

Strategic Technology Management in a software company: a 158ltd.com case study

Galin Zhelyazkov

email: galin.zhelyazkov@strath.ac.uk

Design, Manufacture & Engineering Management; Strathclyde University Glasgow

Abstract

Purpose – The purpose of this paper is to assess and document the key aspects in 158ltd.com's success, identify current gaps, and provide direction for future research efforts.

Design/methodology/approach – 158ltd.com's case study and literature on strategic management, technology management and strategic technology management was reviewed.

Findings – The review summarizes significant aspects of 158ltd.com's success, many of which results from its strategic technology management.

Research limitations/implications – This effort is not an exhaustive review of all research published on strategic technology management. This review does not consider unpublished papers, papers in non-academic journals, or papers presented at conferences.

Practical implications – This review is a useful resource for strategic technology management researchers interested in high-technology companies and software companies willing to learn key aspects of 158ltd.com's success.

Originality/value – This paper uses the course material plus supplementary literature of other researchers to measure 158ltd.com achievement against academic theory. The gaps identified and challenges made will serve as a foundation upon which future researchers can build.

Paper type Case Study Analysis

Keywords

Strategic management, technology management, strategic technology management, case study

1. Introduction

Technology is vital for companies success nowadays. It drives value creation and competitiveness of an organization (Sahlman, 2009). The last decade operating environment is perceived as turbulent and complex, and technology has a significant role in productivity, innovations and business model development. Especially in high-tech industries, global

technology-based competition forms a significant managerial challenge for companies (Sahlman, 2010). Technology management is a broad study, but it still has not got its position in the management of an organization in terms of management role next to strategic management, research and development management and production management.

As a result Bititci (1999) argues that the change in competing factors between organizations has made performance measurement systems less relevant and presented a strategic management through performance measurement systems. The pioneer in that area, Ansoff (2007), adds that *"the high-tech companies that will succeed in this environment will fundamentally revise their strategies from the historical technology-driven product proliferation to strategies that control the rate of technological advances, segment markets according to distinctive customer needs, and design products to respond to those needs."*

Linking strategic business management with technology management leads into managerial challenges in enterprises, due to the complexity of both disciplines (Sahlman, 2010).

This paper is going to research the problem of strategic technology management in an agile software company - 158ltd.com. It was chosen because of the author's familiarity with the case as a co-founder and owner of it. The outcome can be used as a basis for future research and building upon, as well as a successful example for companies trying to benefit from strategic technology management.

Software companies are considered to be most innovative and competent in terms of introducing technology and strategic management. Therefore a case study of a rapidly growing company in Europe will be used to illustrate the process.

The section following this introduction will position this paper's research next to the existing related research work. Section three reports on research methods. A case study in 158ltd.com will be shown after. The outcome will be presented in the results and discussion section. Finally, a conclusion will be drawn, followed by the cited sources.

2. Related Research

There are three topics, which are of interest for this paper. This section will present definition and research done on them briefly.

1. Strategic Management

In order to answer what is strategic management we need to understand what company strategy is. There are couple of definitions, but for the purpose of this paper we will consider the one given below.

Company's strategy is defined by Chandler (1962: 7) as *"determination of the basic, long-term goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for those goals"*.

In that sequence of thoughts strategic management is concerned with the company's initiatives taken by the management, to create, enhance and sustain its capabilities regarding its environment, and to reach the company's objectives (Ansoff 1979). Bititci (2010) gives the most explicit one by saying *"strategy is.. A continuous process... that facilitates actions to emerge as a result of strategic conversation... by focusing the organization on priority issues... through business rules... thus embedding strategic thinking at all levels... and empowering people and teams to operate independently within given boundaries"*

Just for comparison another definition found in Sahlman *et al.* (2010) study says that, amongst

strategic management scholars, the implicit consensus definition for strategic management is: *“The field of strategic management deals with the major intended and emergent initiatives taken by general managers, on behalf of owners involving utilization of resources, to enhance the performance of firms in their external environments”*.

2. Technology Management

Technology Management has become a very important part of companies success during the last decades. It helps the business to manage its technology for competitiveness and business success though linking *“engineering, science and management disciplines to plan, develop and implement technological capabilities to shape and accomplish the strategic and operational objectives of an organization”* (National Research Council).

Today the technology implementation in companies is spreading globally with full speed and rate. It is affecting every aspect of our lives including the changed way we live and do business (Badawy, 2009). As a result the *“ integration of business and technology is critical to success in today’s environment of stiff competition, changing social values, and fast development of new technology. Success in integrating these functions will depend on a corporation’s ability to recognise that the effective utilization of human resources may be the only strategic advantage of a business or corporation...”* (Bhala, 1987). It has been widely agreed, however, that the rapid application of technologies of all kinds in the modern manufacturing industry has brought about management issues not previously encountered.

Finally all these aspects of technology management are grasp in a brief, but explicit definition by Badawy (2009), which will be used for the purposes of this paper. Technology management is a *“process of effective integration and utilization of innovation, strategic, operational, and commercial mission of an enterprise for gaining competitive advantage”*.

3. Strategic Technology Management

Technology management was enriched when linked to strategic management during the 80’s by several authors (e.g. Bhalla 1987, Ansoff 1987, Betz 1993). The result - Strategic Technology Management (STM) was employed to provide solution for managing ambiguity, complexity and business dynamics that are caused by technology (Sahlman, 2010).

Liyanage (2010) argues that common strategic management activities should concentrate on business and product aspects of the organization. This statement is supported by Sahlman (2010) definition saying *“Strategic management of technology is planning, organizing, leading and controlling of technological activities, interacting with company’s skills to apply knowledge, structures, resources and socio-economic environment, to contribute to formulation and execution of the company’s basic, long-term goals and objectives, and adoption of courses of action and the allocation of resources necessary for those goals”*.

The three subsection gave brief description and definition of the terminology that will be used for the purpose of this paper during the case study and its conclusions.

3. Methodology

This section is used to describe the process of preparing and collecting data. Different data was

collected to obtain information, to keep on record, to make decisions on important issues and to pass the information on to others. The process of data collection took place early in the company history since the author is its co-founder and owner, and can be formalized as a data collection plan, which contained the following activities: literature study, interviews and company documentation.

1. Literature study

The literature study was the first action token in order to obtain the theoretical background needed for this research. 13 articles on strategic management, technology management and strategic technology management were read, next to the course materials. This study gave a broad overview of the problem, starting from importance of technology management in global markets, going company strategy and impact on business and concluding with the affect of strategic technology management. The relevant findings were collected and summarized.

2. Interviews

The study comprised of three interviews with the co-founders of 158ltd.com used as an introduction to the problem. These were open question interviews, which were transcribed later on.

3. Company documentation and reports

Access to the 158ltd.com's documentation were provided at the beginning of the research. The documentation provided information on sales reports, business plan, design documents and business strategies.

4. Case Study “158ltd.com”

This section discuss the strategic technology management of 158ltd.com - web design and software solution company. 158ltd.com is one of the most attractive and innovative IT companies on the Bulgarian market. Following the standards and way of work of Western Europe, combining it with the Bulgarian traditions, 158 Ltd has develop rapidly and just for 3 years has tripled its profit, doubled its employees and expand to five new European markets.

1. What is 158ltd.com

158ltd.com's basic activity is developing and designing software applications either for the web or mobile devices like iPad, iPod, Android, etc. Its team, consisting of ambitious and creative professionals, is motivated to prove its reliability, creative approach, aspiration for growth and the ability to build and sustain long-term partnerships. 158Ltd.com pursuits its own style which combines professionalism, individual approach, unique ideas, mixture of intellect and constructive intuition, when realizing the ideas and a maximum comfort in the communication with clients.

The two factors in a product manufacturing are: *complexity* and *uncertainty*. They are also applicable for software products. Depending on those two, products fall into four categories illustrated in the table below (Bititci, 2010). To conclude 158ltd.com's products fall in the top left corner of the table, because they have high complexity and high uncertainty.

	High Complexity	Low Complexity
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High Uncertainty	Fitness for purpose timeliness Example: - aerospace - shipbuilding Key competences: - Product design - Construction	Timeliness / Flexibility Example: - cosmetics - textiles Key competences: - Time To Market - Supply flexibility - Product design
Low Uncertainty	Value for money Example: - automotive - white goods Key competences: - Product quality - Supply flexibility - Efficiency	Price Example: - simple components - stationary Key competences: - Manufacturing - Logistic productivity

2. Principles of work

Principles of work are guiding the working process are considered highly important for the management. The main principles of our work at 158ltd.com are:

- Keeping a high qualification and preciseness in the work as a result of the versatile experience and specialization of the team
- Propriety, loyalty and ethic in the human and professional relations
- Keeping the deadlines negotiated with the clients
- Individual approach for every situation

One of the key success factors of 158ltd.com is relation with customers. Each client receives special attention, competent information and the best solution developed according to their requirements and needs.

3. Mission

Mission is a must to have for an organization, because it describe the company's purpose and goals willing to achieve in long future (Ates, 2010). The 158ltd.com's mission is:

"We are orientated to our clients and their needs as our global purpose is to exceed their expectations, to change the stereotype of the standard execution, to generate and perform the original ideas stimulated from the market, to be innovators and to be an example for everybody. We are trying to gain a leading position on the market with our individuality and creativity. Therefore, in the development of 158 Ltd we have a stake in our knowledge and experience, enthusiasm and creativity and also the faith that the business can and should be a way of communication, exchange of thoughts and ideas and a stimulus for elaboration."

4. Vision

Vision is vital for any organization because it gives direction to future (Ates, 2010). The 158Ltd.com's mission is:

"We want for our company what we want for ourselves – growing power and potential for development, confidence and resources for starting challenges on a larger scale, prestigious and dignified name – symbol of innovation, initiativeness, responsibility and professionalism."

5. Values

Values define the acceptable interpersonal and operating standards of behaviour within a company. They govern and guide the behaviour of individuals within the organization (Ates, 2010). 158Ltd.com's values are:

"We are certain that there is no achievement which is not a result of patience and stubborn work. What defines the direction of life is not what you do, but how you do it. That is why our rule is to do the best we can in the things we are best at. We are convinced that in life we find only what we search with all our hearts. Therefore, we always devote ourselves to the job we do.

We do know that failure will never catch us if our decision to succeed is firm enough. That is why we hold on it until we succeed.

We believe we can achieve our goals."

6. Company purposes

Company purposes are the desired outcomes of the organization's various activities. The company goals of 158Ltd.com are

- To reveal new perspectives in the users
- To build an atmosphere encouraging the development of the talent and fulfilling the ambitions of our staff related the company
- To keep the best quality standards in all of the activities
- To gain new clients with every new contact
- To optimize its resources so that we could ensure high operative effectiveness

7. History

01.2008 The idea of 158Ltd.com was born by three relatives specialists in the areas of sales and marketing, commerce and information technology. Their objective was to penetrate and gain above 80% ownership in certain market niches in Bulgaria. Those markets were transportation (for example: bus tickets and tourist holiday packages sales), news and media and social networks. For each of these a projects was created and in cooperation with IT University in Gothenburg (Gothenburg, Sweden) the requirements and analysis phases were carried out. These projects were given to 3 groups of students (19 in total), who were supervised by one of the founders.

07.2008 The company 158 Ltd. is registered as Limited Liability Company in 2008 in Varna, Bulgaria by the three shareholders. The services of the company were separated in three directions:

- Reconstruction and redesign – correction and new development of already active products and applications.
- Software Development – For the first 6 months, 158Ltd.com has produced over 15 web based applications. For example, a pawnshop management software in accordance to the latest law, also an unique route planner system and business catalog. Another popular application of the company unites a large amount of customer electronics, sorting and comparing them

by brands and prices. Its social effect was noticed and commented by leading publishers. The leading strategy of the company was to offer functionally innovative products with social element in particular, which are headed for a large target of users.

- Advertising – along with the enlarging portfolio of software products, 158ltd.com offered internet advertising combined with search engine optimization (SEO) and a large number of unique visitors in different user groups.

01.2009 an advertisement campaign tool was launched to replace the need of human resource, which by that time was taking orders from customers and setting up the campaigns manually for each website in 158ltd.com's portfolio. The introduction of the tool allow the company to move its focus from ads campaigns to big customers and projects. This was required mainly because for the 158ltd.com's websites to get popular and gain enough market share, simply time was required.

06.2009 158ltd.com was contracted for a period of one year by TomTom International B.V. - the leader in car GPS navigation systems. This was a big project assuring the company financial stability in the time waiting for its portfolio of websites to gain the sufficient unique visitors and customers willing to advertise.

09.2009 a contract with V&D - the biggest retailer in Netherlands was signed to redesign, consult and implement their online shop. That was a project for 6 months and one more big name in the company's portfolio.

Parallel to the big customers and projects, two internal project were carried out, which were extremely important from an strategic technology management point of view. The first one was a bus ticket management tool for transport companies, which was created to support and replace most of the human recourse activities in transportation companies, e.g. booking, scheduling, resellers, affiliate programs,etc. For 158ltd.com it was important companies to adopt such a tool, so its route planner (Bgazpisanie.com) can become reseller of tickets and tourist holiday packages. The tool was bought by most of the transportation companies in Bulgaria and that way 158ltd.com gain 97% market share in that area and huge profit increase.

01.2010 launched a first version of a software development framework. This framework contained a vast predefined set of common customer requirements implemented. That framework was supposed to assure that daily common projects will be done for couple of days and developers instead of programming, will configure projects. As a result the need of expensive senior software developers was not there anymore, so they could be migrated to other bigger projects and their work done by interns.

03.2010 another revolutionary tool was created (Azaret.com). Its purpose was to serve all website owners by providing them with statistics and analytics information, for example ranking in google search results based on set of keywords. That tool has been adopted from webmasters from all around the world and famous publishers wrote articles about it. For 158ltd.com that tool was a way to start selling expensive SEO campaigns to its customers, get new customers and to automate the process, so that setting it takes less than 2 hours, instead of weeks as before.

06.2010 all these achievements required re-branding. Initially the strategy of 158 was to create set of strong web based applications, which have their own brand and reputation,

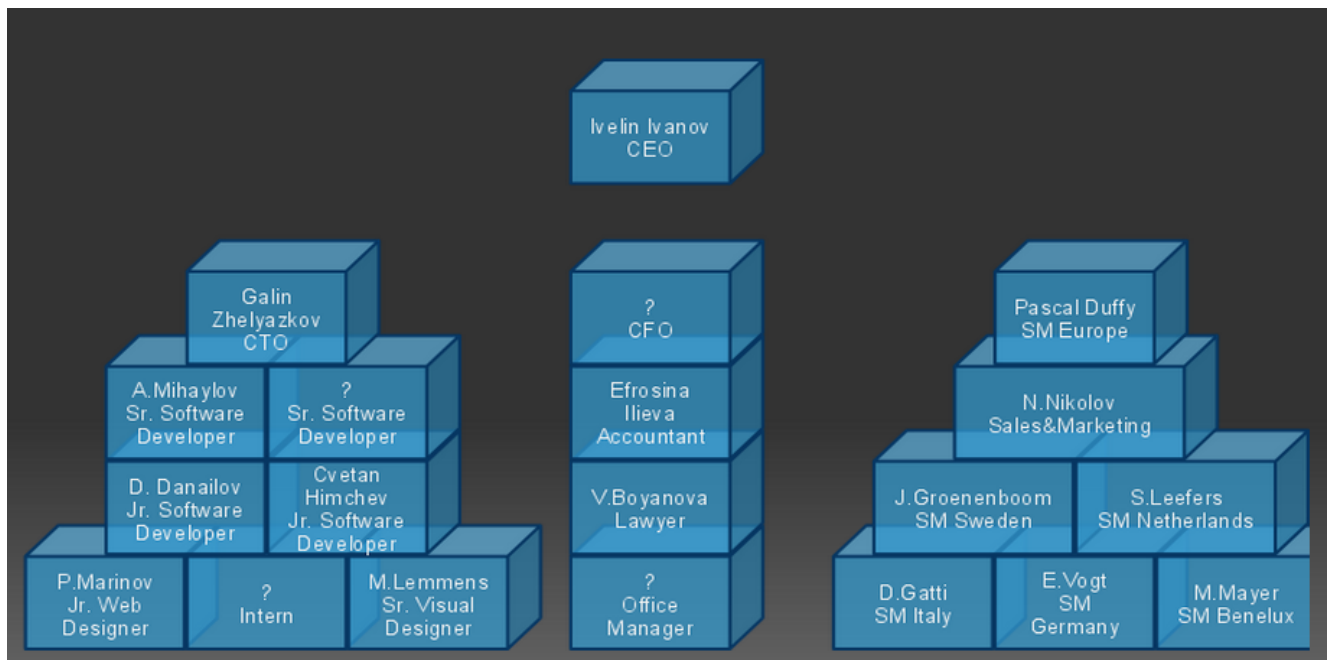
but with the increasing number of private external customers the need of re-branding the mother company has raised. Below there is a comparison: before and after the re-branding process.



09.2010 an e-marketing tool was launched. That tool was fulfilling the strategy plans to create a virtual sales team. Its functionality was simple, a web crawler is constantly going around the net and collect people's emails and then groups them according to various criteria, e.g. age, sex, country, language, interests, etc. Later on that information is used to promote services or products to these customers.

Since the end of 2009 the company started partnership with one of the biggest advertising agencies in Bulgaria. This was a strategic move from the web to full-house advertising. That way 158ltd.com can offer a full set of services starting from branding, business development, technology management and brand awareness and positioning on the market.

The organizational structure is presented in the graphic below:



5. Results and Discussion

From the case study we can see that 158ltd.com is a small size company. Its area of expertise was software development and grew to full marketing and communication management strategy. Its competitiveness derives mainly from the innovative tools the company develops, decreasing the need of human labour in routine operating and focusing it on the real tasks. The company is very agile and its strategy was shifted every eight to ten months.

The big company's portfolio, containing various expertise project gives an evidence of highly skilled employees, but in contrast the radical shift between business models talk about either poor business planning or agility. Anyhow the growth in financial results from the last two years and the expansion on new markets demonstrates success.

As a summary we can see three strategy trends applied at 158ltd.com. The first one creating portfolio of websites with informative content, targeting huge market group of people and selling ads on them. The second one is developing customized software for external customers. And the third one is a combination of the previous two in ratio 50/50. However, in any of those three aspects technology management seems to fully facilitate the process and enhance competitiveness based on automated tasks resulting in higher amount of completed project on a lower cost.

Another aspect of that case study is cooperation between industry and academia. The start up was based on research carried out at an academic institution and was implemented successfully. This can be a result of continuous structured strategy and efficient implementation, because usually the process of monetizing innovation is difficult.

The process of developing tools initially for internal use, later revealing them to the public and commercialize them applied at 158ltd.com, resembles a lot the Google strategy. This might be coincidence, but it can be a pattern for innovative software companies, regardless their size.

As a big pitfall we can consider the initial lack of branding of 158ltd.com. If a company created

innovation in different areas, it should be clear who is driving this innovation and how company brand can benefit from it.

6. Conclusion

The aim of this paper was to present the case study of 158ltd.com and its successful implementation of strategic technology management. Technology strategy is one of the key elements in strategic technology management. The linking between company strategy and technology management has increased the competing power of 158ltd.com and as a result its profit, employees and markets share increased.

The technology facilitate the process to migrate from developing customized software products to configure a software product based on an in-house developed software framework (API). As a result high skilled employees were replaced by junior level or even interns, which lowers production cost.

The strategy of 158ltd.com was evolving and changing, mainly based on events like sales reports, early performance report and financial reports as well as the micro and micro economical framework in the markets where the company is operating.

Based on the good results of strategic technology management implementation at 158ltd.com, we can assume that impact on organization in different business area may also be beneficial. To what extend, depends if the process is seen as a one target goal or a change in the whole company's thinking. This conclusion is supported by Sahlman (2010), saying "technology strategy serves as the basis for business strategy and competitive advantage".

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