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Strategic Planning and Implementation of Balanced Scorecard in a Software Company*

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Özet Türk yazılım firmaları günümüzün küreselleşmiş ve çabuk değişen pazar koşullarında büyük zorluklarla karşılaşmaktadır. Son zamanlarda bu zorlukların üstesinden gelebilmek için stratejik planlama ile performans ölçüm ve denetleme sistemleri hayati önem kazanmaktadır. Stratejik planlama, yalın bir tanımlamayla, vizyona ulaşılması için atılması gereken adımların belirlenmesidir. Çalışmada çevresel ve içsel değerlendirmeler literatürdeki araç ve teknikler ile uygun bir şekilde yapıldıktan sonra uygun yöntemler aracılığıyla stratejiler belirlenmiştir. Belirlenen stratejileri hayata geçirmek ve performans ölçümü için 'dengeli ölçüm kartı? tekniğinden yararlanılmıştır. Stratejik yönetim aracı olarak metodolojik uygulanması oldukça zordur ve özen gerektirmektedir. Küçük ve orta ölçekli yazılım firmalarının dengeli ölçüm kartı ile stratejik planlama bileşik çalışmalarında bu çalışmanın sonuçlarının yararlı olacağı kanısındayız.

Anahtar Kelimeler stratejik planlama, dengeli ölçüm kartı, yazılım sektörü

Abstract Turkish software companies are facing massive challenges to survive in today's global and volatile marketplace. Strategic planning, performance measurement and control systems have recently become crucial in overcoming these challenges. Strategic planning simply stands for defining the moves to achieve vision. Environmental and internal assessments are activities which must be conducted prior to defining successful strategies. Then strategies are identified with suitable techniques. In order to translate the strategy into action and measure the performance, the 'balanced scorecard' (BSC) technique is used. Although balanced scorecard is a significant strategic management tool, its application is a challenging and demanding issue. In this study we used a methodological approach for putting balanced scorecard into action. We believe that small and medium sized software companies from this study for strategic planning and balanced scorecard studies.

Keywords strategic planning, balanced scorecard (BSC), software industry

Introduction

In today's global and complex business world, strategic planning has become a crucial issue for organizations. Briefly, strategic planning is the process of defining the actions, allocating and aligning the human, material and capital resources to achieve the vision of the organization. Since all organizations are unique in terms of their resources and capabilities, strategic planning studies vary according to these differences. Nowadays the concept of strategic planning is affected by globalization, technology and information

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systems. Most studies take into account the topics such as stakeholder expectations, organizational culture and information systems. Moreover, implementation of strategies is highlighted topics of strategic planning studies.

In recent studies, performance measurement and organizational alignment techniques have gained significant attention from both academic and business communities. New tools and techniques are being introduced about these topics. One of the popular performance measurement and organizational alignment tools is 'Balanced Scorecard,' developed by Kaplan and Norton in the early 1990's. It has four perspectives: financial, customer, internal processes, learning and growth. Balanced Scorecard with its perspectives helps provide a comprehensive view of a business, which in turn helps organizations act in their long-term interests.[1] Another concept is the 'Strategy Map' that links strategic objectives in cause-effect relations with the Balanced Scorecard perspectives. With the Strategy Map, strategies are visualized so the relation between perspectives and objectives can be seen in cause-effect relations.[2] Anyone in the company who looks at Strategy Map can see his/her position and contribution to organizational goals.

This study aims to develop a strategic plan for a software company and provide corporate sustainability with Balanced Scorecard approach. The software company is located in Turkey. Recent declarations address that Turkish software industry has been facing serious challenges including lack of strategic planning studies.[3] Strategic planning in this study begins with a broad assessment of environmental conditions for the purpose of crafting environmental opportunities and threats. Then, internal conditions are analyzed in details with certain tools and techniques. Strengths and weaknesses are determined following environmental assessment and internal analysis. Next strategic options are derived with specific technique and tools. Finally for aligning the company to strategy and monitoring the performance of the organization, the Balanced Scorecard approach is

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1. Robert S. Kaplan and David P. Norton, "The Balanced Scorecard—Measures that Drive Performance," *Harvard Business Review*, *70/1* (January-February 1992), pp.71-79.
2. Robert S. Kaplan and David P. Norton, *Strategy Maps: Converting Intangible Assets into Tangible Outcomes* (Boston: Harvard Business School Press, 2004).
3. "Küresel Krizin Ardından Türk Bilişim Sektöründe İşini Kaybedenlerin Oranı %60," retrieved from http://www.turk.internet.com/portal/yazigoster.php?yaziid=25894, on 5.1.2011; "Bilişim Sektörüne Göre İş Ortamı Kötü Ama Düzelecek," retrieved from http://www.bilgicagi.com/Yazilar/2243-bilisim_sektorune_gore_is_ortami_kotu_ama_duzelecek.aspx on, 5.1.2011; "AR-GE'nin Olmaması, Bilişim Sektörünün Geleceği için Tehdit," retrieved from http://www.bursaekonomi.com.tr/default.asp?page=newsopen.asp&opennews=551&qmshow=226, on 5.1.2011; "TUBİDER'in Kuruluşunun 10.Yılı," retrieved from http://www.tubider.org.tr/index.php/component/content/article/3-sicak-haber/77-tubider-onuncu-yltoplants.html, on 5.1.2011; Saadet İyidoğan, Z. Yeşim Gürbüz and İrem Zeyneloğlu, *Türkiye'de Yazılım Endüstrisinin Yapısı ve Gelişimi* (Istanbul: Istanbul Ticaret Odası Yayınları, 2006); TÜSİAD, *2008 Yılına Girerken Türkiye Ekonomisi* (Istanbul: TÜSİAD, 2007).

used. In this study, we assume that many small manufacturing companies are not able to reach the experts of Balanced Scorecard or universities. Furthermore, many SME's do not want to cover expenses of external consultants since they do not believe in a return. Mainly implementation budgets frighten them. In this study, we have implemented Balanced Scorecard with company's own resources. We believe that the approach used in this study can be applied to most of the small and medium sized enterprises.

LITERATURE SURVEY

There are thousands of works done in the literature about strategy. The common point is that strategy is a plan of actions that are designed to achieve particular objectives. In the literature it is also agreed that strategy for an organization is unique, since all organizations are unique in terms of their resources and capabilities.[4] Many researchers demonstrate that strategy making is a very complex process. It involves the most sophisticated, intuitive elements of human thinking. Strategy involves not only the detailed analysis of complex data, but also broad conceptual knowledge of the company, industry, market, customers etc.[5] In some situations personal perceptions may differ in some ways. For example, looking at the same picture two different persons can have different perceptions. At the same time, a person can see great opportunities in a market while the other person can see only negative aspects of the market. Defining a strategic position is a crucial part of determining a strategy. Strategic position determines where a company stands on a specific market, which customers can access the company, what kind of products or services the company serves. Creating difference is a very important part of a strategy. Strategy is about choosing different set of activities to deliver a predefined value. It is very important to monitor the rivals' activities for companies, too. Deciding which activities to do or not to do by evaluating and forecasting rival's activities can provide several advantages to companies.[6] Rue and Holland demonstrate that, strategy describes the way that organization will pursue its goals, given the threats and opportunities in the environment and the resources and capabilities of the organization.[7]

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4. Leslie W. Rue and Phylis G. Holland, *Strategic Management Concepts and Experiences* (New York: McGraw-Hill, 1986).
5. Henry Mintzberg, "The Fall and Rise of Strategic Planning," *Harvard Business Review, 72/1* (January-February, 1994), pp.107-114.
6. Avinash K. Dixit and Barry J. Nalebuff, *Thinking Strategically: The Competitive Edge in Business, Politics, and Everyday Life* (New York: W. W. Norton & Company, 1991).
7. Leslie W. Rue and Phylis G. Holland, *Strategic Management Concepts and Experiences*.

Strategy execution is as important as strategy itself. An excellent strategy without a successful execution does not mean anything. With performance measurement system, an organization can get the feedback needed to guide the planning studies. The measurement of process efficiency makes all changes on process performance visible. Visibility provides accountability, makes real data based incentives possible, and supports better and faster budget decisions.[8] All these reasons make the usage of performance management systems inevitable.

In the past, companies were not completely aware of nonfinancial assessment factors, therefore their main focus area was the short term financial measures. The nonfinancial factors like corporate culture, learning and growth and information capital or long term financial expectations of stakeholders were on the second hand. In today's complex and volatile market conditions, classical financial measures are not adequate. Since most of the organizations are gained expertise in classical financial measures, intangible assets provide major competitive advantage. So their performance measurement is of great importance. One of the tools developed for measuring performance of intangible assets is the Balanced Scorecard. Kaplan and Norton introduced the Balanced Scorecard technique as a performance measurement framework to give managers and executives a balanced view of organizational performance.[9] It is a strategic planning and management tool that is used for aligning business activities, departmental objectives to the vision and strategy of the organization, improve internal and external communications, and monitor organizational performance.

The Balanced Scorecard method comprises four perspectives: learning and growth perspective, internal processes perspective, customer perspective and financial perspective. The perspectives foster a balance between short and long term objectives, qualitative and quantitative measures.

There are various Balanced Scorecard implementation approaches in the literature such as Letza's six step approach, Brewer's four step value dynamics framework for translating strategy into measures, nine step approach for Balanced Scorecard implementation of Lehman et al., six step approach of Papalexandris et al., and eight step approach for putting Balanced Scorecard into action of Fernandes et al.[10] There are also common

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8. P. Arveson, *Three Tier Improvement Process* (Balanced Scorecard Institute, 1998), retrieved from the internet on April 22, 2008.

9. Robert S. Kaplan and David P. Norton, "The Balanced Scorecard—Measures that Drive Performance," pp.71-79.

10. Stephen R. Letza, "The Design and Implementation of the Balanced Business Scorecard: An Analysis of Three Companies in Practice," *Business Process Management Journal, 2/3* (1996), pp.54-76; Peter Brewer, "Putting Strategy into Balanced Scorecard," *Strategic Finance*, *83/7* (January 2002), pp.44-52;

points in Balanced Scorecard implementation approaches. The process mostly begins with planning the project, gaining the commitment of management and workers and selecting the implementation team. Then the internal and external assessments are conducted, vision and strategies are clarified. Afterwards strategic objectives are identified and strategy map is designed. The process continues with selecting performance measures, selecting measurement frequencies and defining measure owners. Then strategies are developed and budgets are determined. Finally for automation, IT solution for the project is selected and re-evaluation plan is prepared for the project.

METHODOLOGY

The strategic planning studies begin with a broad assessment of environmental conditions. Prior to environmental assessments, opportunities and threats are crafted. Then internal analyses are conducted with certain tools and techniques. Strengths and weaknesses are determined according to the findings of analyses. After the internal and external assessments are conducted, strategic options are derived and clarified. Finally for aligning the company to strategy and monitoring the performance, the Balanced Scorecard technique is used.

ENVIRONMENTAL ASSESSMENT

PEST analysis is used for analyzing external factors those have influences on the company. PEST analysis stands for political, economic, social, and technological analysis. It gives a certain overview of the different macro environmental factors that the company has to take into consideration.

According to laws and regulations of Turkey, a certain number of tax exemptions and financial supports are provided to companies which have research and development activities. There are parental authorities as national organizations like TUBİTAK and

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Clemens Lohman, Leonard Fortuin and Marc Wouters, "Designing a Performance Measurement System: A Case Study," *European Journal of Operational Research*, *156* (2004), pp.267-286; Alexandros Papalexandris, George Ioannou, Gregory Prastacos and Klas Eric Soderquist, "An Integrated Methodology for Putting the Balanced Scorecard into Action," *European Management Journal*, *23/2* (April 2005), pp.214-227; Kiran J. Fernandes, Vinesh Raja and Andrew Whalley, "Lessons from Implementing the Balanced Scorecard in a Small and Medium Size Manufacturing Organization," *Tecnovation*, 26/5-6 (2006), pp.623-634.

KOSGEB-Technology Development Centers (TEKMER), which provide support and incentives to software industry. There are privileges that are given to faculty members at universities who have shares in science park companies. Export promotion policies bring opportunities from which software companies can benefit. There are several support and incentive schemes for the goods and services exporting companies. Furthermore, there are international programs promoting closer cooperation between selected sectors of certain countries. One of the most widely known programs is the Frame Program 7 (FP7) of the European Union. This program offers many kinds of support and inventives. Especially, there is a rising attention to health software industry. Many countries evaluate the sector as strategic. National and international funding organizations address the sector.

In recent years, Turkey had a stable economy with single digit inflation rates. This stable economy influenced many sectors positively, including software industry. Turkish software industry has shown considerable improvement in both domestic and foreign markets. Although Turkish currency—Turkish Lira (TL)—gained strength against foreign currencies, stability of its value has created trust of the country, contributing to the reputation of Turkish firms in foreign markets. Software export values had shown parallel behaviour with this growth and have varied among countries on annual base. The Middle East countries—Iraq, United Arab Emirates, Iran, and Saudi Arabia—are important countries for Turkey's software exports. The countries whose economies are mostly depended on petroleum had economic growth further than expected in recent years due to increased petroleum prices. Economic growth will probably effect the investments and expenditures in these countries and it can be expected that their software demand will likely increase. Another potential for software exports has emerged in Central Asia. Countries like Kazakhstan, Azerbaijan and Kyrgyzstan have been new software export destinations as these countries' petroleum revenues rise and economic development continues. These countries can be rated as potential countries for Turkey's software exportation.[11] Moreover, Turkey's geographic position is an advantage for exportation to these countries.

Turkey's economy, however, is open to global economic instabilities. Global economic crisis had many direct or indirect effects on Turkish economy in the past, like sharp increases in petroleum prices. On condition that these situations repeat in the future, TL may lose its strength. These situations pose a threat on the strength of TL

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11. T.C. Başbakanlık Dış Ticaret Müsteşarlığı, İhracatı Geliştirme Etüd Merkezi [İGEME], "İhracat," retrieved from http://www.igeme.org.tr/, on May 2008.

against foreign currencies. TL's loosing strength against OPEC countries' currencies may cause to lose market in those countries.

Software industry is an industry based on creativity, skills and human intelligence. The most important resource of the sector is work force. Data about workforce availability, supply and demand in the sector is not sufficient. In many publications it is reported that there is a gap between sector needs and present workforce. Most of the companies are facing challenges finding skilled workforce. However, widening of internet network in the country and especially in educational institutions, growing computer and software use in schools, young population's interest in computer and software skills, and increasing number of related departments in universities create optimistic expectations for the near future. According to a survey done by the Turkish National Statistics Institute (TUİK) in 2008, the age range that uses internet at the highest level is 16-24, and among this age group approximately 47% of females and 70% of the males use computers.[12]

In today's highly competitive and volatile global markets, small and medium sized enterprises frequently need to acquire technology from abroad or to enter into joint development arrangements with foreign firms which have complementary know-how. There are international business networks aiming at these activities like European Business and Innovation Centers Network. They provide services such as company databases. Any company can look for any of the interested company features, technologies and etc., in these databases.

MARKET ANALYSES

For the market analysis, Porter's 'Five Forces' model is used. Five Forces analysis is a framework for the industry analysis and business strategy development. It uses five forces that determine the competitiveness and, therefore, attractiveness of a market. These forces are: the threat of substitute products, the threat of established rivals, the threat of new entrants, the bargaining power of suppliers, and bargaining power of customers.[13]

In Turkish software industry, despite numerous firms that produce management systems there are few firms that produce innovative products based on research and

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12. Türkiye İstatistik Kurumu [TUİK], "Individuals Using the Computer and Internet in the last 3 months by Age Groups," retrieved from http://tuik.gov.tr/PreIstatistikTablo.do?istab_id=42, on July10, 2008.
13. Michael E. Porter, *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York: Free Press, 1980).

development. It might appear that industry has two different aspects. On one side there are researches and development based innovative products, and on the other side there are information management systems.

THREAT OF ENTRY: Entering to the software industry entering is very easy. Investment costs are very low. There are governmental support and incentives for the development of the industry. The effects of the ease of entering to industry can be seen among health-related software producer companies. Innovative products in the health related software industry requires research and development facilities. Moreover, it requires multidisciplinary studies among health sector experts, researchers and software developers. Hence, entering to the sector requires considerable investments but we can say that threat of entry is moderate, if support and incentives and potential industry earnings taken into account.

THREAT OF RIVALRY: Companies in the health software industry are mainly small regional companies. There are few companies that operate in international area since the support services and language problems are crucial aspects of health industry. There are national software solutions that are specially developed for specific areas. There is a fierce rivalry among the companies those produce information management systems. Although there are numerous firms that operate in health software sector, number of companies that invest on research and development facilities is less. Current research and development activities focus around innovation. Product differentiation is at a very low stage. The industry offers potential earnings in research and innovation, since there are not much product types in the industry. We can say that rivalry in the industry is at low stage.

THREAT OF SUBSTITUTES: The threat of substitute products among health-related software producer companies has two different aspects in Turkey. On one side, there are many information management systems; so the threat of substitutes is very high. On the other side, there are researches and development-based innovative products. There are fewer or no substitutes for these products. As looked from this aspect, threat of substitutes is at a low stage.

THREAT OF SUPPLIERS: There are a large number of suppliers for the basic materials needed to produce software. Thus, the suppliers do not pose a threat. We can say that the threat of suppliers in the industry is low.

THREAT OF BUYERS: Domestic economy and personal attributes play role at budgeting decisions. For privately owned hospitals, rivalry is very important so they pay more

attention to innovative products. The health sector employees especially people who have positions of authority—like administrators and managers—are not completely aware of the benefits of software products. These people must be informed about the new products and enhancements on a continuous basis. As thought all of these aspects we can say that threat of buyers is moderately high.

INTERNAL ANALYSIS

The company chosen for the study is a small Turkish R&D software company which develops, installs and sells software in health informatics industry. It specifically operates in areas such as medical software, consultancy and training. It has offices located at well-known science parks in Ankara. The projects that are carried out up to date in the national and international arena have received support from national and international funding organizations. The company had forty employees at the time of this study. The company's professional team consists of medical doctors, biologists, engineers, international relations experts, project managers, security and web-based software team. Moreover, company has many consultants from universities in related fields. Company objectives are customer satisfaction, profit maximization, market leadership and growth, positive contributions to lives of individuals, innovation and creativity at all levels of production and services.

STAKEHOLDER ANALYSES: The main stakeholders of the company are customers, employees, consultants, shareholders, local authorities and industry partners. The expectations of shareholders are verified by personal interviews. They mainly expect to earn money, grow business, provide opportunities for employment and improve life standards through products and services they provide. Employees' expectations are determined by personal interviews. They mainly expect to improve themselves, a suitable compensation, pretty work environment and feel to be safe and secure. Consultants' expectations are determined by focus groups. They mainly expect to improve their recognition in academic circles through academic publications, a suitable compensation and close relationships with business circles. Customers' expectations are determined by focus groups. They mainly expect high quality products, ease of use, training, and full consultancy services after sales. Local authorities utter their expectations on all the occasions like incentive programs, tax deductions, etc. They mainly expect from companies to stimu-

late regional development, create job opportunities, create innovative products and make contribution to competitiveness in local and global areas. Partners' expectations are determined by interviews with the partners that projects are executed with, nowadays. Their expectations from the company are to act within ethical codes, carry out promises and please customers with the quality of products and services.

VALUE CHAIN ANALYSES: To analyze the activities through that companies create value, it is useful to model the company as a chain of value creating activities. In the literature there are many generic value chains.

Porter's value chain is one such value chain. Porter divided value creating activities into two categories: primary activities and support activities. Primary activities are directly associated with the manufacture and distribution of a product.[14] Support activities are the activities those assist a firm in accomplishing its primary activities. Value chains are sector specific due to the specific activities of that sector. Software value chain is one such value chain. Since the company is a software company it is useful to analyze the company with standard software value chain approach. Though software value chain is a very useful tool for evaluating the activities of a software company, it ignores the support activities that Porter's value chain proposes. For the purpose of analyzing the company completely, the support activities that Porter's value chain proposes were also analyzed.

PRIMARY ACTIVITIES: According to standard software value chain, primary activities of the company are software development, software documentation, software packaging, marketing and sales, consulting, implementation and integration, training and support, and application management.[15]

Software is developed by the expert staff of the company. Critical success factors of this phase are functionality requirements must be met, high software quality must be achieved, time to market must be short and development costs must be minimized certain standards.

Software documentation is conducted during software development phase. Company stores the source code. Necessary modifications are made by the firm. Secondly company uses electronic documentation explaining the software code within the

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14. Michael E. Porter, *Competitive Strategy*.
15. Dorit Spiller and Thorsten Wichmann, *Floss Final Report – Part 3: Free/Libre Open Source Software—Survey and Study Basics of Open Source Software Markets and Business Models* (Berlin: Berlecon Research GmbH., July 2002), retrieved from: http://www.berlecon.de/studien/downloads/ 200207FLOSS _ Basics.pdf, on May 10, 2008.

software enabling interactive studies on codes. The document explaining the functioning of the product is also created in this phase. It includes the information related to the certain functions and usage of the product.

Software packaging is done by software developers of the company. Since software developers have experiences in this activity, it can be done in predefined time periods.

Marketing and sales is committed through four main channels. These are electronic sales, publications, personal interviews and order processing. Publications are the distinctive aspect of company's marketing and sales activities. Company has consultants at reputable universities who publish findings of researches done in the company. These publications' reading and evaluation by academics and health care communities extends the brand recognition of the company. Despite these marketing and sales activities, company believes sales are not at the desired level. Recently, company has started to focus on this topic, and wants to take corrective actions in order to increase sales.

Consultation is a critical activity for the company. Firstly, need assessments according to scope of the project are conducted, and then the appropriate staff is charged in order to make successful consultation. There are certain standards in various units of health organizations. If there is standard evaluation study in fields (health organization's units), company's consultants play active roles in this phase.

In the implementation and integration phase, the software is adjusted to customer needs by suitable modifications such as changing the software code, adding additional modules and if integration with other systems is required, it is done. The training activities in the company are corporate training, on-site training, evaluation of training and allocating user documents. During all process, reports are recorded for each activity. Training activities are mainly conducted by the people who actively participated in the product development phase.

Support activities have been paid great attention in the sector. Support contracts are made with customers for a long time, such as two to five years. Support activities of the company can be classified into two groups: first group being responsible from routine maintenance and support, second group is responsible from call center, web maintenance and support. As routine maintenance and support company experts visit the organizations that company sells products on a regularly basis according to time mentioned in the contract. As call center support, customers can call for support during office hours or make support requests online. Any of the support employees can help by phone, online or if needed support employees go to the company.

Application management is conducted to ensure that software is performing in the way it was desired to perform. Company permanently checks the latest enhancements about the field, national and international standards, and changing needs. Company performs this action by updating software to a newer version completely or it adds new modules to product in order to respond to continuously changing and thriving needs of the sector.

SUPPORT ACTIVITIES: According to Porter's value chain, support activities include infrastructure, technology development, human resource management and procurement. Infrastructure activities in the company include planning, finance and IMS activities. There is a finance director in the company and company has an external financial advisor. Planning activities can be classified as short term and long term plans. Planning activities are conducted by the top management of the company.

IMS is the management information system of the company. It is developed by the company itself. IMS has many deficiencies since it is very new and therefore cannot respond to most of the needs of the company.

Human resources activities include recruitment, performance measurement, and training. Recruitment is done by the related department and general manager. Performance measurement is done by directors. They follow the performance of the staff by their own observations. There is not a structured method for performance measurement. Training methods can be classified as on-the-job training, workshops and sending employees to congress and seminars. Workshops are conducted on a continuous basis. By this way, people can benefit from their colleagues' know-how and experiences.

Important activities at procurement process are determining requirements and determining the suitable supplier. The activities in procurement are not considered among the critical activities because prices do not vary too much among suppliers.

Technology development is among the most important activities of the company. With high skilled workers and consultants, company continuously monitors the new products and techniques developed all over the world. Most of the projects are implemented after broad analysis and research phases. Company has self-trust in this field. Most of the products are produced after a suitable project development phase and the company's R&D and innovation potential has been supported by national and international funding organizations in most of the projects. On some occasions company can implement projects with partners benefiting from their technologies.

ANALYSIS OF STRENGTHS AND WEAKNESSES: The value chain activities of the company are analyzed in details. For broad analysis, fundamentals of resource-based view and the VRIO analysis are used. According to the resource-based view, firm resources are all assets, capabilities, organizational processes, firm attributes, knowledge, and so forth that are controlled by a firm. VRIO framework is structured with four questions to be asked about activities a firm engages in: the question of value, the question of rarity, the question of imitation risk of products, and the question of organization.[16] If a resource or capability is valuable, rare, costly to imitate and exploited by the organization then it is strength and sustainable distinctive competence, if a resource or capability is valuable then it is strength. In our analysis we first listed the critical resources and capabilities of the firm and then evaluated these resource and capabilities through the VRIO framework. In order to prevent limitations of subjectivity, comments from company management were received during analyses.

One of the organizational capitals company owns comes from its culture. All of the employees are aware of the company's mission and vision. This is likely to be valuable rare and costly to imitate resource and sustainable distinctive competence. The company is organized to take advantage of this resource.

Being in an information network with universities and research centers is a very critical resource for the company. The company has employees who are in academic circles and most of the company's consultants are academicians. This plays an important role on the creation of linkages between the company and universities. Company keeps track with the latest enhancements and developments in health informatics area. This is likely to be valuable, rare and costly to imitate and thus a sustainable distinctive competence.

As mentioned before, company recruits consultants from reputable universities. These consultants publish scientific articles about directly company's products which bring along new techniques in medical area, or indirectly deal with company's products in their publications. This is very important for the company for introducing its products to target people or institutions. This is a valuable, rare and costly resource to imitate and is exploited by the organization itself for sustainable competitive advantage.

The company has a very high potential for differentiated research and development. With high skilled employees and consultants, the company continuously follows

16. Jay B. Barney, *Gaining and Sustaining Competitive Advantage*, 2nd edition (Upper Saddle River: Prentice-Hall, 2001).

up new products and techniques developed all over the world. New project ideas are continuously been evaluated in the light of the foregoing. These proposals are evaluated by the company experts and the ones that have high economic potential directed to project development phase. Thanks to know-how from previous projects, the evaluation period is continuously shortening. With these aspects, this capability can be thought as valuable, rare, costly to imitate and exploited by the company hence a sustained competitive advantage.

Management team of the company has known each other for a very long time which results in a strong team spirit and trust. Managerial decisions are made fast and smoothly. With these aspects this is valuable, rare and costly to imitate capability. It is exploited by the organization. It can be thought as a sustained competitive advantage.

Company pays great attention to education of its employees by letting them to attend M.S. and Ph.D. programs during office hours. As a recruitment policy, company prefers to recruit highly educated people. As a result of these policies, more than half of the company's employees have M.S. and Ph.D. degrees. These people have also conveyed their success in academic areas to their business life. We can say that capabilities of the company's employees are very high. It is a valuable and rare resource and can be thought as strength.

The company has a project-based organization structure. When a project is implemented, the project members' tasks are defined clearly. Cross relations between employees in these projects enable quick communication and multidisciplinary studies. This is a valuable capability for the company. The company has offices in science parks in Ankara. There are grants and tax exemptions for companies if they are located in science parks. With these aspects this is a valuable resource. It can also be thought as strength.

When we come to the weaknesses, the most conspicuous aspect is marketing. Company does not have a structured marketing department. There are no specialized professionals who work in marketing. Moreover, the number of people that conduct marketing and advertising activities on a continuous basis are not at a sufficient level. As a result the sales are not at desired levels. The Information Management System that company uses is a very new system developed by the company itself. With IMS's current condition it can be said that the company lacks a proper management information system; hence this is a weakness for the company.

Employee turn-over of the company can also be identified as problematic. According to data of the last four years, employee turn-over rate is around 20-25% per year. Drawing down this rate is important for the company. Hence, high employee turn-over rate can be thought as a weakness for the company. With current capacity of the company, the ongoing projects' completion times are about 20 to 26 months which is relatively long for software industry. If a new project offer comes, a decision is made between completing ongoing projects on time by rejecting the offer or extending their completion times by accepting the offer. Due to the current production capacity constraints, we can say that time to market of products is a weakness for the company.

Company does not have clearly settled institutional structure and division of tasks. This causes improper work distribution in the company so some of the works are never done or done lately. Hence non-institutional structure is a weakness for the company.

STRATEGY DEVELOPMENT: For strategy development in the company three commonly used strategy development tools are used in this study. These are Porter's Generic Strategies, strategy development directions and TOWS Analysis.

Porter's Generic Strategies generate strategies along two dimensions: strategic scope and competitive advantage.[17] Strategic scope concentrates on market size, and competitive advantage concentrates on strengths or core competencies of the firm. Three generic strategies are proposed: differentiation, cost leadership and segmentation. Differentiation stays on the broad market scope and uniqueness competency. It emphasizes segmenting markets in order to target goods or services at specific segments. Cost leadership stays on broad market scope and low cost competency emphasizes the production of goods with lower prices compared to other companies in the industry. Segmentation can be defined as focus or niche strategy. Segmentation focuses narrow and defined segments of the market. The competitive advantage is generally created for the niche.

In software industry a considerable part of costs occur in the product development phase. There are not definite or standard production costs. Then, it is not meaningful to compare production costs with other companies' production costs. But it is also very important for the company to lower the costs. When we come to competitive scope, we see that the company has a narrow market segment. Its products are for special segments of the market. As mentioned in detail in the thesis Kozak has submitted for the M.S.

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17. Michael E. Porter, *Competitive Strategy*.

degree at the Middle East Technical University, the company has a very high potential for research and development of innovative products.[18] Niche strategy is the most proper strategy considering company's small business structure, expertise in health care projects and linkages between health organizations. For broadening the market scope, adding hospital information management system to company's products can be proposed as a strategic option. This is a kind of diversification strategy. With hospital information management system, company can combine all the products run together and meet most of the needs of health organizations. Moreover, it can foster cross sales and hence increase product sales.

As we evaluate through strategy development directions, this method has two points of view; product and market for generating strategic directions. These strategic directions are market penetration, product development, market development and diversification; providing strategic options for present or new markets with present or new products.

As a brief explanation of these strategic directions: Market penetration refers to marketing existing products to existing customers; market development refers to marketing existing products to new markets; products development refers to introducing new products to existing customers; and, diversification refers to marketing completely new products to new markets.

For company's activities in Turkey, market penetration refers to strengthening company's current market position. The main goal here is to increase sales of current products. For this direction, emphasizing quality and services, improving marketing activities can be proposed. Company defines itself as a research and development company. Most of the upcoming products of the company have innovative aspects. A niche strategy and to continue research and development activities were proposed for the company. This refers to diversification and product development strategies. For penetrating the products to new markets and existing markets, improving marketing and advertising, targeting high value customers, emphasizing service quality, increasing brand recognition can be proposed.

Threats-Opportunities-Weaknesses-Strengths (TOWS) analysis aggregates most of the analysis throughout the research. Namely, opportunities and threats from PEST and Five Forces analysis, strengths and weaknesses from resource-based view and VRIO analyses. The indicators and strategic options derived are given in Table 1.

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18. Nuri İlke Kozak, Strategic Planning and the Implementation of Balanced Scorecard in a Software Company.

TABLE 1—TOWS Analysis

	Opportunities from the Environment	Threats from the Environment
Strengths and Opportunities (SO): Strategeies that use strengths to take the advantage of opportunities. **Strengths and Threats (ST):** Strategeies that take advantage of strengths to avoid potential threats. **Weaknesses and Opportunities (WO):** Strategeies that use opportunities to overcome the weaknesses. **Weaknesses and Threats (WT):** Strategeies that minimize weaknesses and avoid threats.	• Pottential Industry Earnings • National and International Funding Organizations • Computer and Internet Usage Level • Exportation Incentives • Rising Attention to Health Sector • Market Potential of OPEC and Eurasia Countries • Tax Policies • International Business Networks	• Economical Instability • Global Economic Waves • Difficulties in Finding High Skilled Labor • New entrants • Currency Exchange Rates • Threat of Buyers
Internal Strengths • Clearly Expressed Mission and Objectives • Information Network Among Universities and Research Centers • Scientific Publications • Product Research and Development Capabilities • Team Spirit of Management • Employee Capabilities • Facility Locations • Project Based Organization	**SO:** • Improve Brand Recognition • Deploy Foreign Markets • Produce Innovative • Standard Products • Increase capacity	**ST:** • Balance Between Domestic Market and Foreign Markets • Produce Innovative Standard Products • Emphasis Employee Training • Decrease Time to Market • Target High Value Customers
Internal Weaknesses • Marketing and Advertising • Management • Information System • Time to Market • High Employee Turnover • Non-institutional Structure	**WO:** • Emphasize Solution Partners • Product Development Cooperation	**WT:** • Emphasize Individual Software Products • Target High Valu Customers • Improve Operating Efficiency • Emphasis Employee Training

BALANCED SCORECARD IMPLEMENTATION

We determined a four phase approach for putting Balanced Scorecard into action. These phases are project initiation, strategy clarification, selecting performance measures and target setting, IT selection and determination of revision frequency.

In the project initiation step of Balanced Scorecard implementation project selecting the implementation team and gaining commitment from workers and creating the communication plan are done. In many case studies in the literature the Balanced Scorecard implementation project has been implemented with specialized teams. The teams are constructed with experts from various disciplines such as academics, managers from various units of organization, consultation firms, etc. For a small manufacturing company accessing to these resources is very difficult and expensive. Most of the small and medium sized enterprise organizations in the country have simple non-departmentalized organization structures. Access to universities is also considerably difficult for most SMEs. Getting assistance from a consultation company can be very costly for a SME. Furthermore, convincing SMEs to consult a consultation firm can be very hard in most situations. In our study we took into account all of these situations and decided to implement Balanced Scorecard with the company's own resources. A team of five people who are already working in the company is formed. The team included industrial engineers, economists and software developers. We also included the general manager who has mastered all the topics in the organization, and the head of the software development team. By this arrangement we have gained the top management's commitment.

We wanted the team to represent all the units of the company. In order to gain commitment from workers we conducted meetings with them. We developed a communication plan for improving the utilization of communication channels and taking the corrective actions faster.

In the strategy clarification phase we firstly listed the strategic options derived in the strategy development section. The strategic options are: (1) Research and Development based standard health software products; (2) Entry to new markets; (3) Foster a balance between domestic and foreign markets; (4) Decrease time to market; (5) Improve marketing and advertising; (6) Target high value customers; (7) Emphasize employee training; (8) Improve operating efficiency; (9) Increase market share with HIS and LIS—Hospital Information Management Systems (HIS) and Laboratory Information

Management Systems (LIS); (10) Improve quality and services; (11) Increase brand recognition; (12) Emphasize individual Software products; (13) Emphasize solution partners; (14) Emphasize product development cooperation; (15) Increase capacity.

Prioritization techniques or mathematical approaches in order to prioritize the objectives are mostly used in the literature. For example, Papalexandris *et al.* mentions giving weights to objectives and Fernandes *et al.* mentions prioritization matrix.[19] In this study we did not prioritize objectives. Instead, we grouped similar objectives: (1) Product Development, (a) Research and Development based standard health software products, (b) Emphasize Individual Software Products, (c) Emphasize Product Development Cooperation, (d) Produce HIS and LIS; (2) Reduce Time to Market, (a) Decrease Time to Market, (b) Increase Capacity; (3) Improve Quality and Services; (4) Emphasis Employee Training; (5) Improve Operating Efficiency; (6) Improve Marketing and Advertising, (a) Target High Value Customers, (b) Increase Brand Recognition, (c) Emphasize Solution Partners; (7) Reduce Financial Risk, (a) Balance Between Foreign and Domestic Market; (8) Entry to New Markets. Objectives are evaluated in order to create the final strategy map which is shown in Figure 1.

For creating strategy map, firstly main strategic options are placed in strategy map and then the other strategic options are derived with the help of the following question: if want to improve this option in related perspective, what must be improved in other perspectives.

The relations of the strategies are given in the Strategy Map. For improving efficiency in the financial perspective, the employee utilization must be increased in the internal processes' perspective. For increasing employee utilization, cross training/job enlargement must be conducted in learning and growth perspective. As mentioned in the internal strengths and weaknesses section, there can be idle times in some departments so these people can stay idle at these times. In order to overcome this situation, job enlargement must be conducted and free time of employees must be reduced. For reducing financial risk we proposed diversifying customer portfolio by entering new markets. Entering new markets has also effects as retaining new customers and increasing earnings in financial perspective. For entering new markets, marketing activities must be improved at the

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19. Alexandros Papalexandris, George Ioannou, Gregory Prastacos and Klas Eric Soderquist, "An Integrated Methodology for Putting the Balanced Scorecard into Action"; and, Kiran J. Fernandes, Vinesh Raja and Andrew Whalley, "Lessons from Implementing the Balanced Scorecard in a Small and Medium Size Manufacturing Organization."
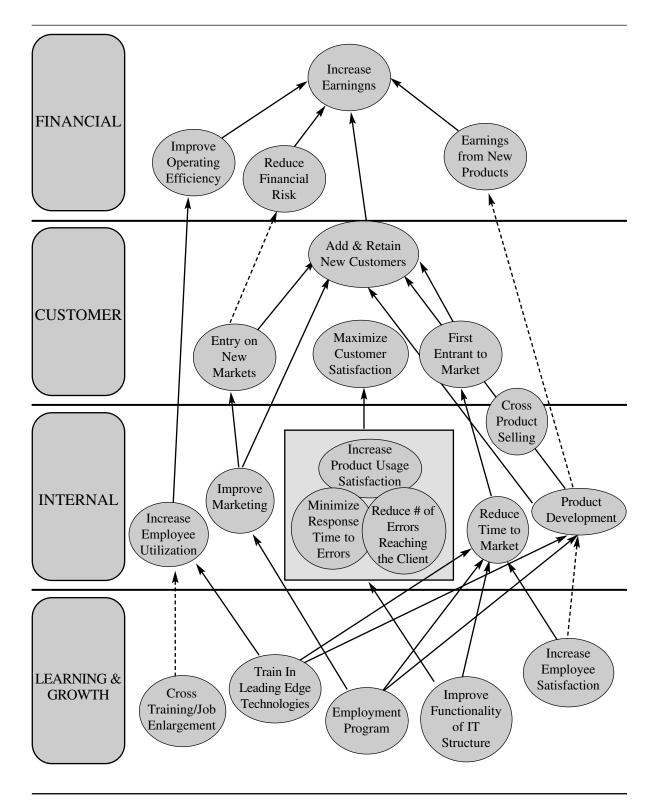
FIGURE 1—Strategy Map of the Company

internal perspective; because with current marketing structure, the penetration to foreign markets is not at the desired level. For improving marketing activities, marketing structure and capacity must be improved. The quality improvements are attempted to be conducted by minimizing response time to errors, reducing the number of errors reaching client and increasing product usage satisfaction. The link to learning and growth perspective is improving internal IT structure. Moreover, quality improvement objective has also connections with all other objectives in the learning and growth perspective. Customer satisfaction will result in retaining customers in customer perspective and ultimately result in increasing earnings in financial perspective. Reducing time to market in internal perspective directly connects with employment program in the learning and growth perspective as increasing human resources capacity. Furthermore, reducing time to market objective has also connections with all other objectives in the learning and growth perspective.

At the customer perspective it directly connects to being first entrant to market. So the company can benefit from the opportunities of being the first to market and hence can add and retain customers. Product development objective has connections with all the previously defined objectives in the learning and growth perspective. After forming all of these relations, we found other relations with defined objectives and connected them with arrows.

In the selecting performance measures and target setting phase, firstly sub-strategies are determined in the strategy clarification phase, which are translated to performance indicators. They are evaluated under the related strategy. By this method we took into account all the strategic options generated in strategy development phase. By setting targets to them, we defined ways the firm to pursue. This method can be thought as a kind of prioritization technique. The important point here is the targets that are set for each performance indicator. For the other strategic options, the measures in this study emanated from three resources: existing studies in literature, existing performance measures, and new measures proposed by the project team. We had interviews with people at the related departments but the final decisions were made by the project team. To derive the most suitable targets and frequencies, examination of best practices and benchmarking from the successful companies in the industry is used. Due to the lack of experience with target setting, targets were frequently altered with more suitable ones. Moreover, measure owners those will be responsible to achieve selected targets were defined in this phase.

TABLE 2—Balanced Scorecard

PERSPEVTIVE	STRATEGY	PERFORE INDICATOR	OWNER
Financial	Increase Revenue From New Products	Revenue From New Products	Finance Director
	Increase Earnings	EBIT[*]	
	Improve Operating Efficiency	EBIT/Employee	
	Reduce Financial Risk	% Sales to Ferign Countries	
Customer	Add & Retain New Customers	% of Sales From New Products	Marketing Director
	First Entrant to Market	% of Products that are First Entrant to Market	
	Entry to New Markets	Number of Countries Company Penetrates	
	Maksimize Customer Satisfaction	Customer Satisfaction Index	
Internal Processes	Increase Employee Utilization	Free Time Percentange	Internal Process Director
	Increase Product Usage Satisfaction	Product Usage Satisfaction Index	
	Reduce Numer of Errors Reaching The Client	Number of Errors Reaching The Client	
	Minimize Response Time to Errors	Response Time to Errors/Maximum Allowed Response Time to Errors	
	Project Development	No of Standard Products Developed	
		No of Individual Software Products Developed	
		No of Products Developed with Cooperation	
		HIS and LIS Production	
	Cross Product Selling	Customers That Buy More Than One Product	
	Improve Marketing and Advertising	Participated Fair and Congress	
		No of Solution Partners	
		No of Scientific Publications	
		Number of Meetings with High Value Customers	
		Man Hour/Marketing Activities/Month	
	Reduce Time To Market	Man Hour/Project/Month	
Learning and Growth	Improve Employee Satisfaction	Employee Satisfaction Index	Human Resources Director
		Employee Turnover	
	Cross Train/Job Enlargement	Cros Training Hours	
		% of People That Can do different Jobs	
	Improve IT Systems	IT Systems Access and Contrubition	
		IT Contrubuted System Solsutions	
	Employment Program	Marketing hours/Required Marketing Hours per Month	
		Production Hours/Required Productiong Hours per Month	
	Train in Leading Edge Technologies	Leading Edge Technologies Training Hours/Month	

[*]EBIT: Earnings Before Interest and Taxes

In Table 3 selected targets and frequencies are given. In the financial perspective we set 20% increase in revenue from new products. In the customer perspective, we set a target as 80% satisfaction of customers. In the internal processes we set 10% free time to employees. In the learning and growth perspective for the improving employee satisfaction objective, we set target as 10% increase in employee satisfaction and 20% decrease in employee turnover rate. All targets are given in Table 3. The indexes such as customer satisfaction and employee satisfaction are determined through surveys. All information about performance indicators will be stored in databases.

As seen from Table 3, frequencies are 3 months, 6 months and 1 year. The target percentages can be seen very high at the first look. Considering the company's current business situation, its small business structure and growth strategy they are the most meaningful number that we agreed on. Moreover, the company is in a transition phase now. Company has products but their sales are very low. The most desired objective is increasing sales. Moreover, the sales must be done as soon as possible before substitute products arrive. Because of this situation the company uses an aggressive marketing strategy and higher targets for sales. The numbers that show percentages without increase or decrease shows definite targets.

Last phase consists of selecting the IT solution, determining the revision frequency of the Strategy Map and Balanced Scorecard. Being a software company we decided to produce the company's own Balanced Scorecard software as a module of IMS. The company can easily make modifications and monitor the software by this way. We determined the revision frequency of the Balanced Scorecard as six months.

CONCLUSION

This strategic planning study tried to propose a structured approach for the company in order to fulfill its objectives. The study begun with broad environmental, internal analyses continued with strategy development and finalize with providing the sustainability of strategies. In all the phases of strategic planning and implementation studies certain tools and techniques were used. The methodology in this study did not follow a single approach from literature. Instead it combined several tools and techniques.

The determination of strategic options was among the most critical parts of the entire study. It is also mentioned that there is no perfect strategy for organization. We have derived many strategic options with different tools and techniques and combined

TABLE 3—Balanced Scorecard Targets

PERSPEVTIVE	STRATEGY	PERFORMANCE INDICATOR	TARGET	FREQUENCY
Financial	Increase Revenue From New Products	Revenue From New Products	20% increase	1 year
	Increase Earnings	EBIT*	25% increase	1 year
	Improve Operating Efficiency	EBIT/Employee	10% increase	1 year
	Reduce Financial Risk	% Sales to Ferign Countries	50%	1 year
Customer	Add & Retain New Customers	% of Sales From New Products	20% increase	6 months
	First Entrant to Market	% of Products that are First Entrant to Market	100%	1 year 6 months
	Entry to New Markets	Number of Countries Company Penetrates	33% increase	6 months 6 months
	Maksimize Customer Satisfaction	Customer Satisfaction Index	80%	6 months
Internal Processes	Increase Employee Utilization	Free Time Percentange	10%	6 months
	Increase Product Usage Satisfaction	Product Usage Satisfaction Index	80%	6 months
	Reduce Numer of Errors Reaching The Client	Number of Errors Reaching The Client	10% increase	6 months
	Minimize Response Time to Errors	Response Time to Errors/Maximum Allowed Response Time to Errors	10% increase	6 months 1 year 1 year
	Project Development	No of Standard Products Developed	10% increase	1 year
		No of Individual Software Products Developed		6 months
		No of Products Developed with Cooperation		6 months
		HIS and LIS Production		1 year
	Cross Product Selling	Customers That Buy More Than One Product	20% increase	1 year
	Improve Marketing and Advertising	Participated Fair and Congress	20% increase	1 year
		No of Solution Partners	20% increase	6 months
		No of Scientific Publications	30% increase	1 year
		Number of Meetings with High Value Customers	25% increase	6 months
		Man Hour/Marketing Activities/Month	20% increase	6 months
	Reduce Time To Market	Man Hour/Project/Month	20% increase	6 months
Learning and Growth	Improve Employee Satisfaction	Employee Satisfaction Index		3 months
		Employee Turnover	20% increase	1 year
	Cross Train/Job Enlargement	Cros Training Hours	20% increase	6 months
		% of People That Can do different Jobs	20% increase	6 months
	Improve IT Systems	IT Systems Access and Contrubition	20% increase	6 months
		IT Contrubted System Solustions	20% increase	6 months
	Employment Program	Marketing hours/Required Marketing Hours per Month	30% increase	6 months
		Production Hours/Required Productiong Hours per Month	20% increase	6 months
	Train in Leading Edge Technologies	Leading Edge Technologies Training Hours/Month	20% increase	6 months

*EBIT: Earnings Before Interest and Taxes

them, and provided a comprehensive solution. It is also mentioned that some strategies from different tools may overlap and can be adjusted later with techniques like grouping.

For sustainability of strategies Balance Scorecard approach is used in this study. Although Balanced Scorecard is a very useful technique, its implementation is very challenging. Firstly, creating strategy map was perhaps among the most challenging parts of Balanced Scorecard implementation project. We firstly put one strategic option in Strategy Map's related perspective, then generated the objectives in other perspectives by the question "What must be achieved at other perspectives in order to achieve the defined strategic option?" After forming the strategy map we saw that the objectives in perspectives have also other relations than we first determined. We also saw that the strategic options generated in strategy development phase have relations with each other in the strategy map. We assumed that all the objectives have equal importance for the company. Objectives can overlap, or can be seen as overlapped, in the Balanced Scorecard, and it is very important to discriminate their main purpose and defining the key performance indicators. The determination of these performance indicators was conducted with people from related departments of the company since realistic performance measures and frequencies are crucial for the success of overall study.

We have shown that classical strategic planning approaches can be tailored to today's market conditions and can provide a comprehensive analysis in a combination with recent approaches. We believe that with little or no change this methodology can be adapted to many SMEs. We believe that companies that adopt this methodology will gain sustainable competitive advantage against their rivals.