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THE STRATEGY PROPOSAL OF ESET COMPANY

NÁVRH STRATÉGIE SPOLEČNOSTI ESET

DIPLOMOVÁ PRÁCE

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Instructions:

Introduction
Problem Statement and Diploma Thesis' Objectives
Review of Literature
Analysis of the Current Situation
Proposals and Recommendations
Conclusion
References
Appendices

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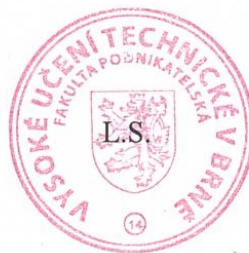
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Abstrakt

Diplomová práce navrhuje strategické řešení pro firmu ESET podnikající v oboru zabezpečovacího softwaru pro různé platformy. Ke kritickému prozkoumání trhu byly použity Porterův model pěti sil a také SWOT analýza. Taktéž použitá metoda benchmarkingu objasňuje trendy na tomto specifickém trhu. S ohledem na současnou situaci na trhu jsou navrženy strategické řešení pro budoucí růst společnosti.

Abstract

Master's thesis proposes strategy solution for ESET company, which is doing business in security software industry for various platforms. For critical examination of the market there were used Porter's five forces model and also SWOT analysis. Similarly, the applied method of benchmarking clarifies trends in this particular market. Considering contemporary situation on the market, there are proposed strategy solutions for further growth of the company.

Klíčová slova

Benchmarking, Porterův model pěti sil, SWOT analýza, analýza trhu, zabezpečovací software

Key words

Benchmarking, Porter's five forces model, SWOT analysis, market analysis, security software

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Poděkování

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Introduction

In the present time of easy access to the internet anywhere and increasing number of people able to code simple application the competition on the software market has exponentially grown in last few years. Nevertheless, persisting position on the market requires more than just purposive product or service. For its success it contains much more afford and planning the uninitiated people would assume.

Strategic management represents together with planning and decision-making the crucial part for any enterprise in all sorts of industries. It leads its progress to achieve given goals and plans. It is principally concerned for long-term objectives and it requires detailed analyses of available information to elaborate the most adequate strategic plan.

For diploma thesis the author has determined the market engaging security solutions for broad range of platforms. It has become cutthroat. The enterprise's willing to be leader has to possess an ability to keep up with the trends changing on the everyday basis. On the other side, company's growth requires coherent strategy plan to excel itself and its competitors over decades.

ESET is a privately owned company operating in information technologies service sector with a specialization in anti-virus protection and malware detection software. This company with relatively short history, but continually strengthening position among giant competitors, was chosen for its dynamic growth in the last decade on the market of security software, which protects users' devices against its harm and misuse.

The future of the electronic devices might be assigned in ESET progress and commonly used security solutions. Device protection increases on importance and that opens options for company growth as well as the range of the devices which are and will be invented in the immediate times.

Resume of Goals and Used Methods

The purpose of this thesis is to critically analyze current strategy of ESET and its main competitors using elucidating method - benchmarking as a tool for mapping of company's scope of activities in international volume and on the base of resulted findings to propose recommendations for the further expansion. The principle of benchmarking is based on the comparison of business strategies across processes and measuring the related scope of activity within relevant industry competitors to achieve increased business performance by learning from the best (Sekhar, 2009).

Modus operandi of the thesis keeps the conventional approach. First chapter acquaints the reader with relevant theoretical frameworks and its use for this particular issue. There needs to be elaborated not only principles of the theories, but also difficulties or benefits of their application. Secondly, the chapter introduces critical overview of the company. It introduces company's product portfolio along with its achievements. Subsequent part applies reader's mind to market analysis, particularly Porter's five forces model. Other part of the chapter states benchmarking method among cognate companies. One analysis serves to purpose disclose relations business aspects for successful running business in this industry. Other method applied is measuring chosen attributes to be used as standards or image to recreate strategy for reaching better practise. Moreover, it enlightens the market conditions the company operates in and its strategy heretofore. Totality of contemporary opportunities and threats is examined through the SWOT matrix. Resulted from the applied analyses and ascertained trends the final part proposes strategy improvements for ESET company to increase its performance in the close future.

From theories involving the strategic management there were chosen those which in author's opinion were the most supportive for the examination of the situation on the market. However, there are no doubts for achieving the objectives of the thesis that there could have been used other frameworks revealing dissimilar results. Nevertheless, the benchmarking as the method on its own would not sufficiently uncover the most obstacles to strategic growth for long-term planning. This theoretical framework would be very beneficial for its utilisation in organisation's strategic management towards ongoing competition.

The business nature of this industry is mainly held online. For this reason, it has become problematic to focus on one country or a single region. The work concerns the security solutions for personal computers worldwide, but it specifies closely at chosen companies and their products and services. It does not focus on organisations, which scope of business is not comparable with ESET operation or its comparison would not bring credible findings.

In conclusion compilation of analyses was executed according pre-studied theoretical background and with supervisor's guidance. For elaboration of the thesis' issue all information was obtained from public databases, market surveys, reports and companies' published data. Eventually, proposed strategy solutions towards further expansion could be inspiration for ESET' strategic planning, although company was not involved into the process by any collaboration.

1 Theoretical Background

This chapter clarifies the theoretical frameworks and forms an integral part of the thesis. It delimits significant concepts and interrelations for the particular issue. Critical point of view delivers to the reader foundation of the used methods with their limitations and benefits at the same grade. Thoroughgoing research of the analyses becomes crucial for further market assessment.

1.1 Strategic Management

As highlighted by Subba (2010, p. 21) strategy is utterly defined as “a unified, comprehensive, and integrate plan that relates to strategic advantages of the firm to the challenges of the environment. It is designed to ensure that the basic objectives of the enterprise are achieved through the proper execution by the organisation”. Based on the ideas of Fotr et al. (2012) systematic approach, which is mostly used in production might be applied also in conception of the strategy. Production process operates with three terms: inputs, transformation and outputs. For the strategic management information becomes an input and through critical thinking it transforms into complex strategy as output.

Business operations and managerial decisions towards fulfilment of company’s future goals in long term period are called strategic management. Complex field of strategic management includes aspects of research, composition, realization, assessment and supervision. Overall impact should lead to growing performance of the corporation. After setting certain objectives and observations, the formulation of strategy is next in the process. Implementation appears only as the middle part of process, because the evaluation demonstrates success rate for pre-established goals (Sekhar, 2009). According to results there should be taken decision-making for continuation in planned strategy or application of further adjustments.

Figure 1 illustrates conventional approach to building long-term strategy. Other opinion for difficult and not predictable environment perceives process with one change in order of the stages. Managers might formulate certain objectives after revealing the basic

factors and relations that enable them evaluate readiness of company for changes (Papula, Papulová and Papula, 2014).



Figure 1: Process of Strategic Management (Papula, Papulová and Papula, 2014, p. 40).

1.2 Porter's Five Forces Model

The model for obtaining of genuine overview of the industry environment complies with principles of Porter's model of five forces depicted in figure 2. In 1980 Michael Porter introduced concept of powers that might have an influence on one's business and one should be aware of them for further arrangement of policy towards discovered conditions. The analysts should identify opportunities and threats in order to ensure ability of firm to suppress or take an advantage of forces' intensity for its own intention (Porter, 1998).

Competitiveness of the company in certain industry might be revealed by analyzing the organization's environment through this model. Identified forces are divided into:

- * Horizontal forces - Threat of substitutes, threat of new entrants, competitive rivalry;
- * Vertical forces - Bargaining power of buyers and bargaining power of customers.

Mentioned powers interlinks company's field of business in certain relation, thus capturing those connections should be utilized for superior competitive strength.

Analysis displays closer look at the existing rivalry and how it influences unfavourably the company's businesses. The company itself should evaluate its potential within life cycle of the industry. Risk of new entrants depends on the level of barriers to entry. In case of low risk, it gives the existing competition space to keep or improve position on the market. Barriers to entry are seen as government policy, initial expenses, access to distribution, economies of scale, brand equity or customer loyalty. Analysis of substitutes specifies range of products that could be more attractive for customers in manners of the price or features. In case of numerous suppliers it degrades bargaining power for the company and though it does not represent high power towards the one. High buyer power stands for convenient bargaining advantage to decrease price or demand higher quality in conditions of small number of customers and great amount of providers or buyers incline to either buy or create by themselves substitutive products or service (Subba, 2010).

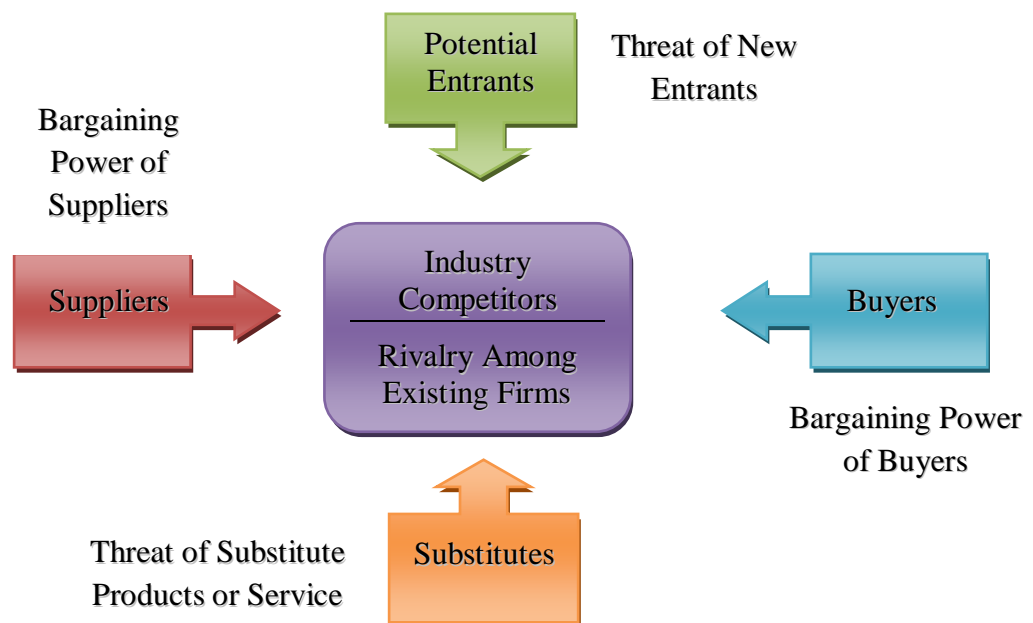


Figure 2: Porter's Five Forces Model (Porter, 1998).

Each force achieves evaluation of high or low influence and that implies threat or opportunity towards the organisation. If threats dominate over opportunities one might perceive an assumption of non-attractive industry and vice versa (Papula, Papulová and Papula, 2014).

Beside, this model was chosen for its supportive identification of key success factors in the particular field of business. It was recognized as suitable combination of frameworks with below mentioned ones for mapping of chosen industry. The specific procedure draws one's mind to the potential power of suppliers or even substitutes to degrade company's competitiveness. Nevertheless, it is necessary to be familiar with industry stage of life cycle the company is doing business in such as ESET belongs to software industry with regular innovations. The mentioned concept is still globally employed in strategic analysis of the industry. Besides, it misses an issue of the innovation in commerce (Jeyarathmm, 2008). Even though it presumes a discernible industry, its application is limited.

Based on the ideas of Chow and Cao (2008) organization needs to have focal point at fundamental indications which underlie success in the business, otherwise it would launch strategy that does not match with industry requirements and fails on the market against competition. Key success factor can be seen as a planning tool for organization to elaborate the right strategy in order to achieve given aims. Indirect relations between factors, extracted value and relative costs can be tangled and perceived in performance indicators (Grunert and Ellegaard, 1992).

Moreover, it should not be neglected that company performs by using its own sources, powers and capabilities. As Papula, Papulová and Papula (2014) also indicate that Porter's model determines certain industry with boundaries, although the factors are capable to influence conditions on the whole market thus the environment is constantly changing. Generated changes do definitely have impact on the external environment. As an example, in the future such changes might result into progress from low bargaining power to very high or opposite.

Another aspect of Porter's model is criticised and it is ignorance of 6th force with influence for the company. As Brandenburger and Nalebuff (2011) found additional force important to be aware of because such complementors stand behind strategic alliances and could have great impact on the products and services. Other opinion comes from Jones (Porter, 2008), he argues that 6th force presents in power of government national or regional. However, Porter (2008) refutes this statement by

appropriate understanding of authority involvement into the business. For reasonable assumption of potential power of government, relevant policies need to be enlightened.

1.3 SWOT Analysis

This analysis stands for systematic approach towards external and internal environment of the company. Fundamental difference between these two spheres of activity is determined by origin of the aspects, which company could or could not influence. Procedure of the analysis begins with evaluation of the strengths and weaknesses on the inside of the company and follows with identification of opportunities and threats towards surroundings. Resulted disposition should be used to develop enterprise strategy for further growth (Papula, Papulová and Papula, 2014). Depiction of SWOT matrix is illustrated in figure 3.



Figure 3: SWOT Matrix (Papula, Papulová and Papula, 2014, p. 82).

1.4 Benchmarking Method

“You must continuously compare yourself against the very best. In this game, good enough seldom is.” Richard Dolinsky (Patterson, 1996, p. 31).

Other theoretical framework applied in this thesis is dated historically in mid 1970s. In those times, XEROX Corporation lost its monopoly position on the market with copy machines because of financial problems. Japanese companies saw favourable conditions and caught the opportunity for entry the market. During searching for origin of the company crisis the ineffective stock control was discovered. XEROX company began to analyze practices of the rivalry in order to learn from them and change policy to become more competitive. For this purpose, corporation chose L.L.BEAN company and studied its processes since they were assumed for superior organised company in manners of stock control. In this case, benchmarking application meant significant change for the view of comparison among enterprises. Subsequently, method found wide application (Patterson, 1996).

Definition of benchmarking resides in three principles maintaining quality, customer satisfaction and continual improvement, which are feasible through “continuous process of measuring firm’s products, services and practices against the toughest competitors or those companies recognised as industry leaders” (Kozak, 2004, p. 6).

The process of evaluation of various aspects in business should uncover weak points and opportunities for essential development to keep up with competition. Benchmarking indicates path and areas, which company could develop according to results of its main competitors. By origin this tool was firstly recognized in USA as mentioned above and nowadays it is utilized by 95% of US companies (Sekhar, 2009).

Company should be aware of advantages and disadvantages of this method. Significant contribution emerges with its application across the businesses of firm. Arguments for this statement are developed in the works of Patterson (1996) and Stapenhurst (2009), specifically:

- * It delivers significant betterment rather than incremental improvement.
- * It helps with identification of real-life targets.
- * It demonstrates examples how to be more competitive.

- * It could solve specific problems.
- * It provides examples to learn from best-practises.
- * It facilitates accurate measurement of productivity.
- * It uncovers weak spots before irretrievable failure.
- * It helps in avoidance of creation what has already been created.
- * It suggests strategy revision according to competition.
- * It delivers educational and creative rush.
- * It brings higher rate of successful reengineering.

Based on findings of Fleisher and Bensoussan (2015) with great achievements benchmarking includes also obstacles with its utilization in real conditions:

- * Unsuccessful application comes with wrong comprehension of method. For example company provides detailed analysis of the competition, but it does not implement inevitable changes for own improvement thus the utilization is not complete.
- * If one company adapts the procedure of benchmarking for its purposes, it subsequently does not have to strictly mean following success for another company.
- * Information is valuable resource, which improvements consequently are built on. This could be difficult in manners of time, size and processing.
- * Another pitfall is hidden that best practise company is not willing to share such credible information.
- * Obstacle could be also found in internal workforce especially employees' compliance for change, insufficient collaboration or communication.
- * Last but not least difficulty becomes with wrong choice of comparative firm.

1.4.1 Methodology of Benchmarking

Since first decision of company management for the benchmarking method, it needs to be understood as long-term process of betterment and involved in strategic planning with regular revision. The awareness and acceptance of the situation that another unit has exceptional performance, is first step towards improvement.

According to Axson (2010) after that three situations might occur:

1. Another industry has outstanding practise to be learned from.
2. Another process has outstanding operation to be learned from.
3. Industry rival with same processes has superior accomplishment.

Based on the ideas of Andersen (2007), methodology of benchmarking consists of only measurement, comparison, learning, improvement and sustainability stages. This progress might give an assumption of entire completion, but that could cause failure in its use. Therefore, benchmarking method needs to follow steps for proper utilization. Before employment such method the initial phase is proceeded to secure appropriate training of benchmarking team and assessment of company needs in relation to choose suitable procedure to accomplish (Kozak, 2004).

Support of PDCA cycle is very handy for inclusion of benchmarking into strategic management. Its repetitiveness ensures sustainable development for the organisation (Patterson, 1996). Detailed steps illustrating PDCA cycle are listed in figure 4.

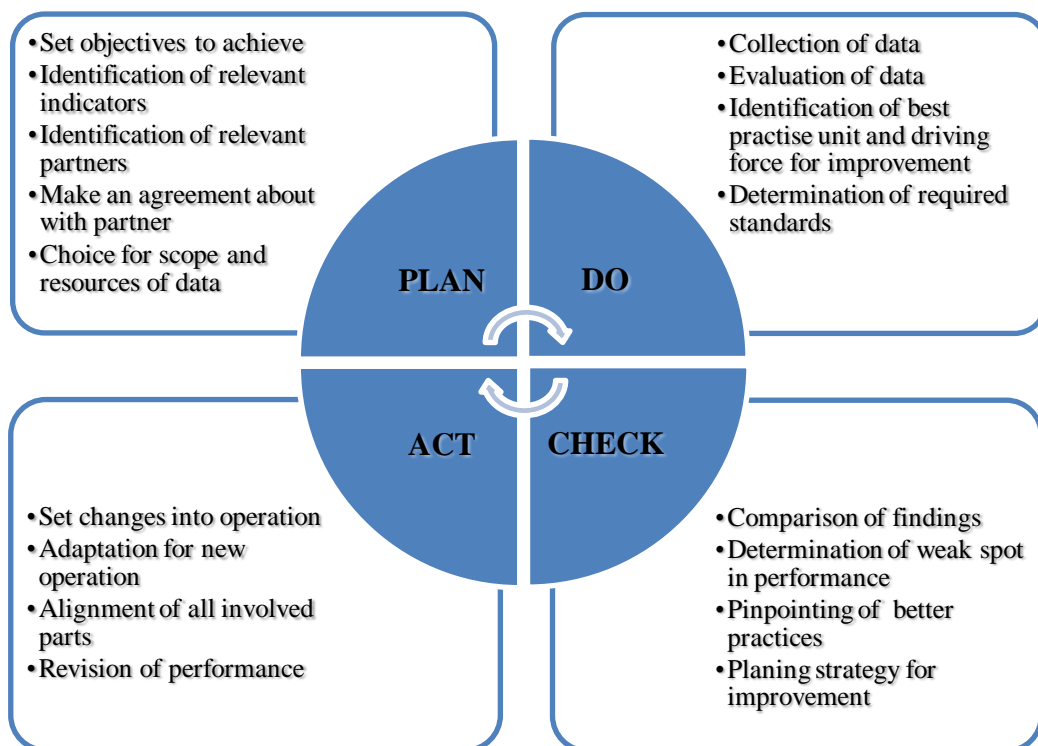


Figure 4: Progress of Benchmarking Based on PDCA Cycle (Patterson, 1996; Kozak, 2004).

1.4.2 Types and Approaches of Benchmarking

Scope of study can be limited to specific area of interest for instance internal business processes, financial results, performance, range of products, strategy of rivals or business functions. Chosen certain type and approach of benchmarking helps organization to obtain new ideas and practices how to become more effective. Figure 5 demonstrates benchmarking classification according to different aspects.



Figure 5: Classification of Benchmarking (Patterson, 1996; Kozak, 2004).

At the beginning, it is necessary to consider from which company one might learn the most. There are two viewpoints according to studied environment:

- * Internal benchmarking – It focuses on activities or subjects among various business units of one organisation. Finding of superior example leads the path to set performance standards for the others to follow. This collaboration is perceived as simplest because of sharing and gaining sensitive data, although it is not assumed for radical change of company practise (Kozak, 2004).
- * External benchmarking – Examined environment is enlarged behind the boundaries of company’s own business. Aiming on the competition firm has opportunity to find new methods, techniques or services in order to take an example. It also contributes in relation that such practises are time-tested and taken to perfection.

Execution of benchmarking might be either collaborative or competitive. Those two approaches are related with companies' openness to share information towards learning through one-way or multi-way information flow.

- * Collaborative benchmarking – The approach of limited information exchange provides to consortium of companies simpler access and faster execution of benchmarking which leads to the best practises database and could increase standards in the certain industry.
- * Competitive benchmarking – In relation to accomplishment of proper comparison this approach becomes the most difficult. Performance, products and all range of activities are studied among direct and indirect rivals from the same industry. Reverse engineering is at the beginning and then it enlarges into benchmarking in order to find the world-class example (Patterson, 1996).

Company using benchmarking for continual development, measurement of performance or increase of quality has option to follow various types, which can be used within the organisation and its divisions or departments, or among industry competitors.

- * Performance benchmarking – This type of analysis concerns performance data in comparison towards the competition. It provides measurement of achievements. It does not involve searching for way how it accomplishes. In terms of values it demonstrates clear numerical assessment of the difference in performance for instance costs, margin, rate of rejects etc. However, the core processes are lacking in study. Because it does not expose path for the future, it is recommended to use this method in combination with process benchmarking.
- * Process benchmarking – The special attention is drawn to process and even following sub-processes. It is appropriate for the transformation process, when inputs change for outputs and during that time the sources are spent in certain conditions. Process benchmarking finds its utilisation even in non-producing operation as internal audit, invoicing, booking systems, etc.
- * Functional benchmarking – Its orientation covers only specific functions and it does not have to necessarily deliver profit for entire enterprise. Its application is found in service and also non-profit sector. In this case of benchmarking,

the execution is not obliged for comparison within identical business industry, but with similar and top-level operation (Patterson, 1996).

Other classification is given in Global Survey on Business Improvement and Benchmarking (Mann et al. 2010) such as formal and informal approach. The informal is conducted without any structure and not in a consecutive manner. The other one is split to sub-categories such as shadow benchmarking and best practice benchmarking. Although this method seems to be rather beneficial for the organization, the procedure might introduce certain impediments to proper application, for example, insufficient technical knowledge and obstacles in identifying the appropriate partner to compare with. Moreover, another constraint could be also incurred by the involvement of the third party in position of benchmarking authority.

In addition, benchmarking practises are criticised by Fleisher and Burton (1995) for relevant data collection from sources with breaking any privacy or rather possibly without just fabrication of information. Gathering data for benchmarking is conceived as complicated phase together with its evaluation. According to Patterson (1996) for key decision-making there is 90% of all information about market and competitors either in public or could be obtained from public data. For this reason organisation should emerged further analyses from free-access data, for instance associations' reports, public available databases, questionnaires, competitor's press releases, released legal documents etc.

Other germane point related to information handling is seen in ethical code. It should declare rules for behaviour and action of all involved parties during benchmarking utilized. Organizations might feel tension in manner of legality and trustworthiness. After benchmarking partners align each other in cooperation, they need to find mutual comprehension for fulfilment under the agreement (Patterson, 1996).

To this end, for each case certain concept might be applied, but as well types have their limitations in the use. They need to be adjusted for real conditions, but every deviation of simplified structure of models presents divergence in actual view on focused issue. Therefore, it raises assumptions against universal framework for all contemporary occurrences. Application of various theories could reveal non-identical proposals for strategic management. Adoption of another model with difference in suggested

recommendations should not be taken to one's detriment, but rather as instrumental guide in strategic decision-making. As corollary, there was seen relevant reason for author's choice for this method and thus the nature of the competition is continually progressing with uneven innovations.

1.5 Malicious Software

In the light of better comprehension the target industry and its products it is inevitable to define what could be assumed as malware. The term malicious software was replaced by shortened version as malware. Based on the ideas of Stamp (2011) such software created with the purpose to break security belongs to malware. Another interpretation on malware comes with "any software designed to do something that the user would not wish it to do, hasn't asked it to do, and often has no knowledge of until it is too late" (Foldoc, 2007). The design of malware differs by plentiful shapes, intentions and extent of the damage. Confusion might arise when it comes to determination what signifies malware.

1.5.1 Classification of malware

Malware could be categorized by purpose and effect on the device, whereas types of such software could be sectioned by the way it is executed on the device. Frequent malwares with dissimilar effects are listed in Table 1 on next side.

Misuse of the device could be done through the infectious or concealing malware. In other words, first disseminates; it is able to duplicate and spread from one's device to the others. The following are considered:

- * Virus – malware designed to infect executable programs one by one by using them as agents of the spreading.
- * Worm – malware attacking via email to disseminate recipient's computer and spread through his or her email (Timm and Perez, 2010).

Table 1: Examples of Frequent Malware (Timm and Perez, 2010).

CATEGORY	DEFINITION
Crimeware	Set of programs created to be used for illegal activity online.
Spyware	Software installed on device with intention to gather information about user's browsing, preferences and interests without one's awareness.
Adware	Software package, which shows or promotes advertising during its use or installation, it might also slow down user's system.
Browser Hijackers	This malware dominates home page and misleads the user to hacker page instead of the desired site.
Downloaders	Tiny application created for infection and consequently let to get in malicious software.
Toolbars	Imitation of the regular toolbars procures tracks for transmitting and redirection.
Dialers	Software attacks user's modem to interlink with a number 1-900, which raises programmer's profit.

Concealment of malware is based on the hiding itself. So the user has no knowledge of its presence even intention. The time until it will be revealed it uses for gathering information about the user. Among concealment software there belong:

- * Trojan Horse – Beside it provides desired functionality, it also contributes to unauthorized admission into device system.
- * Rootkit – After concealed facilitated admission into the system data and processes are modified for attacker's purposes. It usually co-works with another malware.
- * Backdoor – Owing to self-installation onto a computer, it enables easier access to the system using bypassing method for authentication procedures.
- * Keylogger, sniffers or password hash grabbers – Passwords and other user's sensitive data could be stolen due to this malwares, which monitor keyboard entries. Attackers use this software with intention to hack into online accounts such as emails or online banking.

- * Launcher – Its purpose is only to launch other malicious code. This malware is mostly used after first-time admission.
- * Scareware – This malware behaves as security program. It frightens the user of the hacking the computer and forces him or her to buy attacker’s software in order to protect the user’s computer etc. (Sikorski and Honig, 2012).

Mentioned malware types might infect the user’s computer contemporaneously with intention to keep unrevealed and gain as much infected devices as possible. As Sikorski and Honig (2012, p. 4) give an example, “a program might have a keylogger that collects passwords and a worm component that sends spam”. According to the opinion of these authors targeted attack is much bigger threat than mass malware. Usual security products might not protect the computer against such an attack.

Malwares are not committed only to personal computers shortly PCs, such as desktops and laptops but also to mobile phones. Security companies use also term endpoint protection or security for PCs. Many smartphones achieve the level of processor capacity and computer power which might compete with common laptop. Due to that fact they are exposed to rival threat from malware designers, too (Jakobsson, 2012).

1.5.2 Anti-malware tools

When it comes to terms it might lead to user’s confusion that could be more than convenient for security companies. For clarification, as Kizza (2013) pointed out that in the past the security market was aimed at viruses and small worms. Consequently, companies put the term anti-virus into use for marketing purposes. Nonetheless, similarly as the malware presents broad term explained above, so anti-malware software stands for each tool protecting the user’s device, including anti-virus. With variety of malware it comes also range of anti-malware tools. They differ by technology of device protection and methodology of malware detection. Most of contemporary anti-malware tools use method of comparison data from possibly infected system with database of earlier detected malware in the network. It needs to be regularly updated in order to recognize the latest threats and maintain their potency. They are not universal for all kinds of threats as some new types are so well-sophisticated not to be detected.

Common user needs to figure out against which malware is safeguard from (Misra, Verma and Sharma, 2014).

Thereto detection of itself might become more complicated as malware hides in common programs. Anti-malware tool might use three general approaches to reveal malicious code:

- * Signature detection – Its principle is based on string of bits, which were already recognized as malicious code. This approach seems to be effective for the known malware, because its signature has a record in database. It only requires access to this database. Disadvantages arise with size of the database and consequently with needed time to scan.
- * Change detection – It works on assumption that malware needs to act to accomplish its goal and therefore it needs to make a change in the system. Such working tool securely stores generated hashes of files and on the regular basis it checks change of hash values. This approach is seen effective as it uncovers new infection. In addition to that it gives many false results so that involves administrators to check the results or it comes back for signature detection.
- * Anomaly detection – This technique focuses on the network behaviour. It is determined in challenge to discover what acts unusual from normal and distinguish the difference. Inconvenience comes with changes of normal. As the system adaptation is inevitable, it might end up with user's overwhelming by false findings, but in uncovering patterns is faster than signature approach. Application of only this detection does not have to be sufficient, but it could work simultaneously with signature detecting tool (Foster, 2005; Stamp, 2011).

Anti-malware products could possess features against various threats at once. Their complex technological design includes different tools which recognize malicious behaviour in different forms and shapes. Some of them are marketed as separated tools. There are listed essential ones for sufficient security:

- * Anti-Banner – prevents from displaying products or services not related to host web page; it is often pop-up windows banner adverts.
- * Anti-Botnet – prevent before taking control over the device and becoming zombie computer as part of a network of infected computers.

- * Anti-Malware – eliminates various types of malicious code (including viruses). Difference between terms anti-virus and anti-malware is not significant. Both have the same purpose, but companies build software in different design and use different detection approach as elaborated above.
- * Anti-Phishing –prevents attempts to acquire confidential banking information and identity details by fake websites.
- * Anti-Spam – prevents reaching unsolicited messages, which could be possibly dangerous, usually contains commercial advertising and are massively sent.
- * Anti-Spyware – eliminates rootkits and spyware.
- * Anti-Theft - helps to locate and protect device in case it of a loss or theft.
- * Anti-Virus – engine that scans disk drive, the memory and programs in computer to detect threats.
- * Auto-Updates – for searching up-to-date threat, there are included constant updates during purchase licence period.
- * Browser Cleanup – possesses characteristic of anti-banner and also prevention of annoying toolbars hijacked searches.
- * Cloud Scanning – assistance of cloud for scanning and defence. It should speed up the process with no reduction of device performance.
- * Data Shredding – conversion of unwanted confidential information to be unreadable or unrecoverable for misuse.
- * Encryption – conversion of private files into a meaningless form for unauthorized user.
- * Firewall – protection of information in relation of network and connection.
- * Game Mode – tool for no interruption during full-screening by pop-ups.
- * Online Shield – another term for firewall protection.
- * Parental Control – feature for safeguarding children against not suitable content.
- * Removable Media Control – protection in case of connecting infected storage medium (CD, DVD, USB Flash Drive, Memory card, External Hard Drive).
- * Sandbox – virtual space for test running of suspicious applications.
- * TuneUp – tool for extension battery life and betterment of device performance in terms of more speed, more space and automated maintenance (Avast, 2015c; Avg Technologies, 2015c; Eset, 2015i; Kaspersky Lab, 2015b).

2 Current Situation Analysis

2.1 Company Profile

Since company's incorporation ESET has operated in IT sector, especially on the security software market with continual rise in performance. Nowadays, ESET company belongs to world leaders in the struggle against computer viruses, but its inception goes back to 1987 in Slovak Republic. In those times it was just two fans of information technology world, Peter Paško and Miroslav Trnka, who identified one of the earliest computer threats worldwide and created a detecting virus program. As several more harmful applications appeared so they wanted to contrive "the universal software solution" (Eset, 2015c). It should be competent to eliminate outer device perils and protect an inner content. They founded ESET company labelled as limited liability company. In 1992, Bratislava became and still is the middle of the thing as the headquarters.

For more than 25 years the company has been expanding and now it employs over 1000 professionals in global sense. Later it was eligible to have closer approach to customers and extend workplace to different world continents in order to penetrate the markets. Therefore the regional distribution and research centres were founded in several countries around the whole world, namely in San Diego (USA), Bristol (United Kingdom), Buenos Aires (Argentina), Singapore (Singapore), Prague (Czech Republic), Košice (Slovakia), Krakow (Poland), Montreal (Canada) and Moscow (Russia) (Eset, 2015c). Research and development department is seen as key part in fight against the hacking or data privacy breaches. Consequently, ESET invests heavily in this department in order to improve software capabilities for instance it re-engineered and re-designed business solutions with goal of proactive protection, with low foot-print for the system and easiness to administrate for the client (Eset, 2014b).

In founders' belief of sustainable development and innovation ESET has achieved repetitively awards for its success on this specific market as fast-growing and innovative company. Co-partners have built the company on the three basic principles - "responsibility, reliability and honesty" (Eset, 2015c) and now the company operates in global sales network through e-commerce and also affiliates partner

program. More detailed history record is illustrated in appendix I. Lately, ESET revised visualization style of history. It was replaced by fresh view on story line by years with only one and the most significant achievement (Eset, 2014a; 2015c).

Richard Marko in position as Chief Executives Officer of ESET states himself that "For over 25 years we've been helping people to protect their digital worlds. From a small, dynamic company we've grown into a global brand with over 100 million users in 180 countries. Many things have changed, but our core aspirations, philosophy and values remain the same – to build a more secure digital world where everyone can truly Enjoy Safer Technology" (Eset, 2015c).

2.1.1 Product Portfolio

Presently, ESET offers solutions for home and business customers. Its range of activities is always related to data protection. Individual user can choose from basic ESET NOD32 Antivirus for the common used operation system Windows (XP, Vista, 7, 8, 8.1) or other advanced ESET Smart Security; both are regularly upgraded and include ThreatScan technology developed by ESET. Software has also versions for other operation systems such as Mac or Linux (Eset, 2015c).

As technology exceeds limits of possibility, so new and new devices have been raised and needed to be protected from outer danger. Therefore ESET has been advised and reacts on the market situation as it occurs. In its range mobile and tablet security has equal preference as PC (OPSWAT, 2014). ESET promises to consumers "we believe in technology – and we want to make that you can enjoy it in safety" (Eset, 2015c).

Back to business to business (B2B) relation, ESET tries to enhance its services towards satisfaction of enterprises and their needs. It focuses highly on endpoint security with great emphasis on malware detection. Moreover, it includes remote administration and real-time web dashboard and many other extras. Those offered security solutions are designed for enterprises over 5 endpoint seats up to 25. According to customer's needs and number of endpoints there are other two categorizes taking into consideration the size of the business 25-500 and 500+ endpoints. Solutions and services might be extended to securing all operations which organization runs on daily basis (Eset, 2015c). Of course, it provides complex assistance and consultancy to safeguard

one's network with customization within business solutions. Current range of products for business contains Business Security Pack, Remote Administrator, Mobile Security, Mail Security, File Security, Gateway Security, Data Encryption etc (Eset, 2015d).

As one certain evidence out of many about IT development could be particular study about educational organization's replacement of combination of two security providers Microsoft and Symantec for single protection from ESET. Specific demands and reasons for substitution are described in appendix VI. After deployment users experienced the following benefits such as "protected organizational intellectual property and data, increased end-user efficiency and freed IT resources to pursue other projects" (Appendix VI). That is why ESET implements individual approach and tries to adopt software to companies' or government's needs.

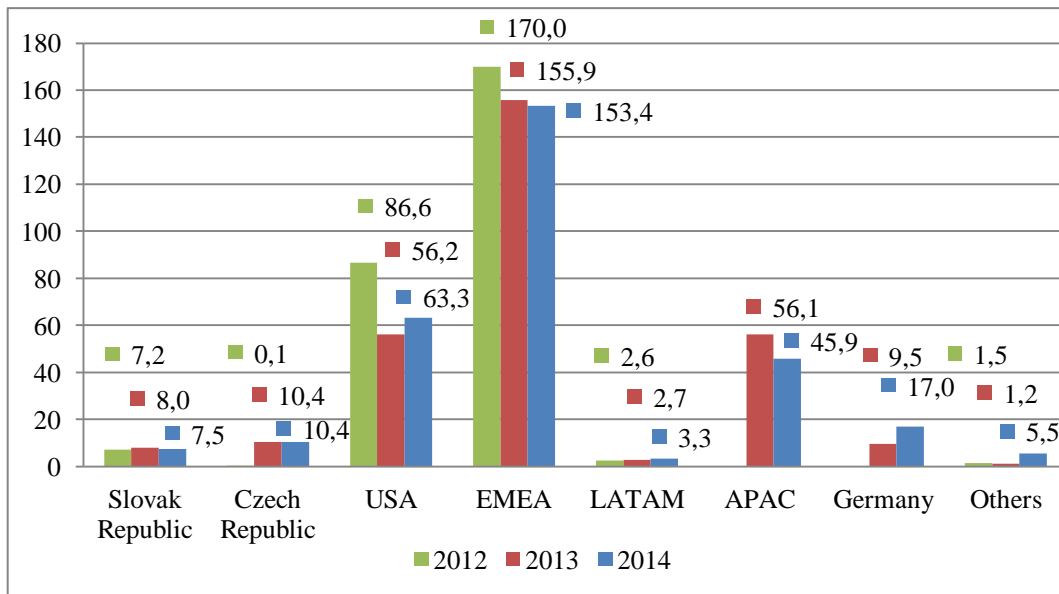
Other than included case study in appendix VI it has been spotted namely about Slovakia - leader in loans (Eset, 2014d). Such a large company operating within 15 servers and different operating systems on 150 workstations chose AVG Technologies as first provider "because of the comprehensive remote administration" (Eset, 2014d), but as volume of personal data grew so threats did and financial institution considered better solution and switched to ESET. It has recorded an achievement of higher efficiency of IT engineers not spending time on malicious program issues caused by automatically updating and scanning with accurate virus detection. For any company with similar difficulties it means time and cost savings. Those evidences of either positive or negative satisfaction of customer's needs could be initiative building element to design products and service in the interest of math for potential client's demands.

In conclusion, ESET belongs to companies, which provide safety and preventive software against real-world threats that could cause damage or even misuse of data or take control over device. It lays emphasis on the common user and separately the business clients. It even keeps attention to the industry the company makes business in. It recognizes different needs for sectors such as finance and banking, healthcare, government and education.

2.1.2 Achievements

Key success factor is captured certainly in highly-developed technology ThreatSense and its innovations as one can see on the results of regular tests in order to adapt for current market conditions closer looked in next chapter. Customization and implementation support are other valuable benefits that customers look for. Furthermore, ESET's competitive advantage is mainly present in conviction of founders doing business according to their principles mentioned earlier. The position on the market has been built step by step as privately held company. This fact might make impression about limitation in financing for further growth and establishment of new centres globally at once rather than continually one by one (Beblavý and Kureková, 2014; Eset, 2015c). Nevertheless, used strategy ensured attainment of reputation of trustworthy and experienced security software provider.

At the end of 2011, ESET concluded with partners in EMEA region (Europe, Middle East and Africa) the contract about new software and distribution, which created a new business model and financial structure. It moved complete control over its business in EMEA region back to the headquarters in Bratislava. However, there is drop in sales for this particular region almost 10% in past three years, overall sales increased about 22% (Appendix II). Therefore in 2012, ESET increased economic added value over one hundred million EUR (Andacký, 2013). This limit has not been overcome by any Slovak IT company, yet. At the same time revenues from sales of products increased at 268 million EUR (Appendix II). Graph 1 demonstrates sales distribution across the regions. Behind high achievements of the producer security software stands also optimization in sales and marketing activities.



Graph 1: ESET Sales in Regions in Million EUR in Past Years (Appendix II).

In 2013, company also opened new office in Germany. It enabled to strengthen its position and closer access to important business partner as DATSEC became joint establisher (Eset, 2015c). This year has been also meaningful for collection of awards as “ESET has received its 80th VB100 Award and celebrates record of 10 years consecutive VB100 Awards” (Eset, 2013). There is no other anti-virus vendor, which holds so many awards for proactive protection.

In the very last moment, ESET could be proud of 100 million population of software users and over 1000 security enthusiast employed all over the world (Eset, 2015c). More significant achievements are listed in appendix I.

2.2 Application of Porter’s Model

2.2.1 The Development of the Industry Forces

Current conditions in the security software market are captured in following subchapters in manners of Porter’s five forces model and with special focus on ESET company. Accordingly, the evolution of the industry forces in past 20 years is highlighted in Table 2. The nature has matured by the years and in terms of product life cycle one could assume the phase of maturity is approaching if it has not begun yet. Dramatic change is apparent in significant increase of intensity of rivalry and decline in buyer power.

Table 2: Development of Forces in Past Years (Developed from Zeltser, 2005).

Industry Force	1995	2005	2015
Intensity of Rivalry	Low	Medium	High
New Entrants	Medium	High	High
Substitutes	Low	Medium	Medium
Supplier Power	Low	Low	Low
Buyer Power	High	Low	Low

As identified by Zeltser (2005) atmosphere in the security industry has changed since its beginning in early 1990s. Awareness about importance of software protection grew simultaneously with number of PC users. Therefore, customers started to look for complementary assets and stopped to place great emphasis on uniqueness of anti-virus technologies. Time about year 1995 could be characterized by high importance of uniqueness and low interest for complementary assets. Launched business industry provided space to companies for competition about dominant design. Anti-virus technology was primary factor for company's success. This author claims also that the market leaders emerged in this early phases of its evolution. However, in those times the early adopters were not attracted by brand, because the small number of them belonged to well-informed and they based buying decision on product quality and directly from vendors. Limitation of the market was determined by highly educated IT specialists and they did not possess association towards brand evaluation. For the reason, desktops were not connected into the wide network, the regular update was not necessarily required. Subsequently, companies did not need support to defend promptly arising new threats.

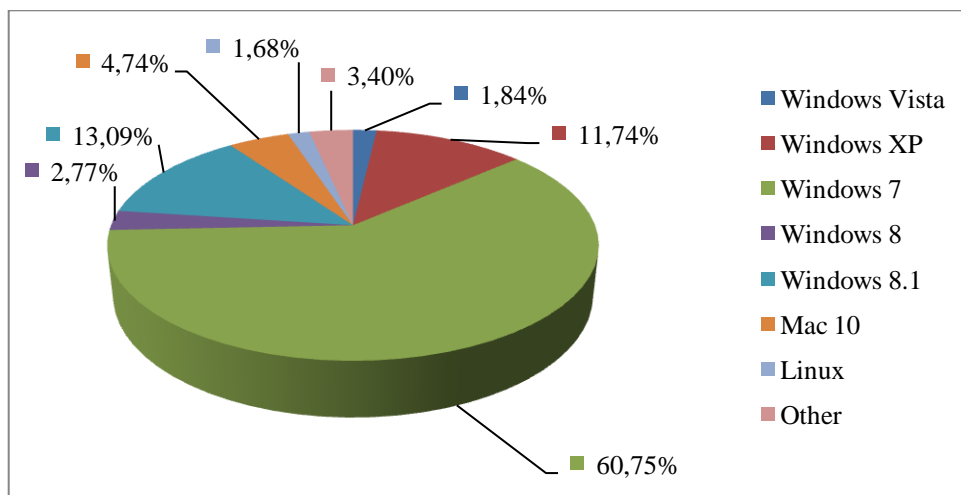
In difference, period about 2005 is characteristic for unlike features. As the nature of the security threats was perpetually changing and new and new updates were demanded, uniqueness of the technology declined on its importance. Nevertheless, complementary assets became more important. Effectiveness of technology became more difficult to evaluate and consumers leaned on brand as the factor of quality. The market reached the size when vendors relied on channel relationships specifically retail distributors through original equipment manufacturers and value-added resellers. Constant identification of

new threats and subsequently their elimination forced industry rivals to establish research and development facilities around the world to keep up with the times. Companies needed to enlarge its support for customers on daily basis, because quick respond in software protection became another relevant indicator for company's success (Zeltser, 2005).

2.2.2 Intensity of Competitive Rivalry

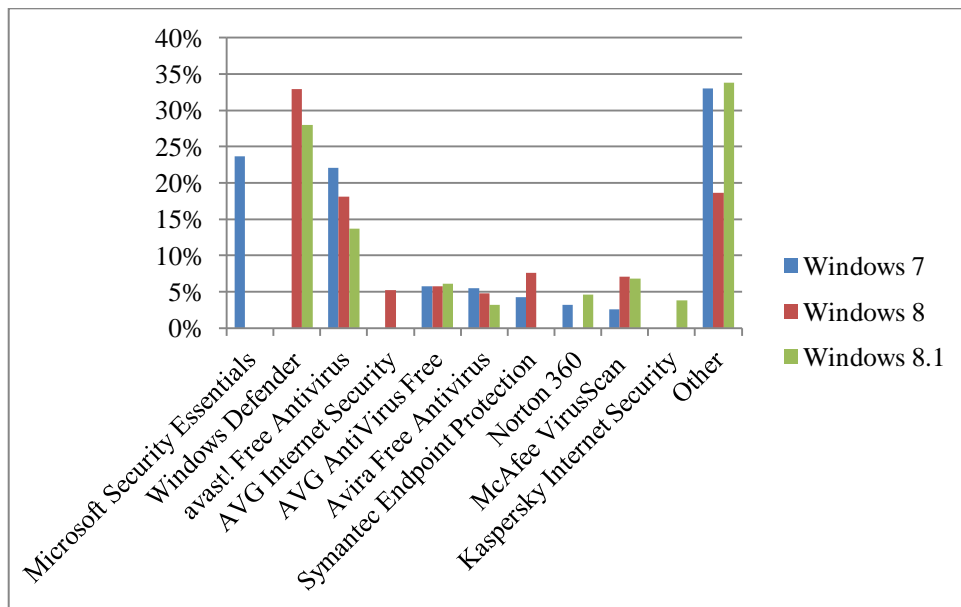
The aim of this part is to present intensity of competition for ESET operation. Company's core business is to provide security software for home and for business, too; as it is explained in details above. For evaluation of main competitors it is necessary to look at companies running business with the same or related function, although companies did not take the same path in establishment and afterwards business model. Similarly, it is necessary to follow the changes in market share within past years.

Other characteristic might distinguish the market through target segments, namely security solutions for home and for business. Proportion of operating systems also distinguishes customer's demand for security software, therefore security companies adapt to buyers' needs. Graph 2 shows that Windows system counted with all versions is the mostly used operating system. Because of the different approach from the providers, the intensity of rivalry could be difficult to separate from each other, some of them even does not possess product for all marketed operating systems.



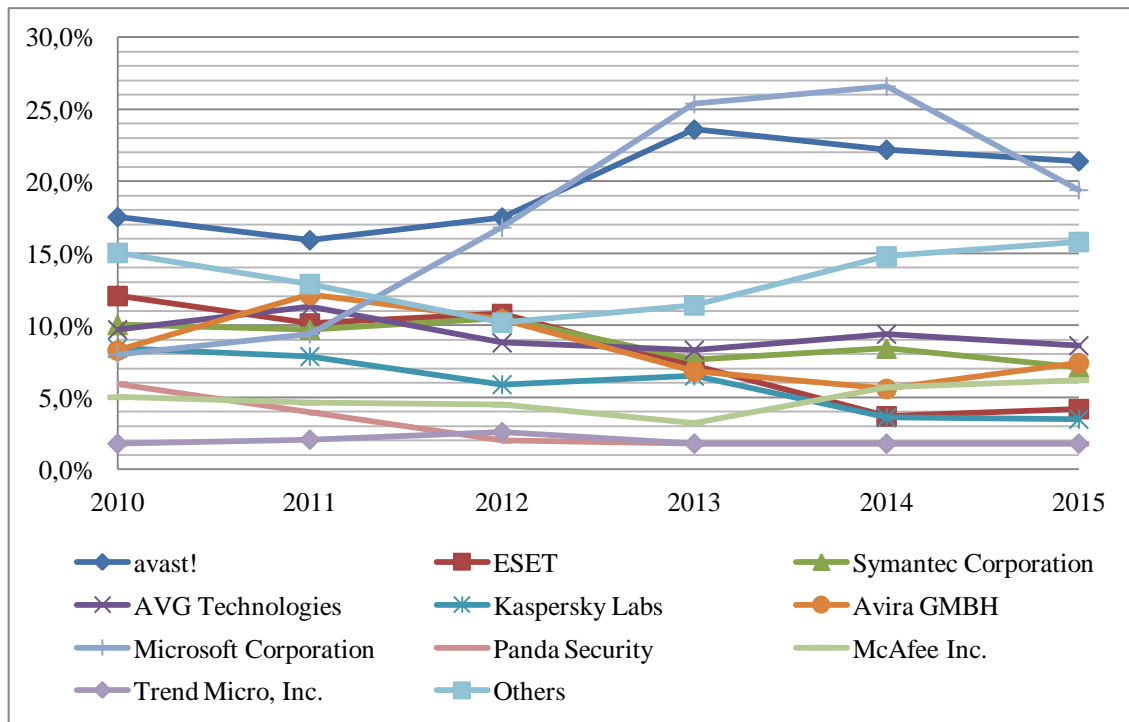
Graph 2: Percentage of Utilized Operating Systems (Net applications, 2015a).

Closely looked at individual market shares, it depicts non-monotonic progress. Microsoft remained at the top in past years, but nowadays Avast has been undertaking the lead by product market share and also vendor market share (Appendix III-V). Free version secures Avast wide and thankful audience. On the other hand, Windows Defender raised overall vendor market share for Microsoft, but in the last report executed by Opswat (2015, p. 2) “it has been removed from data because it is a feature of Windows 8 and 8.1 and not actively acquired by the user”. Despite of that fact, Windows Defender gained more than quarter of the market for mentioned OS users as displayed in Graph 3. It results from the feature that Windows Defender deactivates automatically if there is present another anti-virus.



Graph 3: Anti-virus Market Share according to Operating System in 2014 (Opswat, 2014).

As a result, Avast software keeps first place for a long time, but in 2012 it was suppressed by giant strategy of two security solutions relatively free of charge. Since that time, positions of Symantec Corporation and AVG Technologies have fluctuated or rather declined below 10%. Moreover Kaspersky Labs together with ESET have dropped by more than half of their shares (Graph 4).



Graph 4: Change of Anti-virus Vendor Market Share in Past Years (Appendix III).

Due to consideration of regional distribution at the first places there occur the same providers - Avast, Kaspersky Lab and ESET primarily operating on device, as it is demonstrated in Table 3. Ranking by users displays according how vendors also try to place their business around the globe by location of their offices and research and development centres. It enables them to adjust marketing tools more appropriate towards regional conditions (culture, trends, language), even though Microsoft dominantly won in the North America with share over 30% (OPSWAT, 2012). It should not be omitted that Microsoft's strategy is focused on "build best-in-class platforms and productivity services for a mobile-first, cloud-first world" (Microsoft, 2015). Therefore, Microsoft security solutions are supportive and do not stand for primary business but as complementary assets. In this industry one should be aware of their services, but it is not equivalent rival to ESET in this specific industry.

Regarding distribution strategy of the other vendors, they use computer manufacturers in long-term partnerships as well as network of resellers. Then, it becomes problematic to sell outside the network. Procuration for this obstacle is seen in affiliate programs, which run on integrating advertisement link to click into other websites.

Table 3: Ranking of Top Twelve Manufacturers in 2014 by Users (Av-comparatives, 2014b).

Europe	North America	Asia	South/Central America
1. Avast	1. Avast	1. Qihoo 360	1. Avast
2. Kaspersky Lab	2. ESET	2. Kaspersky Lab	2. Kaspersky Lab
3. ESET	3. Microsoft	3. Avast	3. ESET
4. Bitdefender	4. Symantec	4. Tencent QQ	4. AVIRA
5. AVIRA	5. Kaspersky Lab	5. ESET	5. Bitdefender
6. Symantec	6. Malwarebytes	6. Bitdefender	6. Microsoft
7. Microsoft	7. Bitdefender	7. AVIRA	7. Panda
8. Panda	8. AVIRA	8. Microsoft	8. McAfee
9. Emsisoft	9. AVG Technologies	9. Symantec	9. Symantec
10. F-Secure	10. Webroot	10. Kingsoft	10. Trend Micro
11. AVG Technologies	11. Panda	11. AVG Technologies	11. AVG Technologies
12. McAfee	12. F-Secure	12. F-Secure	12. Emsisof

Product differentiation in such severely competing market is reasonable way for vendors to distinguish from each other in order to gain more customers mostly by vertical or horizontal differentiation. In this specific industry, the lack of any differentiation astonishes, so this market is flooded with nearly identical products. Related findings are concluded in the article by Dey, Lahiri and Zhang (2014). These three authors judge this particular market fascinating specifically for non-traditional but fiercely competitive in its nature. Based on that fact one would assume that there is high differentiation in quality of the marketed products, despite this prediction, there is barely significant level of it even within products the vertical differentiation is nearly absent. In terms of horizontal differentiation the authors find it impractical for low user interaction and subsequent creation of idiosyncratic preferences. To this end, “vertical differentiation is conspicuous in its absence” (Dey, Lahiri and Zhang, 2014, p.593).

Consequently, as identified by Dey, Lahiri and Zhang (2014) there are four factors which have implication on the extent of differentiation besides the customers segments based on used device. There is the cost of quality, the network effect, the number of vendors and presence of substitutes in the manner of free software. At the time the

article was written, there were counted 87 vendors in security software business and 367 products (Opswat, 2012). Currently, there is no certain evidence about amount of marketed products.

The quality differentiation does not come to the light with comparable price for products and security-related features (Appendix V). Within price policy companies sell the products in terms of fixed-term subscriptions. For longer subscription, they give percentage discounts. Additionally, they use also bundling (more security components in package) or volume discounts (Dey, Lahiri and Zhang, 2014).

Regardless, included features do not signify accuracy and efficiency of the software, thus they should not be taken as the only proof of quality. Hence, product testing by several independent organizations might get view about effectiveness of the software. Tests are usually proceeded quarterly depending on procedure and specialty, although there is no consensus in research among those authorities. Results of several such tests are listed in Table 4. From renowned authorities vendors might gain certificate or award which they are glad to use for benchmarking. This hidden war of results from mentioned tests has been becoming crammed, but on the other hand plentiful amount of positive evidence about software quality is the information people are interested in. Typically, there is unlikely that user would have a preference for security product that is “less effective in guarding against security threats“ (Dey, Lahiri and Zhang, 2014, p. 591). Furthermore, commercial providers very likely post up certain case studies about successful implementation for enterprises. However, it is more convoluted to find negative fragments, but still there some exist.

Table 4: Comparison of Test Results among Industry Leading Companies with their Best Selling Products (Av-comparatives: 2014c-2014e).

	Performance Test	Real-World Protection	Malware Removal test	Anti-phishing test
Date	Oct 2014	Nov 2014	Nov 2014	Oct 2014
Indication	higher is better	higher is better	higher is better	higher is better
ESET	188.8	98.6%	83 points	99%
Microsoft	---	83.5%	75 points	---
Avast	181.3	96.6%	81 points	82%
AVG Technologies	182.1	97.5%	88 points	---
Avira	187.7	99.4%	80 points	---
Kaspersky Lab	187.7	99.4%	87 points	99%
McAfee	177.1	96.1%	---	98%

Very similar results obscure the quality differentiation across the market with little variation from normalized score as criticized by Dey, Lahiri and Zhang, (2014). Despite, companies are taking an advantage of achieved awards in terms of slogans for the products. Posey’s (2005) analysis of the anti-virus market demonstrates focus of slogans: for Symantec it was Norton AntiVirus as “The world's most trusted anti-virus solution” and McAfee tagged its VirusScan as "award winning" and as "trusted by millions worldwide". Owing to regular tests and measurement of the software performance, phrase of “award winning anti-virus” may be going around among competitors each quarter of the year. Altogether, any product offers the same benefits by using other words, so low degree of transparency becomes misleading for future customer. And besides the tests, important element of product effectiveness is related also to the amount of current users, because each user contributes to detect new threats thus reduces chance of infection for the others and then with more users company may develop security solutions even more.

As highlighted also by Dey, Lahiri and Zhang (2014), another factor is present in network effect, specifically, users’ involvement in network by installation of the product. It is based on the implications of user’s benefits, which are direct benefit for defeating direct attacks and indirect one occurred in prevention against infection of

other users in the network. Simultaneously, as the coverage of the security market is greater so indirectly the chance of being infected is reduced as well the indirect benefit. As a negative consequence of this affect are declining revenues with larger coverage of the market. However, the companies charge also those indirect benefits, even they are substantial for their usage and in this oligopoly market with strong negative effect it ends up with higher profitability for companies while dropping coverage. If the vendors keep the coverage low, they might be profiting on this effect, otherwise it leads to free-ride solutions because of the price. Other implication from these realities is seen in behaviour of the hackers, who try to attack more and more those computers without security solutions. People subsequently demand more security solutions.

For reader's better comprehension the different versions of the software are only lowered versions of full ones by deactivation of certain features and that is not taken as vertical differentiation. Moreover, together with free-riding behaviour and the negative network effect it does not become attractive for companies to expand product range in vertical way. Additionally, other opinion is mentioned in the article from Dey, Lahiri and Zhang (2014) that these products are not perceived germane to differentiate in this case, when the quality is not cost-based Therefore, the vendors because of low marginal cost of development do not consider vertical differentiation as optimal strategy. By other words, the marginal cost of additional subscription is insignificant as once the software is manufactured and updating mechanism is included in relation to production and distribution (Dey, Lahiri and Zhang, 2014). However, there are very few companies offering multiple versions.

Moreover, Kizza (2013) states market saturation of PC protection. As identified earlier by Dey, Lahiri and Zhang (2014) there is present negative network effect that it may influence consumers in higher tendency for free-riding behaviour, then their overall willingness to pay decreases. Market leaders need to keep sustainable competitive advantage through regular innovation to keep people willing to subscribe again. From business point of view, securing appropriate and wide advertisement gives provider everyday profit and also keeps in customer's mind brand association of perfect solution for anyone's needs.

Unique structure of the security software market is spotted as the issue illustrates severely competing market with almost identical products for comparable prices and just versioning is sub-optimal for long-term position. Vendors use distribution channels in global and regional merit, too. To the conclusion, the mentioned realities place the overall intensity at high level.

2.2.3 Threat of New Entrants

In spite of the market segment seems to be dynamic and very inconstant, the risk taking of new competing company might be considerable. Entering this market requires very good technological background with experienced workforce, which all together secures keeping up with hectic pace of the modern world and its continual development.

In 2004 companies Malwarebytes and iObit were founded by the similar way as the other security software companies. The enthusiasts got malicious code from video games and set the group of fanatics to “build a better malware fighter” (Malwarebytes, 2015). Firstly, they started on voluntary basis, but now Malwarebytes and iObit are proud of over 220 million and 250 million of users and Malwarebytes also claims that its sales have increased 100% year over year (Malwarebytes, 2015; iObit, 2015). These cases illustrate the path of entry to this industry. However, based on ideas of Posey (2005) the anti-virus market became almost saturated in 2005, but ESET has just opened a branch in Latin America. Arisen situation gave companies opportunity to grow and gain more loyal users. In appendix III, it is indicated that number of companies that have achieved less than 2% of market share is extremely volatile. However, they have not achieved the higher score, their global growth presents a potential risk towards competitors with bigger market share. By other words, each organisation fights to make a buck.

By years with rising number of other types of devices (smartphones and tablets) amount of PC users and their demand for new anti-virus started to fluctuate. So it seems that current market place for protective software of PCs has got saturated and complex at this point (Kizza, 2013). However, this author claims also the fact about complexity of these security products for common user. These software products differ by the technology they used and features they have, which might become unclear and misleading. Luckily for users, the switching costs do not represent high barrier. On the

other hand, the provider of the software needs to patent its technology to prevent trading on the achievements of oneself.

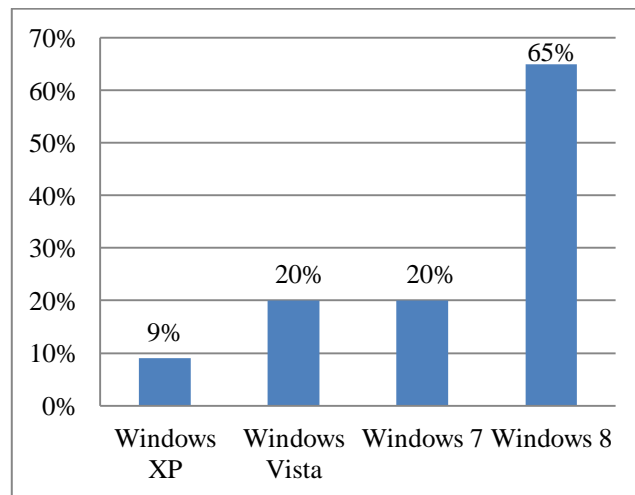
With growing trend of possession of the latest technology there is high tendency for creation of new malicious code to misuse its function, therefore threat of new entrants is risen together with such a technology. ESET takes an advantage of its previous experience with malwares by heuristic feature of programs and has lately launched software package for various devices at once (ESET, 2015). Nevertheless the mobile and tablets security might be viewed such as start up opportunity and it gives to this threat higher potential. Present risk should not be underestimated.

To sum up, the barriers to entry are presented in high-skilled workforce and innovative technology up to date. Workforce might be involved at zero-cost at the beginning and be motivated by the ideas of more secured usage of electronic devices worldwide. Each new electronic device or operating system opens the possibilities for the existing competitors as well as for the potential ones. Attractiveness for potential competitor in building of new anti-malware tool comes together with new type of malware, so it does not necessarily have to come with an idea to get expected retaliation but to build universal protection for free. Nevertheless, the growing revenues are inseparable factors for entry, although for extensive earnings it needs heavily initial investment into marketing and distribution. Finally, continuing high estimation of barriers makes the industry more competitive with too many products almost not distinguishable from each other for common user. Overall threat of new entrants is considered with high power.

2.2.4 Threat of Substitute Products

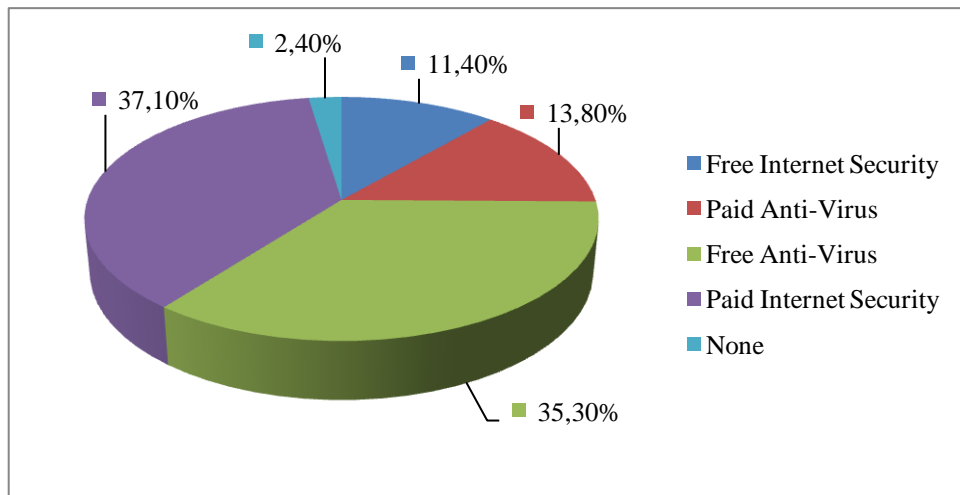
In presence of the free anti-virus worldwide this risk is considerably high as individuals tend to try what is accessible for free in short-term period. Although overall ability to protect one's device is comparably efficient to paid software, it hides weak spot at some point. As an example appears the second widely used anti-virus from Microsoft with its poor malware detection (OPSWAT, 2014). The last version of Microsoft Windows Defender is criticised for its efficiency and no extra preventive features (Scharr, 2014). In last detection test it found only 79% of widespread malware, which is very low according to industry average number 98% (Av-test, 2014a). Important fact about this anti-malware program is its dependence on Windows operating systems and other

feature earlier mentioned; it switches its real-world protection if other anti-virus is installed. Graph 5 exposes how much people tend to involve more than one anti-virus in terms of Windows operating systems. Difficulty with displayed data comes with duration on the device after installation, because most of the products offer to consumer trial version for certain time, usually 30 days. Secondly, purchased products also run tightly on operating system and usually ask for user's permission to uninstall competitor's anti-virus (Dey, Lahiri and Zhang, 2014).



Graph 5: Percentage of Computers with More than One Installed Anti-virus Product
(OPSWAT, 2013).

The most pleasing thing about free anti-virus is, if the user does not like it, so that it could be uninstalled and substituted at no loss. This substitute might not appear as such great threat according to Graph 6, because users tend to activate more than one anti-virus at the same time; despite it is not recommended. In addition, ESET also offers to any user 30 days free trial versions and it also keeps its trustworthiness by regular introduction of new versions of software (Eset, 2015c).



Graph 6: Percentage of Used Security on Personal Computers (Av-comparatives, 2014b).

Making summary, in this industry substitutes are hidden only in free software. The threat is involved in their performance thus abilities to protect one's device, but regarding total prevention before attacks one might exist offline or purchase advanced security with up-to date features against current malware threats. Free solutions have not grown in power; therefore substitute products stay at medium level power.

2.2.5 Supplier Power

Other element in Porter's five forces is related to suppliers and their ability to influence price. ESET creates its own software product, therefore for its operation it only needs hardware equipment and operation system, which both are negotiated with partners, who hold significant quantity of goods. ESET also follows its principles on the B2B market and builds mutually convenient relationships with various partners (Eset, 2015c). Therefore ESET is not highly dependent of natural resources and the bargaining power of the suppliers is low.

In comparison human capital is seen as inherent factor for doing business in this industry. Skilled workforce is essential for sustainable development of the software. Each new detected malicious code should be used for innovation of existing version of protection. Any anti-virus company needs IT specialists. Therefore the labour market represents the supplier. ESET in position of the employer is aware of this need for its own progress and supports its workforce even not employees yet, but still students in Bratislava and USA and Canada by cooperation with universities of

technology (ESET, 2014e; 2015b; 2015c). ESET made untypical recruitment for potential employees about doing specific tasks of programming or analyzing in 2009. It was aimed at IT specialists as well at students. The company also achieved award for its working environment in Slovakia as “2nd best employer of the year” in the same year (ESET, 2009).

2.2.6 Buyer Power

From the opposite point of view, ESET represents a provider of security solutions for customers. Since the beginning, it has mainly focused on individual users of PCs; it strengthened its position on the local markets by special offers for governmental and educational segments of societies (Eset, 2015c). The software is valued at the bottom and top of price range among competitors, which several of them offer protective software for free (Appendix V).

2.3 Benchmarking among Cognate Companies

The initial part of benchmarking when one should get pre-acquainted about specific issue and guidance for utilisation of this method is fulfilled. In terms of type and approach of benchmarking, the author decided for performance benchmarking with competitive approach using free-access information. As the aim of this thesis is to propose strategy solutions for the increase of the ESET company in international volume, proper execution of comparison should be accomplished among rivals with similar operation in order to measure related scope of activities. The selection of the companies was influenced by gained market share of their products, range of products and complementary services, and their performance in detailed mapping. However, the mentioned figures are volatile, because of industry dynamics. Therefore, each year benchmarking partners could be different thus it makes choice even more difficult. For this reason, author selected only four specific companies to learn from:

- * Avast
- * AVG Technologies
- * ESET
- * Kaspersky Lab.



Figure 6: Logos of the Selected Anti-virus Companies (Avast, 2015h; Avg Technologies, 2015k; Eset, 2015c; Kaspersky, 2015c).

Moreover, there need to be set relevant indicators to compare in order to complete goals of the work. For purposes towards ESET's growth in international view to meet customer needs, there are determined benchmarks:

- * product range for home user,
- * mobile security portfolio,
- * price strategy,
- * strategic partnerships.

Solutions for business are not included, because of its scope of activity and number. Moreover, not all selected companies have same approach of transparency towards data about business clients. Therefore, there is more emphasis paid on comparison of the existing partnerships instead.

2.3.1 Brief Introduction of Selected Companies

The hereinafter introduced business environment appeared not so approachable to assert a stable position in. An examination of how ESET deals with the present conditions it demonstrates much effort and continual development. From inception of this specific industry the company has grown with other two benchmark partners in relatively similar regional conditions - AVG Technologies and Avast. They coexisted in terms of appropriate market segmentation - software for common users, enterprises and orientation on different foreign markets. Next step divided them as identified by Beblavý and Kureková (2014). ESET took path of strong promoting at home and abroad in comparison other two presented freemium business model. Progressively, ESET based new and new branches in strategically chosen countries around the globe keeping consistent marketing for market penetration. After Avast's establishment, it took path

for its stabilization on the home market in Czech Republic with marketing and sales orientation on the large enterprises. Nevertheless, home market was very important for each firm to gain space for further testing and development of the anti-virus software to become internationally recognized for its quality. For foreign companies and investors, the Central Europe was not attractive in terms of political instability, low purchasing power and poor reputation of the region. Moreover, their unwillingness for building versions in national languages killed the chance to destruct potentially the commencing off Czechoslovak companies (Beblavý and Kureková, 2014). These several factors shielded them for ample period thus enabled them to evolve to their size and shape of the present day.

Another competitor's strategy gives an impression of great success, which is simply popular for its free download with limited features. Avast launched its first free version in 2001 in conviction of the security should not be luxurious thing that some people can not afford. After 30 months it gained 1 million users. That fact persuaded founders it is worth to launch paid version for all common systems. Previous year was assumed very successful for Avast by Vince Steckler, Avast CEO (Avast, 2015b) when it became prosperous with increasing revenue up to 217 million dollars, reached 230 million users in 186 countries and employed over 500 specialists ready to open new offices in East Asia. As it is depicted in appendix III and V, Avast has won towards its competition over few past years and keeps its position on the market by free word of mouth advertising and software free of charge to discover new malware (Avast, 2015a).

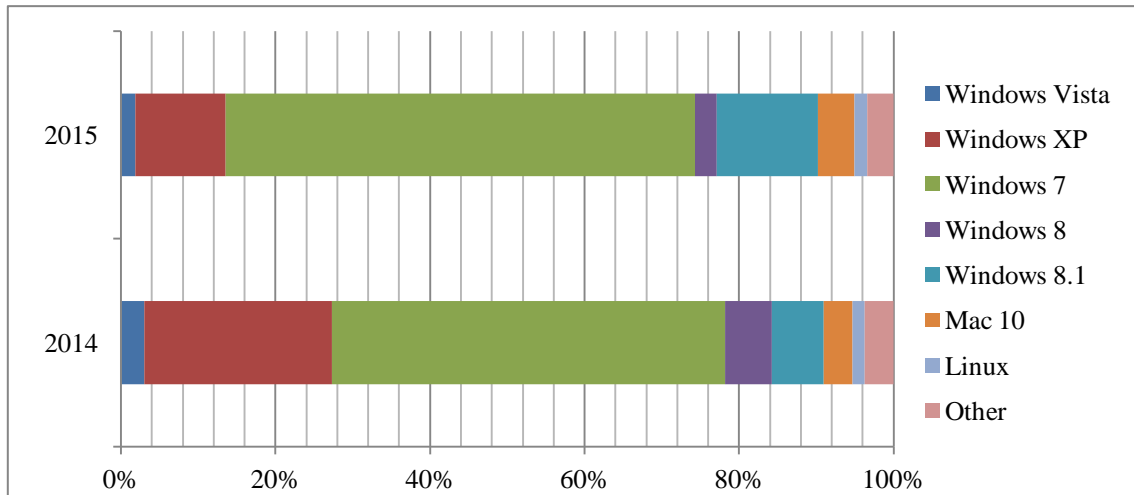
Other benchmarking partner AVG Technologies is well-known company for its security solutions protecting devices, data and people nowadays. Although it introduced first anti-virus product at the local market based in Czechoslovakia, recently AVG Technologies resided its headquarters is Netherlands. The latest news towards global growth is that new Center of Excellence for cellphones was established in Tel Aviv, Israel (Avg Technologies, 2015h). Company diversifies its portfolio to satisfaction of distinctive customer needs. It places demand on itself to give consumers safety and security services with top-level performance as well as software which minimizes with device load, speed it up and clean from unwanted data (Avg Technologies, 2015a). In round figures, in 2014 company recorded 197 million users and revenue of 374 million dollars thanks to 1000 employees from around the globe (Avg Technologies, 2015b).

Similarly as ESET, Kaspersky Lab is privately-held company. However, its holding company is registered in United Kingdom in 1997, founders come from Russian Federation and also headquarters are located in Moscow. Since the beginning, it has targeted home users as well as small companies up to great enterprises. The organisation places great emphasis on research and development. It also believes in security with no borders and shares its own findings with IT community. It could be praised for cooperation with well-known agencies as INTERPOL or The National High Tech Crime Unit and many others. This year it opened successfully new office in Singapore, where INTERPOL placed newly Global Complex for Innovation, too. Then its strength is seen in technology of detection and neutralization of threats and also corporate persuasion to fight against cybercrime, cyber-espionage or cyber-sabotage (Kaspersky Lab, 2015a). By numbers, it operates in 200 countries, employs over 3000 specialists, keeps 400 million home users and 270 thousand corporate clients, and declares revenue 711 million dollars in 2014 (Kaspersky Lab, 2015c).

2.3.2 Product Range for Home

To home users benchmarking providers offer versions of anti-virus protection and more complex internet security for desktops, laptops, netbooks, tablets and smartphones. Consumers could try free trial of security products for 30 days, except those which are utterly free of charge. These versions are also recommended for home office or business up to 5 endpoint devices.

Firstly, with respect to device operating system, product range for computers with Windows OS is wider than for others, because as it concludes from population of different OS versions, earlier depicted on Graph 7. There is also estimation about partial utilization of some Windows XP and even Windows 7 without purchased licence as pirate versions. For anti-virus companies launch of new OS version Windows 10 is tougher obstacle for successful adaption of their contemporary products. So these four providers also declared compatibility with the newest system Windows 10 on their support forums or blogs, but officially only ESET mentions this feature with product description (Eset, 2015e). Overview of the range product for home customer begins with those using Windows OS for the reason about volume of segment.



Graph 7: Computer Operating System Market Share (Net Applications, 2015a).

In the present time customers take regular auto-updates for granted. Difficulties appear with the name of the other features and tools included in this very complex security software in manners of their actual meaning. Fortunately, providers post also short explanation about what specific tool protects or what kind of threat it prevents the device from. There are well-known tools such as firewall, anti-spam, anti-phishing, data shredding and encryption, game mode etc. But still non-IT educated person might be caught unaware about some terms. For instance, tool for betterment of device operation can be named as TuneUp; Eset labels such tool as Small System Footprint; Kaspersky Lab uses term Efficient Security; AVG Technologies separates this characteristic into fast scanning and scanning during low workload into two features Turboscan and Smart Scanner. This small example is applied cross demonstrated features. In Table 5 there are shown essential, absent and extra features.

Table 5: Security Software for Home User, especially for Windows OS (Avast, 2015c; Kaspersky Lab, 2015b; Eset, 2015e; Avg Technologies, 2015c).

Company	AVG Technologies			Kaspersky Lab		ESET		Avast			
Product Features	AntiVirus Free	AntiVirus Pro	Inetner Security	Anti-virus	Internet Security	NOD32 Antivirus	Smart Security	Free Antivirus	Pro Antivirus	Internet Security	Premier
Anti-virus & anti-malware	•	•	•	•	•	•	•	•	•	•	•
Antispyware	•	•	•	•	•	•	•	•	•	•	•
Firewall	X	X	•	•	•	X	•	X	X	•	•
Anti-Spam	X	X	•	X	•	X	•	X	X	•	•
Anti-Phishing	X	X	•	X	•	•	•	X	•	•	•
Game Mode	X	•	•	•	•	•	•	X	•	•	•
Parental Control	•	•	•	X	•	X	•	X	X	X	X
Extra Shopping Protection	X	X	•	X	•	X	X	X	•	•	•
Virtualization tool	X	X	X	X	•	X	X	X	•	•	•
Data Shredding	•	•	•	X	X	X	X	X	X	X	•
Data Encryption	X	•	•	X	X	X	X	X	X	X	X
Tune Up Tool	•	•	•	•	•	•	•	X	X	X	X
Other *- included also features of lower-level version.	Social Networking Protection, Anti-Rootkit	Auto-fix, Online Shield*	---*	Anti-Blocker, Exploit Prevention, Safe Surfing	Safer Networking, Anti-Banner, Webcam Protection*	Exploit Blocker	Anti-Theft, Botnet Protection*	Home Network Security, Browser Cleanup	---*	---*	Automatic Patching of Security holes *

ESET products lack information about adware prevention and data care in relation of its shredding or encryption in comparison towards chosen vendors. On the other side, it offers Anti-Theft for laptops in one licence. However, AVG products contain encryption and shredder in almost all three home solutions, except free version.

Kaspersky Lab does not offer data care or Anti-Theft in one-device licence, but its multi-device total protection includes even data backup, too. Avast stands out by its Sandbox for running suspicious application in virtual space. Only Kaspersky Internet Security possesses virtual keyboard for untraceable insert of confidential data. From technological point of view, AVG Technologies, ESET and Kaspersky Lab utilize cloud-assistance in scanning and defence, but Avast employs this feature only for business products. Anti-virus with its capability of elimination “all types of threats including viruses, rootkits and spyware” (Eset, 2015e) could be divided into sub-components as anti-virus, anti-rootkit and antispysware or vice versa. Therefore, one needs to check also relevant efficiency before purchase, which is compared next.

Regular test executed by independent agencies brings another point of view for quality of the products. On one hand, product descriptions assert qualities of software by naming the characteristics, but true comparison arises from examination of prevention and protection tests in real-world conditions. As benchmark testing authorities were chosen: Av-Test, Av-Comparatives and Virus Bulletin. For clear view about anti-virus efficiency results of various tests are expressed by numbers in Table 6.

First two tests are focused on the performance of the device during installation of chosen software. PC Mark 8 testing suite is benchmark for anti-virus that combines efficiency and performance with respect to real-world relevance. Together with score of AV-C Performance test they rank products and subsequently give award to vendors. Last test gave three-star award to all chosen products, but previous year AVG Technologies and Avast had to satisfy with two star award, as the others kept standard (Av-comparatives, 2015a). Next RAP average includes four tests in order to measure reactive and proactive side of the anti-virus products. Subsequently, it shows accuracy of products in revealing previously un-detected malware (Virusbtn, 2015).

Last authority provides complex testing of protection, performance and usability. First test contains protection against zero-day malware attacks and detection of widespread prevalent malware. By percentage almost all tested products are higher than industry average (in 2014 94% and 99%; in 2015 96%/ and 99%). Performance test measures effect on computer speed by average in daily usage (Industry average is 2s in 2015 and 4s in 2014.) Absolute leader is Kaspersky Internet Security with supreme score. Last

usability test demonstrates false warnings or blockages and false detection. One might consider those results as good practise of chosen products (Av-test, 2014b; 2015).

Table 6: Comparison of Results from Various Testing Authorities (Av-comparatives, 2014c; 2015a; Virusbtn, 2015; Av-test, 2014b; 2015a).

Test	Date	AVG Internet Security	Kaspersky Internet Security	ESET		Avast	
				NOD 32	Smart Security	Free Antivirus	Internet Security
PC Mark 8 testing suite (Points)	May 2015	97,5	97,7	X	97,6	97,9	X
	Nov 2014	97,1	97,7	X	98,8	X	98,3
AV-C Performance Test (Points)	May 2015	65	68	X	63	73	X
	Nov 2014	85	90	X	90	X	83
RAP Average (Percentage)	Apr 2015	89,7	83,8	89	X	X	X
	Aug 2014	X	88,5	91,8	X	91	X
Protection (only Win 7; percentage)	Apr 2015	X	100 & 100	X	100 & 99	99 & 100	X
	Dec 2014	96 & 98	100 & 100	X	98 & 100	100 & 99	X
Performance (only Win 7; time)	Apr 2015	X	0s	X	6s	2s	X
	Dec 2014	6s	0s	X	5s	5s	X
Usability (only Win 7; score)	Apr 2015	X	6/6	X	6/6	6/6	X
	Dec 2014	6,0/6,0	6/6	X	6/6	6/6	X
<div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 20px; height: 10px; background-color: #cccccc; margin-right: 5px;"></div> – top score; </div> <div style="display: flex; align-items: center;"> X – excluded from test </div>							

Regarding validity of executed measurements there are present few difficulties. However, testing procedure is proofed for its identical approach. Some surveys are focused on particular gaps of anti-virus in manner of detection. They might bring further more benefits than general tests, for instance anti-phishing test or malware removal test. Secondly, these particular tests are not performed at the same time and also they require some observational work with duration of few months. Meanwhile, anti-virus versions are developed by vendors according to up-to-date safety requirements. Those tests do give valuable overview about latest version of products included in survey. It has logical implication that authorities carrying out the research are not able to comprise all marketed anti-virus products. Thus, there is always pre-selected range, which might not be the same in the next research as there are missing

data in Table 6. Av-Comparatives involved Avast internet security in 2014, but next year it was Avast Free Antivirus.

Second group of products according the operating system is considered for utilization on Mac OS X. With estimation of two billion computers market one would assume that Mac OS X with number about 95 million potential customers seems to be reasonable for including in product range (Worldometer, 2015). However, benchmarking companies place dissimilar emphasis on this consumer demand. It might be also influenced by interest or impression for its need from user's point of view. Lack of demand for such security was caused by boast from Apple that Mac "does not get PC viruses" (Apple News Centre, 2015). Even though it can be true in this world full of prevalent and zero-day malware, then Apple changed the statement for "it's built to be safe" (Apple News Centre, 2015).

Avast keeps its freemium strategy and offers Mac Security and SecureLine (tool making computer invisible in network) free of charge. The second tool stands for making computer invisible in network and also protects data by encryption (Avast, 2015d). Equally, AVG provides to Mac users AntiVirus and Cleaner for better computer efficiency at no cost (Avg Technologies, 2015d). Difference begins with offer by Kaspersky Lab. It includes in its portfolio Internet Security for Mac evenly with other products. After free trial version expired, one needs to pay or switch to free products (Kaspersky Lab, 2015b). Simultaneously, ESET holds its approach and its range contains even two security versions. Similarly as for Windows OS there is Mac Cyber Security and advanced version with more features Cyber Security Pro. Conventionally, 30-day trial version let consumer to get in touch with product and to be ready for purchase (Eset, 2015d).

Last considered operating system for home user is Linux Desktop. Regarding small percentage of computers with such system, there is no surprise of small number of anti-virus products. Among benchmarking rivals, ESET is the only one with "ESET NOD32 Antivirus 4 for Linux Desktop for home user, which runs on any system with Debian, RedHat, Ubuntu, SuSe, Fedora, Mandriva and majority of RPM and DEB distributions" (Eset, 2015f). Kaspersky Lab and Avast provides security solutions for Linux Desktop only for enterprises.

In addition, it should not be omitted that all compared anti-virus companies provide also technical support for the users. Some of them mention this service as component of the product, which customers pay for (namely ESET and Kaspersky Lab). However, the others use policy of service for free even for free products as Avast mobile security and AVG Free AntiVirus.

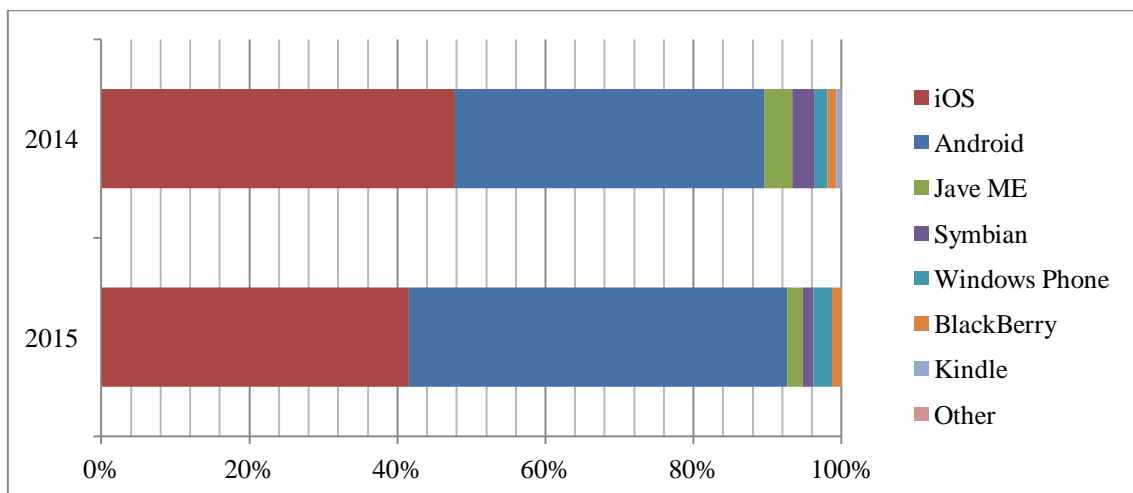
Besides mentioned all-embracing software for computers, security companies offer also additional applications for advanced protection or superior performance of the device. Such applications could be gratis or for small charge. ESET let customers to scan their computer through the Online Scanner, which leans on Windows OS and web browser for download such as Internet Explorer, Opera, Chrome, Firefox and others. It operates with the newest database of malware and is utterly free of charge. Other standalone application is present in SysInspector for Windows as diagnostic tool, which is also integrated into both anti-virus products. Next group of cleaners helps user to remove unwanted malware (Eset, 2015h). Kaspersky Lab provides free Password Manager for Mac and Windows up to 15 passwords for free. The rest of application is only for Windows OS versions, such as Software Updater, Security Scan, Rescue Disc, Virus Removal Tool (Kaspersky Lab, 2015b). Another provider Avast plays with the names of applications, again. It offers limited version of separate components of total protection for instance EasyPass as password creating tool, SecureLine as network security tool and Browser Cleanup as anti-banner with secured browsing tool. These all run only on Windows OS (Avast, 2015b). The utilization of last application Cleanup is conditional on installation of one anti-virus software from Avast mentioned above. Moreover, it is only paid version with no trials (Avast, 2015f!). Tools for better performance for Windows by AVG Technologies are paid Driver Updater, PC TuneUp, and free Web TuneUP and PrivacyFix. For Mac computers there are utterly free applications Cleaner and PrivacyFix (Avg Technologies, 2015f).

Resulted from benchmarking among products for common PC user one could observe that vendors offer several versions for one device. However, there is only one full-blown product which is lowered into basic or free security. All of them possess the essential features to defend device against malware in real-world circumstances. Differentiation is noticeable in branding of extra features. The competition is significant in those additional components which are included even in free version as it is parental

control present in AVG Free AntiVirus. On the other hand, product description becomes incomplete specifically if one company tries to avoid mentioning the features all products contain for instance anti-spyware and emphasizes only the rest of additional components and vice versa. In this sub-chapter the dissimilar policy about standalone components was spotted. ESET as being body to be benchmarked keeps strategy when all protection the user needs is included in paid products. Those few applications are only for demonstration of its usability. The other rivals keep wide product range including individual components as standalone applications, although they are not utterly free of charge, then only with reduced functions or time-limited. Finally, this concept gives consumer chance to become familiar with various features and install more than one application, but it leads the consumer to purchase one full version; moreover, it is recommended by vendors.

2.3.3 Mobile Security Portfolio

In similar way as personal computers, smartphones run on special design of operating system, too. More specifically, each system needs its own version of protective software or supporting application as it works with computer systems. As Windows dominates among OS for desktops and laptops, for mobile OS the leader is hidden in Android. By other words, it means majority of Android utilization over the rest of devices (Graph 8). Next comparison focuses mostly on attractive applications for such phone users.



Graph 8: Mobile/Tablet Operating System Market Share (Net applications, 2015b).

Smartphone products differ from the computer devices by the features and design, too. As well, they have common characteristics with extra features. After comparison of computer anti-virus one gets used to read behind curious labels, because most of the time they mean the very same thing. Additionally, the manners how the malware can be infiltrated are numerous as the computer does not receive SMS, MMS, etc. All mobile securities embrace real-time scanning, application scanning, scan on demand and web protection for safe surfing. All have their kind of Anti-Theft with certain features listed in the other half of the Table 7. Comparing the paid versions Avast is the leader with the features of the Anti-Theft. Moreover, one could be surprised about what is possible to control in the distance.

Table 7: Comparison of Mobile/Tablet Security Portfolio for Android (Avg Technologies, 2015e; Avast, 2015e; Eset, 2015g; Kaspersky Lab, 2015d).

Company	AVG Technologies		Kaspersky Lab	ESET		Avast	
Product	Free AntiVirus	AntiVirus Pro	Internet Security	Free Mobile Security	Mobile Security	Free Mobile Security	Mobile Premium
Features							
Anti-virus & Anti-malware	•	•	•	•	•	•	•
Anti-Phishing	•	•	•	X	•	•	•
Device Monitoring	•	•	X	X	•	•	•
SMS and Call Filter	•	•	•	X	•	•	•
Privacy Protection	X	•	•	X	•	•	•
Battery Save	•	•	X	X	•	•	•
GPS Localization	•	•	•	•	•	X	•
Camera Snapshots	X	•	•	X	•	X	•
SIM Guard	X	•	•	X	•	•	•
Remote Siren	•	•	•	•	•	•	•
Remote Lock	•	•	•	•	•	•	•
Remote Wipe	•	•	•	X	•	•	•
Other - included also features of lower-level version.	---	App Backup to SD card., Anti-Banner*	Extra Safe Money Tool	ESET Live Grid, Quarantine	Location Tracking*	SiteCorrect, Remote Display, Remote Restart	Ad Detector, Geofencing, Backup, Remote texting*

With respect to listed features one should be aware of the functionality of them. For that reason there are results of several tests in Table 8, which are executed on Android versions of anti-virus applications. First test checks total protection of the product against over four thousand of malicious applications (Av-comparatives, 2015b). Second survey contains three views: protection in real-time operation and for malware discovered in last four weeks, impact on the device and range of features which are

pre-selected to search and rest is counted as extras. During this survey products have to perform their capabilities by employment of all components and layers (Av-test, 2015b).

Table 8: Comparison of Test Results of Security Products for Android

(Av-comparatives, 2014f; 2015b; Av-test, 2014c; 2015b).

Test	Date	AVG Free AntiVirus	Kaspersky Internet Security	ESET Mobile Security	Avast Mobile Security
AV-C Protection (Percentage)	Mar 2015	X	99,6	99,9	99,8
	Sep 2014	X	99,7	99,7	99,8
Protection (Percentage)	Jul 2015	99,3 & 98,8	99,9 & 100	100 & 100	99,7 & 99,9
	Jul 2014	99,9	99,9	100	99,9
Usability (Score)	Jul 2015	6/6	6/6	6/6	5,5/6
	Jul 2014	4/6	6/6	6/6	6/6
Features (Score)	Jul 2015	6/9 + 4 extra	6/9 + 1 extra	6/9 + 1 extra	6/9 + 6 extra
	Jul 2014	6/9 + 2 extra	6/9 + 1 extra	6/9 + 2 extra	7/9 + 3 extra
<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 10px; background-color: #cccccc; margin-right: 5px;"></div> – top score </div> <div style="display: flex; align-items: center; margin-top: 5px;"> X – excluded from test </div>					

In the first view on Table 8, there is high level of competition between ESET and Avast Mobile Security. For protection complex survey also mentions industry average for real-time protection 99,3% and for prevalent widespread malware 99,4% in 2015 (Av-test, 2015b). In 2014, Av-test (2014c) included only testing for pre-discovered malicious applications and its average was 98,3%. The history repeats with trouble of AVG Technologies in protection test, because it is the only product with lower percentage than average according to the others.

Additionally, providers possess in their portfolio many applications free of charge. Starting by Kaspersky Lab, there are ThreatScan, QR Scanner, Phound! (free version of Anti-Theft) and Password Manager. AVG Technologies offers only AVG Zen for interlink with other Android devices or computer. Another Secure Wi-Fi Assistant is free only up to 500 MB, then for unlimited data it costs 2,7 EUR per month. PrivacyFix for social networks shows separate tool for management of user's networking such as

Facebook, LinkedIn, Google+ and Twitter. Further more complicated strategy is kept by Avast. There are several partial components marketed for free. However, for full utilization of them, it is recommended to use Avast Free Mobile Security at least. Totally free of charge tools are Cleanup, Ransomware Removal and Battery Saver. But other SecureLine VPN, AntiTheft, Mobile Backup & Restore run with limited functions. First two applications could be purchased standalone ones after trial version ends. The last one offers basic backup without music, videos and apps. Remaining competitor ESET gives to consumers the version of Parental Control application for 6 month gratis and Social Media Scanner only for Twitter utterly free.

Users of iPhones and iPads could be happy about the Kaspersky Lab and its Password Manager, Save Browser and QR Scanner. Among the rest of providers there are marketed only applications for control over social media and over device's connection, namely AVG PrivacyFix and Avast SecureLine. ESET does not contribute by its technologies for this kind of devices.

Smaller group of potential buyers reside in Windows Phone and Symbian. For those Kaspersky Lab could promote only SafeBrowser and only for Windows Phone. In table 7 and 8, there are demonstrated qualities of ESET's design for Android mobile security application likewise for Windows Phone and also for Symbian. The rest of existing mobile OS is not present in any selected company's portfolio.

To sum up, security companies follow same model with mobile security as it was explained in previous sub-chapter. ESET keeps the approach of one universal security application, but in comparison the other providers have wider portfolio with free or paid applications. It should not be omitted that on one side ESET offers mobile security for various mobile OS, but on the other side it does not give any other application to customers relatively free except scanner for Twitter.

2.3.4 Price Policy

Competition among these companies concerning price of one-year licence for home user it could be hardly referred to as significant price war. The value of premium security fluctuates about 35 EUR and does not exceed limit of 50 EUR for PC protection (Table 9). This situation is caused by the range of the products and their

features. The versioning is present in removing of protection components. All four companies do not use round price for products. One should not forget that free versions possess only fraction of the components in comparison with supreme products. All values in the Table 9 are considered for one country, namely Germany. Regarding the prices are dissimilar in currency and discounts, too.

Table 9: One-year Licence Price Comparison in EUR (Avg Technologies, 2015c; Eset, 2015d; Kaspersky Lab, 2015b; Avast, 2015c).

Company	AVG Technologies		Kaspersky Lab		ESET		Avast		
Product / Device	AntiVirus Pro	Internet Security	Anti-virus	Internet Security	NOD32 Antivirus	Smart Security	Pro Antivirus	Internet Security	Premier
Windows	29,99	44,99	29,95	39,95	29,95	34,95	24,99	39,48	49,99
Version for Mac	29,99	X*	X	39,95	X	34,95	X	free	X
Version for Linux	X	X	X	X	34,95	X	X	X	X
Mobile or Tablet	10,49 ¹	X	X	10,95 ^{1,2,3}	X	14,95 ^{1,3,4}	X	X	14,99 ¹
Package	X	44,99	X	59,95	X	49,95	X	X	X
X – not in portfolio					² – iOS				
X* – included only in multi-device licence					³ – Windows Phone				
¹ – Android					⁴ – Symbian				

In total policy about mobile products does not vary significantly from the computer ones, but there is marketed only one all-in mobile security from each provider. Nevertheless, Avast, AVG Technologies and Kaspersky Lab offer more component applications for free than ESET as compared in previous sub-chapters. Most of them are with limited features or for restricted period.

In relation to multi-device package, the price corresponds with value for the basic version with minimum licence for 3 devices. However, it is necessary to observe more specifically the multi-device packages, because they include additional features besides already complex security software and they also vary in size of utilization on different kind of devices and operating systems. Only Avast does not have any multi-device

licence package. The others join the internet security for various OS and devices into multi-licence for user to choose variety of versions according possessed devices. Except AVG Technologies, the limitation of the licence is about 3 up to 5 devices. The same effect appears with Linux Desktop again. Only ESET includes that into multi-device licence. However, it should be mentioned that Kaspersky Lab does not offer Linux security version such as it does only for business customers, but on the other hand it does offer online backup as one of the extras for common PC user (Table 10).

Table 10: Multi-device Security Packs (Avg Technologies, 2015f; Eset, 2015d; Kaspersky Lab, 2015b).

Company	AVG Technologies			Kaspersky Lab		ESET	Avast
Package	AVG Protection	AVG Performance	AVG Ultimate	Internet Security Multi-device	Total Security Multi-device	Multi-Device Security Pack	None
Included							
Windows	•	•	•	•	•	•	X
Mac	•	•	•	•	•	•	X
Linux	X	X	X	X	X	•	X
Mobile or Tablet	• ¹	• ¹	• ¹	• ^{1,2,3}	• ^{1,2,3}	• ^{1,2,3}	X
Devices	Unlimited	Unlimited	Unlimited	3 or 5	1-3	3 or 5	X
Extras	Zen Dashboard	Cleaner for Mac, Cleaner Pro, PC TuneUp*	---*	Password Manager, Anti- Theft	Encryption, Shredder, Online Backup*	Social Media Scanner	X
X – not in portfolio				² - iOS			
*- includes also extras of lower version				³ – Windows Phone			
¹ - Android				⁴ - Symbian			

Separate attention is paid to special offers and discounts for longer subscriptions. Beginning with Avast there is special offer for schools as for enterprise with Mac or Windows endpoint computer. Lately vendor lowered the prices up to 40% percent of several products, but usually it gives up to 25% discount for two-year licence (Avast, 2015b). AVG Technologies and ESET set the strategy for longer licence alike (Avg Technologies, 2015f; Eset, 2015d). Kaspersky Lab appreciates customer less for two years subscription and gives discount only up to 12,5% (Kasperky Lab, 2015b).

Besides the mentioned discounts, vendors use price policy in terms of customer discrimination. Avast, ESET and Kaspersky Lab give discount for students and educational organizations. On home market ESET gives also preferential treatment to disabled people, healthcare related or non-profit organizations, orphan's asylums and rest homes from 20% up to 50% (Eset, 2015k). There is occurred another event connected with limited offers. Currently, ESET keeps posted about 15% summer lowering of prices (2015d). Other discount policy is spotted from Kaspersky Lab. Provider gives special limited offer such as Internet Security & Password Manager Bundle for lower price (Kaspersky Lab, 2015b). The gap is spotted for ESET as it can not bundle two standalone components, but on the other hand it tries to catch consumers' attention by comprehensive multi-device package for entire household.

2.3.5 Strategic Partnerships

Vendors towards enlargement of their sale network interwork in manner of affiliate programs. The principle is based on advertisements of vendor's products through partner's website. For this action vendors make a commitment to give certain percentage of referred sales. Amount of commission differs from vendor to vendor. Avast promises starting rate of 25% which could increase up to 35% (Avast, 2015g). AVG Technologies scale is wider and it is considered sale value, so affiliate partner could get from 5% to 30% commission (Avg Technologies, 2015g). Comparing to ESET, which sets the rate at only 10%-18% of entire purchase, the first two vendors seem to be rather generous to become widely spread than rely only on their own promoting and regional offices (Eset, 2015j). The last company chooses different strategy based on the regional differences. Therefore affiliate partner from USA could get up to 30% of sale value and in United Kingdom it is levelled at 20% maximum from Kaspersky Lab (Kaspersky Lab, 2015e). Different kind of partnership occurs in terms of reselling the products, then there are OEM partners (Original Equipment Manufacturer). However, the commission is higher according to affiliate program. In those cases, anti-virus vendors offer also software for involved partner in such a cooperation as pre-installation, bundling or co-branding. Specifically, Avast and ESET provide also training for such business partners in order to secure improvement of sales force or customer care (Avg Technologies, 2015j; Eset, 2015l). Additionally, there are MSP

partners (Managed Service Provider) which are more independent in practice for partner as potted only in ESET (2015).

Besides nature of previous partnerships there are existing technology alliances for mutual benefits. Security products portfolio for business is much greater in quantity and service to offer. Companies consider number of endpoint devices, but also overall data management and internal communication in order to meet with organisation's needs. With respect towards customer's satisfaction vendors create alliances for certain types of services. Lately Kaspersky Lab joined to Facebook group of anti-malware companies for instance Microsoft, Symantec, McAfee and ESET. Benefits for Facebook clients lean on safer browsing on this social network due larger database of malicious code, which was spotted earlier. On the other side for vendors it brings a public to be included in searching engine for new threats. Moreover, after malware detection there is presented to user cleanup or removal tool for the infected device to eradicate the trouble (Osbourne, 2015).

ESET services for enterprise are focused on location and identification of organisation vulnerability related to system. Consulting services consider level of information security management and consequently come with key problem solutions in terms of independent opinion from authority with top market know-how. Earlier these anti-virus pioneers have started to target at enterprises as it is mentioned in interview with ESET's managing director, Richard Marko (Hospodárske Noviny, 2011). During this commerce from customers' point of view enterprises have their negotiating advantage for enormous demand. But as an example of partnership Netbox case could be presented. The relationship ended with contract merging the merits of both involved partners. Resulted combination of integrated security and management suite with industry fastest and most accurate anti-virus acquaints for small-to-medium sized businesses valuable solution (Netboxblue, 2010). On that base it builds seminal partnerships and keeps negotiations flexible. Additionally Slovak company connected with DESlock+ for data encryption and with StorageCraft for backup and restore of data. ESET declares also ongoing establishing of new technological alliance by statement "we are working on new security collaborations to expand our offering - to keep businesses better protected" (Eset, 2015).

Back to benchmarking of single companies, since Avast's beginning, company has awareness that appropriate partnership brings success, therefore it started to cooperate with McAfee by licensing the company for use of its engine. It displayed as crucial growth step, which helped for further development and marketing (Beblavý and Kureková, 2014). Since 2007 it has performed as joint stock company and nowadays it is worth of one billion US dollars (Avast, 2015a). Behind this progress it is criticised or rather users are concerned about free anti-virus vendors misuse of their private data by implementing hidden mechanism to gain economic result (Yiming, Clementi and Stelzhammer, 2014a). In spite of that fact, Avast's latest partnership brings its business great success in downloads of mobile security application. Level of 100 million downloads was not reached so fast by any other application in Google Play history. Behind this achievement it is worth noticing that Avast bought startup Inmite and strengthened its mobile protection division by 40 developers (Avast, 2015a). Moreover, according to Av-comparatives (2014b, p. 9) it has been ranked as "the most popular mobile security provider in North America, South America, and Europe, and third in Asia".

The latest strategic partnership with AVG Technologies (2015i) in global volume was announced in June 2015. It has connected with "telecommunications equipment, networks and mobile devices company ZTE, to become a provider of mobile security across range of devices". On presume that most of the people use cellphone or tablet as primary device, partners committed mobile security based on the pre-installation of AVG AntiVirus Pro on the ZTE smartphones and tablets with Android. It gives customers advanced trial version in duration of 60 days instead of 30. Even afterwards, it should secure smooth running of the device with core protection (Avg Technologies, 2015i).

Besides the partnerships of Kaspersky Lab with number of original equipment manufacturers and technology partners for instance ASUS, Gigabyte, IBM, and dozens more, it also cooperates with national agencies (Kaspersky Lab, 2015e). In May 2015 it became strategic partner with another company from New York City. LIFARS Llc. operates in relatively similar business thus as security company based on digital forensics and cyber-security intelligence. The mutual convenience emerged from sharing technology and services in order to resist threats of digital

nature (PRNewswire, 2015). Combination of knowledge about the latest threats and monitoring scenarios of targeted attacks gives to these two enterprises great advantage in keeping up with new types of attacks in ongoing battle against cybercrime.

2.4 SWOT Analysis

Based on the findings from the previous analyses, ESET is the company, which offers very comprehensive product portfolio as it concerns security and safety needs of common users of personal computers or smartphones and also business clients of small or large size. It manifests its eagerness towards “more secure digital world where everyone can truly enjoy safer technology” as stated by Richard Marko (Eset, 2015c).

Beginning with internal environment ESET’s strengths and weaknesses are depicted in Figure 7. Its technology built in all security products, namely ESET ThreatSense, and also the constant upgrades of whole software secures to Slovak pioneer high scores in comparative tests. ESET is able to keep its products up-to-date in ongoing battle against malware threats. It keeps its consistency in its message for need of protection by only one fully-featured product for certain device. However, significant quality differentiation is not observed in the market of so similar products. Prices are comparable, thus ESET gives preferential treatments to specific groups of consumers and turn their attention by seasonal discounts or in subscription to supreme version. Additionally, it is very helpful provider for securing of entire household with all included devices as it offers very complex package covering the widest range of operating system versions out of selected companies.

With the focus on weaknesses, they might be found in size of the business units and inevitable high investments in their development. Nevertheless, on the other side, there is also proved high growth rate in sales in past few years. New office in Germany is just another example of constant expansion.

Strengths	Weaknesses
<ul style="list-style-type: none"> ThreatSense technology Constant innovations Superior results in comparative tests Extended range of products for various OS Complex security packages for households Permanent support and cooperation with students Growing sales New office and partner in Germany 	<ul style="list-style-type: none"> High costs of research and development Only one free mobile application
Opportunities	Threats
<ul style="list-style-type: none"> Many new viruses Growing economy New markets Rapid development of technologies Innovative processes in electronics Cooperation with government and health care 	<ul style="list-style-type: none"> External business risk Growing competition Decreasing profitability Increasing HR costs

Figure 7: SWOT Analysis of ESET's Current Situation (Author).

Regarding the external origin of helpful aspects seen as opportunities and harmful ones as threats, there is predominance of positive aspects towards company's businesses (Figure 7). Firstly, there is still present growing demand for security technologies, but interest of other competitors also increases in order to stay involved in a business. Therefore, almost saturated anti-virus software market compels ESET to find its field of business in new markets. Secondly, growing competition puts this Slovak privately held company in danger by free versions of software with above standard features. ESET with its outstanding performance has great chances to use all mentioned aspects stepwise in order to gain higher market share.

Benchmarking as resource for formulation of future strategy is ascertained very useful for detection of anomalies and weak points. At the same time, it is conducive and essential part of strategic management for practise betterment in this strongly

competitive market. It is salutary to achieve superior performance in comparison to competitors and gain bigger market share. Besides, current stage of the company business is recognized with superior performance towards competition according to author's opinion. Ongoing strategy is found in low differentiation simultaneously with relatively high costs.

In 2011, ESET expanded its essential business on mobile security market and subsequently added multi-device package for various devices in portfolio. However, this entire market does not concede stable position. By other words, ESET needs to keep the path of sustainable development in order not to drop its position or decline its qualities in so severely competitive market. Company needs to preserve its high level practice with its strengths and also harness the opportunities to grow extensionally beyond the limits of this specific market.

Slovak vendor encourages people to be online with safe and secure technology by slogan "ESET will protect you" (Eset, 2015c). Then its growth leads logically towards protection of other technology human beings use. Innovative processes and electronics raise technology into new dimension for enlargement of scope of business. One should not forget that core purpose of the entire security software business originates from genesis of the malware. Subsequently, just development of contemporary software products might not be sufficient in order to sustain one's position against new types of threats targeting new electronics that have not even been invented, yet.

3 Proposals for Improvement

ESET is doing business in fiercely competitive market with wide portfolio of relatively similar products, but it has still a great potential to grow even though security software market industry might be seen saturated. To achieve betterment in organisation's performance has become permanent struggle in terms of erratic behaviour of new malware formation and it needs further knowledge about the latest industry conditions.

According to author's opinion company's essential part of future success is hidden in continuous development of cutting edge software and service. Base premise for this outlook is fact that still almost 50% of home users are willing to pay for advanced version of anti-virus or internet security apart from that the core protection could be obtained with no commission (Av-comparatives, 2014b).

The summarising SWOT analysis in previous chapter reveals the current situation of ESET in this particular industry. In other words, ESET should direct its attention to sustainability of its outstanding technology and emerge its evolvement into new markets as it was recognized in predominance of positive factors for further growth according author's observation. The initial pace of expansion into other countries is requisite with manner of further enlargement of existing business units around the world and setting new strategic offices and partnerships for long-term operation. Certain evidence of this kind of progress is contained in the new office and partnership in Germany. Additionally, this industry was forecast to increase by 10.88% in period 2013-2018 towards global anti-virus software package (Reportsnreports, 2014). Future expansion for ESET stands on partnerships and cooperation with corporate enterprises.

Based on the findings, mentioned general recommendations need to be more elaborated. However, the methods discover particular segments that need to be looked into individually as situation requires. More specifically, market is divided by nature of customer, computer technology and the operating system of one's device. Considering the trend of declining usage of PCs and growing tendency for tablets and smartphones enterprise should take into account nowadays customer's requirements and adapt its performance to them. One would even assume that people might begin to use widely the latest version of computer technology namely netbooks, ultrabooks or hybrid version

laptop and tablet in one, but on top of that there is rising another technology related to phenomenon called Internet of Things as explained later.

3.1 Improvements for Current Conditions

For continual growth of ESET, certain strategic management tools need to be implemented. Necessity was spotted in mapping of imminent competition specifically comparing key success factors for security software market. Author also recommends that central feature underlying this concept is inclusion of benchmarking in terms of effectiveness of prevalent security software and global strategy, as a result of internal research, but also independent tests, audits and surveys, which could demonstrate divergence between producers' plans and qualities. Meaningfulness of such research stands on regularity, rigorousness and consistency of studying. Therefore, it could illuminate shortcoming of ESET' performance as an enterprise.

Regarding level of saturation of the market ESET's products for personal computers with different operating system secures slightly broader range of potential customers. In this segment, ESET gives the impression of perfect solution for anyone. Among benchmark rivals ESET is the only one which lays equal emphasis on security of devices with Windows versions and MAC OS X operating systems. Even, it is the only vendor, which proffers security software for Linux common user, too. At the same time, other competitors demonstrate their scale of software paid versions together with free application. Here, the first recommendation arises. Even though ESET focuses on paid versions, the public is eager to use everything what is utterly for free. With the emphasis that ESET should not deteriorate its politics with one optimal and universal solution, it is not recommended to launch standalone application for free, but rather follow consistency in view of one complex product for safety and security.

Related recommendation from the author comes with broadening of existing products with additional features. As spotted in previous analysis, data security features are not present in product range for home use. In this case, author proposes establishment of in-house advancement for inclusion of data encryption and shredding into multi-device package. Proposal impacts the multi-licence subscription, as its introduction should convince the consumer for purchase of one security pack with value of the most

complex solution for household. Simultaneously, there will be followed practice of one product instead of several detached components.

When it comes to mobile applications, this segment appears excessive amount of Android applications, which are only components with limited functions instead of proper mobile security. For this reason, it is recommended by author to provide multi-device licence to include possibility of backup for currently marketed mobile versions of protection namely for Android, Symbian and Windows Phone. This particular improvement is very appropriate to introduce to public on 5th anniversary of ESET Mobile Security on the market, which is next year. The other technology alliance related to this function is concluded as another opportunity for growth. In more details, author proposes to involve such a partner in terms of designing such a feature and actual data cloud storage. This sort of partnership brings synergy effect for both involved companies. ESET includes new feature for its product. Moreover, for ESET it can be space for searching for new types of threats. At the same time, cloud backup provider gains customer population of anti-virus provider and label of really secure backup company.

3.2 Global Betterment

Additionally, the most radical strategy proposal is shrouded in adoption of blue ocean strategy for global progress of ESET. Its principle stands for totally different utilization of actual resources and practise in order to find or create new markets and new space for operation.

Central aspect underlying this strategy is based on searching outside current authorities by using recognized opportunities of the organisation with the aim to minimise the risks. Building blue ocean strategy requires accomplishing certain issues depicted below in Table 11.

Table 11: Blue Ocean Strategy vs. Conventional Head-To-Head Competition (Developed from Blue Ocean Strategy, 2014; Papula, Papulová and Papula, 2014, p. 144).

	Red Ocean Strategy	Blue Ocean Strategy
Industry	Competes in existing market place	Creates uncontested market space
Strategic Group	Focuses on competitive position within the group	Looks across strategic groups
Buyer Group	Focuses on better serving the demand	Redefines the industry buyer
Scope of product and services	Focuses on maximizing the value of goods within the bounds of its industry	Looks across to complementary products and service offerings
Functional - Emotional Orientation	Focuses on improving the price performance within functional-emotional orientation of its industry	Rethinks the functional-emotional orientation of its industry
Time	Focuses on adapting to external trends	Participates in shaping external trends over time

Before ESET can adopt the blue ocean strategy, which in final means adjustments of current practice, there are important questions to be answered listed in Figure 8.

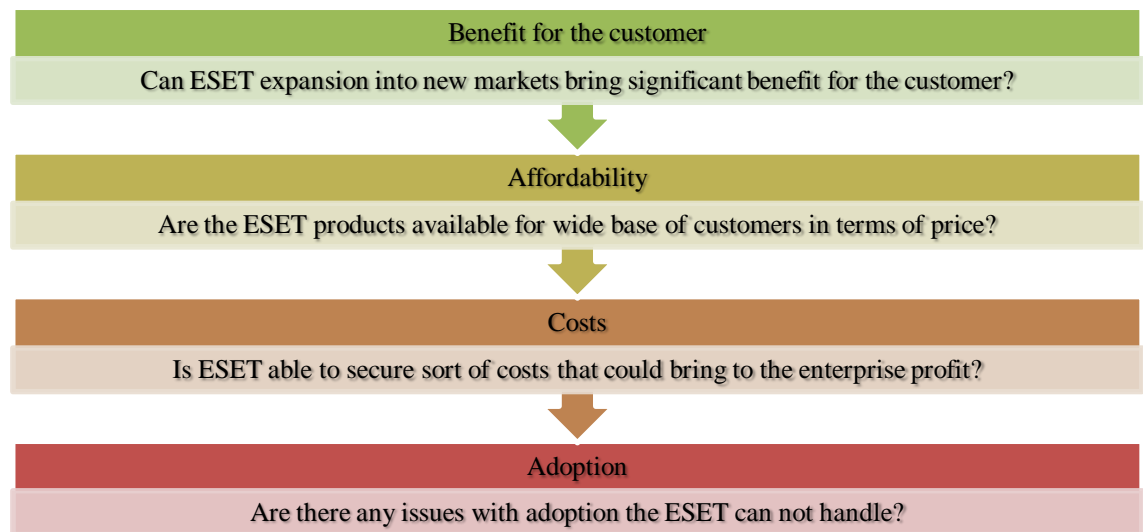


Figure 8: Application of Blue Ocean Strategy (developed from Papula, Papulová and Papula, 2014, p. 145).

ESET’s applications of the technology into new space of activities are seen very beneficial for customer in author’s point of view. In terms of the securing the most

modern systems their usage can become safer for common user. At the same time, ESET offers products affordable for wide public in terms of price. Query to the potential profit is bounded with level of required technological development of the tailor-made security related to particular electronic gadget. Another issue comes with feasibility towards adoption of blue ocean business plan. Specifically, if there are any internal or external unpredictable barriers, then it will get clear view of its own readiness for such action.

Regarding blue ocean strategy it requests to find or create uncontested market and shape external trends at the same time. Fundamental predisposition of the product, which can require ESET's protective software, is related to its functioning. Basic characteristic indicates the necessity of connection to Internet or any other broad network, where malware can be present. Electronics might be connected within such network thus vulnerable to outer attacks. This concern creates incentives for using security software, which scans and matches in the manner of being online connected to the malware database and also detects anomalies offline. Device's ability to connect to external network becomes crucial indicator for potential market regarding ESET's expansion.

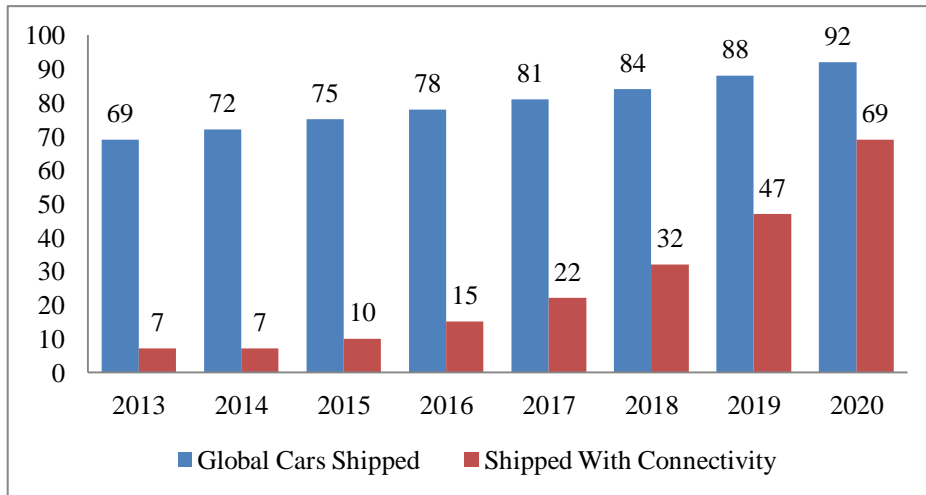
The time of connected devices begins to occur with network connectivity of common household appliances up to cars. This upcoming event gets the name "Internet of Things", shortly IoT. As identified by Tully (2015) adoption of IoT technologies brings opportunities for broad scale of industries. This connectivity matter is interesting also for giant companies such as Apple, Google and Samsung in terms of commencing collaboration with manufacturers of such things, connected cars, connected homes, connected healthcare. Besides, Tully (2015) criticises those vendors are not mature for IoT adoption in terms of changing its business model. If they do not achieve differentiation regarding strong security in this early beginning then they probably will miss the chance to do so. Vulnerability of the things to get infected plays an important part to be successful in long-term manner.

In 2011, Reed sees (2011) possible danger in hacking the cars. Reed ends up the topic that access to only one car is not interesting for time consumption of dedicated hacker. Later in 2012, company Bitdefender (2012) states that "cars may need anti-virus software". As some cars contain enormous number of electronic systems like GPS,

Bluetooth or even Wi-Fi vehicle might become so attractive for hackers as currently personal computers are.

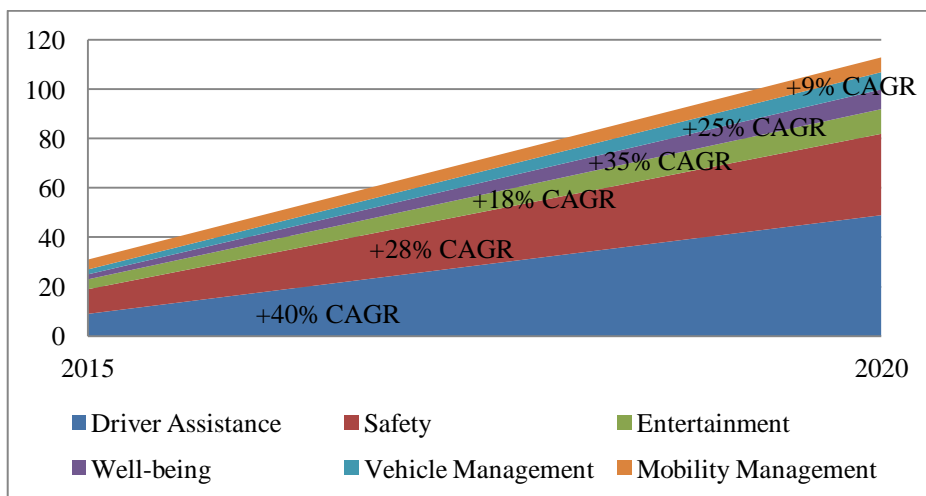
Threat of remote control over the car systems seems to be far more dangerous than misuse one's webcam on personal computer. Compromising systems related to engine, breaks or even car safety features can pose much more serious situation than infected laptop. Such ideas are far more present than they appear. In USA the hackers became famous for hacking into Jeep Cherokee through wide open port (Higgins, 2015). By other words, they were able to hack the car through smartphone and integrated connection system and consecutively take control over air-conditioning, radio, windshield wipers, door locks, accelerator pedal, and brakes. They switched off the engine from about 110 kilometre distance. Fortunately, it was intentional attack to discover gaps in car system security. Higgins also mentions event that earlier something similar happened with Tesla car version S, but for premeditated hacking it was necessary to tamper physically with the car. This depicts that car manufacturers take different measures towards cyber security of their products.

Automotive industry with its new networking capabilities is spotted as potential market for ESET. Author recommends penetrating car systems security market. Luxury brands appear to be reasonable starting line for expansion as those cars include most high tech systems that are more likely to become targets of cyber attack. "In-vehicle wireless connectivity is rapidly expanding from luxury models and premium brands, to high volume mid-market models," as James Hines mentioned in article by Gartner (2015). Based on those ideas, the car market will represent the main factor in relation to Internet of Things. This event is predicted to grow and potentially reach more than 220 million connected cars in the world in the 2020. New concept of car connectivity will transform this sector in terms of greater demand for digital content in cars, thus connectivity components and services can boost up to 170 billion EUR by 2020 (Gartner, 2015). The forecast by BI Intelligence about number of connected cars on the road estimates amount on 220 million out of which only 88 million owners will activate connecting service in next 5 years (Greenough, 2015a). Graph 9 demonstrates growth in shipments of connected cars in total volume on a global scale.



Graph 9: Global Forecast for Connected-Car Shipments in Millions (Greenough, 2015a).

The opportunity for involvement into this industry is present also for hardware and software makers. The revenue forecast for related services is estimated in 152 billion EUR in 2020 counted at overall compound annual growth rate (CAGR) of 29%. (Viereckl, Assmann and Radüge, 2014; Greenoug, 2015b). Graph 10 depicts revenues according the driver assistance and safety technologies for car.



Graph 10: Revenue Growth Rate for Related Technologies in Billion EUR

(Viereckl, Assmann and Radüge, 2014).

Another aspect for ESET's infiltration into this market is potentially gained revenue as early collaboration could bring long-term yields. ESET's application is seen mostly in Mobility (9% CAGR) and Vehicle management (25% CAGR) and Entertainment (28% CAGR) according their need of remote access on the principle of

mobile or GPS (Viereckl, Assmann and Radüge, 2014). Furthermore, its proactive engine searches for other anomalies through entire system.

Consequently, for ESET it would be convenient to merge in manner of technology alliance with one of the companies, which manufacture or design relevant sort of cars with networking system at the moment. These automotive OEMs are Tesla, Daimler AG (Mercedes-Benz), General Motors (Buick, Chevrolet and Cadillac), Volkswagen Group (Audi, Bentley), Toyota (Lexus) and BMW. The struggle comes with approach of vehicle makers towards implementing such a technology into vehicles. There are two possible ways. Firstly, automotive companies could produce cars with embedded connections which are more convenient for data collection. Secondly, they may rely on secondary devices which need to set data plan from external provider. The initial decision about the right partner could become crucial specifically when chosen automotive manufacturer will move toward single worldwide architectures.

Author recommends for the initial partner for ESET to begin collaboration with German based manufacturer Volkswagen Group and firstly implement security software onto Audi in-car systems as it is luxury brand with decent production. Another advantage of this particular brand is that all models share common system, which will save costs in software development of ESET's side. Collaboration with Volkswagen is right choice for initial technological alliance on the connected cars market. Narrowed co-work with the focus on the only luxury car brand involves application of ESET's technology into the process at the earliest. This view is seen rather acceptable also for carmaker with respect to liaise in long- term manner. Author also concludes that Volkswagen's car portfolio is suitable for further expansion into other car classes (Bentley, Bugatti, Lamborghini, Porsche, VW, Seat, Skoda, Scania and Man). As technology will mature and initial R&D costs will be recovered, connectivity technology will be penetrating mainstream car models. Such trend would be rather beneficial for both, ESET and vehicle producers as well. ESET will be scaling up number of cars to secure and carmakers possess another technological advantage on the market.

It needs to be mentioned, why automotive company would involve external company in such a business. Internet of cars will generate enormous amount of data. Hirsh, Mueller and Krishnamurthy (2015, p. 2) see that "manufacturers are lagging behind in security

regard”. Even, they try to simulate multiple attacks and consequently build multi-layers into the system not be accessible for hacker, although at some point it will not be enough. ESET belongs to specialists in security software market and it can be helpful to implement save and secure technology into so advanced car systems. Moreover, design of the system will need to evolve, because it will require permanent surveillance for new threats and updates of protection against them. For this reason, ESET’s technology and database of prevalent malware could have significant contribution to reveal such external attempts as it works on constant scanning and matching malicious codes. Additionally, for any carmakers it would be very hard time if hacking appears in wide scale.

Besides, among other rivals, it helps Volkswagen to differentiate its cars from the other carmakers with ESET security integrated into the system. Another very real example occurs in cooperation of automotive industry with audio-system producers as before it was aftermarket. Nowadays, they build high standard audio components into cars in the manner of direct supply from specialists in their field of business. Specifically, Audi liaises partnership with Bang Olufsen audio systems company for its “advanced music systems” (Bang Olufsen, 2015).

From author’s point of view, ESET business model needs to adjust for arising conditions, too. Market of connected cars is at its beginning and it requires more attention in terms of development security solution with tailored-made approach. The value of ESET application requires to be given to the customer satisfaction and feeling of proper security. ESET needs also to appraise its readiness internally for such adjustments, although there is always risk the process goes wrong in unpredictable way. For example, anti-virus installed on PC used to pop-up if there is any threat spotted, but this will be unrequested event in car as it could distract the driver from driving car and subsequently cause the accident. Security software specialists have better overview about cyber threats and carmakers are more aware of implementation within car systems. As a corollary, for ESET the author of the thesis proposes collaboration in manner of joint research and development departments, thus it will be more feasible to provide advanced technology into the connected car with security software shield. By the end, every potential customer does make sure that the most expensive device is also the most secured in proactive way from attacks or takeover for harmful intentions.

Nevertheless, blue ocean strategy delivers notable opportunities as well as risks for intention to find new markets. The market appraisal needs to be executed properly with intention to avoid potential failing. Company should adopt blue ocean strategy after due consideration of its realization. The Nintendo case helps as certain example. According “company made the false assumption that new market would react identically to the old market,” it failed with its launch of Wii console (Brown, 2011). Critique is also on the spot with relation to the timeline. Realization of blue ocean strategy with successful accomplishment will lead other companies to establish similar business. They could learn from initial mistakes of the first vanquisher and might overtake the rest of the market. It should not be omitted that this strategy is dynamic process and it will evolve as company business model so operation of involved parties.

For proper utilization and further application of blue ocean strategy ESET needs to be aware of procedure to contest the market and shape trends. It concerns risk of wrong establishment of collaboration in terms of future expansion onto lower car classes. The initial steps will not be possible to take back. It will serve as deterrent example for other anti-virus vendor to avoid those mistakes.

Last of all, ESET as any other company needs to be aware of the upcoming phenomenon called Internet of Things. It will have impact on enormous volume of digital businesses in terms of opportunities to grow and requirements for business model adjustments. Preparedness for this rising situation on the market will divide companies into hesitant and promptly responding ones. ESET’s engagement to connected car market increases its salutary experience. Obtained valuable know-how can serve to evolve its application within another market – connected houses.

Conclusion

The main aim of this paper was to analyse ESET company operating in very specific industry. It provides security software against malicious codes. Based on the findings, author proposed strategy solution for further growth. The analysis was focused on uncovering conditions of environment ESET is currently doing business in and mapping emerging markets where ESET can get engaged in near future.

As a result, benchmarking method was found in keep eye on close competition and gain awareness about their nature. For this reason, author recommended to include benchmarking in ESET's strategic management to maintain up to date information about current competition. Besides, there was recognized predominance of positive aspects about ESET's outstanding performance within fierce anti-virus software competition. However, the current status of market does not secure future success without any action.

Based on the elaborated comparison, it was proposed to aim for one effective product for home user. Thereto, the multi-device package should attract the entire households as it contains security software for broad range of platforms. Author's improvement was spotted in extension of its features. Inclusion of tools for data management, namely backup, encryption and advanced file removal can make the product more versatile and thus more attractive for customer.

The major recommendation towards global betterment of ESET was proposed in order to change viewpoint on the market. The author assumed that security software vendor can find or even create its new space of business by adoption of blue ocean strategy. Suitable market for penetration was discovered in automotive industry. With raising connectivity in cars there is also increasing risk of cyber-attacks just as with personal computers. Innovation and implementation of ESET's security technology into cars can make them more secure and help carmakers to differentiate among rivals. On top of that related services revenue is forecasted at 152 billion EUR till 2020 on a global scale.

Generation of connected electronics, Internet of Things, is not far from everyday's life. Such advancement in technology will disturb several industries, including one that ESET operates in. It has already begun with connected cars and it will continue with

other devices. Early awareness and experience of ongoing changes on technology market would give ESET significant advantage in future decision making. This fact delivers a suggestion of further study of ESET's resources and processes, and their capabilities for the changes.

To this end, the idea of further expansion into other markets with connected systems will be brought by another security software vendor soon or later. A central feature underlying this concept is appropriate procedure for market penetration with dynamic approach towards upcoming evolution of the global market.

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Appendix I: History of ESET

2012	<ul style="list-style-type: none">• In September celebrated 20 years since the company's founding• In May, joined forces with Google Play for its Android-based antivirus protection - ESET Mobile Security for Android, for both smartphones and tablets• In April, opened the technological hub in Montreal, Canada with offices directly on the campus of the highly-recognized École Polytechnique Montreal• In March, ESET exhibited for the first time at GSMA Mobile World Congress in Barcelona - the world's largest exhibition for the mobile industry
2011	<ul style="list-style-type: none">• In October, ranked in Deloitte Technology Fast 50 Central Europe and is the only company to have placed in the "Fast 50" ranking ten times in a row. Previously, ESET has been ranked in Deloitte Technology Fast 500 EMEA for several times• In September, ESET CEO Richard Marko was named IT personality of the year in Slovakia• In September, launched ESET NOD32 Antivirus 5 and ESET Smart Security 5, the fifth generation of the flagship security solutions• In the fall, selected as one of the top ten most innovative companies in Europe for the 2011 HSBC European Business Awards receiving the Ruban d'Honneur accolade• In June, opened its second Slovak office, research and development center in Košice• In April, brought to life its first security solution for Linux desktops• In January, Richard Marko became the new CEO of ESET
2010	<ul style="list-style-type: none">• Became the first company to receive 60 VB100 awards• In November, the CRN Magazine included ESET CEO Miroslav Trnka as one of the 25 Most Innovative Executives of 2010. In November, ESET received third-time record-breaking "Company of the Year" recognition awarded by TREND, an economic weekly in Slovakia• In November, launched security solutions for the Mac OS X platform - ESET Cybersecurity• In September, released ESET Mobile Security for Windows and Symbian platforms• Named one of America's Fastest-Growing Private Companies by Inc. magazine for the 4th consecutive year• Acquired anti-spam company Comdom• Opened the Asia/Pacific office in Singapore• In January, Richard Marko, then ESET' CTO, was chosen by "CRN" as one of the top 25 technology leaders in the world
2009	<ul style="list-style-type: none">• Launched ESET NOD32 Antivirus 4 and ESET Smart Security 4• Securing "Our eCity" initiative founded to promote cyber security• Received prestigious "Company of the Year" recognition awarded by TREND, an economic weekly in Slovakia, for the first time• Has been introduced into the IT Hall of Fame in Slovakia• Received CNET Editors' Choice award• Being placed on Gartner Magic Quadrant• Ranked #1 by Consumer Reports• Ranked #1 antivirus by Maximum PC magazine• Named one of America's Fastest-Growing Private Companies by INC. Magazine for the 3rd consecutive year• Named 6th-fastest growing privately-held company in San Diego• Launched official ESET Facebook page
2008	<ul style="list-style-type: none">• Merged with ESET, LLC USA• In September, ESET CEO Miroslav Trnka was named IT personality of the year in Slovakia• Opened the Research and Development Center in Krakow, Poland

	<ul style="list-style-type: none"> • Acquired Šetrnet, a Czech-based AV company • Achieved 50th overall Virus Bulletin Award
2007	<ul style="list-style-type: none"> • In November, launched ESET NOD 32 Antivirus 3.0 and introduced ESET Smart Security, the new flagship software • ESET is distributed in more than 100 countries
2006	<ul style="list-style-type: none"> • Received the second "IT Company of the Year" award in Slovakia at IT Gala
2005	<ul style="list-style-type: none"> • Introduced ThreatSense unified engine, based on Advanced Heuristics and ThreatSense.Net, a cloud-based early warning and malware analysis system
2004	<ul style="list-style-type: none"> • Opened the Latin American office in Buenos Aires, Argentina
2002	<ul style="list-style-type: none"> • Launched ESET NOD32 Antivirus 2.0 for MS Windows, introducing a technological breakthrough in malware detection with ESET's Advanced Heuristics • Participated in the largest IT expo in the world - CeBit in Hannover, Germany - for the first time • Received "IT Company of the Year" recognition awarded by the Slovak Information and Communication Technologies Association • Listed for the first time in "Fast 50 CE" and "Fast 500 EMEA" ranking by Deloitte
2001	<ul style="list-style-type: none"> • Established ESET Software Company in Prague, Czech Republic
2000	<ul style="list-style-type: none"> • Started to develop a global partner network by appointing the first exclusive partner in Australia and several other partners in EMEA, LATAM and APAC region
1999	<ul style="list-style-type: none"> • Commenced the global expansion by establishing ESET LLC in San Diego, USA
1998	<ul style="list-style-type: none"> • ESET NOD32 Antivirus received the first Virus Bulletin Test award
1995	<ul style="list-style-type: none"> • Launched the streamlined version of the antivirus program NOD-iCE
1993	<ul style="list-style-type: none"> • Started to contribute to "Virus Radar" column in a leading Slovak IT periodical PC-Revue
1992	<ul style="list-style-type: none"> • Established ESET Spol. s.r.o. in the former Czechoslovakia. The associates are: Rudolf Hrubý, Peter Paško and Miroslav Trnka • Started to sell the first AV products in Slovakia and abroad • The foundation of Slovak Antivirus Center (SAC) and SAC BBS
1990	<ul style="list-style-type: none"> • Launched retail through A.T.A. Consortium • Delivered the first retail version to the Austrian market under the product name STOPVIR
1987	<ul style="list-style-type: none"> • Created the first version of antivirus NOD running on MS-DOS; the authors are Peter Paško and Miroslav Trnka • NOD is a twist on an acronym of a Czechoslovak television series title, meaning "Hospital at the Edge of the Disc"

Source: Eset, 2014a.

Appendix II: ESET Sales in Business Regions in EUR

	2014	2013	2012
Slovak Republic	7 495 910	7 964 541	7 246 603
Czech Republic	10 381 869	10 359 593	109 950
USA	63 258 837	56 236 502	86 645 619
EMEA(Europe and South Africa)	153 380 204	155 879 965	169 950 636
LATAM	3 328 882	2 743 332	2 580 732
APAC	45 899 923	56 096 868	---
Germany*	16 952 649	9 538 607	---
other	5 509 004	1 217 857	1 469 151
Together	327 083 259	300 037 265	268 002 691

* Sales of products and services in Germany are included in EMEA region for year 2012

Source: Eset, ESET Annual Reports 2013-2014.

Appendix III: Anti-virus Vendor Market Share

	1 st quarter 2015	4 th quarter 2014	4 th quarter 2013	4 th quarter 2012	4 th quarter 2011	4 th quarter 2010
Avast	21,4%	22,20%	23,60%	17,50%	15,92%	17,53%
ESET	4,2%	3,70%	7,20%	10,80%	10,14%	12,05%
Symantec Corporation	7,1%	8,40%	7,60%	10,50%	9,71%	10,04%
AVG Technologies	8,6%	9,40%	8,30%	8,80%	11,29%	9,71%
Kaspersky Labs	3,5%	3,60%	6,50%	5,90%	7,85%	8,42%
Avira GMBH	7,4%	5,60%	6,80%	10,40%	12,13%	8,26%
Microsoft Corporation	19,4%	26,60%	25,40%	16,80%	9,41%	7,99%
Panda Security	<2%	<2%	<2%	2,00%	3,95%	5,94%
McAfee Inc.	6,2%	5,70%	3,20%	4,50%	4,64%	5,02%
Trend Micro, Inc.	<2%	<2%	<2%	2,60%	2,08%	<2%
Other	15,8%	14,80%	11,40%	10,20%	12,88%	15,04%

Source: Opswat, 2010-2015.

Appendix IV: Anti-virus Market Share according Operating System

Product	Windows 7	Windows 8	Windows 8.1
Microsoft Security Essentials	23,7%	---	---
Windows Defender	---	32,9%	28%
Avast Free Antivirus	22,1%	18,1%	13,7%
AVG AntiVirus Free	5,7%	5,7%	6,1%
AVG Internet Security	X*	5,2%	X*
Avira Free Antivirus	5,5%	4,8%	3,2%
McAfee VirusScan	2,6%	7,1%	6,8%
Symantec Endpoint Protection	4,2%	7,6%	X*
Norton 360	3,2%	X*	4,6%
Kaspersky Internet Security	X*	X*	X*
Others	33%	18,6%	33,8%

X*- gained less than 2% market share included in others

Source: Opswat, 2014.

Appendix V: Market Share of Anti-virus Products for Home

Anti-virus Product (for Windows)	Market Share 2015	Market Share 2014	Market Share 2013	1-year licence price in EUR
Avast Free Antivirus	17,6%	20,20%	19,60%	free
Microsoft Security Essentials	17,8%	16,80%	17,20%	free*
Windows Defender	X	8,40%	7,80%	free*
AVG Free Anti-Virus Free Edition	5%	5,90%	4,80%	free
Avira Free Antivirus	5,9%	5%	5,80%	free
Symantec Endpoint Protection	3,6%	3,90%	<2%	46,07
McAfee VirusScan*	3,6%	3,60%	2,20%	---
Symantec Norton Security	X	3,20%	3,20%	49,99
AVG Internet Security	<2%	2,70%	2,90%	44,99
Kaspersky Internet Security	2,2%	2,30%	3,80%	39,95
ESET Smart Security	<2%	<2%	4%	34,95
ESET NOD32 Antivirus	<2%	<2%	2,50%	29,95
Avast Internet Security	<2%	<2%	3,00%	39,48

* - renamed all lines
X – no data.

Source: Av-test, 2014b; Opswat, 2013; 2015.

Appendix VI: Case Study of Software Replacement

Faced the following security challenges before purchasing ESET:

- Protecting customer data, organizational data and intellectual property
- Balancing employee productivity and strong protection
- Chose ESET security solutions because of the following features:
- High malware detection rates with low false positives
- Light footprint
- Remote administration dashboard and ease of management

Uses the following ESET products:

- Endpoint protection

- Server, gateway or file protection
- Has the following in their IT environment:
- Desktops and laptops: 1000+
- Mobile devices: 25-99
- Virtual desktops: 500-999
- Virtual servers: 100-499
- Physical servers: 100-499

Replaced the following security solutions when implementing ESET security solutions:

- Symantec
- Microsoft
- Experienced the following operational benefits since deploying ESET security solutions:
- Protected organizational intellectual property and data
- Freed IT resources to pursue other projects
- Increased end-user efficiency

Source: Taylor, 2014.