to construct more or less formal and afterwards visual plans (e.g. written) for future. The study intends to find out among other things the degree to which young technology based firms adapt formal strategic planning methods.

The planning of the company's desired future and the means to strive for it (strategic planning) can in principle be either formal, informal, or, in case the desired future has not been identified in the company (=> it cannot be striven for), there is a situation of no planning.
The formality of planning can be explained with a continuum illustrated in Figure 2. In the other end of the continuum the formal planning represents the most developed or distinguished way of realising strategic planning, while the other end describes a completely opposite line of action, where the company has no strategic planning at a conscious level. Informal planning describes the situation between formal planning and no planning where planning is done but it does not reach formal features.

An enterprise can be either in an imagined or real situation where no strategic planning is done. The fact that a company does not make even informal strategic plans does not necessarily mean that the company would not in some way function strategically (at least in later assessment). The ad hoc type of actions and reactions of this kind of a company inevitably form a development path, which can later be interpreted as a realised strategy regardless of its success. If the company is successful, the realised ad hoc strategy can be found appropriate, and if the company fails, its strategy can be established as either insufficient or unsuccessful.

This way the chain of choices made by a company and its consequences can be seen, at least afterwards, as a certain strategy and the current situation of the company as an inevitable consequence of this strategy. Naturally the consequences of this kind of an afterwards explained strategy are inevitable, because things cannot be changed, they can only be interpreted. In this situation one can thus claim that ‘the strategy is to develop no conscious or formal strategy, and decisions are made according to the situations that are faced’. However, this kind of a definition can be accepted only with the precondition that a strategy is not necessarily seen as a plan made in advance.

Strategic planning can be either voluntary or obligatory by nature. For example, formulating a strategic plan into a written form can be characterised as voluntary. A company can usually either do it or leave it undone. Obligatory strategic planning is, for example, the financial planning related to the taxation, financing or budgeting, which are necessary for the overall existence of the enterprise.

Usually planning in its formal form is voluntary, while control in its certain forms is formal and obligatory. For example, the annual balancing of accounts, which is, among other things, the basis for taxation, represents obligatory control. Voluntary control occurs in companies everyday, but its extent and frequency are determined by the company itself. Also obligatory formal planning takes place, for example, in situations where companies wish to acquire...
outside public (or private) financing and are thus required to make business plans and strategies which, at least formally, meet the requirements of the financiers.

Shanklin and Ryans (1987) draw a parallel between the formality and the bureaucracy of a company’s functions by stating that bureaucracy and formal planning are needed if the function of strategic planning is to be fulfilled. However, taken too far, bureaucracy and formality prevent management from taking rapid actions to direct capital to the utilization of opportunities in markets or fighting the possible drawbacks. According to Shanklin and Ryans, if management relies too strongly on bureaucratic arrangements, organizational charts and formal procedures, the company becomes clumsy and slack, creativity is suffocated and a too careful management style encouraged. The mentioned issues are important competitive disadvantages for all companies and sometimes conclusive ‘kisses of death’ for those companies which operate in the fast changing world of high technology. (Shanklin and Ryans 1987, 289-90).

Berry (1998) in his rather recent research discusses the question whether managers of small technology companies functioning in turbulent markets take the trouble to make long term plans and if strategic planning is even realistic or feasible in companies such as these. The research was conducted in an English technology park. Berry approaches the question with both qualitative and quantitative methods.

A significant majority (69 %) of the companies that answered Berry’s questionnaire considered long term planning as important in the light of the future success. However, only half of the companies that were thinking this way had planning that could have been classified as formal. (Berry 1998, 458). Of especial interest is Barry’s conclusion that there is only little need for formality in companies during the early phases of their life cycles. It raises the question whether the lack of formal planning at the early stages of a company’s existence is really a question of no need for planning or the insufficient strategic competence of the management. This competence develops naturally as the experience in business increases.

In his research Berry developed a typology, which is an attempt to describe the formality of planning of a small company as a phase model, which starts from the basis of a company: the financial planning, and develops towards more and more formal techniques of strategic planning. The research by Berry (1998) indicates that all companies do not proceed through all the phases in this continuum. The nature of the realisable planning activities is determined partly according to the size and development phase of the enterprise, but it is also significantly influenced by the earlier experience of the entrepreneur as well as the balance of management’s skills and competence.

Growth models for companies

Most of the growth and development models for companies are in one way or another phase models bound to the life cycle theoretical views. Companies, their growth and development are pictured with the help of the growth and development of a living organism. This kind of a life cycle metaphoric description is perhaps not scientifically sufficient but still illustrative and easy to understand.
The size, growth and market share of a company as well as their relation to the profitability of the company have long naturally been of interest to the researchers working with economic phenomena. The most famous example of this kind of research is the PIMS research (Profit Impact of Market Strategy) started by the Strategic Planning Institute in Massachusetts in the 1970s. It investigates e.g. the relation between company’s market share and profitability. On the basis of PIMS research a considerable amount of articles and research reports have been written which suggest that the size and market share of a company has an undeniable effect on the profitability of business. The growth of the market share and profitability seem, according to many PIMS reports, to have almost a linear connection, whereas the size and profitability form, depending on the interpretation, either a V-shaped (Roach 1981) or a U-shaped (Porter 1980) dependence on one another, as the following adapted figure shows.

![Relationship between Market Share and Profitability of Company](image)

**Figure 4** Relationship between Market Share and Profitability of Company.

(After Roach 1981, 21 and Porter 1980, 43)

The central content of the figure can be interpreted as follows: a small company can be very profitable until it reaches a certain critical point in its growth. After this its profitability worsens radically as there are still attempts to increase the size of the company. Companies in the so-called ‘Death Valley’ are at their weakest. In this situation some of them disappear completely or, alternatively, become merged with a bigger company, if the company in question is interesting enough, in other words, if it has something to offer for the bigger company.

In the operational environment of high tech companies the markets are often new and develop fast and thus large market shares are easier to gain than in traditional industries. Therefore in the high tech environment the above mentioned dependence relationship could mean that the companies’ efforts to grow are even more grounded – a question of life and death – than in traditional markets. If a company does not intend to stay small it has to be able to cross the ‘Death Valley’ fast, and the means to do that are relatively limited. If the crossing is not possible alone, outside financing is needed from either public or private sector. Private funding

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usually leads to the loss of independence, in one way or another, and the merging of the company into some existing structure in the industry. A conscious choice to stay small, on the other hand, is not a relevant option from the point of view of an innovative enterprise, because the possibilities of a small enterprise to do important product development are limited, and in high technology industries product development cannot be overlooked.

Greiner (1972) has proposed a model which describes the growth and development of a company with the help of five phases. Each separate phase contains both an evolution and a revolution phase. A company’s transition from one phase to another is always preceded by a revolution phase, which is necessary to face, because having dealt with a revolution phase the company is ready to take bigger (and different) challenges. In this model each phase is characterised by a certain management style, which thus has to change when moving from one phase to another if the company wishes to continue its growth.

Another well-known model explaining particularly the growth of small enterprises was developed by Churchill and Lewis (1983) about ten years after Grainer. Their model too is a phase model, with which the researchers attempt to describe the change that takes place through growth as well as the central problem areas related to management, organisation, formal systems, and critical strategies which arise in different phases of development. Churchill - Lewis model is more versatile than Grainer’s rather mechanistic model, and it takes a stand also on the development of the formal systems of a company as well as the central business strategies during the growth. The model remains slightly superficial but provides one frame for the examination of strategies and formality.

Moore (1995) in his view modifies and combines a known diffusion theory of innovations (Rogers 1962, 162) and the life cycle theory in an interesting way to serve the modelling of the growth and development of high technology enterprises and to illustrate the possible discontinuity points in the development. Moore has replaced the concepts for crisis of the above introduced growth theories with one term ‘chasm’, which, according to him, every growing technology enterprise inevitably has to face sooner or later. Moore’s description is an illustrative simplification of a larger problem field, and its biggest advantage is that it is readily understandable when the wish is to describe a multifaceted problem field with few concepts.
Moore’s view differs from the above explained growth theories also because he examines problems on a very wide strategic level but, at the same time, he is inevitably simplifying things. Moore’s strategic view to a technology company could be thought as a view from above and outside rather than from inside and operative functions. An effort to perceive the functioning of company from an overall point of view makes the model easy to understand. It is thus easy for the management to understand and internalise the logic of the model. It should, however, be questioned whether all high technology companies aspire to become the leaders of their industry. If the answer is no, Moore’s model is relevant to only a relatively small part of technology companies.

Special Characteristics of High-Technology Environment

It can be asked what in high technology companies, markets or marketing is so different or special that it is worth a separate study, or if there even are such special features. The companies in question follow normal business regularities and operate in a context defined by their own industry (just like companies in any industry). Next chapters raise several special features describing high technology market and the characteristics of it. These feature can be found in other industries too but not as pronounced as in the field of high technology.

Moore et al. (1998, 7) raises the great probability of ‘discontinuous innovations’ as the central characteristic of high technology environment. Discontinuity in this context does not only mean ‘fast change’ but a sudden change even faster than this, ‘a change as quick as lightning’. The managing director of a high tech company has said in an interview, “Changes in our field take place fast. As I open the morning paper I might read that the market of my company has disappeared – as has my job.”

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Figure 5: The concept of Moore’s growth model and Rogers’ diffusion model.
(According Moore 1995, 14-25 and Rogers 1962, 162)

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<th>Innovators</th>
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It feels like a cliche to say that the life cycles of products have become shorter, and that this causes increasing product development pressures especially on technology companies. It is, however, a justified claim to say that the more recent technological applications in question, the faster new product generations enter the market. Because new technologies are brought to the markets as fast as possible, they are often insufficiently developed. Companies have no time to improve their products which have to be introduced to the markets as fast as possible. The product generations following the first wave appear rapidly. Product solutions quickly become finer and more versatile, and after a few product generations, the product with the technology applied in it starts to achieve what is in reasonable limits, and thus the further development starts to slow down. The product reaches the end of its technological development and further development usually requires the creation of a new technological base.

In a fast developing environment continuous product development is needed in order to stay in competition. High tech companies calculate the costs of product development in many ways, but according to many studies, 30% of the turnover is more a rule than an exception. If the product development costs of a company are less than 10% of the turnover, it most probably is not a high tech company.

Typical of high technology industries is the fast growth of markets. In the world of product saturation high tech companies have the ability to produce and offer its customers solutions the advantages of which compared with the previous solutions are considerably better. This is how new markets are in a way born, and their growth can be explosive. Fast growth means that there are also markets for capable follower enterprises that know the technology. One or a couple of companies cannot satisfy the ever growing demand. This situation offers an opportunity for almost endless development and growth for companies which are in the forefront of new technologies. The fast birth and growth of markets affects directly the growth rate of companies, which can be examined in the light of both turnover and personnel. According to many researches (e.g. Phillips 1991, Myllyniemi et al. 1990, Autio et al. 1989) The growth rates of high technology companies are clearly faster than those in other industries. The growth of high tech companies is often restricted by the availability of right personnel.

Often high technology companies create their own markets, which is to a certain extent in contradiction with the modern customer related marketing thinking (e.g. Smilor 1989, 79-88, Hamel and Prahalad 1994). Customers in this situation cannot themselves perceive possible solutions for their needs, because they do not have any understanding of the available new technologies.

High-tech companies can turn arrogant in their concentration on technology (Smilor 1989, 6). Pride in own skills and competence may be earned, but it can also be dangerous if technology and know-how become the purpose in itself to the company. When technological details exceed the real needs of users, we move in a dangerous area from the company’s point of view. The blurring of customer orientation takes the company’s attention away from satisfying customers’ actual needs to the satisfying of company’s (or development engineers’) own needs. To understand the danger a sense of proportion and reality are needed, which can sometimes become blurred even in successful companies.

For example, high tech companies in electronics industry are often managed by graduate engineers; bio- or genetechnological laboratories by doctors or biologists. These managers have gained a good education in their own special fields, but they often have a limited understanding of marketing, finance, administration, management and/or leadership. In a small high tech company this is not necessarily a risk, but as companies grow, the need for the above mentioned competence areas increase.

Surprising as it may sound, there are high tech managers with hostile attitudes towards marketing. It feels astonishing when a manager says: “The word ‘marketing’ is forbidden in our company.” (Still this same manager works well in marketing - although he himself does not consider his work as marketing.) The term marketing has for some reason become, either for bad experiences or other misunderstandings, a swearword for managers with this attitude.

Polarisation is not characteristic only of high tech companies, but it is seems strong also in these industries. Polarisation means that there are a couple of very big, even global, companies on the one hand and several small specialised enterprises on the other. The amount of the middle sized companies often seems small. Also the personal interests of the owners of small technology enterprises can further polarisation. Many previous owners of high tech companies have fast reached a personal financial independence as a result of the selling of their companies.

High technology companies are international by nature often simply because national markets e.g. in Finland do not offer the high technological special applications enough potential growth opportunities. Some of the OEM producers (Original Equipment Manufacturer) can even be completely dependent on their Finnish principals, but generally the direction of technological companies is towards international markets.

The language of technology in itself is international. Just like mathematics is universal, so are technologies. The fences between nationalities are low for new technologies.

However, sometimes the desired market can already have local solutions based on other standards which are substitutes for the newer and more efficient technologies. Such situations can become obstacles for internationalisation. These situations may not only develop into open conflicts between technologies but also into financial (or even worse political) protectionism, which is an attempt to stop the invasion of competitive technology or at least to win some time for the local companies to develop corresponding products.

High tech applications are often directed at niche-type markets, and the more narrow the market the bigger the need is for internationalisation. Let us take a Finnish high tech enterprise as an example. It has developed a training aid based on laser technology for target shooting. It is clear that the Finnish target shooters alone cannot support this company. Internationalisation is obligatory for an enterprise like this, and it thus has to adapt to it.

Different Decision Environments in High-Technology Context
With the choice and formulation of strategy the future of the company is being consciously affected. When future is being discussed, we are dealing with a more or less unknown area. The future of high tech environment is much more unforeseen than in many other industries. Courtney et al. (1997) have proposed an interesting approach to study the effect of uncertain environment on strategic decisions. In their article in Harvard Business Review the researchers describe companies' strategic decision environments with four principle levels of uncertainty: A Clear-Enough Future, Alternative Futures, A Range of Futures and True Ambiguity.

In this kind of a decision environment a simple linear forecast is usually enough to describe the future with a sufficient probability. Traditional planning systems and phase models are here enough for the enterprise. This situation is not likely in a fast changing market environment.

In a high tech environment companies sometimes have to make early choices concerning the technologies they become tied to. When basic technological solutions have not been established yet, it is possible for any of the introduced basic technologies to become the dominant one in the future. Usually companies cannot afford to become tied to several solutions at the same time.
Making a wrong choice in this kind of a decision situation may later lead the company to problems, depending both on the exchange cost of technology and on how far behind competitors the company remains because of the wrong decision. Different theoretical decision analyses, forecast models for the future value and game theories are possible tools when the company attempts to select the correct continuum.

Figure 8: A range of futures

A good example of this kind of a situation is the competition between VHS, Beta and Sony technologies over the dominance of global home video market in the 1980s. Later the companies bound to the two last technologies either had to give up the market completely or adapt themselves to the dominating VHS technology. A similar situation is today in the world mobile phone technology, where the USA standard and Europe-Japan co-operation are competing over the dominance. The winner is not clear yet, but the meaning of the dominating technology to the party that rules it is known for certain.

In the situation of the range of futures, a company knows the approximate direction of the development, the sector of the development, but not much more. There are many open questions but their nature can be anticipated.

In this kind of a situation companies attempt to secure their future success by creating future scenarios and by preparing themselves to face each of these scenarios. Relying on only one future scenario is too risky. An example of this is the development of electronic commerce in the near future, and the possible meaning of this new technology both to enterprises and to entire industries represented by these enterprises. Regardless of the fact that today a lot of business is done ‘electronically’ there are still many open questions left. Also the fact that many enterprises and even industries say that they are ‘rehearsing’ or ‘learning’ to do business on the net say something about the uncertainty of the situation. Most of the companies do not yet want to (=do not dare) invest heavily in electronic commerce but are still prepared to quickly adopt what will later be established as the ‘right’ way to do business on the net. Nobody knows yet for sure what the right way will be, but companies know that most probably one way will dominate.
If there is a prevailing uncertainty about future, the company has no realistic grounds to estimate it. The future in the markets can become almost anything. The only available procedures are analogies to earlier similar situations, non-linear dynamic models, and the intuition of decision makers together with an analysis of the situation on the basis of this intuition.

Figure 9: True ambiguity

Courtney et al. (1997) raise as examples of this kind of situations the home multimedia applications and investments in Russian markets e.g. in the uncertain situation of the year 1992. The first mentioned multimedia applications have been coming for a long time but still their future is at least uncertain. The political instability and sensitivity of the Russian situation together with the endless transitional stage of the functional structure are situational factors in connection with which it is impossible for a company to estimate the real risk of its actions, although there would be a general consensus about the long term development of these markets.

Few (if any) high tech company can sincerely claim to belong to the above mentioned group 1, where the future can be extrapolated as a clear extension of the past. Instead, high tech companies belonging to the group 2 can probably be found even among relatively small enterprises. Even if the companies themselves did not make independent technological choices, they are, at least through their principals, becoming tied to, or have already become tied to, some standard or basic technology, which influences their processes. Almost all technology companies identify the strategic situations in group 3. Companies operating in a completely ambiguous situation such as group 4 are gamblers with "everything or nothing" attitude, who can win a lot when they succeed but whose risk of failure is often considerable.
Levels of strategic thinking

The term strategy in itself is very general and used in almost every level of company hierarchy. There are, for example, company's overall strategies, business unit strategies, product family strategies, and also strategies for each single product. The term is interpreted freely and used widely in different connections, which causes confusion, unless the level of thinking is known. One way of categorising the levels of thinking is connected with the extent or comprehensiveness of thinking. When moving from the widest possible frame for strategic thinking towards the strategic thinking of the smaller entities, the following familiar (and controversial) strategic grading can be presented:

- **Mission**
  - The Core of Business
  - Why do we exist?
  - What are we actually doing?

- **Vision**
  - What kind of a firm are we in future?
  - How do we look like then?

- **Corporate Strategy**
  - How is our corporate success achieved?

- **Operational Strategies**
  - How should we manage our businesses?

**Figure 10: Conventional levels of strategic thinking**

Mission and vision in this grading represent the highest levels guiding strategic thinking and decision making. Company and operational strategies are more concrete and ‘systematic’ by nature, form and structure.

**Mission** is defined as the basic strategic outline, the basis of company’s functions and the understanding of why the company exists in the first place as well as what its mission in the society is. Internalising the mission gives the company (or other organisation) a meaningful purpose, which, in turn, helps to keep the company or the organisation on the ‘right track’. Mission is often connected with large companies and organisations with clear social influence. From the point of view of a small firm the term mission may seem grand, and is often replaced with the term business idea.

The existence and understanding of mission does not limit the number or quality of strategies used to realise it, but it is a reminder of the eventual goal to be reached with the chosen strategies. One high tech company defined its mission as 'the improvement of the safety and quality of senior citizens' life'. There are certainly many other companies and organisations.
trying to reach this goal, but it does not weaken the clarity of this particular mission in the identification of the company's eventual purpose.

Vision (although a worn-out expression) is a useful term, when correctly understood, related to strategic thinking. Vision is created by the owners of the firm or the general management and is often described as the picture or scene of what the organisation could at its best be when it was exactly the way the general management wished it to be. Vision is thus an attempt to describe the future of a company as seen in its functional environment through glasses chosen by the management and owners. Often vision is claimed to be the synonym for dream, which is not grounded, because dreams are often thought as utopian. Vision is a possible future state that can be seen, that is really being striven for, and the thinking of which here and now creates deep satisfaction for the management.

Vision thinking is appropriate in the context of high technology companies, because it does not set any requirements for the stability of environment. One could say that in static environment a vision is more 'realistic' than in turbulent environment, where almost anything is possible. Traditional strategic planning can be said to suit well a stable environment, similarly visions are well suited for a turbulent industry.

The strategic meaning of missions and visions is emphasised in the fact that they lead a company towards some great and often 'noble' goal. The problem is that they do not give any advice on how the goal can be achieved. However, this is not even expected from them. One generally agreed motivating factor in a company is the personnel's understanding of the ultimate purpose of the company's existence as well as the decisions of the management about the ways to realise this purpose. Management's task is to find a way to approach the visionary state which supports the realisation of the mission.

It is somewhat contradictory from the point of view of missions and visions that a company should not preferably reach perfectly either its mission or its vision. A mission reached means a finished task, then the goal of a company or organisation has been reached and there is no longer any reason for its further operation. A vision that has been achieved can be compared to management's nirvana, where everything has been achieved and there are no new (better) visions or goals to guide the company forward. The company is perfect, development stops and the consequences are predictable. While mission is permanent by nature, vision has to be changing and growing constantly.

Corporate level strategic decisions are related to the decision making regarding the entire company and all its business units. Both the mission and the vision(s) about future are guiding corporate level planning. At this level of decision making a company determines its central business units or business functions and the ways to develop them in the future. Typical corporate level decisions are the decisions to develop or end different business units. Corporate planning can be said to deal at a general level with the questions which businesses the company should be involved in and which to invest in, and how and how much, in order to successfully carry out its task in the future. According to Normann's business idea thinking (Normann 1976) it is the choice of field or game.

The purpose of operational strategies is to reach the goals determined by business units. They answer the question how a company can be successful in the markets where it operates. The operative strategies of different business units can differ considerably from each other but they still have to have the support and acceptance of the entire company. This requires the operational level to internalise the objectives of the entire company and thus see its operations as a part of the entirety which it is a part of. A business unit is often defined as such function in a company which could survive on its own outside the company. It is thus normal for each unit to have visions of its own about the development and the future of the unit. It is then responsibility of the corporate management to supervise that the visions of different units support the overall mission of the company.

In the turbulent high tech environment operational functions are in the forefront when the changes are realised. The inability of operative strategies to change and give away with the environment can lead to failures, which are quickly reflected in every corporate level.

Framework for the further study

The framework for the further study is based on the presented theory. Six basic entities have been chosen for the framework of strategy development for a high tech company:

1. Strategic skills of management
2. Environment turbulence
3. Products
4. The core marketing thinking
5. The stage and need of internationalisation
6. The growth stage of the company.

These entities are thought to be in the main roles when a strategy is being built (or it builds up) for a high tech company. The main frame with its six components is divided into more detailed parts, the characteristics and influence of which eventually determine the overall strategy.
Figure 11: The frame of strategy formation

Figure 11 shows that each of these entities can be divided into smaller parts which are (if needed) still possible to divide into smaller factors. Thus the ultimate amount of factors that are more or less influencing the formalisation of the strategies in the high tech field rises very high. One of the main questions in this study is what the most influencing and characteristic factors among all those presented in this frame are. Answer to that will be given in the case study research, which will follow the conceptualising phase in the near future.

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