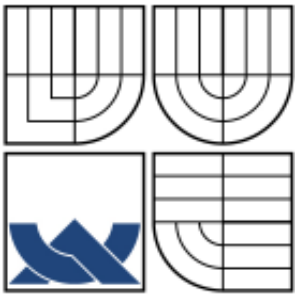

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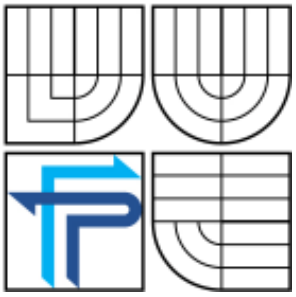

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MARKETING ASPECTS OF TECHNOLOGY VENTURES

DIPLOMOVÁ PRÁCE
MASTER'S THESIS

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Zde prosím vložte zadání, které jsem dodal

Abstract

The aim of diploma thesis is to analyze marketing tools used in Company XAX and under this condition evaluate and purpose increase efficiency used tools. The current marketing strategy of the company is described and main influencing factors are identified. The thesis contains proposals and recommendations for tools usage in the field of High-tech marketing.

Key words

Marketing, 4C, 4P, marketing mix, High-tech marketing, implementation, innovation

Abstrakt

Cílem diplomové práce je analýza marketingových nástrojů použitých firmou XAX a následně vyhodnotit a navrhnout zvýšení jejich efektivity. Popis strategie společnosti a faktory ovlivňující budou identifikovány. Práce obsahuje návrhy a doporučení na zvýšení efektivity marketingových nástrojů dané firmy v oblasti High-tech odvětví.

Klíčová slova

Marketing, high-tech, 4C, 4P, SWOT, inovace, implementace, marketing mix

Citation

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Declaration

I declare that this master's thesis is original and has been elaborated independently. I also declare that the list of references is complete and that I did not breach of copyright in the sense of Act No. 121/200 Coll. On Copyright Law and Rights Related to the Copyright and on the Amendment of Certain Legislative Acts.

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Content

Introduction

Nowadays, when the Internet use most of the population, comes to the fore the issue of special computer protection. The broad spectrum of threats is endangering individuals or companies in all ways on the daily basis. Therefore it is needed to pay increased attention. When computers have became perceived as a helping tool and source of information, people start to think how damage or get the data. When the threat became reality, there appeared another group of people who went opposite way and start to develop antivirus programs.

Due to complexity of computer security, I have decided to focus only on High-tech products from one company. Considering highly innovative and groundbreaking technology, I have been asked to change the name of the company and products.

The main aim of my thesis is analyze marketing aspects of technology ventures. Became a successful in today fast growing market is hard challenge for most of companies. The current market situation could be characterized by general factor supply over demand. Despite growing knowledge of key success factors, advanced methods, which supports the innovative marketing, it is very difficult to launch a new product.

Companies trying to strengthen their market position must implement suitable innovative policy, which allows achieving more favorable position among competition.

Goals and methodology

The aim of diploma thesis is to analyze marketing tools used in Company XAX and under this condition evaluate and purpose increase efficiency used tools. Company is currently using methods such as marketing mix and SWOT analysis. I will deal with their description and suggest newer implementation according to literature review. For this purpose it is needed to describe technology used, the specifics of high-tech industry a marketing tools. Due to complexity of possibilities what is possible to improve, I would specialize on their innovative product.

Theoretical analysis

Whereas the diploma thesis will deal with innovative information technologies, I consider dividing theoretical part in two sections such as nowadays security standards and marketing analysis by using already mentioned tools.

The Art and Science of Satisfying Customers

Marketing and innovation

Marketing is the process of planning and the implementation of price conception, propagation, distribution ideas and products to create shifts, which are satisfying goals of individuals and companies (Kotler, 2001). To be more specific: “Marketing generally involves analyzing customer needs, obtaining the information necessary to design and produce goods or services that match buyer expectations, satisfying customer preferences, and creating and maintaining relationships with customers and suppliers“(Kurtz, 2009, p.7). These innovations focus on higher quality of communication, opening new markets or in order to increase sales and profits. “By introducing a new and valuable product, the innovator obtains temporary monopoly power until rivals figure out how to mimic the innovation“(Byers, Dorf, Nelson, 2011, p.18). According to Kotler (2004) if marketing specialist is able to understand costumer needs, developing product, which brings to costumers new value for the favorable price, effectively distributes and supports their sale, then these products are easily sell. Sale and advertising are therefore only a part of wider marketing mix, a set of marketing tools that work together to influence relevant market.

Innovation (Trommsdorff, 2009, p.3) defines it as a new kind of company-subjective subject (product or process), which is not necessary to invent, but which must be enforced in the company internally and externally.

Successful innovation requires

- Define goals
- Scheduled activities and objectives to fulfill these goals
- Cooperation in the company, with external experts and costumers
- Monitoring results
- Communication
- Proper timing and luck

Characteristic of the innovation

Five characteristics influence an innovation's rate of adoption. The first characteristic is *relative advantage*—the degree to which the innovation appears superior to existing products. The second is *compatibility*—the degree to which the innovation matches the values and experiences of the individuals. Third is *complexity* - the degree to which the innovation is difficult to understand or use. Fourth is *divisibility* - the degree to which the innovation can be tried on a limited basis. Fifth is *communicability* - the degree to which the benefits of use are observable or describable to others. The fact that DVRs have some clear advantages can help create interest and curiosity. Other characteristics that influence the rate of adoption are cost, risk and uncertainty, scientific credibility, and social approval. The new-product marketer must research all these factors and give the key ones maximum attention in designing the product and marketing program.

Marketing concept

"The marketing concept holds that achieving organizational goals depends on determining the needs and wants of target markets and delivering the desired satisfactions more effectively and efficiently than competitors do"(Kotler, 2005, p.16). This concept takes outside-in perspective. First of all is well defined market, focuses on customer needs. In other words important is to harmonize all of the marketing activities which affect costumers. Targeting the long-term relationship, based on customer satisfaction and values makes constant profit. „The firm's actions are based on its knowledge of its customer, its product, and its markets. The firm must identify and understand its customers, its competitors, and their values and behavior. Knowledge of organizations, design, and technologies is filtered through a firm's strengths and weaknesses. The firm acts on all this knowledge"(Byers, Dorf, Nelson, 2011, p.16).

According to (Doole, I. & Lowe, R. 2004) Global market is not anymore a complex of individual or independent countries, but markets became to each other interdependent in most of aspects. This opinion also shares Stone and McCall (2004) and complement present situation, when companies prosper by specializing in particular varieties of products more than complex range. As Kotler (2009) stated: "The company constantly compares the value and customer satisfaction delivered by its products, channels and promotion with those of its close competitors." As Ghauri and Cateora (2010) mentioned, that for successful companies functioning is also needed favorable economic, cultural, political and geographical factors.

For applying effective strategic marketing, it is needed to mention two basic analytical requirements. These ingredients noted Wilson and Gilligan (2012). First able market opportunity must be analyzed, second is company's ability to use the opportunity of its advantage. Coade (1997) and Nieuwenhuizen (2009) observe, that gathered information from international market is definitely helpful with strategic decision making. Understanding and knowledge of international markets become the most important factor for strategic positioning and successful competitiveness (Doole, I. & Lowe, R. 2004).

Competitive advantage

Theory of competitive advantage was the first published in 1985. To compete in any industry, companies must perform a wide array of discrete activities such as processing orders, calling on customers, assembling products, and training employees. Activities, narrowed than traditional functions such as marketing or R&D, are what generate cost value for buyers (Porter, 1998). In other words competitive advantage explores the role of complementary products or services in competition and competitive advantage in some industries. “Organizations in a market economy are concerned with delivering a service or product in the most profitable way. The key of profitability is achievement with sustainable competitive advantage, which is based on superior performance relative to the competition” (Subnash, 1999).

Technology

Technology is the main source of economic progress, a source of competitive advantage and daily guided lifestyle of the modern consumer. New technologies help to make existing products more efficient, creating better and different quality, new way of meeting the traditional needs, new and currently unknown products. They help to improve existing marketing methods, better and more efficient information analysis about customers and competitors. Sometimes drastic changes in new technologies may lead to extinction, but on the other hand possible emergence of entire new industries. They can contribute the considerable growth in market share. This realize most of the manufacturers, therefore their respond to these trends relevant will cause increase spending on research and development.

New technologies also shorten the life cycle of products, a growing number of innovations and also the number of failures of new products on the market (approximately up to 80% introduced new products to the market will not survive for more than two years after its introduction), which causes pressure on the management process of introducing new products market.

Technology can be developed very slowly, until the effect of synergies allows achieving the effect of breakthroughs. Businesses cannot react on these facts, by increasing costs on research and development, but rather should learn to combine research programs with the needs of customers. Market success is achieved only, when the users accept this solution. Technological progress depends on potential successful result in the form of the product, which will become part of customers' lives. Marketing must therefore focus and coordinate development activities and efforts where can be reflected as market success. Research by Parasuraman and Colby (2001) shows, that technology readiness (TR) is a key factor in the adoption of innovative products and services.

When company selects new technology, where the innovation is implemented, it is possible to choose basic, groundbreaking or key technology. Another choice is existing or new technology. The implementation of new technology is crucial decisions making with possible extraordinary impact. Decision making is affected by technological, competition and company factors.

Factors conditioned on costumer groups

Searching new functions follows best provided unmet needs. Potential functions are necessary to evaluate on the number of costumer, size of customer segments and the probability of purchase.

Factors conditioned on technology

The strongest external motor of innovation is nowadays dynamic development of technologies (Information technologies and communications, nanotechnologies, biotechnologies, neurophysiology, tec.). It is based on technical feasibility, its dominance against existing competition. Technical feasibility and compatibility contributes a high degree of success. From the view, oriented on market, should be technology a mean to a given purpose not a purpose itself.

Life cycle of technology

Life cycle of technology divides Trommsdorff (2009) according their strategic importance.

Groundbreaking technologies are located in early stages, which needs more research before the development of particular products. When the technology will be useful for the costumers, the technology will became priceless.

Key technologies are located in the front raw of technological development. It can be described as **Competitive innovation advantage (CIA)** for the company, when:

- One or one of few, who own the key technology
- Can be demonstrated additional benefit for costumers
- Can communicate that benefit
- The lead of the company cannot be simply catch up
- All mentioned above cannot be negated.

With innovation must be connected benefit for the costumer, which allows inflicting comparison with competition. Important is to have particular performance character. This character can be decisive for purchasing. The problem is not in understanding of concept but in a specific implementation in practice.

CIA and quality

Significant influence on costumer is how he perceives the quality of the product. Among the central components belongs adequate problem solution and prefect realization. It is about a gaining particular performance instead of simple product.

Innovation functions

As mentioned above innovation should perform particular functions. These functions can be distributed, how they are mediated (technological functions) or how costumers perceive their benefit.

The consumer-adoption process

As Kotler (2009) mentioned this process include 5 mental steps which follow from first costumer notion to final adoption:

1. ***Awareness***—The consumer becomes aware of the innovation but lacks information about it.
2. ***Interest***—The consumer is stimulated to seek information about the innovation.
3. ***Evaluation***—The consumer considers whether to try the innovation.
4. ***Trial***—The consumer tries the innovation to improve his or her estimate of its value.
5. ***Adoption***—The consumer decides to make full and regular use of the innovation.

New-Product Failure

According to Kotler (2009) new products continue to fail at estimated rates as high as 50 percent or even 95 percent in the United States and 90 percent in Europe. They can fail for many reasons: misunderstood of ignoring market research; market size; high development costs; poor design; incorrect positioning, price and advertising; distribution support is insufficient ; hard competitors. Few more drawbacks describe as:

- ***Shortage of important ideas in certain areas.*** There may be few ways left to improve some basic products (such as steel or detergent).
- ***Fragmented markets.*** Companies must aim their new products at smaller market segments, which can mean lower sales and profits for each product.
- ***Social, economic, and governmental constraints.*** New products must satisfy consumer safety and environmental concerns. They must also be resilient if economic times are tough.
- ***Cost of development.*** A company typically must generate many ideas to find just one worthy of development and thus often faces high R&D, manufacturing, and marketing costs.

- ***Capital shortages.*** Some companies with good ideas cannot raise the funds to research and launch them.
- ***Shorter required development time.*** Companies must learn to compress development time with new techniques, strategic partners, early concept tests, and advanced marketing planning.
- ***Poor launch timing.*** New products are sometimes launched after the category has already taken off or when there is still insufficient interest.
- ***Shorter product life cycles.*** Rivals are quick to copy success. Sony used to enjoy a three-year lead on its new products. Now Matsushita can copy them within six months.
- ***Organizational support.*** The new product may not mesh with the corporate culture or receive the financial or other support it needs.

High technology marketing

Moriarty and Kosnik (1989) define high technology industries as characterized by a high degree of market, technological, and competitive uncertainty. Some of customers can see the potential of high degree of marketing uncertainty, but would not mark as a high technology product if do not see high degree of technological uncertainty.

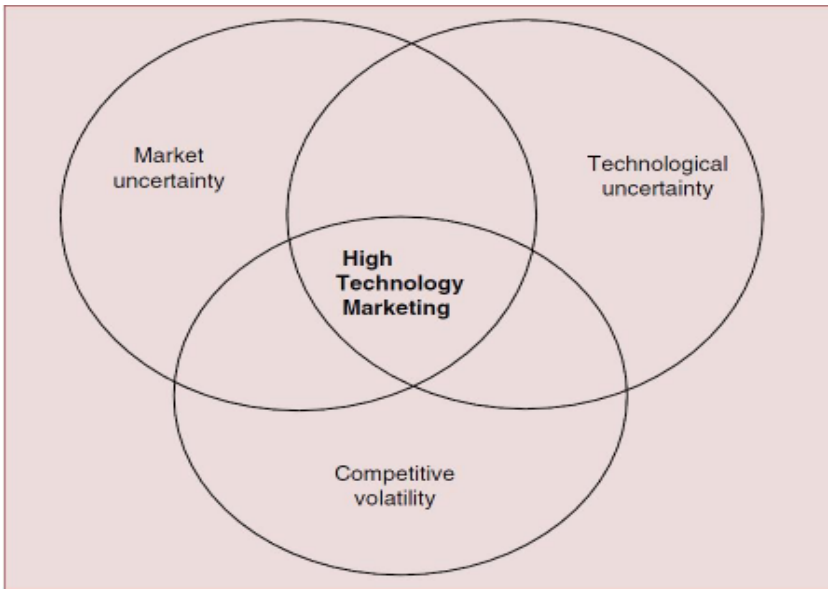

Figure 1.1 High Technology marketing (Yadav, Swami and Pal, 2006, p. 58)

Figure 1.1 Describe how marketing environment in the high technology industry is defined. It shows obvious intersection among market and technological uncertainty and competitive volatility.

Market Uncertainty

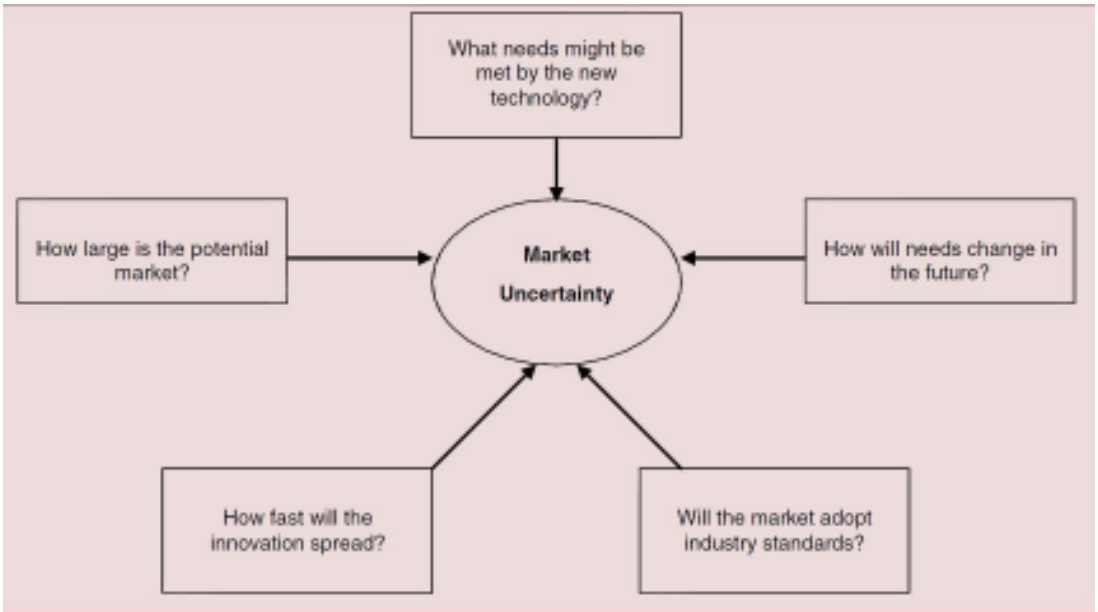

Figure 1.2 Market Uncertainty (Yadav, Swami and Pal, 2006, p. 60)

Yadav, Swami and Pal (2006) identifies market uncertainty as consumer's fear concerning the problems/needs of new technology and i fit will meet those needs.

Technological Uncertainty

It can be characterized by not knowing if technology or company providing can achieve a costumer specific needs. As Yadav, Swami and Pal (2006, p. 60) stated: "First, questions are raised regarding whether or not the new innovation will function as promised. The second relates to the time-line for availability of the new product which

can always take longer than expected. Third, technological uncertainty may arise from concerns about the supplier and the service of the new technology."

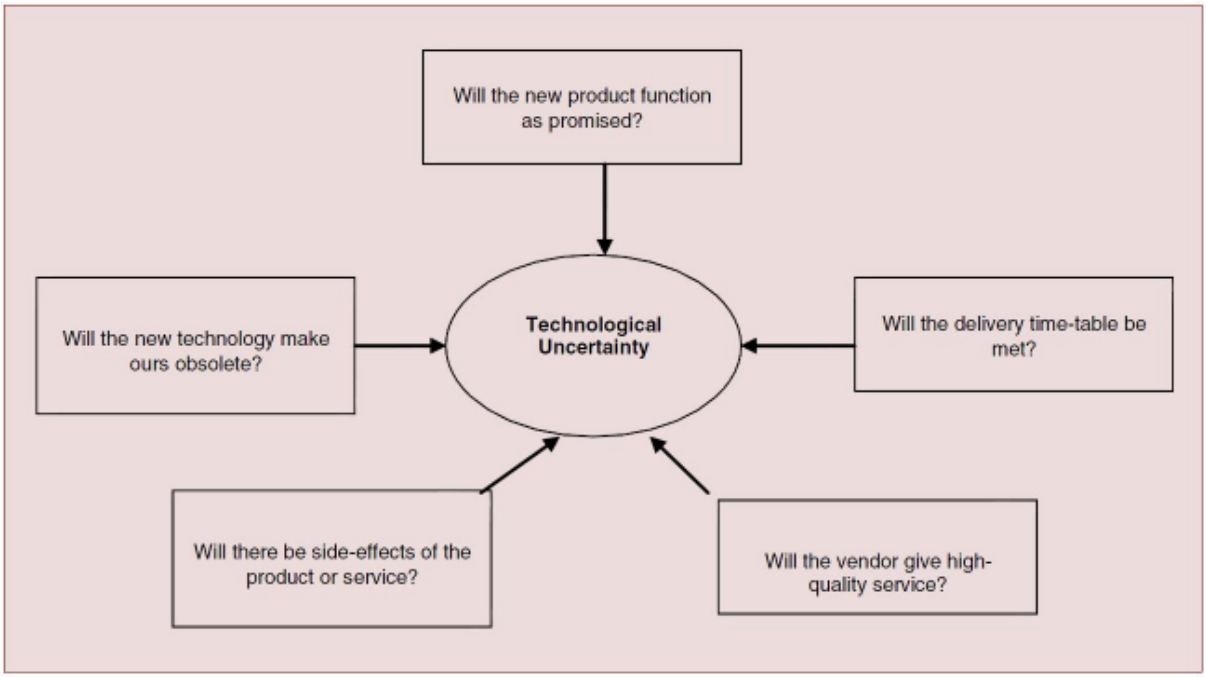

Figure 1.3 Technological Uncertainty (Yadav, Swami and Pal, 2006, p. 62)

Competitive Volatility

It deals with changes in competitive landscape, such as identifying key competitors, their product and tool used. As a result, product-oriented developers tend to be driven by their technology in determining the marketing mix.

Marketing MIX

Providing the correct marketing mix of goods/services can make the difference between a company's success and failure. Many variables placed such as adjusting prices, warranties, or adding features to products or services that could be used to target potential customers. First the marketers develop the art of knowing how to manipulate the four Ps (product, price, place and promotion) to get a customer's curiosity and then develop a long-range plan to keep them coming back (Perreault, McCarthy, 2004). Looking more closely we find that these guidelines really cover the majority of options to form and present their offer to customers. Each of them also contains a wide range of other tools.

The marketing MIX 4ps

Figure 1.4.: The 4ps marketing mix concept (Budrum hotels)

Product as a marketing tool

It should first be emphasized that in the sense of marketing it is not just about physical products, but also contains intangible products. Furthermore, for the marketing orientation is important to monitor the whole context, where the product itself and its

customers perception mutually connected. In other words it can be seen as a crucial link to the needs that the product has to satisfy (what is the "core"). Simultaneously, it is not only the quality of the product but also its label, the packaging design, etc.

Price as a marketing tool

This tool provides more opportunities for supply formation. Decisions making can be related to:

- The level of prices
- Determination of final price methods, for instance can be mentioned psychological valuation, trunked or discriminatory pricing, etc.
- Price changes
- Discounts and precipitation

Place as a marketing tool

By defining specific mode from various options, company would be able to choose the way how the product is distributed to the customer. Basically the modes are dedicated by following levels:

- decision about the type of distribution channels,
- decision on its segmentation,
- decision about the types of distributors,
- decision on specific merchants,
- decision about methods of distribution.

Communication support possibilities as a marketing tool

First, it should be pointed the changes which the original designation of the fourth P has passed. The original term *Promotion* has been frequently used for just one

specific area. At the presence communication instruments are called as marketing communication.

Major Tools in Marketing PR
Publications: Companies rely extensively on published materials to reach and influence their target markets. These include annual reports, brochures, articles, company newsletters and magazines, and audiovisual materials.
Events: Companies can draw attention to new products or other company activities by arranging and publicizing special events such as news conferences, seminars, outings, trade shows, exhibits, contests and competitions, and anniversaries that will reach the target publics.
Sponsorships: Companies can promote their brands and corporate name by sponsoring and publicizing sports and cultural events and highly regarded causes.
News: One of the major tasks of PR professionals is to find or create favorable news about the company, its products, and its people and to get the media to accept press releases and attend press conferences.
Speeches: Increasingly, company executives must field questions from the media or give talks at trade associations or sales meetings, and these appearances can build the company's image.
Public Service Activities: Companies can build goodwill by contributing money and time to good causes.
Identity Media: Companies need a visual identity that the public immediately recognizes. The visual identity is carried by company logos, stationery, brochures, signs, business forms, business cards, buildings, uniforms, and dress codes.

Table 1.1. Major tool in marketing PR (Kotler 2009 p. 529)

Modern marketing mix

In the last decade marketing thinking have move towards on strengthening the relationship with the customers. It can be summarized in the concept of 4Cs. Here belong: Customer benefits, Total Customer Cost, Convenience and Communication. The aim of is getting and keeping competitive advantage by satisfying customer needs. The emphasis is laid on longtime cooperation while ensuring the highest level of convenience and company costs.

Difference between 4C and 4P

Lauterborn, suggest shifting from product oriented (4P) into customer oriented (4C). According to him marketing strategies that involved product, place, price and promotion are passé. Companies should be more oriented on Consumer wants and needs, cost to satisfy, convince to buy and communication. This model thus considers a marketing problem from costumer perspective.

4 Ps Marketing Mix	conversion focus	4 Cs Marketing Mix
Product		Consumer
Price		Cost
Place		Convenience
Promotion		Communication

Table 1.2. Conversion marketing mix 4Ps to 4Cs (business-fundas)

SWOT analysis

According to Kurzt (2009) SWOT analysis, helps planners compare internal organizational strengths and weaknesses with external opportunities and threats. (SWOT is an acronym for *strengths, weaknesses, opportunities* and *threats.*) This form of analysis provides managers with a critical view of the organization's internal and external environments and helps them evaluate the firm's fulfillment of its basic mission. Byers, Dorf and Nelson, (2011) determine that a SWOT analysis helps the entrepreneur competitive advantage. The unique competency of a firm arises from its capabilities and resources. Resources are human, financial, physical, and organizational, and include brand patents, know-how, plants and equipment, and financial capital. The capabilities of a firm include methods, skills, and process management. According to Trommsdorff (2009) the objective of the situation analysis (SWOT) is data structuring and summarization. Opportunity analysis examine sources and of the company according their availability for concrete strategic decision. The specific strength and weakness of innovation intention are connected with the results of competition analysis.

The results of SW analysis are specifically identified for the competition to obtain possible competitive advantage. Analysis of the opportunities and threats identifies external influence of the market and simultaneously the company surroundings. Kotler (2011, p. 54) stated:" The goal is to match the company's strengths to attractive opportunities in the environment, while eliminating or overcoming the weaknesses and minimizing the threats. The final SWOT outcome is a summary of the strategic situation investigated unit.

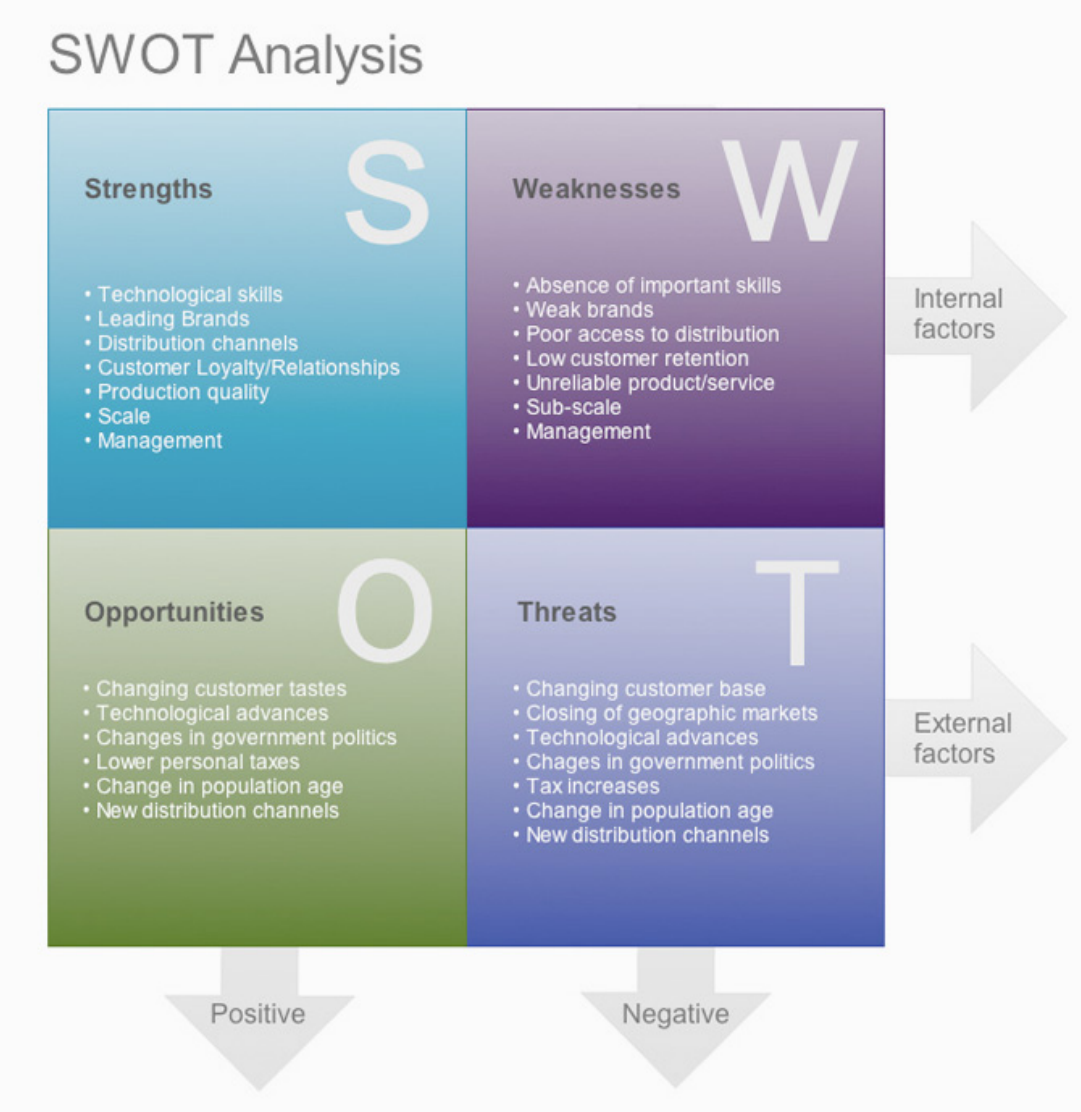

Figure 1.5.: SWAT analysis (Bussinessdictionary)

Implementation of marketing

Economic performance of firms do not depend simply on whether or not its strategies create such markets, but also on the cost of implementation those strategies. Clearly, if the cost of strategy implementation is greater than return obtained from creating an imperfectly competitive product market, then the firms will not obtain above normal economic performance (Barley, 1986). Kotler questioned that many managers think that 'doing things right' (implementation) is as important as, or even more important than, 'doing the right things' (strategy) (2005, p.74). The truth is that compiling marketing strategy is more simply rather than accomplished in practice. We can say that both of them are critical to success. However effective implementation may provide competitive advantages for the company. Kotler (2005, p.75) states that successful marketing implementation depends on how well the company blends five elements – action programs, organization structure, decision-and-reward systems, human resources and company culture – into a cohesive program that supports its strategies.

Entrepreneurs

Entrepreneurs are people who identify and pursue solutions among problems, possibilities among needs, and opportunities among challenges. (Byers, Dorf, Nelson, 2011, p.5). They can achieve high firm reputation, leadership or performance. Goal is to seek particular way to address the needs of society and the marketplace. New way of thinking allows innovative response on opportunities by recombining concepts, people or technologies into original solution. The determination of actual opportunities contains combination of good timing with realistic solutions. According to Shramm (2004) modern entrepreneurial companies pursues constant flow of high-impact products. These products are creating values and simultaneously instigate economic growth by bringing new technologies, ideas, methodologies to the global marketplace.

A vision is an informed and forward looking statement of purpose that defines the long-term destiny of the firm (Byers, Dorf, Nelson, 2011, p.52). With sound vision

and mission statements and an initial business model, the entrepreneur examines the economic and political context of the industry, along with its profit margins and growing rate. When the industry is understood, it is time to describe the firm's strengths and weaknesses and its opportunities and threats (SWOT). The entrepreneur uses his or her knowledge of the industry and competitors with his or her own SWOT to identify key success factors (KCF). Based on the information should rethink his vision, mission, and business model and to create a strategy to gain competitive advantage.

Modern concept of Customer relationship management (CRM)

As Kotler (2011, p .119) stated: "In fact, smart companies capture information at every possible customer *touch point*. These touch points include customer purchases, sales force contacts, service and support calls, Web site visits, satisfaction surveys, credit and payment interactions, market research studies—every contact between a customer and a company." By using CRM to understand customers better, companies can provide higher levels of customer service and develop deeper customer relationships"(Kotler, 2011, p .120).

Kurtz (2008, p.310) mentioned that Relationship marketing is based on promises:

- the promise of low prices,
- the promise of high quality,
- the promise of prompt delivery,
- the promise of superior service.
- A network of promises—within the organization, between the organization and its supply chain, and between buyer and seller—determines whether or not a relationship will grow.

Market segmentation

It involves dividing a market into smaller segments of buyers with distinct needs, characteristics, or behaviors that might require separate marketing strategies or mixes. The company identifies different ways to segment the market and develops profiles of the resulting market segments. **Market targeting** consists of evaluating each market segment's attractiveness and selecting one or more market segments to enter. In the final two steps, the company decides on a value proposition—how it will create value for target customers. **Differentiation** involves actually differentiating the firm's market offering to create superior customer value. **Positioning** consists of arranging for a market offering to occupy a clear, distinctive, and desirable place relative to competing products in the minds of target consumers. (Kotler, 2011)

Segmenting Business Markets

Consumer and business marketers use many of the same variables to segment their markets. The segmentation of Business buyers can be applied geographically, demographically (industry, company size), or by benefits sought, user status, usage rate, and loyalty status.

Market targeting

Market segmentation reveals the firm's market segment opportunities. When company evaluates varied market segment, it has take in mind three factors: segment size and growth, segment structural attractiveness, and company objectives and resources. After evaluating market segment, company must decide what kind and how many segment it will target. A **target market** consists of a set of buyers who share common needs or characteristics that the company decides to serve.

Differentiation and Positioning

Beyond deciding which segments of the market it will target, the company must decide on a *value proposition*—how it will create differentiated value for targeted segments and what positions it wants to occupy in those segments. A **product's**

position is the way the product is *defined by consumers* on important attributes—the place the product occupies in consumers' minds relative to competing.

Positioning Maps

Perceptual positioning maps show consumer perceptions of company brands versus competing products on important buying dimensions. The task of positioning and differentiation consists of free steps:

1. identifying a set of differentiating competitive advantages on which to build a position,
2. choosing the right competitive advantages,
3. Selecting an overall positioning strategy.

The role of marketing channels in Marketing

"A firm's distribution channels play a key role in its overall marketing strategy because these channels provide the means by which the firm makes the goods and services available to ultimate users" (Kurtz, 2009, p. 417).

According to Kurtz (2009) most channel options involve at least one **marketing intermediary.** A marketing intermediary (or **middleman**) is an organization that operates between producers and consumers or business users. Retailers and wholesalers are both marketing intermediaries. A retail store owned and operated by someone other than the manufacturer of the products it sells is one type of marketing intermediary. A **wholesaler** is an intermediary that takes title to the goods. It handles and then distributes these goods to retailers, other distributors, or sometimes end consumers.

Producer to Wholesaler to Retailer to Consumer

The traditional channel for consumer goods proceeds from producer to wholesaler to retailer to user. This method carries goods between thousands of small producers with limited lines and local retailers. A firm with limited financial resources will rely on the services of a wholesaler that serves as an immediate source of funds and

then markets to hundreds of retailers. On the other hand, a small retailer can draw on a wholesaler's specialized distribution skills. In addition, many manufacturers hire their own field representatives to service retail accounts with marketing information. Wholesalers may then handle the actual sales transactions.

Producer to Wholesaler to Business User

Similar characteristics in the organizational market often attract marketing intermediaries to operate between producers and business purchasers. The term industrial distributor commonly refers to intermediaries in the business market that take title to the goods.

Producer to Agent to Wholesaler to Retailer to Consumer

In markets served by many small companies, a unique intermediary—the agent—performs the basic function of bringing buyer and seller together. An agent may or may not take possession of the goods but never takes title. The agent merely represents a producer by seeking a market for its products or a wholesaler, which does take title to the goods, by locating a supply source.

Producer to Agent to Wholesaler to Business User

Like agents, brokers are independent intermediaries who may or may not take possession of goods but never take title to these goods. Agents and brokers also serve the business market when small producers attempt to market their offerings through large wholesalers. Such an intermediary, often called a manufacturers' representative, provides an independent sales force to contact wholesale buyers. A kitchen equipment manufacturer may have its own manufacturer's representatives to market its goods, for example.

Producer to Agent to Business User

For products sold in small units, only merchant wholesalers can economically cover the markets. A merchant wholesaler is an independently owned wholesaler that

takes title to the goods. By maintaining regional inventories, this wholesaler achieves transportation economies, stockpiling goods and making small shipments over short distances. For a product with large unit sales, however, and for which transportation accounts for a small percentage of the total cost, the producer-agent-business user channel is usually employed. The agent in effect becomes the producer's sales force, but bulk shipments of the product reduce the intermediary's inventory management function.

Selective Distribution

In another market coverage strategy, selective distribution, a firm chooses only a limited number of retailers in a market area to handle its line. By limiting the number of retailers, marketers can reduce total marketing costs while establishing strong working relationships within the channel. Where service is important, the manufacturer usually provides training and assistance to the dealers it chooses.

Vertical Marketing Systems

Efforts to reduce channel conflict and improve the effectiveness of distribution have led to the development of vertical marketing systems. A vertical marketing system (VMS) is a planned channel system designed to improve distribution efficiency and cost effectiveness by integrating various functions throughout the distribution chain. A vertical marketing system can achieve this goal through either forward or backward integration. In forward integration, a firm attempts to control downstream distribution. (Kurtz, 2009)

"Achieving holistic security requires physical security, technological security, good policies and procedures." (National Research Council, 2009)

The background specification of Information technology

Internet

New technology what influence presence is Internet. It is constantly developing, public and widely available computer network, which is not owned by anybody and none, can control it. Internet connects persons, business entities and makes information available around the world. Companies use the internet to build closer relationships among customers and partners. According to connection to rest of the world the problem of data protection is placed.

Problem of data protection in information system

Under the term of IT security we can name: security of information systems, protection systems, information protection and protection of information technology. As Goodman and Roback (1995, p.10.) mention: "Information and computer systems are often critical assets that support the mission of organization. Protecting them can be as critical as protecting other organizational resources, such as money, physical assets, or employees." Companies which daily use modern information technology is constantly threaten data breach. "Different types of businesses will be more sensitive to different threats, and will have different security goals to mitigate those threats. Understanding threats is important in determining a system's security goals" (Daswani, 2007, p.26).

The aim of this part is to get better understanding of computer threats and concepts associated with it.

Glossary of terms

Vulnerability	A bug, glitch, hole or flow in network, application or database
Threat	Attack developed to take advantage of vulnerability
Exploit Kits	Attack on selection of vulnerabilities to control a network, device or asset.
Patch	Software designed to fix vulnerability and otherwise plug security holes.
Zero-day Attack	Attack against unknown vulnerability, with no known security fix.
Advanced Persistent threat	Methodological, long-term convert attacks, using many tools to steal information.
Malicious code	code in any part of a software system or script that is causes undesired effects, damage or security breaches to a system.
Algorithm	sequence of rules that gives instruction how to solve certain classes of problems

Modern sophisticated attacks - Target sectors

Figure 1.6. Modern sophisticated attacks – Target sectors (XAX)

The purpose of attacks on information system

- Unavailability of service (DoS attacks – denial of service) causes that any service (http, ftp… where was the attack implemented ceases to be functional, may freeze or restart the server
- Unauthorized access the reset of an attack may be that attacker illegally obtains full or partial access to device. It can perform unauthorized configuration chase, delete or modify files.

- Obtain confidential information - The attack can be headed to obtain sensitive information, such as list of users, passwords, ETA.

Computer protection

According to Goodman individuals and companies do spend large amounts on security. Roughly $100 billion is spent annually on IT security worldwide. But there are couple ways to know what amount of money is enough. Some of technology solutions

can create a false sense of protection. Budgeting for IT security is often driven by results as the past year's budget, list of must-do items, suitable industry practices, rather than any sound economic principles. Understanding the risk profile helps companies to properly determine levels of investment, they are predicated on an ability to estimate benefits.

MAD system

To understand what kind of High-tech product and how does it work we follow Goodman (2009), who explains the environment of Cyberspace.

MAD systems are potentially valuable in that they seek to detect the early stages of an attack (e.g., an attacker's probing of a machine or network for specific vulnerabilities) and can then aid in protecting a machine from (or even preventing) the subsequent stages of the attack.

MAD systems also seek to detect telltale signs of suspicious activity or patterns of behavior (whether by a user, an application, or a piece of malicious code) that firewalls or other tools might miss or ignore. MAD systems are generally quite complex and require significant effort to manage properly. They are not a fix-all solution for computer or network security; MAD systems cannot compensate or account for weaknesses such as design flaws and software bugs, and cannot compensate or account for weaknesses in organizational authentication policies, data management practices, or network protocols themselves.

An aggravating factor is that attackers are constantly at work devising and refining ways to elude known MAD systems for example, using so-called "stealthy" scans to avoid the notice of some MAD systems. Reconciling the tension between false positives and false negatives is thus a central area of MAD system research. Another challenge in the development of MAD systems is that of finding methods that function efficiently in large systems. Many approaches to misuse and anomaly detection generate enormous amounts of data, which must subsequently be analyzed.

The specification of Information technology industry

Technology industry analysis is provided by using statistics, market data, and economic trends to determine the financial strength of the technology sector.

The information technology sector of is highly innovative and subject to constant technological development. Businesses and customers expect to communicate with each other's and the efficiency of productivity is constantly increasing. In November 2012, Gartner released a report that said that public cloud services are simultaneously cannibalizing and stimulating demand for external IT services spending.

Global market

The network security market volume was about $8B in 2009, projected to grow to more than 10 billion in 2013 (IDC 2008). The segment of Intrusion Detection Systems/Intrusion Prevention Systems (IDS/IPS) where the company belong has the highest projected growth: it is predicted to grow 13% annually between 2009 and 2013, going from 2 billion in 2009 to more than $3 billion in 2013.

Historically, the most important market is the US, with about $3bn in 2008. It is expected to grow to $4.5bn in 2013. The situation is even more interesting in the EMEA region, where the market penetration lacks severely behind the US market. In the EMEA market, the growth of the network security market is predicted from $2.3bn in 2008 to $3.8bn in 2013.

Even more important is the specific issue of IDS/IPS penetration in Europe, which is comparatively much lower than in the US. Considered an "add-on" item to Firewall and mail/web gateways, relatively few enterprises deploy IDS/IPS, and even fewer complement them with the behavior analysis techniques.

Traditional market for Network behaving analysis (NBA) solutions, developed in the US, with established competitors in specific segments (Arbor and Lancope). The customers in this segment in Europe were less inclined to invest I IT security so far, and even major corporations sometimes outsource the networking and/or security to specialists (IBM, HP and others). In general, security awareness is growing in the segment and we expect that the NBA solutions will become widespread in the future.

Company overview

XAX develops innovative network analysis technology designed for detection of Advanced Persistent Threats, other sophisticated malware and hacker activity inside client's networks. Czech Republic-based R&D team provides unique security innovation, best in class detection accuracy and self-management capability using advanced artificial intelligence, pattern recognition, game theory and statistics.

XAX is a provider of Network Behavior Analysis products and services. It uses advanced Artificial Intelligence techniques developed under the sponsorship of the U.S. ARMY CERDEC and Air Force Research Lab to offer superior security solution that complements current firewalls and Intrusion Detection/Prevention Systems based on pattern matching and simple rules. Product A uses this technology to protect its users from the current generation of advanced security threats, such as purpose written attacks customized against specific user.

Mission & Vision

- Providing detailed intelligence against modern sophisticated network attacks.
- Optimize security costs by swiftly identifying unauthorized breaches to corporate assets.

Approach

Artificial intelligence, high detection accuracy and automatic self-configuration.

Market access

- Security as a service
- Managed security providers
- OEM for security big data analysis

Market has been growing consistently, regardless of economic climate. In this already robust market, the modern attack (APT-like) detection and prevention is the

fastest growing segment. Unique technology allows the paradigm shift in the network security: moving from reactive towards proactive defense, from arbitrary blind blocking of recognized attacks towards continuous security monitoring & intelligent response against new threats and from incident handling towards risk awareness & strategic risk mitigation.

The target is the detection of the most significant threats that are not detectable by mainstream security products. APT, Advanced Persistent Threats are attacks specifically targeted to breach a particular organization and to obtain well-defined, business-critical information. They don't result in immediate financial gain, but their effects, such as the loss of critical IPR or trade secrets can be devastating for the target. Such APT attacks utilize original, custom-written malware and frequently rely on exploits against zero-day vulnerabilities. This makes them very hard to detect, as the APT malware is typically not detectable by means of antivirus, firewalls/IDS, email/web gateways or other techniques. The number of APT-class attacks and other sophisticated malware is growing exponentially.

XAX positioning

Figure 1.7 XAX positioning (XAX)

Product

Since that time the Founders together with a team of researches started to develop the technology that integrates a range of sophisticated software technologies to identify and analyze key IT security threats through advanced network behavioral analysis of real-time data. This technology can detect Advanced Persistent Threats (APT) and other malware and hacking attacks inside the client's networks, increasing the level of security provided by the traditional, perimeter-based defenses.

Until now network security has primarily focused on securing the perimeters of networks but even if the door is locked, someone can get through the window and this is what the product can detect. To make it easy and understandable –It operates like the immune system of a network that finds strange or non-typical things in the body and these are highlighted.

During product development XAX came also to the attention of the US military, which was interested in its ability to monitor internet traffic for anomalies that could signal that a system was being hacked known as "advanced persistent threats" APT. Since 2007 US Army, US Air Force and Navy provided the University team the sponsorship to support the product development.

Competitive advantages

The design of the product based on most innovative Artificial Intelligence techniques. Instead of concentrating on ad-hoc detection of frequent, ordinary attacks, it has been developed a robust collective Antaly detection technology that performs consistently against widespread and novel attacks alike. This distinction provides a critical competitive advantage: ability to detect novel and unique attacks.

Another key advantage is the self configuration capability of solution, which allows clients to deploy it rapidly, with minimal configuration costs. This advantage also plays well into our OEM products and managed security service positioning.

Solution can be deployed as a network-based appliance, virtual appliance, cloud-based service or an OEM software module for integration with third-party products. It relies only on standard GB NetFlow/IPFIX inputs. Unlike Big Data analysis, solution detects

APTs without the need for large data storage and analytical engines, while it can also work on top of existing data stores.

XAX proposals to the customers

- Security Innovation - Delivering Forward-thinking Security Solutions, thought Leadership
- R&D Expertise - Cost effective Research & Development resources, quick development turn-around
- Integration with OEMs, MSSPs, & Device manufacturers - Intuitive Management Interface, Easy-to-Use Dashboard, granular attack detection analysis
- Product Reliability - 5th Generation Network Behavior Analysis platform
- Privacy Concerns - Data anonymity is maintained

Fully managed network security monitoring

- NBA benefits without the need for internal: Competence, Capacity/resources, Persistence and regularity
- Delivery: Regular reports, Proactive alerting on Critical/Major issues, The client would retain the access to the appliance, On-premises or cloud-based appliance options
- Segmentation: Frequency of reporting/time spent, Alerting level, Network type (Branch / HQ / DMZ or Server Farm)
- Enterprise: Medium and Large segment

Analysis of applied marketing in the company

Product A

Network Behavior Analysis system designed to identify the threats inside the network with a low rate of false alarms, low installation and integration overhead and robust behavior over extended periods of time. The competitive advantage is based on the use of advanced artificial intelligence/pattern matching and anomaly detection technologies within the system, to ensure a low number of false positives. These technologies are combined with advanced approaches from the autonomic computing field, resulting in an easy to integrate, robust, reliable and long-term stable system.

System is deployed as a boxed appliance, appliance with embedded network probe, virtual appliance or an OEM software module for integration with third-party products. In any of these configurations, it can be also offered as a local or remote (cloud-based) service.

Key selling points

- high sensitivity
- low false alarm rate
- effectiveness against purpose written attacks
- effectiveness against self-modifying malware
- low installation and integration effort – minutes, not weeks
- self-configuration
- self-management

Risks

This section highlights the most important risks as identified at this moment. Obviously, additional risks or Issues can be still identified in the future during the execution of this diploma thesis.

External risks

- Market not mature – clients not ready to buy security as a service or NBA solution at all.
- Problems with the client acceptance of the SaaS business model.
- Partners not ready for new technology or not willing to cooperate.
- New major threats immune against the technology and consecutive loss of client appeal.
- Strong SMB network monitoring /managed security services offer from one of the top players.
- Major new technology based on content inspection or other techniques.
- Move of general IT market towards extremely thin clients and purely cloud computing.

Internal Risks

- Technology performance/scalability may not allow profitable operations
- Employees hired may not have an appropriate level of security relevance/experience
- Employee training might be too difficult/costly to allow wide-scale deployment of services
- Staffing may not be available
- Sales may be too costly/inefficient to sustain

Current market situation and market segmentation

Market segments

At this stage, has been identified several market segments that are considered as important:

1. Traditional Enterprise NBA sales: product sold as a VM, appliance or part of larger integrated solution.
2. NBA-as-a-service for the SME segment: product is delivered as a service to the companies that can't afford to operate a 24/7 NBA solution
3. OEM market for the technology: Integration the technology with strategic partners from narrow vertical segments, e.g. web request anomaly analysis or industry automation network analysis.

Enterprise NBA market

Traditional market for NBA solutions, developed in the US, with established competitors in specific segments (Arbor and Lancope). The customers in this segment in Europe were less inclined to invest I IT security so far, and even major corporations sometimes outsource the networking and/or security to specialists (IBM, HP and others). In general, security awareness is growing in the segment and the expectation of NBA solutions will become widespread in the future. The goal is to penetrate into this market indirectly, through distributors, resellers and integrators

Market is currently under-developed (or more likely not developed at all), as the NBA tools are rarely used by smaller/midsize companies.

- Midsize company is defined as a company with 3-10 IT people.
- Small company as a company with 0-2 IT people, typically with most of the IT function outsourced to external suppliers.

Small and medium enterprises (SME)

The SME companies are currently satisfying their security needs by procurement of network security that requires minimal user intervention. The key feature in the buying decision is not the price alone, but primarily the ease of operations, simplicity of training and ideally zero configuration-deployment. Most IT departments in the SMEs are currently under-staffed, under-funded and they need to cope with the increasing volume of security issues besides their primary work.

While currently under-developed, company should assume that this segment offers the biggest potential for the growth of our services, due to its volume alone.

The SME companies are currently satisfying their security needs by procurement of network security appliances that require minimal user intervention/supervision: Unified Threat Management (UTM) appliances, firewalls, web security appliances, e-mail security appliances and other solutions covering them against one type of attack. Few clients operate centralized security monitoring solution (SIEM). The key feature in the buying decision is not the price alone, but primarily the ease of operations, simplicity of training and ideally zero configuration-deployment.

Proposal

Most SME's IT organizations currently lack resources for the acquisition, deployment and operation of a standalone NBA solution, but feel an increasing need to counter the increasingly sophisticated malware spreading in their networks. Company should suggest for this market the offer of **NBA-as-a-service.**

The service may be delivered by the company or by local partners as a part of a larger service package. Ideally, the data can be obtained from the security appliances currently used by the client, through the partnership with the supplier of this appliance.

The aim is to penetrate into this market indirectly, through distributors, resellers and integrators.

Technology and OEM

In this market, partnership with large and medium partners in order to use the technology in related segments, enlarging product portfolio, building global brand awareness and reputation and also targeting geographical expansion into global market through the vertical segments.

Partnerships are:

- GP: web request analysis, including URL content analysis and more detailed behavior modeling.
- US Automation company (major): protection of industrial networks

Approach: Joint R&D projects at first (may include supplementary US Govt. financing), OEM deployment in later stages.

US & Global markets

The above analysis is oriented towards the markets, with strong emphasis on the EU market. Regarding the global market penetration, the most important is the US, which accounts for the majority of IDS/IPS expenditures as of today. Strong regulatory requirements in some areas (healthcare, finance, corporate governance and recently universities) make the adoption of the state-of-the-art IDS products more significant and widen the market.

On the other hand, the US market presents special challenges: it is strongly penetrated by direct competitors (Arbor and Lancope), whole market segments are accessible to specialized companies only (Government) and the direct sales model requires high initial investment for market penetration. That is why to consider the OEM and narrow vertical partnerships as best way of entering the market at this stage, while adopting a wider strategy.

The GP and automation partnerships that we intend to develop in the meantime are carefully selected as a way of extending ourselves beyond the traditional NBA

market and thus entering the global market from a better position. As we will detail in the corresponding section below, the partnership with GP will examine the possibility of Product A use in a related, but distinct domain of web traffic analysis and filtering, where the market share of Cisco is more than significant.

The other partnership tries to transfer the NBA potential for industry networks monitoring, in collaboration with a major US-based manufacturer of industry automation controls.

Success in any of the partnership would automatically result in new market opening and great sales potential in the OEM mode, and most of this potential will be realized on the US market.

Future of security market

It is expected that the most significant shift in the future will be delivery of the security as a relatively transparently self-organized service. Instead of providing complete security through their devices, the suppliers of the current firewalls, gateways and unified threat management appliances will become service integrators. They will integrate specialized services provided by third parties into their products in order to tailor their solutions to individual customer's needs.

The trend is apparent already: anti-virus solutions based on multiple engine correlation do already exist, as well as network security gateways (Unified Threat Management solutions) that resort to server-side filtering or reputation engines.
Product A is ideally positioned for this market, as we have concentrated on its easy integration with third-party devices from the very beginning.

The integration can be performed both in the local mode, when the software will run on the device directly (currently on the Invea-Tech network probes and collectors), or in the remote mode, when the Product A running in a remote location (e.g. cloud) can process the data received from the gateway/UTM device (Underground 8 or SecureGuard mode).

Execution

In order to exploit the market opportunities described above, it is needed to take the current company from the point where the product and the essentials of the business model (pricing, market segmentation and others) to the point where we will have a fully functional company with efficient sales organization able to obtain a significant market share in the growing market.

SME services market

The key market for the first phase of the growth is the currently under-developed market for the NBA services provided to small and medium size companies. As noted above, the biggest adoption barrier in this segment is the client-side effort associated with the traditional deployment and operation of the NBA-as-a-product solution. The answer is to build on the key abilities of our technology and to offer the product as a service within a pricing range appropriate for this category of buyers.

There are several obstacles to tackle:

1. Efficient sales
2. Zero-cost integration on client site
3. Efficient service delivery
4. Client-side effectiveness

The above-listed issues should be addressed by working with partners with existing access to distribution chains in EU, solid partner network and significant installed base of devices that can be converted/upgraded to produce the data for monitoring. The company will be able to obtain commercial access to the clients with a unified device present in their network and to sell our services to large number of these similar clients through established partner networks.

Using the partners to gain access to the end users has some obvious drawbacks as well: the margins will be thinner and our commercial contact with the clients will be more difficult. On the other hand this can be compensated by carefully designed service provisioning model.

The chain will be as follows:

1. XAX – provides license, technology, hosting (outsourced to eg. Amazon ECC) and monitoring services
2. Device suppliers – provide device that can be installed in the customer network (typically multi-purpose firewall/IDS/gateway) and that will provision the NetFlow data from the customer network into the hosted Product A solution.
3. Distributors: Distribute the devices and service to the partners in the local market. Marketing, publicity and PR on the local markets. Typically 1-2 per country.
4. Partners/Resellers: Sell the devices/service to their clients, may potentially provide the service (monitoring/analysis) by themselves.

Current partners (P)

- P1, Austria – Provider of network security appliances (firewalls, IDS/IPS, web and email filtering). Installed base of several thousand devices across Western Europe, mainly Germany and Switzerland. Offices and distribution networks are in Germany and Switzerland.

- P2, Linz, Austria – provider of specialized firewall & web filtering appliance featuring tight integration with Windows Active Directory and user management. Integration is used to provide authenticated web access.

- P3 - provider of software-based firewalls, IDS and mail servers. Strong presence on global markets and software-based distribution model complements the first two partners. On the other hand, the composition of clients is heavily tilted towards small companies with less than 50 hosts

Hiring the employees

The most important (and virtually only) use of the cash is building the sales organization to target the three markets described above. The key positions to fill in are:

Sales & Marketing

VP sales: An experienced individual who will manage the sales strategy. Needs experience with building and running a technology sales organization, preferably in the security domain.

Required:

- 5+ years sales experience in computer/networking/telco business
- Independence, management abilities

Preferred:

- Security/network security experience
- Former engineer/technologist with extensive sales experience, preferably at director/VP level
- Experience with management of rapidly growing organization
- Experience with the territory, network of personal contacts in relevant segments
- Fluent English speaker

Besides the obvious ideal candidate fulfilling the above requirements completely, there are two possible profiles of people to consider:

- Experienced sales director VP, probably from another IT/Telco segment (due to the small local HR market), with extensive experience of building a high-growth organization.
- Younger sales manager specialized in security with good domain experience and an existing network of contacts.

Channel sales manager (1 or 2): Acquire and work with channel partners, work with the distributors, train the partners and their sales force.

Enterprise sales manager (1 or 2): Tenders, enterprise sales process.

Product manager: Structure the products offer, positioning, maintains product sales materials and work on the training and communication strategy. Security background is highly desirable.

Sales engineer (2+ positions): Support sales staff, provide partner training, pre-sales support, support tenders.

Competitive analysis of Strengths and Weaknesses

XAX Strengths and Weaknesses

Competition companies

Company - Lancope

Overview

- Designed mainly for deployment on Enterprise/Government networks.
- Large part of revenue comes from US Government
- Uses NetFlow (from Cisco, Juniper) or sFlow (from HP ProCurve, Brocade), cFlow, J-Flow, Packeteer-2, NetStream, IPFIX

Strengths

- FlowSensor uses DPI & NBA to identify apps & protocols in use across the network
- Scalable up to 60,000 FPS
- Claims Non-signature based detection

Weaknesses

- Not visible in the European or Enterprise markets
- Very Expensive
- Long setup time
- High integration effort
- sFlow, jFlow, & cFlow etc. are not effective in network behavior analysis

XAX – Strengths vs. Lancope

- XAX does not recommend the use of sFlow, jFlow, & cFlow, etc. due to the high sample rates which does not result in accurate attack detection
- Client has a choice of SW or HW distribution
- Most intelligent NBA solution on the market today
    - Strength of 8 Detection Algorithms
    - Peer-Reviewed Algorithms
- Non-signature based detection
    - Not limited to signature based solutions and their limitations
- Much more cost effective
    - Quotes for are 2-8x higher cost for Lancope
- Auto-Configuration capabilities

    - Challenge agents send synthetic attacks into the data stream to ensure robust threat detection
- Self-Tuning Engine
    - XAX is running within 1-3 hours for most clients
    - No engineer needs to be deployed
- Easier to Integrate
    - Due to intelligence self-configuration
    - No need to deploy costly engineers
- Resistance to Hacker Circumvention
    - Game theory robustness to randomize decision and thwart hacker evasion

Company Arbor

Overview

- Main NBA product is PeakFlow X
- PeakFlow SP is used for statistical analysis of the network
- Largest NBA provider by revenue

Strengths

- Strong in the Telco space
    - Scales to 40 Gbps
- Offers mitigation via their Threat Management System (TMS)
- Offers HA via PeakFlow SP Portal Interface (PI) for redundancy
- 10 years experience in the market
    - Currently the NBA market leader
- Offers Atlas to combine global threat data into a service offering

Weaknesses

- Very Expensive solution
    - 2-8 times more expensive than XAX
- Time consuming tuning process
    - At least two weeks to one month to configure their platform

    - For Arbor you need to deploy an engineer to configure the device
    - Clients are therefore restricted to redeploying their device due to reconfiguration.
- Redeploying PeakFlow is hard to adapt to network changes
    - PeakFlow is difficult to move to different network locations - requires engineer resources, and reconfiguration which could take weeks.
- Uses rule based detection.
    - Their platform does not rely on non-signature intelligence
- Arbor does not focus on unknown and anomalous traffic behavior
    - This data is ignored and not even analyzed
- Arbor does not utilize cutting edge security innovation
    - such as Challenge agents, Hacker circumvention methods, or self-turning capabilities

XAX Strengths vs. Arbor

- Client has a choice of SW or HW distribution
- XAX analyzes unclassified traffic for trustfulness and severity
    - A critical competitive differentiator for XAX against Arbor
- Most intelligent NBA solution on the market today
    - Strength of 8 Detection Algorithms
    - Peer-Reviewed Algorithms
- Non-signature based detection
    - Not limited to signature based solutions and their limitations
- Much more cost effective
    - 2-8x higher cost for PeakFlow
- Auto-Configuration capabilities
    - Challenge agents send synthetic attacks into the data stream to ensure robust threat detection
- Self-Tuning Engine
    - Cognitive Analyst is running within 1-3 hours for most clients
    - No engineer needs to be deployed

- Easier to Integrate
    - Due to intelligence self-configuration
    - No need to deploy costly engineers
- Resistance to Hacker Circumvention
    - Game theory robustness to randomize decision and thwart hacker evasion

Company - Q1 Labs

Overview

- Bought by IBM in Oct ’11
- OEMed by Enterasys & Juniper
- Mainly a SIEM engine with an NBA component

Strengths

- Uses QFlow & VFlow collectors for layer 7 apps

Weaknesses

- Much more expensive than Cognitive Analyst
- Long setup times
- High integration effort
- Client is required to purchase a full SIEM solution along with their NBA
- IBM will likely not monetize the acquisition of Q1 Labs. Most
- Low throughput capabilities
    - can't compete in the Telcos space

XAX Strengths vs. Q1 Labs

- Client has a choice of SW or HW distribution
- XAX analyzes unclassified traffic for trustfulness and severity
    - A critical competitive differentiator for XAX against Arbor
- Most intelligent NBA solution on the market today
    - Strength of 8 Detection Algorithms
    - Peer-Reviewed Algorithms

- Non-signature based detection
    - Not limited to signature based solutions and their limitations
- Much more cost effective
    - 2-8x higher cost for PeakFlow
- Auto-Configuration capabilities
    - Challenge agents send synthetic attacks into the data stream to ensure robust threat detection
- Self-Tuning Engine
    - XAX is running within 1-3 hours for most clients
    - No engineer needs to be deployed
- Easier to Integrate
    - Due to intelligence self-configuration
    - No need to deploy costly engineers
- Resistance to Hacker Circumvention
    - Game theory robustness to randomize decision and thwart hacker evasion

Company Fire Eye

Overview

- Malware Protection Systems (MPS) - Botwall 4000
    - Almost identical positioning to Cognitive Analyst
    - No mention of NBA
- Targeted mainly against botnets

Strengths

- Strong marketing presence

Weaknesses

- Focused on Botnets rather than a much wider scope of network behavioral analysis
    - Such as APT, exploit kits, zero day attacks, etc.
- Redirects suspicious traffic to a virtual system ("sinkhole" server)

    - Since FireEye uses sandboxing techniques, they would miss “sleeping” malware which use VM execution detection
- Sandbox integration efforts are more complex, compared to NetFlow integration.
- Expensive solution compared to XAX
- FireEye’s largest product only scales to 1Gbps

XAX Strengths vs. FireEye

- XAX scales to higher speeds
    - testing up to 40Gbps
- Focused on more than just malware detection
    - APT, zero day attacks, & Exploit Kits
- Most intelligent NBA solution on the market today
    - Strength of 8 Detection Algorithms
    - Peer-Reviewed detection Algorithms
- Non-signature based detection
    - Not limited to signature based solutions and their limitations
- Much more cost effective
    - 2-4x higher cost for FireEye
- Auto-Configuration capabilities
    - Challenge agents send synthetic attacks into the data stream to ensure robust threat detection
- Self-Tuning Engine
    - XAX is running within 1-3 hours for most clients
    - No engineer needs to be deployed
- Easier to Integrate
    - Due to intelligence self-configuration
    - No need to deploy costly engineers
- Resistance to Hacker Circumvention
    - Game theory robustness to randomize decision and thwart hacker evasion

Company NetWitness

Overview

- Acquired by EMC RSA in Apr ’11
- Proposed alongside their enVision® SIEM.
- Panorama – event log collection, Spectrum – Malware analysis, Visualize – dashboard, Live – threat intelligence aggregator, Informer – reporting tool, Investigator – analytics, and an API/SDK

Strengths

- Claiming a signature free approach
    - But appears to be mainly based on rules and base-lining
- Scalable architecture
- Support for more than 200 devices and common log formats

Weaknesses

- Mainly a big-brother approach to tracking all user activity on the network
    - Leading to EU privacy concerns
- Pricing scales very expensive when multiple components are added

XAX Strengths vs. Netwitness

- Client has a choice of SW or HW distribution
- Maintains end-user privacy by utilizing only NetFlow data
- Most intelligent NBA solution on the market today
    - Strength of 8 Detection Algorithms
    - Peer-Reviewed detection Algorithms
- Non-signature based detection
    - Not limited to signature based solutions and their limitations
- Much more cost effective
    - 2-8x higher cost for NetWitness
- Auto-Configuration capabilities
    - Challenge agents send synthetic attacks into the data stream to ensure robust threat detection

- Self-Tuning Engine
    - XAX is running within 1-3 hours for most clients
    - No engineer needs to be deployed
- Easier to Integrate
    - Due to intelligence self-configuration
    - No need to deploy costly engineers
- Resistance to Hacker Circumvention
    - Game theory robustness to randomize decision and thwart hacker evasion

Company AdvaICT

Overview

- Offers basic statistics on network traffic patterns - not a security solution

Strengths

- Statistical analysis capabilities
- Slightly lower cost compared to XAX

Weaknesses

- Basic solution for simple attacks
    - No intelligent engine for advanced attacks
- Mostly suitable for IT staff, not security administrators
- No learning capabilities as the client network changes & grows
- More connected to log management functionality than NBA
- Feedback from clients is that their solution is far inferior compared to XAX

XAX Strengths vs. AdvaICT

- Detecting modern attacks
    - AdvaICT is mainly focused on statistics, using only basic signature solutions for detection

- Captures Unclassified Behavior
    - Ignored by AdvaICT
- Utilizing Artificial Intelligence
    - State-of-the-art attack detection
    - Robust Network Behavior Analysis & Anomaly detection
- Most intelligent NBA today
    - Strength of 8 Detection Algorithms
    - Peer-Reviewed Algorithms
- Non-signature based detection
    - Not limited to signature based solutions and their limitations
- Auto-Configuration capabilities
    - Challenge agents send synthetic attacks into the data stream to ensure robust threat detection
- Self-Tuning Engine
    - XAX is running within 1-3 hours for most clients
    - No engineer needs to be deployed
- Easier to Integrate
    - Due to intelligence self-configuration
    - No need to deploy costly engineers
- Resistance to Hacker Circumvention
    - Game theory robustness to randomize decision and thwart hacker evasion

Competition analysis

This section provides an overview of the competition landscape. It is not necessary to focus on list of all the competitors, but concentrate on the representative technologies/leaders of their respective fields.

Large direct competitors

Arbor Networks: $30M revenue in 2008. The biggest direct competitor who has its own PeakFlow product. Mainly oriented towards the ISP market, but moving towards the content-based methods and alternative markets to extend the services to its core clients beyond pure flow-based security monitoring.

Lancope: $20M revenue in 2008. Competes with a StealthWatch product line, designed mainly for deployment on Enterprise/Government networks. Large part of revenue comes from US Government and contractors.

Indirect Competitors

Network Monitoring Tools: Most network monitoring tools offer rudimentary behavior alerting functionality based on fixed rules and simple traffic volume and traffic type thresholds. However, the sensitivity of these solutions is not sufficient for the detection of sophisticated/advanced attackers, but only for detection of malfunctions, mis-configurations or high-volume attacks such as Denial of Service attacks.

Q1 Labs: Q1's QRadar product (also selling as OEM under the **Juniper** and **Enterasys** brands). It achieves good results by fusing data/alerts from multiple sources through a variety of protocols and performing data fusion on them. On the other hand, it requires careful integration with a variety of data sources in the network.

Sourcefire: Sourcefire offers an NBA module as a part of its IDS/IPS offering. It differentiates itself from the competing solutions by tight integration with single type of IPS/sensors and by complementing the NetFlow data by information from other sources, e.g. the Sourcefire RNA sensors.

Proposals to Improve

Within the target group, I would recommend three types of clients that need different service profiles, provided at different price levels:

Mid-enterprise customers: Customers with hundreds of hosts (servers) on their network, with an existing IT organization, but without a specialized IT security team. Some/most of the IT management may be provided by external organizations, notably network management and possibly also network security. *IT is aware of the security risk, but does not have resources to cover them by themselves. They may be able to perform opportunistic network monitoring /checks on their own through the XAX web interface.*

Small enterprise customers: tenths to low-hundreds of hosts, small internal IT department, outsourcing most of their activities. Most of the management is outsourced, typically including the network/security/server/major applications management. *IT may not be aware of the risks, but shall be able to process the written reports received from the service providers and progressively start to use the web interface as they gather experience. Initial training may be offered.*

Small office customers: units to tenths of hosts, IT management is typically outsourced to a third party or not performed. We expect little or no security experience and risk awareness. Security is managed by ad-hoc installation of appliances. The customer is not able to use a written incident report or the web interface.

In the first time, XAX should concentrate its sales efforts on the customers in the **first two groups**, starting with the customers from the mid-enterprise segment and progressively scaling down into the small enterprise segment. Small office customers are not currently addressed directly and would require an indirect approach where the system user would be a local IT management company.

NBA as-a-service

The keys to the success in this market are relatively clear and are well aligned with distinguishing product features:

- Provide a service, not a tool: It is important to not selling just the tool, but selling the tool with a service.
- Self-installation and self-configuration: the solution should require virtually no effort to install the source of the data and start operating.
- Provide network monitoring as a service with affordable price.

In essence, the key selling argument in this market is providing the help with no overhead to the clients, saving their resources by rapid identification of problems and precise analysis of the security-related issues in the network.

Conclusion

The approach of the market indirectly, through the network of partners with established market presence and existing customer base. Strict vertical orientation of product is of major importance: easy identification of the primary clients in each partner's portfolio. The indirect approach will require strong partner support from investor. Strategically, the essential point of partner acquisition is the success of the initial sales to the security enthusiasts between the existing customers. Delivering strong support to our partners at this stage, allow them to build up the sales and integration competence. The sale of a relatively complex product as Product A to larger customer base (getting behind the visionaries and technology enthusiasts) requires initially informing the mass of the clients, making them aware of the risks, and thus broadening the customer base accessible in each partner's portfolio. The success of the initial sales will show the partners that the market is ready and that the additional sales effort will pay off.

The role of firm sales force in the indirect sales model is to provide product expertise, gather use-cases and generalize them into sales materials usable by all the partners. This will require company's enterprise sales people to work with product management/marketing people.

The sales managers will ensure the support of the partner when making the first sales calls and/or when offering to major accounts. They will assist the partners during the RFI/RFQ processes, pricing and other business activities. Sales engineers will assist the partners and clients with quantitative assessments, integrations, training and with the technical aspects of the tenders.

Based on the experience with current partners, the partners will require initial sales training, subsequent technical/support/integration training and our assistance during the offering to first clients.

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