

STRATEGIC PLANNING AND THE IMPLEMENTATION OF
BALANCED SCORECARD IN A SOFTWARE COMPANY

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ABSTRACT

STRATEGIC PLANNING AND THE IMPLEMENTATION OF BALANCED SCORECARD IN A SOFTWARE COMPANY

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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. In this study broad environmental and internal assessments are conducted in an organized manner by using tools and techniques in the literature. Then strategies are identified with suitable techniques. In order to translate the strategy into action and measure the performance the Balanced Scorecard technique is used. Balanced Scorecard is a relatively new approach to strategic management which has been gaining significant importance in academic and industrial communities. 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 this study will present a useful method to small and medium sized software companies for Strategic planning and Balanced Scorecard studies.

Keywords: Strategic Planning, Balanced Scorecard, Software Company

ÖZ

BİR YAZILIM FİRMASINDA STRATEJİK PLANLAMA VE DENGELİ ÖLÇÜM KARTI UYGULAMASI

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Türk yazılım firmaları günümüz küresel ve çabuk değişen pazar koşullarında muazzam zorluklarla karşılaşmaktadırlar. Son zamanlarda bu zorlukların üstesinden gelebilmek için stratejik planlama, performans ölçüm ve kontrol sistemleri çok önemli hale gelmiştir. Stratejik planlama basitçe vizyona ulaşılması için atılması gereken adımların belirlenmesidir. Çevresel ve içsel analizler başarılı stratejilerin belirlenmesi için yapılması gereken ön faaliyetlerdir. Bu çalışmada çevresel ve içsel değerlendirmeler düzenli bir şekilde literatürdeki araç ve teknikler ile yapılmıştır. Daha sonra uygun yöntemler vasıtasıyla stratejiler belirlenmiştir. Belirlenen stratejileri hayata geçirmek ve performans ölçümü için Dengeli Ölçüm Kartı tekniği kullanılmıştır. Dengeli Ölçüm Kartı, akademik ve endüstriyel çevrelerde büyük önem kazanan, stratejik yönetim alanında oldukça yeni bir yaklaşımdır. Dengeli ölçüm kartının önemli bir stratejik yönetim aracı olmasına rağmen uygulanması zor ve dikkat gerektiren bir konudur. Bu çalışmada Dengeli Ölçüm Kartını uygulamak için metodolojik bir yaklaşım kullandık. Bu çalışmanın Dengeli Ölçüm Kartı ve Stratejik Planlama çalışmaları için özellikle küçük ve orta ölçekli yazılım firmalarına kullanışlı bir yöntem sunacağı kanısındayız.

Anahtar Kelimeler: Stratejik Planlama, Dengeli Ölçüm Kartı, Yazılım Firması

To My Parents

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LIST OF ABBREVIATIONS

ABBREVIATIONS

SME	Small Manufacturing Enterprise
İGEME	Export Promotion Center
TURKSTAT	Turkish Statistical Institute
DTM	Undersecretariat of Foreign Trade
YASAD	Software Industrialists Association
TBV	Turkey Informatics Foundation
KOSGEB	Small Manufacturing Enterprises Parental Authority Administration
İSO	İstanbul Chamber of Commerce
TBD	Turkey Informatics Association
TTGV	Technology Development Foundation of Turkey
TÜSİAD	Turkish Industrialists' and Business' Association
ASO	Ankara Chamber of Industry
KOSGEB	Small and Medium Industry Development Organizations
IPR	Intellectual Property Rights
R&D	Research and Development
BSC	Balanced Scorecard
CPI	Customer Price Index

CHAPTER 1

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. The common approach to strategic planning begins with conducting the internal and external assessments for determining external opportunities and threats, and internal strengths and weaknesses. Then strategic options are derived. In all phases of strategic planning process certain tools and techniques can be used. The important thing is choosing the tools those best fit the organization and explain the external factors those have influences on the organization.

In previous studies, strategic planning studies major on market conditions, organizational capabilities, resources, and organizational values. Nowadays the concept of strategic planning is affected by globalization, technology and information 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 at the present day. 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 tool is the balanced scorecard that is developed by Kaplan and Norton in the early 1990s. 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 (Kaplan & Norton, 1992). The Balanced Scorecard helps focus on performance metrics while balancing financial objectives with customer, internal and learning and growth perspectives. Another concept is the Strategy Map that links strategic objectives in cause effect relations in 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 (Kaplan & Norton, 2004). Anyone in the company who looks at Strategy Map can see his/her position and contribution to organizational goals.

This thesis aims to develop a strategic plan for a software company and provide sustainability with Balanced Scorecard approach. The software company operates in the Turkish market. Recent studies address that Turkish software industry has been facing massive challenges. In an attempt to overcome these challenges there are several efforts from governmental organizations, private sector and sector specific associations. These efforts have some fresh results in a positive direction. Experts address that Turkish software industry has an important potential. If the sector can overcome challenges it can show considerable improvement. In many publications it is mentioned that sector lacks strategic planning studies.

The company we worked on this study operates especially in health informatics industry. Company has seven years of history. It has built up with four persons and growth year by year and reached to forty employees by June 2008. The company aims at developing innovative software products with the purpose of making positive contribution to economic, cultural and social lives of individuals. Although the company has a successful history, up to this study, a strategic planning study had not been conducted.

The strategic planning studies in this thesis begin 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 through the findings of analyses. After the internal and external assessments conducted, strategic options are derived with specific technique and tools. Deriving strategic options in such a volatile industry is very crucial and requires significant consideration. Finally for aligning the company to strategy and monitoring the performance of the organization Balanced Scorecard approach is used.

Although the concept of Balanced Scorecard is a very useful technique its implementation is a very difficult and crucial topic. In the literature there are practices for application but most of these studies were conducted on companies that are bigger than small manufacturing enterprises. In our research we see that the Balanced Scorecard implementation studies are mainly conducted with experts and external consultants with significant budgets. We assume that many small manufacturing enterprises cannot reach experts of this area. Furthermore implementation budget frightens many small manufacturing enterprises. In this study we implemented Balanced Scorecard with company's own resources. We believe that the approach that we used in this study can be applied to most of the small manufacturing enterprises.

CHAPTER 2

LITERATURE SURVEY

The word strategy comes from the Greek word strategos which was associated with military decision making. It is the combination of the words stratos (the army) and agein (to lead) (Cummings, 1993). In the ancient Greek, as understood from the name, strategos was the leader of the army. Shortly he was the authority to understand the environment, to evaluate the options and make the decisions. In the ancient times strategy was mostly associated with military. Military strategy has been with us for thousands of years. From that time up to now physicist, biologists, psychologists to name but a few have also made contributions to the field of strategy. Despite the long history, strategy has not been studied deeply until 1960s. By the time strategic planning studies begun, literally thousands of work has been done. Related to these studies there are lots of strategy definitions in literature. Here some of them are given below.

“A strategy is the pattern or plan that integrates an organization’s major goals, policies, and action sequences into a cohesive whole.” (Mintzberg & Quinn, 1996, p. 3).

“A strategy can be thought of as the overall game plan or map to help lead or direct the organization toward the desired objectives.” (Smith, Arnold & Bizzell, 1988, p. 12).

A strategy for an organization 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 (Rue & Holland, 1986, p. 4).

Common points in these definitions are; 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 in its context. Many researchers demonstrate that strategy making is a very complex process. It involves the most sophisticated, intuitive and at times subconscious elements of human thinking. Strategy can hold different meanings to different people and organizations. This is due to the strategies uniqueness. For example being market leader can be defined as a strategy for a firm that operates in electronics sector and this strategy with same words can mean totally different for a company that operates in furniture sector. This idea is also valid for companies that operate in same sector. This is because all the companies are different in terms of resources they have, no matter which sector they are in. Recent studies have shown that all the strategies have some common characteristics. Although some writers deal with these characteristics in different topics mainly the definitions conjugate on the same basis.

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 (Porter, 1996). These criteria can stand alone or together in a company's strategic position.

Strategy involves not only the detailed analysis of complex data, but also broad conceptual knowledge of the company, industry, market, customers etc. (Mintzberg, 1994). In some situations personal perceptions of the situations 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. As seen intuitive thinking plays a great role on strategy making process.

A company can outperform its rivals if it can preserve a difference. The difference may arise from activities themselves, resources and capabilities in general all assets. Strategy is about choosing different set of activities to deliver a predefined value (Porter, 1996). Another point of view is that, the essence of strategy is choosing to perform activities differently than rivals do. In both views strategy is about creating difference. The rivals' activities are as important as a company's own activities. It is very important to monitor the rivals activities for companies. Deciding which activities to do or not to do by evaluating and forecasting rival's activities can provide several advantages to companies (Dixit & Nalebuff,1991).

A strategy requires not only one activity to be done but also a combination of activities that are chosen to achieve a particular goal. These activities affect each other. Fit among these activities must be sustained in order to succeed in strategies. Fit among activities derives sustainability of strategies (Porter, 1996). Coherence must be achieved among activities in order to solidify whole.

There will always be major structural changes in the industries. These changes will lead to changes in strategies. But some parts of the strategies or some strategies will not change or will not be reinvented. These strategies are constant and freeze the companies' behavior on some main issues. These issues can be hinged on company's mission and values. These issues must be clear to both internal and external stakeholders.

2.1 Strategic Planning Approaches

There are various strategic planning approaches in the literature. Various writers deal with different aspects of strategic planning processes. From past to present strategic planning studies have shown considerable changes. In the early studies writers mostly deal with market conditions, owned resources and market based strategy types. As coming to today, researches mostly deal with impact of globalization usage of information systems and management of intangible assets.

Porter (1980) proposes that strategic decisions should be viewed in terms of how business creates value and how it defines its scope of market coverage. Miles and Snow (1978) identifies four strategy – market decision types as: Prospectors, Analyzers, Defenders and Reactors. Prospectors emphasize on product development and seek market opportunities. Defenders emphasize productive usage of resources in a portion of market with stable products. Analyzers stay at a position between defenders and prospectors and seek to minimize risk and maximize opportunity. Reactors do not have a definite response to product-market problem. Mintzberg (1994) proposes that strategic thinking involves tacit knowledge and intuition on the other hand strategic planning involves rational and systematic analysis using hard data. These approaches have some limitations as they remain inadequate to understand whole system and its environment at the present day. Despite their limits these approaches can still be used as long as they are tailored to meet the needs.

The recent impact of globalization, usage of information systems, dynamic structure of markets and continuously increasing competitiveness among companies, forced strategic planning studies to widen and tailor to meet the needs of today's industries. There are numerous studies on new trends in business world to be addressed in strategy process. Akan, Allen, Helms and Samuel (2006) analyzed the Porter's

generic strategies and presented several tactics for implementing Porter's generic strategies. Grundy (2006) analyzed the Porter's Five Forces model. Five Forces model uses five forces: the threat of established rivals, and the threat of new entrants, the bargaining power of suppliers, and bargaining power of customers to determine the competitive intensity and therefore attractiveness of a market. He took into account the political, economical, social, and technological factors while evaluating the Five Forces. Barney (2002) offers several tools for strategic planning concept. He combines traditional and modern approaches that take into account most of the organizational and environmental options that may come into existence on a global business world such as internalization, importance of intangible assets, and dynamism of markets.

Most writers deal with the impact of information systems and Internet on strategy. Porter (2001) deals with the impact of internet on business strategy and concentrated on integrating internet features to his previous studies such as; five forces method, value chain and principles of strategy. Cassidy (2005) deals with strategic planning of information systems in organizations. Savin (2004) deals with information technology strategy. Grover and Segars (2005) works on how organizations change their planning process over time in an attempt to improve their effectiveness as well as leverage their investment in strategic information systems planning. Moreover they worked on identifying key dimensions of strategic information systems planning. The fact that there are strategic planning studies on information systems shows the point where studies come.

Environment has been suggested as a moderator in strategic planning studies, but its role has been argued. Early studies suggest formal planning in stable environments and incremental planning in unstable environments. More recent studies present both formal and incremental planning in unstable environments. An alternative hypothesis

is that planning in unstable environments includes both formal and incremental planning and possibly other types of planning (Brews & Hunt, 1999). Brews and Purohit (2007), represents generative and transactive planning related to environmental conditions. Generative strategic planning represents the degree to which plans encourage product/service innovations and the degree which plans encourage internal process innovation. Transactive planning represents the degree to which plans are formed iteratively on an ongoing basis based on continual adaptation and feedback.

2.2 Linking Strategy with Performance Evaluation

Strategy execution is as important as strategy itself. An excellent strategy without a successful execution does not mean anything. A survey conducted in U.S. among the unsuccessful company and CEO's showed unexpected results. In the majority of cases approximately 70 percentage, the real problem isn't bad strategy but bad execution. (Charan & Colvin, 1999)

There are many works in the literature about performance measurement. In general a proper performance measurement system helps to execute the strategy of an organization. It allows a company to align its strategic plan. It permits deployment and implementation of the strategy on a continual basis. With performance measurement system, an organization can get the feedback needed to guide the planning studies. Moreover, it provides basis for selecting which business process improvements to make first.

The measurement of process efficiency makes all changes on process performance visible; visibility provides accountability and incentives based on real data, and supports better and faster budget decisions (Arveson, 1998). By this way company

can reduce financial risks. Furthermore collection of process cost data for past projects allows one to estimate costs for future projects.

All these reasons make the usage of performance management systems inevitable. Both the tangible and intangible assets of organizations must be measured. Research show that, from mid 80's to present was a transition phase for companies. In this period intangible assets' importance increased on a continuous basis. Due to the rising attention to intangible assets, business world and academics have been searching for measurement techniques of intangible assets. One of the most advances in this area is the development of balanced scorecard.

2.3 Balanced Scorecard as a Performance Measurement System

The key to achieve a state of continuous improvement is dependent on the ability to measure consistently and constantly the performance of key processes within an enterprise (Braam & Nijssen, 2004; Fernandes, Raja & Whalley, 2006). Many organizations have realized the importance of performance measurement processes and adopted performance management systems over the last few years.

Performance management systems have been studied by researchers and business people for a few decades. Chakravarthy (1986) studied firms operating in the computer industry and proposed that financial measures are inadequate for a broader evaluation. Daly (1996) mention that analysts who consider both financial and nonfinancial performance indicators are more accurate in their estimates. As coming to today the importance of intangible assets are in a continuous increase. Researches show that, the share of tangible assets of organizations in their market value is in a decline from the mid 80's. Kaplan and Norton (2004) stated that tangible assets constitute only 25% of industrial organizations' market value. In today's complex

and volatile market conditions classical financial measures are not adequate and today intangible assets are the major success factors of competitive advantage. So their performance measurement is of great importance.

Kaplan and Norton (1992) introduced the term Balanced Scorecard as a performance measurement framework to give managers and executives a balanced view of organizational performance. In their research they mentioned that traditional financial reporting systems are not enough to measure the value that has been created by intangible assets. In the past, managers were not completely aware of nonphysical presences therefore their main focus area was the short term financial measures. The nonphysical presences like corporate culture, learning and growth, stakeholder expectations and information capital were on the second hand. The importance of nonphysical presences is better understood at the present day thereby the measurement of nonphysical presences' and their annex on corporate success has gained importance. Thus Balanced Scorecard gained significant importance.

2.4 Balanced Scorecard

The Balanced Scorecard is a strategic planning and management system that is used extensively in business, industry, government, and nonprofit organizations worldwide to align business activities to the vision and strategy of the organization, improve internal and external communications, and monitor organization performance against strategic goals (Balanced Scorecard Institute).

After the Balanced Scorecard was first introduced by Kaplan and Norton it has drawn significant attention of business people and academicians. Up to date it has been researched by several writers in a series of articles and book.

The Balanced Scorecard method comprises four perspectives: learning and growth perspective, internal processes perspective, customer perspective and financial perspective. The sequence is in this order. Outcomes within each perspective are adopted as leading indicators of the outcome measures in the subsequent perspective. The perspectives foster a balance between short and long term objectives, qualitative and quantitative measures.

The Learning and Growth Perspective: This perspective captures the ability of employees, information systems, and organizational alignment to manage a business.

The Internal Process Perspective: Kaplan and Norton divided value chain activities in a firm to four main parts. These are; operations management processes, customer management processes, innovation processes and regulatory and social processes. Balanced Scorecard model assumes that the topics in the learning and growth perspective derive the internal processes improvement.

The Customer Perspective: The customer perspective identifies the outcomes associated with delivering different value propositions to customers in order to satisfy their needs. These outcomes include complete solutions, innovative products and services, customer satisfaction.

The Financial Perspective: The financial perspective includes all financial measures that are important to shareholders. Return on capital, cash flow, reducing financial risk, earnings from new products are examples of financial measures.

The Balanced Scorecard originally seen by Kaplan and Norton as a measurement tool, is now presented as a means for implementing strategy by creating alignment (Fernandes et. al., 2006). The method enables organizations to clarify their vision and

strategy and translate them into action. The fundamental issue in Balanced Scorecard is translating the strategy into terms that everyone understands. By doing this it brings focus to daily activities of everyone in the company.

2.5 Implementation Approaches of Balanced Scorecard

In their books and articles Kaplan and Norton give several examples of Balanced Scorecard (BSC) applications. Most of these examples are conducted in companies that are bigger than small manufacturing enterprises. It is known that BSC is widely used in most of the successful large scale companies. In addition to this fact there is very limited systematic research done on BSC applications in small and medium scale enterprises (Fernandes et. al., 2006).

However there is also certain research on BSC implementation on small manufacturing enterprise (SME)s. Various writers tried to implement BSC on SME with various stages. Letza (1996) uses a six step approach for implementing BSC. Brewer (2002) proposes a four step value dynamics framework for translating strategy into measures. Lohman, Fourin and Wouters (2004) proposes a nine step approach for Balanced Scorecard implementation, Papalexandris, Ioannou, Prastacos and Soderquist (2005) uses a six step approach. Fernandes et. al (2007) uses an eight step approach for putting balanced scorecard into action

There are also common points of BSC implementation approaches in literature. In general the implementation process 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, and 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 strategic initiatives 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.

In addition to application studies there is a conspicuous study related to strategy types and BSC in the literature. Olson and Slater (2002) investigated Miles and Snow's (1978) strategy types and the relationship of these strategies with BSC perspectives. They divided the companies into two groups as low performers and high performers in each of the strategy types. Based on a survey research they conducted, they mentioned: prospectors emphasis innovation and growth more than any other strategy type; high performing analyzers place greater emphasis on both the innovation and growth perspective and the financial perspective than do low performing analyzers; high performing low cost defenders place more emphasis on financial perspective than low performing ones and high performing differentiated defenders emphasize the customer perspective more than low performing ones. This it can serve a point of view for the attention companies pay to their activities in the BSC perspectives.

CHAPTER 3

STRATEGIC PLANNING IMPLEMENTATION IN SOFTWARE INDUSTRY

3.1 Environmental Analysis

3.1.1 Software Industry Overview

Software business with its production and merchandising structure is different from classical businesses. Software business does not need a high technology or infrastructure investments. The most important input of software business is human intelligence and creativity. Any web developer with just a personal computer can be a part of the software market. Moreover with an internet connection a software developer can be a part of world software market.

The software industries basic products are called software products. The software product is determined by several characteristics that make it different from physical products. Firstly software is a non-material product with no physical limits. It is a product of intellectual property. This results in high development costs and low per-item costs for standardized products. The incremental costs for additional sales are negligible. Therefore, volume is very important for sales. It is difficult to measure in terms of physical product measures. Either technical or financial equivalents have to be found to measure the value of software (Berlecon Research, 2002).

Software industry's outputs are the inputs of most industries. The software packages in most industries enhance productivity and reduce costs. This is among the most important external economy of software industry. Ultimately this situation causes a

general increase in productivity in national and international economies. In other words, the development of software industry stimulates the national and finally international economies.

The sector has a very dynamic infrastructure. In the basement of the sectors dynamic infrastructure, there is growing demand. There are lots of places in the world that software did not enter and the works those can be done with computers are being done with old methods. These places are potential markets for computer and also software products. On the other hand, there are places that use newest versions of software solutions and demand newer versions for their growing needs. This situation creates a competitive environment for software companies that produce substitute products and leads to invest on product development. The companies that cannot keep a step with these conditions cannot survive in the industry.

Software industry is a basic industry that plays a role in the center of the globalization process with its market size, infrastructure and employment potential. Software produced at anywhere can be sold to any place on earth through internet without any addition cost. As an example many software packages can be downloaded from companies' web pages and then can be paid by phone, online by credit cards or pay checks. Moreover, many huge software companies like Microsoft, IBM and Adobe open offices in most of the countries. They provide employment and chance to acknowledge their cultures to the residents of foreign countries. Furthermore many software manufacturers provide employment opportunities to skilled workers overseas. On some situations this is a predicament for some countries because, many high skilled employees migrate to developed countries for high salaries and higher life standards. This is called brain drain and the results to the country that migrated from, is dramatically deleterious.

3.1.2 World Software Industry Outlook

At the present day, the software industry has become a strategic industry for countries' sustainable development. Many countries make important investments for the purpose of development of their software industry. The ones that cannot keep a step with this situation fell behind against gradually increasing global competition and cannot benefit from positive contributions of software industry to their economies. This Atmosphere, on one side creates new opportunities for the countries that build up their software industry and on the other side the countries that cannot keep a step fell behind so the cliff between countries that developed their software industry and that could not develop their software industry gradually increases.

In the world computer software spending is in a continuous increase. North America has the highest spending for computer software. West Europe follows North America. Asian Pacific countries follow these regions. Then in order East Europe, Latin America, Middle East and Africa comes. Regional computer software spending in the world is given in table 1.

Table 1 : Total Computer Software Spending According to Regions (Million of U.S. Dollars) (Digital Planet, 2008)

	2003	2004	2005	2006	2007
North America	96,689	107,748	117,863	124,819	130,312
Latin America	1,896	2,316	2,849	3,340	3,687
West Europe	71,812	84,314	91,660	100,669	109,916
East Europe	4,190	5,329	6,362	7,379	8,549
Asia Pacific	21,003	25,868	30,623	34,930	38,884
Middle East	1,242	1,458	1,685	1,892	2,062
Africa	1,128	1,494	1,786	2,146	2,402
Total	197,959	228,526	252,827	275,174	295,812

Computer software spending is proportional to global extent of the countries. In the world US is the country that has the highest computer software spending. Germany follows US. Naturally other developed countries follow these countries. Direct proportion can be seen with the development levels of the countries and their software spending. Top five countries according to computer software spending are given in table 2.

Table 2: Top Five Countries According Computer Software Spending (Million of U.S. Dollars) (Digital Planet, 2008)

	2003	2004	2005	2006	2007
USA	90,438	100,557	109,706	115,903	120,579
Germany	15,891	18,128	20,254	21,715	21,714
England	14,457	16,461	17,505	19,163	20,724
France	10,822	12,417	13,239	14,093	15,136
Japan	10,079	11,060	11,816	12,342	12,512

Software industry is among the most value added sectors. The investments has the shortest time of return on investment and highest value proportion compared to other sectors (Undersecretariat of the Prime Ministry for Foreign Trade Export Promotion Centre [İGEME], 2006)

The leading players of software sector is the industry groups like IBM, Microsoft, Electronic Data Systems, Computer Sciences, HP Services (İstanbul Chamber of Commerce [İTO], 2006). They are all well known global companies. These players constitute approximately 14% of total market value in 2004 and IBM has the 5.6

market share, Microsoft has 3%, EDS has 2%, Computer sciences and HP services has 1% market share. (İTO, 2006).

Compared to Industry leaders, relatively small companies have large amount of share in the industry. Governments and commercial associations' choice of small companies for sector specific products and consultation play a big role in small companies' market share. Despite the share of small companies in software market one drawback of these small companies is, they cannot allocate enough resources for R&D. In order to overcome this drawback and stimulate the industry, in many countries and in many science parks there are support and incentive funds for the companies that have R&D facilities.

3.1.3 Software Industry In Turkey

For the accurate evaluation of Turkey's software industry it is useful to evaluate the ecosystem components of the industry. Ecosystem components of the software industry include human resources, intellectual property rights (IPR), the level of research and development and innovation, international relationships (governmental, institutional, etc.), governmental supports, the level of technoparks and firms quality certifications (Heeks & Nicholson, 2002). Government and industry are two important players that determine the national software industry vision and strategy. National software industry vision and strategy lead to determine the quality of software eco-system components (OECD, 2007).

In recent years in Turkey, government pays great attention to software sector. New policies have been generated and support programs are developed. In this context seventh and eighth five year term development plans made important determination and set policy areas concerning software industry. Ninth Development Plan

compasses 2007-2013 period gives special emphasis to software sector and also set policy recommendations in order to develop the sector more. In recent years software related organizations and associations have been founded. There is a growing attention to these organizations. These efforts play a stimulating role for the innovations in the industry.

Although Turkey has high human resources potential software industry cannot benefit from this resource at the desired level. The sector is continuously developing and need for workforce is continuously increasing. About the need of workforce of the sector the data are not absolute and enough. The numbers on some publications base on sector professionals' previsions and forecasts and in many publications, it is said that 70000 employees must penetrate the sector in order to satisfy the sector needs (IGEME, 2006). It is obvious that statistical analysis about the workforce gap and its categories must be done in order to reach more solid data. Most high skilled people migrate to developed countries where there are higher life standards and more opportunities for personal development. This causes a major deficiency in work force. Furthermore, universities' education system and company needs do not overlap. Sector needs and university curriculums show major differences. During university years students do not interact with companies. This causes new graduates being foreigner to real business world. However it is hopeful for the future of the industry in terms of workforce due to increasing percentage of schools that have internet connections, growing attention to technical education in high schools and young population of the country. Moreover in universities there is a growing attention to information technologies and new master doctoral degree programs are opening. Furthermore due to lack of the skilled people in the sector there is a growing attention to computer aided programs such as; computer teaching and computer programming.

There are venture capital firms operating in Turkey. Some of these firms are parts of international technology companies, like Siemens; some directly operate under financial groups, like İş Risk and the rest are other industrial groups, or small size technology companies. There are few success stories yet but in mid-term, it is expected that venture capital will play an important role in software industry (OECD, 2007).

Research and development is one of the most important topics of Turkish software industry in recent years. There are many supports for the companies that have research and development activities. Especially, TUBİTAK and TTG have substantial research and development supports for companies. These supports play a stimulating role for the companies to invest in research and development.

Technoparks play a great role for the development of the industry. New technoparks are being established at a high rate. In 2006, the number of software companies in Technology Development Zone (TDZ) increased 65% and reached 417 from 252 in 2005 (OECD, 2007). It is hopeful for the future of the industry that the numbers of technoparks are continuously increasing and companies are competing for getting offices to benefit from technopark supports. By the April 2006, 22nd (TDZ) has been established (OECD, 2007). Technoparks provide several opportunities to companies. The detailed evaluation of these opportunities is given in the following chapters.

Although there are many technoparks in Turkey, a technopark association has not been established yet. Moreover business networks have been newly establishing. İrc-Anatolia is an example of these business networks. Companies are not totally aware the benefits of these networks. Although there are many associations like Informatics Association of Turkey and Software Industrialist Association, those go at the success

of the industry their efforts are not in an organized manner. This results in these associations' efforts remain dispersed and inadequate.

Software piracy is one of the biggest problems for the sector. Industry continues to experience high losses due to software piracy in Turkey. There are certain efforts to reduce software piracy in Turkey but common view is that the efforts remain inadequate. Moreover there are international rules and regulations about this topic but they remain insufficient. This can be due to the difficulties of control and control costs. It is known that huge global enterprises have great efforts against software piracy. In the future it is hoped that there will be advances in preventing software industry with the help of technology itself.

There are certain quality standards for software products. ISO: SPICE, COBIT, ITIL, CMMI are most known standards of software industry. The Capability Maturity Model Integration (CMMI) for software has been a model for judging the maturity of the software processes of an organization for many years. It has become a standard for assessing and improving software processes. The CMMI is organized into five maturity levels. Level five is the highest level of the standard. In Turkey, Milsoft Software Technologies Co. is the first company to obtain SEI CMMI level 5 certificate. There are also five software companies (Havelsan, Ayesas, Koc System, Meteksan System and Cybersoft) which has CMMi 3 level certifications (OECD, 2007). It is also known that a great deal of Turkish software companies is striving to obtain CMMI, SPICE:ISO, ITIL, and COBIT.

Recently clustering studies have become an important issue for Turkey. Clustering improves the competitiveness in international markets through exploiting the synergies between companies, governmental organizations, universities and research centers. It plays a stimulating role to foster the competition and cooperation among

companies. Competition and cooperation among companies in true ways and true time not only strengthens the companies and the national industry but also leads to increase trust of the international markets. International linkages and lobbies also play great roles for being a strong player in international markets. Recently Undersecretariat of Foreign Trade has several efforts to create a clustering policy. We can say that Turkey is at the very beginning of clustering studies. But it is hopeful for the future of industry that there is a growing attention to clustering studies.

As in many countries in the world Turkey's software industry has shown duality as on one side there are large global companies and on the other side there are small and micro scale companies (İTO, 2006). The leading global companies in Turkish market are Microsoft, IBM, SAP, Oracle. The companies in Turkish software industry offer various products. These products are generally application software such as supply chain management, customer relationship management, global positioning systems, mobile marketing solutions, hospital and laboratory management systems, document management systems, quality management systems, and enterprise resource planning systems (İGEME, 2006) These products have been served to internal and external markets. Recently the spread of internet leads to widen the web applications such as dictionary, web messaging etc.

3.1.4 Medical Informatics Industry

Medical informatics is located at the intersection of information technology and the different disciplines of medicine and health care (Introduction to Medical Informatics, n.d.). It deals with the resources, devices, and methods required to optimize the acquisition, storage and use of information in health and biomedicine. The term Medical informatics is meant to capture the broad discipline which is also referred to as health informatics or biomedical informatics (Nationmaster, n.d.).

Health informatics tools include computers, clinical guidelines, formal medical terminologies, and information and communication systems. Sub domains of health informatics include: clinical informatics, nursing informatics, imaging informatics, consumer health informatics, public health informatics, dental informatics, clinical research informatics, bioinformatics, veterinary informatics, pharmacy informatics and healthcare management informatics.

The US and European Union countries are the leading countries in the world in the field of medical informatics. Medical informatics began to take off in the US in the 1950s with the rise of the microchip and computers. Early names for medical informatics included medical computing, medical computer science, computer medicine, medical electronic data processing (Nationmaster, n.d.). From that time up to now industry has continuously developed. Up to date many national and international associations have been founded. Most of the countries have national health informatics associations.

In this study our main concern area is software solutions in health area. Many countries see the industry as a strategic industry. There are national software solutions that are specially developed for specific areas. Companies in the 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 industry.

In Turkey health informatics is a topic that gained significant importance in recent years. Parallel to advances in the world, in the year 1999 Turkish Medical Informatics Association was founded. In turkey there are many companies that operate in medical informatics industry. The companies' main products are Hospital Information Management Systems (HIS), Laboratory Information Management Systems (LIS),

Dental Clinic Information System Management (DIS), and Health Associations Information Management System. Some of them also produce other products but these are the main products in health software sector. The innovation potential of the health informatics industry is very high. In the sector most of the products are not directly related to health care issues. As mentioned these products are mostly management systems such as hospital management systems and laboratory management systems. There are opportunities for developing innovative products. Also the companies can benefit from all other supports related to software industry. This is a stimulating factor of increasing innovation potential in health related topics.

The main customers of the industry are hospitals and health institutions. According to 2006 data there are 1205 hospitals in Turkey. In the table the number of hospitals according to institution they belong to in Turkey according to 2006 data is given.

Table 3: Hospital Numbers According to Institution in Turkey (Ministry of Health, 2006)

Ministry of Health	769
University	56
Private	332
Ministry of National Defense	42
<u>Municipal</u>	<u>6</u>
Total	1205

3.1.5 Environmental Assessment

For analyzing external factors those have influences on the company PEST analysis approach is used. PEST analysis stands for Political, Economic, Social, and

Technological analysis and describes a framework of macro environmental factors used in environmental scanning. It gives a certain overview of the different macro environmental factors that the company has to take into consideration.

Political Environment

In accordance with the eight five-years development plan that is approved in 2000 by TBMM, the declaration that activities related to IT, Research and Development would be supported, was covered by a national act. This was a very important step for the development of the industry. Likewise, Law: 4691, on Technology Development Zones that has taken effect in 2001 was a huge step for the development of the industry either.

A certain number of tax exemptions and supports are provided to the technopark companies according to Law: 4691. The companies that locate in technopark are exempt from corporation and income taxes related to software, and research and development activities, up to end of year 2013 according to Law:4691. In this period the products; system management, data management, sector-specific, mobile, internet, business applications, military command control application software, delivery and services are exempt from value added-tax. Moreover research and development, software and research personnel that work in the zone are exempt from all kinds of taxes. Furthermore there are privileges that are given to university members. Companies can also benefit from other governmental supports along with technopark supports.

There are many support and incentives from the governmental organizations for the development of the industry. For the purpose of fostering entrepreneurship based on advanced technology, strengthening university industry relationships, supporting

technology transfer, fostering research and development facilities' technology development centers (TEKMER) are founded by SME parental authority administration (KOSGEB). Technology development centers provide companies, materials, prototype production, raw materials for test production, quality improvement, technological hardware, consultation, publishing research and development facilities results, office renting support in technoparks, congress, conference and fair participation in foreign countries opportunities. Moreover KOSGEB has supports for SMEs apart from technology development centers. These supports constitute, bank credit interest supports, IT technologies support, regional development supports, consultation and training supports, market research and exportation supports, technology development and innovation supports, development of international cooperation supports (KOSGEB, 2008). Turkish Scientific and Technological Research Institution (TUBİTAK) has substantial support programs for SMEs. These supports are mostly related to research and development topics. According to type of applicant and type of works done in a company, type of support vary (TUBİTAK, 2008). Moreover Turkish Technological Development Association (TTGV) gives supports. These supports are related to environmental projects, technologic entrepreneurship, research and development projects and technological investment (TTGV, 2008). There may be support and incentives except from these mentioned in previous paragraphs but mostly known supports are these. Software industry is a very rapidly changing, developing and strategically important industry. Types and number of supports moreover the organizations that give supports are changing continuously at a great speed. An organization can benefit one or more than one of these supports. It can choose the supports those best suits its operations.

Exportation policies are another topic that software companies can benefit. There are many support and incentives for the companies those export their products. Exportation support and incentives are formulized by Undersecretariat of Foreign

Trade. These supports constitute, research and development supports, supports related to environmental costs, market research supports, education costs, employment supports, opening office abroad, brand recognition and presentation supports, and Turquality supports. The amount and upper limits of these supports vary according to applicant companies' various attributes like size, works done and applied support (DTM, 2008).

There are many non-governmental organizations that go at the success of the industry. These are; Turkey Informatics Association (TBD), Turkey Informatics Foundation (TBV), Turkey Software Manufacturers Foundation (TUBISAD), Software Manufacturers Foundation (YASAD), Informatics Sector Foundation (TUBİDER). Also there are foundations like Turkish Electronic Manufacturers Foundation (TESİD) and Turkey Technological Development Foundation (TTGV) which are indirectly related to software sector. Despite the existence of the mentioned organizations, there is no organization that comprises all facilities related to software industry in Turkey. They have efforts on their own-wide but their efforts are not in an organized manner. This causes their efforts to remain inadequate and sparse.

There are international programs that address national politics and programs in related sectors of member countries to become closer. One of the most widely known is Frame Program 7, This program's purpose is to strengthen Europe's science and technology base, support European Union member and Associate member country's social and economic situations and support collaboration among countries. This is a huge program with the budget of \$53,2 billion. Seventh framework program has been divided into fields of activity. One of these fields is health. The budget of health field in seventh framework program is 6.1 billion euro between the years 2007-2013. European commission has grants for several fields. These grants range in many topics from agriculture to transportation and there are also topics related to health issues.

There are also other programs like, Competition and Innovation program, Instrument for pre-accession assistance, Socrates, Leonardo da Vinci. Funding principles vary according to topic of the projects. Here short descriptions of some programs were given. These programs are changing on a continuous basis.

Economical Environment

In recent years increased global liquidity had a great effect on developing countries' economies in positive direction. When we come to year 2006 inflation anxieties had begun to appear in global markets. In the year 2007 mortgage crisis in USA, crystallized the problem. The problems in international markets and slowing down of developed countries economies in the year 2007 show that by the year 2008 the world economy will go at a period that is harder and ambiguous (Turkish Industrialists and Businessmen's Association [TUSIAD], 2007). It is estimated that there may be a slowdown in global economy. It is estimated that world economy had grown 5,2% in the year 2007 and it is estimated that world economy will grow 4,8% in the year 2008. (TUSIAD, 2007) Slowing economy of America threatens all over the world. For precaution FED decreased interest rates. As a result in most of the developing countries inflation began to increase, but the effects has not been seen in developed countries yet. Europe Central bank cited that the ongoing financial turbulence could affect Euro zone growth and inflation rates badly and represented that it will continue to carry on sober money politics. The increase in petroleum prices is another indicator of world economy. Political and environmental conditions in the petroleum production area stimulated the petroleum prices. In the year 2008 the price of petroleum beat record over record. This causes appreciation in prices in many countries.

Increased global liquidity in international markets in recent years, had a great effect on developing countries' economies included Turkey in the positive direction. There had been important capital flows to Turkish domestic market. These capital entries had great effects on Turkey's low inflation and high growing rates. According to Turkish Statistical Institute in the last five years Turkey had a stable economy. In the table 4 the rate of change of customer price index (CPI) figures in the last five years based on previous year January are given.

Table:4. Annual Rates of Change of CPI of Turkey in Last Five Years (TurkStat, 2008)

2004	10,59
2005	9,23
2006	7,93
2007	9,93
2008	8,17

In the table 2008 year's rate of change of CPI shows the change according to previous year January. According to expectations in 2008 the rate of change of CPI will go beyond the expectations. Pecuniary difficulties in international markets will probably have effects on Turkish economy. This means capital inputs may slow down or almost die and ultimately may cause Turkish economy to slow down. Moreover current account deficit of Turkey is very high; this constitutes a very big risk on economy. Turkey's domestic economy depends on many factors like political issues, global economies foreign investments. Any disgusting situation on any of these factors can effect overall Turkish economy.

The recent strength of TL against foreign currencies especially dollar, euro and Arabic countries' currencies has affected the Turkey's ability to compete in export markets and has also increased the competitive pressure from imports in the Turkish market. (TUSİAD, 2007). In the future it is not definite that Turkish Lira (TL) will remain strong against foreign currencies. As mentioned in the economic views TL may probably lost its strength in near future. This lost is not expected as a crisis but there is a strong expectation that TL will be leaner against foreign currencies especially against euro and dollar in coming days. When come to Organization of the Petroleum Exporting Countries (OPEC), as casted high petroleum prices, it can be expected that TL will lose strength against OPEC countries' currencies.

In conjunction with stabile and growing domestic economy, Turkish software industry has a growing trend in recent years. According to data of 2005 Turkish software market size was \$540. When we come to year 2006 we see that market size was \$880. In the year 2007 the market size is \$1.260 with a growing rate of 43%. In the year 2008 the expected growth is 28%. The figures are given in table 5.

Table 5: Turkey Software Industry Market Size (Interpromedia, 2008)

Year	Market	Growth(%)
2005	540	
2006	880	0,63
2007	1.260	0,43
2008	1620*	0,28*

Parallel to the growth in software market software foreign trade shows improvements. Recently Turkish software companies have directed their export to almost ninety

countries (OECD, 2007). In the year 2005 software exportation value had become \$15 million level and importation value had become \$90 million level (İGEME, 2006). It has been known that there have been some difficulties regarding measuring of software export and import values. Also it is well known that these numbers do not reflect the real value of sector exports, because software products are often a part of other products and services such as machinery, electronics, electronic machinery, engineering, medical equipment, etc. It has been thought that sector has an important potential for exportation. According to Günel (2007), head of YASAD, Turkey has giant potential about software export and if right policies have been implemented, software exportation value will reach 2 billion dollars by 2013.

The software exportation values have varied among countries on year's base. Generally, Germany, USA, Iraq are among the countries that Turkey's most exportation has been done in recent years (İGEME, 2006). The Middle East countries, Iraq, United Arab Emirates, Iran, and Saudi Arabia are important countries for Turkey's software exportation (İGEME, 2006). 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 exportation is Central Asia Turk Republics. Kazakhstan, Azerbaijan, Kyrgyzstan are the countries, Turkey has important exportation values (İGEME, 2006) As thought these countries' petroleum revenues and economic development will likely to continue, these countries can be rated as potential countries for Turkey's software exportation. Moreover Turkey's geographic position is an advantage for Turkey for exportation to these countries.

Social Environment

Turkey has a very young population. Among this young population computer usage level is very high. According to a survey done by Turkish Statistics Institute in the year 2007, the median age is of Turkey is 28,3 and fifty percentage of the population is under this age.(Turkstat, 2007)) According to another survey done by Turkish Statistics Institute in 2008, the age range that uses internet at the highest level is 16-24 and among this age group 25,2 % of female and 43,79% of 81,89% of the males use computers (Turkstat, 2008). As thought this young population will be future's adults the figures are hopeful for the future of the industry.

Software industry is an industry that is based on creativity, skills and human intelligence. The most important source of the sector is work force. About the need of workforce of the sector the data are not absolute and enough. The numbers on some publications base on sector professionals' previsions and forecasts. In many publications, it is said that 70000 employees must penetrate the sector in order to satisfy the sector needs (İGEME, 2006). Universities' education system and company needs do not overlap. During university years students do not interact with companies at adequate level so that causes new graduates being foreigner to real business world. Brain drain is a very big problem for the sector. Most high skilled people migrate to developed countries where there are higher life standards and more opportunities for personal development. This causes a major deficiency in work force. However it is hopeful for the future of the industry in terms of workforce that increasing percentage of schools that have internet connections, growing attention to technical education in high schools, young population of the country. Moreover in universities there is a growing attention to information technologies and new master doctoral programs are opening.

Technological Environment

The industry has a great innovation potential. The companies that continuously develop new products play a great role on this situation. In the industry innovation occurs in cumulative basis. Companies upgrade their existing software on definite periods. Most of the products come out as updated versions of older products. Furthermore there are open source software products those span the sector with a great rate. These software products are completely free and anyone can add new features and develop the software. Most of these freeware can compete with commercial software products nowadays. The hardware for computers is also continuously developing. As a result, software for hardware has also been developing. Operating systems and other vital programs for computers are changing on a continuous basis. Newer software may be incompatible with older products in most cases. As an example, software that operates on windows 98 can be obsolete for windows vista. As a result software must continuously improve itself according to collateral products. Due to these conditions great amount of investments are being done on research and development topics. The products are being developed in shorter times. Companies those cannot keep a step with this development speed, cannot stay in market.

In today's highly competitive and volatile global markets, SMEs frequently need to acquire technology from abroad, to sell or license technology outside their own country, or to enter into joint development arrangements with foreign firms which have complementary know-how. There are international business networks aiming at these activities. They provide services such as company databases. These databases constitute companies according to meaningful classification criteria. Any company can look for any of the mentioned purposes at these databases. European Business and Innovation Centers Network and Business Support Network Anatolia are two

examples of these networks. There also more organizations that address these issues all over the Europe and also World. Moreover there are international and national technopark associations. They mainly address at connecting science park professionals, provide services that drive growth. International Association of Science Parks (IASP), Association of University Research Parks (AURP) are two examples of international associations.

There are lots of software development tools. We can divide these tools into two categories. One is open source and the other is commercial software development tools. In this sector huge global companies play a great role. Microsoft's ASP (Active Server Pages) Sun Microsystem's Java, Coldfusion Opensource PHP are some of these tools. These tools develop and evolve in time. Their recent versions are PHP 5, ASP.Net 2.0, Coldfusion MX, and Java. Evolution brings ease of use to these programming tools. Everyday programming becomes easier. Some of these languages are like speaking language. A programmer can develop programs like speaking but in a methodological way.

3.1.6 Market Analysis

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 developed by Michael E. Porter. It uses 5 forces that determine the competitive intensity and therefore attractiveness of a market. Attractiveness in this context refers to the overall industry profitability. Porter (1985) referred to these forces as the micro environment, to contrast it with the more general term macro environment. These forces affect a company's ability to serve its customers and make profit. A change in any of the forces normally requires a company to re-assess its marketplace. These forces are:

threat of substitute products, the threat of established rivals, and the threat of new entrants, the bargaining power of suppliers, and bargaining power of customers.

Turkish health software industry consists of firms that produce software for use in hospitals, laboratories, village clinics and all health related institutions etc. The major products of the industry are management information systems. These management information systems are mainly hospital information management systems, laboratory information management systems, clinic information management systems. Despite numerous firms that produce management systems there is few firms that produce innovative products based on research and development. It might appear that industry has two different aspects. On one side there are, research and development based innovative products, and on the other side there are there are information management system products. The detailed assessment of Turkish health software industry with five forces analysis is given below.

The Threat of Entry

As thought generally software industry entering to industry is very easy. Investment costs are very low. There are governmental support and incentives for the development of the industry. The effects of ease of entering to industry can be seen among health related software producer companies. There are numerous companies that produce information management systems in health area. Moreover the structure of management software is very flexible. With little changes in modules of the programs, a hospital information management system can be adapted to a laboratory or a clinic.

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. Although there are support and incentives for research and development activities, creating connections with health sector experts, enforcing multidisciplinary studies among software developers, project managers and health sector experts are time consuming and challenging activities. The companies that succeeded at these topics gained substantial know-how. Moreover learning curve effect must be taken into account. As thought these aspects entering to sector requires considerable investments but if support and incentives and potential industry earnings taken into account we can say that threat of entry is moderate.

Threat of Rivalry

On one side of the industry there are numerous firms that produce information management systems like hospital information management systems and laboratory information management systems. Most of the companies in the sector are small sized. There is a fierce rivalry among the companies those produce information management systems.

Although there are numerous firms that operate in health software sector there is fewer companies that invest on research and development facilities, emphasis on innovation. Product differentiation is at a very low stage. There are small number of firms that carve out different product niches based on their individual research and development skills. As thought these products have very few or no rivals result in low rivalry.

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. These companies compete in the usability, price and quality of their products.

On the other side there are, research 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 large numbers of suppliers for the basic materials needed to produce software. Basic materials are computers and special software for this industry. Obtaining them is very easy. Thus the suppliers do not pose a threat. We can say that the threat of suppliers in the industry is very low.

Threat of Buyers

Main buyers of health software products are hospitals, laboratories, village clinics and all health related institutions. Most of the hospitals and health organizations belong to state. They have limited budgets. For buying innovative and new products convincing them is very important. Moreover ministry of health plays a big role at purchases. Domestic economy and personal attributes play role at budgeting and decisions of purchases. For privately owned hospitals rivalry is very important so they pay more attention to innovative products. By investing in new products they can improve their service quality and impress their customers. They can also make

their own advertisements by this way. Introducing products to them in correct way is very important.

When talked with sector experts, their common view is that the required importance is not given to the products of health software companies. The health sector employees especially the people who have authority like administrators and managers, are not completely aware of the benefits of software products. For the development and progress of the industry they must be informed and trained on a continuous basis. As thought all of these aspects we can say that threat of buyers is moderately high.

Performance

It might appear that the industry has two different aspects. On one side there are, research and development based innovative products and on the other side there are information management systems producer companies. The threats differ according to companies operations and products. As thought information management systems, the threat of entry, rivalry and substitutes are very high. When come to the innovative, research and development based products, the threat of entry decreases to moderate level. Threat of rivalry decreases or on some products disappears. The innovative, research and development based products carve niches in the industry. The threat of substitutes to these kinds of products decreases to very low or negligible levels. Threats of suppliers for all software products are very low. The threat of buyers for all kinds of health related software is at a high level.

3.1.7 Crafting Opportunities and Threats

As seen from the analysis software industry constitutes a lot of opportunities. To begin with governmental support and incentives are very important economic sources. A research and development company can find a variety of monetary sources. Trading policies are another opportunity for the companies. While deploying foreign markets foreign trade supports can lighten the economic burden on the companies. There is growing market potential in OPEC and Eurasia countries. The companies that want to export their products can focus on these countries. As a research and development company tax exemptions is another topic that company can benefit. International programs such as seventh framework program constitute another opportunity for the companies. The programs related to health in seventh frame work offers considerable opportunities such as, meeting costs, help in finding project partners and marketing abroad. When come to the Turkish domestic market, market has a growing potential. Potential industry earnings come from the market potential. Especially in health informatics industry there are not many kinds of products. Products are nearly same types and there are not many companies those invest on research and development. There is a growing attention to health sector especially in developed countries. The rise of older population and need for providing better life standards to patients played great roles at the growing attention. There are international networks for promoting collaboration among companies. These networks simplify establishing relations with companies abroad. The level of computer and internet usage stand at the social aspect of the industry. High levels of internet and computer usage rates and the ascending trend is hopeful for the future of the industry.

Along with opportunities, the sector also constitutes threats. Economic conditions are very crucial for development of industry. Turkey's domestic economy is very brittle.

Although in recent years inflation rates were stable it is not a definite indicator for the future. Economic crisis are facts of Turkish domestic economy. Moreover the economic expectations are not very optimistic in short term. An economic crisis affects all the sectors in Turkey. In the past many SMEs go bankruptcy because of economic crisis. As thought software industry is supported by government in many ways, and budgets of governmental health organizations are determined by governmental institutions it is obvious that it will be affected drastically by a potential economic crisis. Moreover global economic waves have also affects on Turkish economy and also on many countries' economies. In the PEST analysis it is mentioned that developing countries constitute an important market potential. These countries' economies are not as strong as developed countries'. A global economic crisis affects these countries firstly and affects of crisis in these countries are stronger compared to developed countries. Turkish Lira may loose its strength against foreign currencies. And there is a growing attention that interest rates will increase. In some researches and publications it is mentioned that there is a gap between the need of workforce of the software industry and present workforce in the industry. Many companies are facing difficulties at finding high skilled workers. Most high skilled workers request too much salary because of the mentioned gap. In the future if that gap would not be closed, it is obvious that many companies will face difficulties in finding workforce. All the conditions of the industry if thought together, there can be companies that want to enter the sector. This may cause the increase the number of substitute products. Customers play a great role for the development and progress of the industry. However sector experts think that the customers are not completely aware of the benefits of the health software products. In order to overcome this situation customers must be correctly informed, number of fairs and congress held must be increased.

3.2 Internal Analysis

We have chosen a Turkish software company for our studies. It was an important criterion for us that the company was a small sized company. Moreover we were familiar with the business and found suitable environment for our studies.

3.2.1 Company Overview

Company Profile

The company is a R&D company which develops software and provides training, project development and consultancy services. It has two offices located at well known technoparks in Ankara. The projects that are carried out up to date in the national and international arena, have received support from the United Nations, European Commission, TÜBİTAK and TTGV. The company had forty employees at the time this study was being conducted. 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 in related fields such as medical and consultancy areas.

Mission, Vision and Objectives

Mission: To create information and technology-intensive projects to be used in national and international platforms, through utilization of company's know-how, to establish new areas of practice for the projects developed.

Vision: To create projects which are often needed by the communities in Turkey and elsewhere. We aim at bringing along higher life standards and make positive contribution to the economic, cultural and social lives of individuals.

Objectives

- Customer Satisfaction
- Profit Maximization
- Market Leadership and Growth
- Lead Positive Contribution to Lives of Individuals
- Innovation and Creativity at All Levels of Production and Services

Corporate Culture

The main goal of the company is to provide complete solutions that meet the needs of its customers. Creating brand awareness and ultimately becoming a well known brand is on high importance either. In doing so the company focuses customer satisfaction and full consultancy services after sales. The customer satisfaction includes understanding the needs of customers, including them in the product development process, informing them about usage of the products, after sale giving full support and getting feedback. The company also collaborates with universities and research centers for developing innovative products. It chooses its consultants from among the most connoisseurs in their fields of study. The company stays on a continuous connection with the domestic and foreign universities and research centers. The company's training system is on-job training. It believes that the best learning method is learning on the job. It directs its employees to be aware of all the activities of the company. This brings complete awareness of the company, believes, culture,

stakeholders and stakeholder expectations. Decision making in the company stays on a rational basis. Company pays great importance on commitment of employees to decisions. It believes that multiple commitments creates higher value and provides multiple points of view. Company values leadership character. It believes that leaders play a stimulating role in achieving the desired situations and have positive effects of personal effectiveness.

Scope of Business

The company is an R&D company which develops, installs and spreads software in health informatics industry. In doing so, it creates new areas of employment, provides training and consultancy services and closely collaborates on partnership and consultancy basis with national and international companies, universities and research centers. It specifically operates in areas such as medical software, consultancy, and training.

3.2.2 Stakeholder Analysis

A stakeholder is an individual or group that can heavily influence the performance of the business (Curtice, 2006). Assessing stakeholder expectations is an important part of strategic planning process. Stakeholders have certain expectations from the company. The degree of satisfying their expectations provides a valuable indicator of current and future performance.

The main stakeholders of the company are customers, employees, consultants, shareholders, local authorities and industry partners. The customers of the company are all organizations those use medical software such as hospitals and health institutions. The shareholders of the company are four people and the company is an

incorporated company. The company has forty employees. Local authorities are the funding organizations, regulators and governmental organizations. Industrial partners are the companies that the company conducts projects together. Consultants are the people the company works with in special projects.

In the literature there are empirical methods for verifying stakeholder expectations such as, surveys, focus groups, personal interviews. In this study for verifying each stakeholder group different methods are used due to the nature of each group.

The expectations of shareholders are verified by personal interviews because the group consists of four people and there was chance to interview with each of them. They expect to earn money, grow business, provide opportunities for employment and improve life standards through products and services that 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 on the pavement. 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 stimulate 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 be moral, carry out promises and content them and customers with pleasing quality of products and services.

3.2.3 Value Chain Analysis

To analyze the specific activities that firms create value through, 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 chain. Porter (1985) 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. Support activities are the activities those assist a firm in accomplishing its primary activities. According to Porter's Value Chain primary activities include: inbound logistics, operations, outbound logistics, marketing & sales, and services; support activities include: infrastructure, technology development, human resource management and procurement.

Software Value Chain

Recently specific sectors use special value chains according to their sector specific activities. Software value chain is one such value chain. As focused on product or services, software value chain exhibits different arrangements. This results in two different activity arrangements in value chain as; software value chain for standard software and software value chain for individual software. Software Value Chain for standard software, activities are in order: software development, software documentation, software packaging, marketing and sales, consultancy, application integration training, support, application management; Software Value Chain for individual software, activities are in order: consultancy, software development, software documentation, software documentation, software packaging, implementation and integration, training, support, application management (Berlecon Research, 2002).

The standard product is produced for multiple sales whereas the individual product is produced for a solution of a specific problem. In the software value chain for individual product consultancy phase is at the beginning of the software value chain and there is no marketing and sales activity because the product is developed for only demanded body and will not be sold to third parties. However, as produced for a special solution to a problem, according to demand, an individual product can be tailored to a standard product.

Modeling Company as Value Chain of Activities

Although company has individual software products most of the company's products are standard software products. Then the primary activities of the company are analyzed 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.

Support Activities

Infrastructure: 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, long term plans. Planning activities are conducted by top management of the company. There is no a structured planning approach. IMS is the management information system of the company. It is developed by the company itself. It has modules for daily activities and running projects. It is a very young information management system and as many deficiencies. It cannot respond to most of the needs of the

company completely. Mainly used resource in these activities is workforce and also IMS can be thought as a resource.

Human Resources Management: Human resources activities include: recruitment, performance measurement, and training. Although there are no hierarchic levels in the company, project coordinators and departmental directors exist. Recruitment is done by the related department and general manager. For example, if a software developer would be recruited, software development director interview with applicants; if a sales person would be recruited, sales director interview with applicants and finally general manager interviews with applicants. The one, that's characteristics most suits the demanded worker, is recruited. Performance measurement is done by directors. As a small company most of the works are conducted with workshops. Directors are aware of all the people's performance by their own observations. There is not a structured method for performance measurement. Training method can be classified as on-the-job training, workshops and sending employees to congress and seminars. Company believes that the most effective training method is on-the-job training. Furthermore workshops are conducted on a continuous basis. By this way people can benefit from their colleagues' know how and experiences. The company also sends its employees to congress and seminars related to fields of their study.

Procurement: At the beginning of the procurement process need assessment is conducted. The results of the need analysis are notified to related department director. If the determined needs are confirmed by director, then it is looked for if it is a project base purchase. If it is a project base purchase, suitable suppliers are searched at the database. If suitable suppliers are found at the database, offers are received. If suitable suppliers are not found, suitable suppliers are searched outside, determined and registered to database and offers are received from these suppliers. Then the

offers are evaluated and most suitable offer is selected. Afterwards order is placed. 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: 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 trusts itself on this field. Most of the products are produced after a suitable project development phase and most of these projects have been supported by national and international funding organizations with their R&D and innovation potential.

Project development is specially conducted with the purpose of attending support organizations for receiving supports. This is a critical activity area for the company as thought financial conditions are very important for commercial companies. Recently this activity has been gaining significant importance as support and incentives become widespread. Many consultation companies serve this service. Any company with a project idea consults to these consulting companies for searching relevant supports and preparation of project submittal forms. Different from consultation companies the company we work on only develops its own projects. Project development starts with generating project idea. Then relevant support and incentive options are searched. Then project is evaluated by project team. In the conformity assessment literature research, feasibility analyses are committed. If the project is decided to be implemented, support and incentives to be attended are determined and project documents are prepared. Then it is looked for if the project needs to be implemented together with partners. If the project will be implemented on its own

then project submittal forms are prepared and delivered to support organizations. If the project is to be implemented with partners, the company searches for relevant partners. For a small company partnerships are very important. Most of the companies cannot find all the resources needed to produce all the parts of a product. To overcome this situation they create partnerships. For example for a product that contains hardware and software, one company produces hardware and the other produces software. If suitable partners are not found the project is terminated or deferred to a later time up to suitable partners are found. If suitable partners are found the project is presented to them. If revision decisions are made after presentations, revisions are done. Then the documents for support and incentive applications are prepared and presented to related institutions. If the support and incentives taken product development phase begins.

This study requires a multi discipliner study among project team, the consultants related to project topic and software developers. The critical activities are project conformity assessment, partner search and project submittal forms preparation. In the conformity assessment, the products idea's innovation potential, feasibility analyses are conducted with a multidisciplinary study among project managers, software developers and consultants. Project submittal forms are large documents those require large scale information about the product that will be developed. For filling project submittal forms, project managers, software developers and consultants work together. Project managers mainly deal with the management of the project. Software developers mainly deal with the characteristics of the software developed. Consultants give the relevant information about literature and health related topics in the projects. The flowchart of project development is given in figure 1.

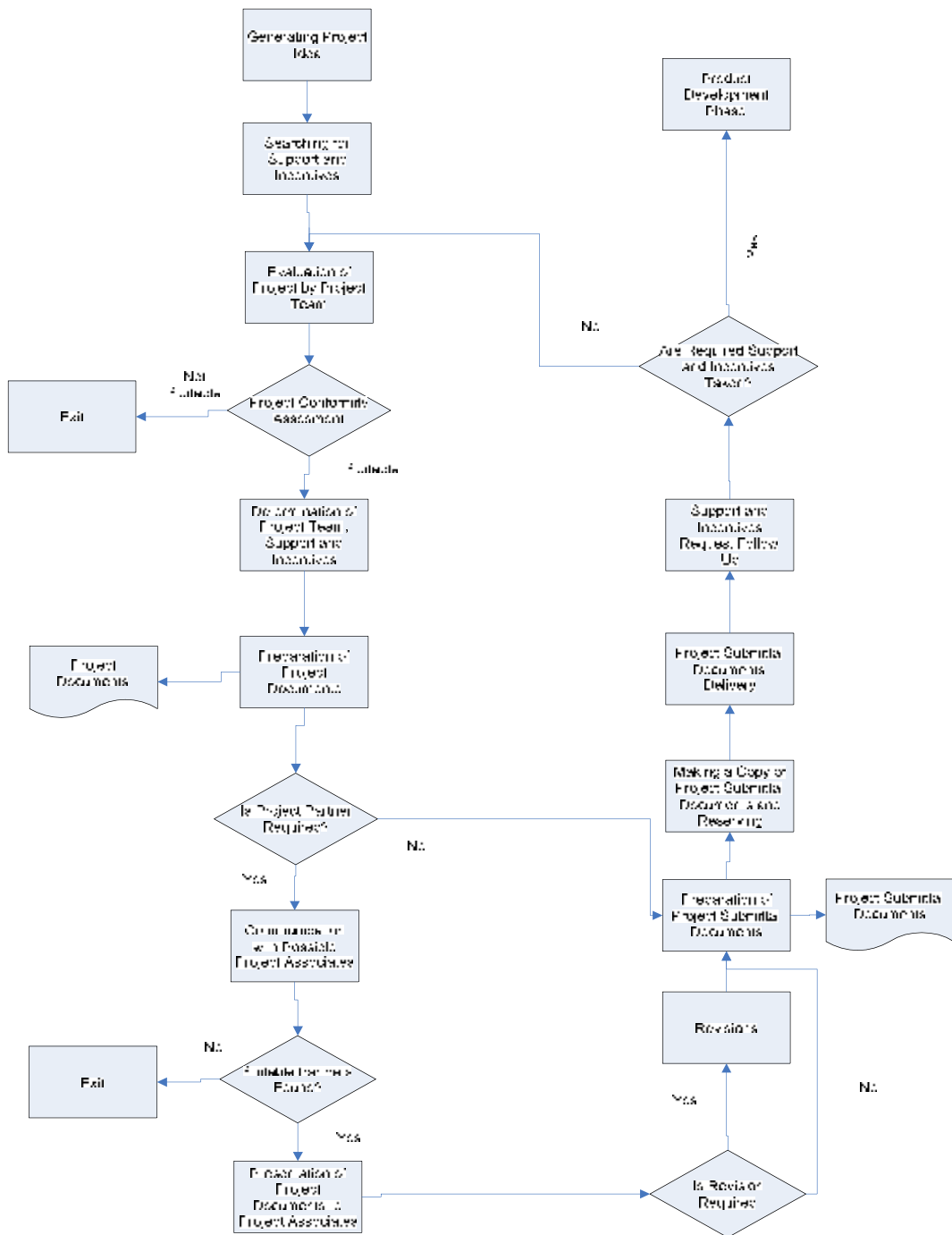


Figure 1: Project Development Flow Chart

Primary Activities

Software Development: Software development is the writing of technical code in order to initiate and control the functionality of machines, especially computers in a certain way and so that they meet certain requirements (Berlecon Research, 2002). Software development tools such as programming languages which allow controlling the technical codes are used in this phase.

For software development iterative incremental model is used for the entire projects of the company. In iterative incremental model when a subcomponent is completed, it is assembled to the previous one instead of producing all subcomponents and assembling at the end of the project. Waterfall model is the name of assembling all the modules after producing all. In iterative incremental model, debugging cost is lower compared to assembling all subcomponents at the end of the project. Revision meetings are continuous processes that lay over all product development phase. Revision meetings require a multi disciplinary and are conducted by consultants, software developers and project managers. In these meetings the project progress, resources that are used, the deviations from predefined plan are discussed and corrective actions are determined. Critical success factors of this phase are the following factors.

Functionality requirements must be met.

High software quality must be achieved.

Time to market must be short.

Development costs must be minimized

Certain standards must be met.

Software Documentation: Software documentation is conducted during software development phase. Company stores the source code so that if any modification must be done, it can be done by the company itself in any later time. Secondly company uses electronic documentation explaining the software code within the software enabling interactive studies on codes. If a modification must be done on codes a software developer finds the related electronic source explaining the functioning the software in source code and makes modifications. By this way finding the related code is much more easily compared to not writing explanation codes within the software. 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: Software packaging is the aggregation, integration and optimization of software products or components (Berlecon Research, 2002). It is very important for the company since customers' demands vary. Software packaging is done by software developers in the company. Since software developers have gained experience this activity can be done in predefined time periods.

Marketing & Sales : In the company marketing and sales is committed by four main channels. These are electronic sales, publications, personal interviews and order processing. Electronic sales are done over internet. Customers can reach company's products and services over internet and can make orders. Publications are the distinctive aspect of company's marketing and sales activities. As mentioned before company has employees involved in academic circles. Moreover 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. Another marketing and sales activity is personal interviews. Products are introduced to customers with personal interviews. This method is mostly used when the customer is a high eminent person usually from a governmental organization or a private enterprise. With these sales, company can sell a group of product at the same time. Order processing is another sales technique for company. Company submits proposals to customers and if the proposal is found suitable by the customer than the product is bought by customer. This kind of sale can be also for an individual software product. Furthermore company participates fairs and congress. By this way company reaches a group of potential customers at the same time. Despite these marketing and sales activities, company thinks the sales are not at desired level. Recently company focuses this topic and wants to take corrective actions in order to increase sales.

Consulting: Consulting activities of the company are: analysis of the current situation, defining the functional and technical requirements and selection of the solutions. For a health software company consultation is a highly important activity. Firstly need assessments according to scope of the project are conducted than the appropriate staffs are 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.

Implementation and Integration : Implementation phase includes; installation, configuration and customization activities. Firstly as installation, software is made run on an existing basis of software or hardware. Then it is adjusted to customer needs within the given framework without changing the source code of the software. Finally the software is adjusted to customer needs by suitable modifications such as: changing the source code, additional system integration, etc., as customization

activity. Integration is conducted if integration is needed with other systems or applications. These activities are conducted by software developers. In this phase also training activities are planned. The people those will be trained and the people those will train them are determined in this phase.

Training : Training activity includes training people that are directly or indirectly related to system. The training activities are in order; corporate training, on-site training, evaluation of training and finally allocating user documents. During all process, reports are recorded for each activity. Training activities are conducted by the people who actively participated to the product development phase. Company firstly trains its own employees and makes a training plan, and then according to plan the target people are trained. The people that will train customers are determined before sales. The company's experiences show that determining and training the people who will train customers yield better results than selecting people who will train customers after the sales.

Support : Support is a form of enabling the software performing in the way it was supposed to perform (Fixing problems). This is done through telephone, e-mail and interviews in the company. 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 as routine maintenance and support, and call center and web maintenance and support.

Routine Maintenance and Support: Company experts visit the organizations that company sells products on a regularly basis according to time mentioned in the contract. Company specialists check out the program and processes. If improper usage or better ways to use the systems are determined the users are warned.

Call Center-Web Maintenance Support : Customers can call for support during office hours. Any of the support employees can help by phone or if needed support employees are sent for onsite maintenance. Company has a web support portal. Every day the support portal is controlled by company. If there is a maintenance request, firstly support employees attempt to solve the problem by mail or by phone. Otherwise support employees go for onsite maintenance. Work flow diagrams of these processes are given figure 2.

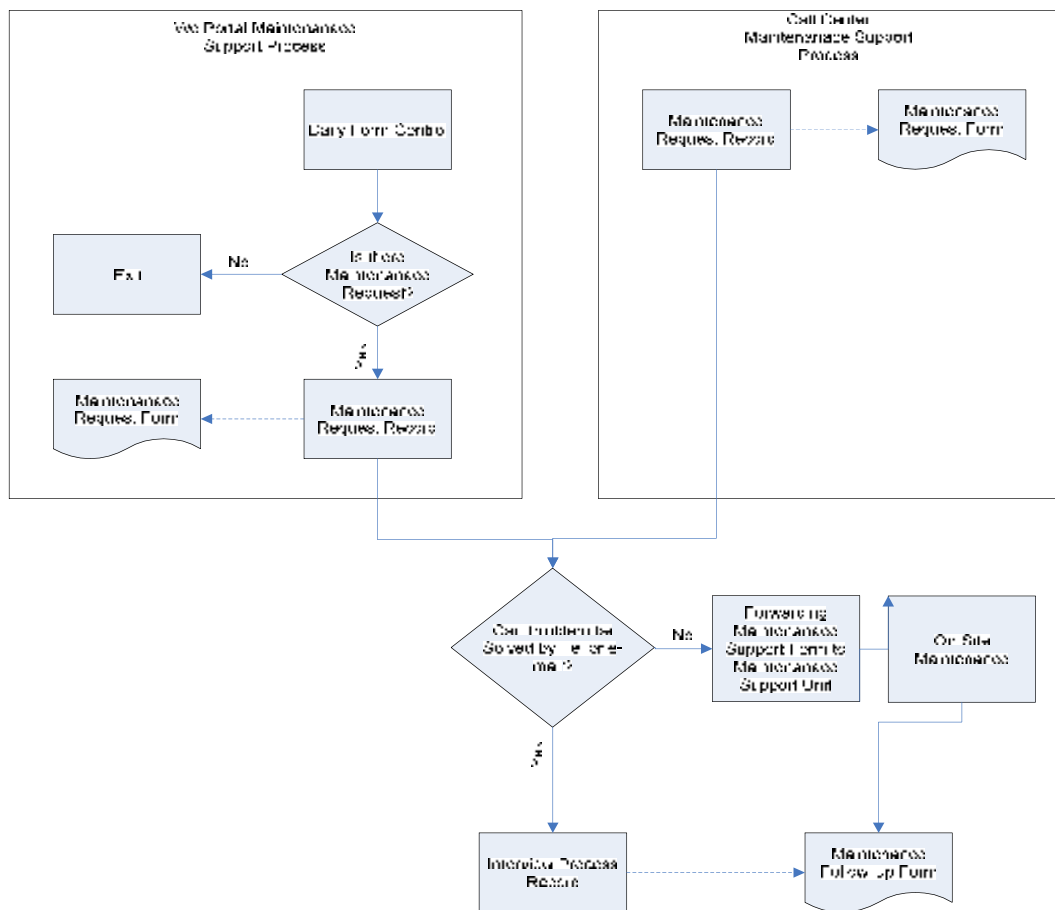


Figure 2: Maintenance and Support Flow Chart

Application Management : Application management is conducted to ensure that software is performing in the way it was desired to perform. Company permanently checks the following questions for the purpose of determining if an update is necessary for its products.

- Are all of the functional and technical requirements met according to alternating needs?
- Are newer methods and data available?
- What are the latest enhancements about the field?
- Are all the national and international standards met?
- Are all compatibility requirements met with complementary hardware and software?

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.

3.2.4 Analysis of Strengths and Weaknesses

With the value chain, activities of the company are analyzed in details. For broad analysis fundamentals of resource based view and VRIO analysis are used. According to 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 imitability, and the question of organization (Barney, 2002). These questions are asked for each resource and capability. The question of value deals with if a firm's resources and

capabilities enable the firm to respond to environmental threats and opportunities; the question of rarity deals with if a resource is currently controlled by a small number of firms; the question of imitability deals with if the firms that do not possess any resource face a cost disadvantage in obtaining the resource; the question of organization deals with if the organization is organized to exploit the full potential of its resource and capabilities (Barney, 2002).

According to VRIO analysis 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 and rare it is strength and distinctive competence, if a resource or capability is valuable then it is strength. In our analysis we first listed the critical resource and capabilities of the firm and then evaluated these resource and capabilities through 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. In the company mission and objectives are clearly expressed to all employees. All of the employees are aware of the company's mission and vision. Employees are informed about their role for achieving the mission and vision of the company by directors on a continuous basis. This is likely to be valuable rare and costly to imitate resource and sustainable distinctive competence. Here the firm is organized to take advantage of this resource.

Information network among universities and research centers is a very critical resource for the company. As mentioned, in the value chain activities, in the product development phase and marketing phases it plays a great role. The creation of this network takes a very long time. The fact that, the company has employees who are

already in academic circles and most of the company's consultants are university members play an important role on the creation of linkages among company and universities. Company keeps track with the latest enhancements and developments in health informatics area thanks to information network. Moreover its reputation increases thanks to information network. This is likely to be valuable rare and costly to imitate and thus a sustainable distinctive competence.

In the value chain activities' marketing phase it is mentioned that scientific publications, is another critical capability for the company. 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 valuable rare and costly to imitate resource and, exploited by the organization itself hence sustainable competitive advantage.

Company has a very high potential for differentiated research and development. With high skilled employees and consultants, company continuously follows up the 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 decreasing. Project proposals are continuously coming from consultants, universities and research centers. Moreover before development of a product all the substitute products are systematically searched all over the world. 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 have known each other for a very long time. Despite seven years of the company history they have approximately twenty years of friendship 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. It encourages them to attend master and doctoral degrees. Moreover company supports the employees who are already attended master and doctoral degrees as it lets them to attend school lessons in office hours. As recruitment policy company prefers to recruit high educated people. As a result of these policies more than half of the company's employees have doctoral and master degrees. These people have also conveyed their success in academic areas to their business life. We can say that employee capabilities of the company, is very high. It is a valuable and rare resource and can be thought as strength.

Company has a project based organization structure. When a project is implemented the project members are defined clearly. The project members focus on their projects. They became aware of all the activities of the project. Cross relations between employees in these projects, enable quick communication and multidisciplinary studies. This is valuable capability for the company.

Company has two offices in two technoparks in Ankara. The operations are realized in these offices. Technoparks only host companies which have research and development activities. There are grants and tax exemptions in technoparks which are explained in previous sections. But there are lots of software companies that

locate in technoparks. With these aspects this is a valuable resource. It can be thought as strength.

When we come to the weaknesses the most conspicuous think is marketing. Company has not a structured marketing department. Up to now sufficient importance has not been paid to marketing and advertising activities. There are no specialized professionals that make marketing activities. Moreover the number of people that conduct marketing and advertising activities on a continuous basis are not at sufficient level. As a result the sales are not at desired level.

Company uses a management information system called IMS. IMS is a very new system developed by the company itself. It has information about ongoing projects and daily jobs module. For better communication and project management IMS must be improved in order to meet company needs. New modules such as, project follow-up, contacts, messaging, performance follow-up, and etc., can be added to IMS. With IMS's current condition we can say that company lacks a proper management information system hence this is a weakness for the company.

Employee turn-over of the company is not at desired level. According to data of last four years employee turn-over rate is around 20-25% per year. All new employees have adaptation and training periods. This period varies between one to six months. In this period company cannot benefit from the employee at desired level which creates a burden for the company. Drawing down this rate is important for the company. Hence high employee turn-over rate can be thought as a weakness for the company.

In software industry product development times are essential. With current capacity of the company, the current ongoing projects completion times are about 20 to 26

months which is relatively long for software industry. Company's most of the product development projects are unique and do not have substitute products at the beginning of the product development phase. During the product development time there is a risk that new products can be introduced to the market by other companies. These products may include company's upcoming products features or may become direct rivals to company's upcoming products. If this situation occurs company may lose an important competitive advantage as being first to market. Moreover with current production capacity, the tradeoff between running more projects simultaneously or to complete ongoing projects in shorter times is very low. If a project offer comes at a peak time, company rejects this project or risks other running projects as extending their completion times. Due to these aspects 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. There are functions but the people that are responsible for these functions are not defined clearly. Clear job definitions do not exist. This causes improper work distribution in the company. Some of the works are never done or done lately because of this situation. Hence non-institutional structure is a weakness for the company.

3.3 Strategy Development

In the previous chapters internal and external environmental conditions of the company are analyzed in details. Worldwide and domestic market conditions, capabilities and weaknesses of the company are derived. Now that, strategies for the company can be determined. It is mentioned in previous chapters that there are several strategy development approaches in the literature. The important thing is to choose the approaches that best explain the system and its containing system.

For strategy development in the company three commonly used strategy development tools are used in this study. These are; strategy development directions, Porter's Generic Strategies and TOWS Analysis. By choosing strategy development directions market and product oriented strategies are developed. Porter's Generic strategies provided a framework based on competitive scope and competitive advantage. Finally TOWS analysis is implemented. TOWS analysis is a detailed analysis that takes into account of all the strengths, weaknesses, opportunities and threats. Each method yielded different strategic options regarding the scope of the method. All the options derived from these methods are then gathered together and evaluated.

Porter's Generic Strategies

Generic strategies were initially used in 1980s. This method generates strategies along two dimensions: strategic scope and competitive advantage (Porter, 1980). Strategic scope concentrates on market size, and competitive advantage concentrates on strengths or core competencies of the firm. Three generic strategies are proposed with these dimensions: differentiation, cost leadership and segmentation. Differentiation emphasizes segmenting markets in order to target goods or services at specific segments. Cost leadership 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. Competitive advantage is generally created for the niche. According to competitive scope and competitive advantage these strategies are shown in the table 7.

Table 7: Porter's Generic Strategies

Narrow Market Scope	Segmentation Strategy	
Broad Market Scope	Differentiation Strategy	Cost Leadership
	Uniqueness Competency	Low Cost Competency

In software industry a considerable part of costs occur in the product development phase. Costs those occur after the product development phase are so little compared to product development phase. Moreover 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 company has a narrow market segment. Its products are for special segments of the market. As mentioned in the previous chapters company has a very high potential for research and development of innovative products. As thought company's small business structure, expertise in health care projects and linkages between health organizations niche strategy is the most proper strategy. For broaden 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.

Ansoff's Product/Market Matrix

This method has two points of view; product and market, for generating strategic directions. These directions provide strategic options for present or new markets and products. For each part of the matrix different strategic directions are proposed. These are: market penetration, product development, market development and diversification as seen in table 8.

Table 8: Ansoff's Product/Market Matrix

		Products	
		Present	New
Markets	Present	Market Penetration	Product Development
	New	Market Development	Diversification

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; diversification refers to marketing completely new products to new markets (Marketing Teacher, n.d.)

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. Moreover in previous techniques a niche strategy and to continue research and development activities were proposed for the company. This refers to diversification and product development strategy in the table. 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.

Tows Analysis

TOWS analysis includes the concepts that are same as SWOT. These concepts are: strengths, weaknesses, opportunities and threats. In the TOWS analysis environmental threat and opportunities are matched with internal strengths and weaknesses (Weighrich, n.d.). By this way four conceptually different strategic directions are generated. These directions are abbreviated as SO, WO, ST and WT. SO defines the strategies that take the advantage of strengths and opportunities. WO defines the strategies that minimizes weaknesses and takes the advantage of opportunities. ST defines the strategies that use strengths to avoid threats. WT defines the strategies that minimize weaknesses and avoid threats.

Overall this tool 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 according to these indicators are given in table 9.

Table 9: TOWS Analysis

<p>Strengths and Opportunities (SO): Strategies that use strengths to take the advantage of opportunities.</p> <p>Strengths and Threats (ST): Strategies that take advantage of strengths to avoid potential threats.</p> <p>Weaknesses and Opportunities (WO): Strategies that use opportunities to overcome the weaknesses.</p> <p>Weaknesses and Threats (WT): Strategies that minimize weaknesses and avoid threats.</p>	<p>Opportunities from the Environment</p> <ul style="list-style-type: none"> • Potential 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 	<p>Threats from the Environment</p> <ul style="list-style-type: none"> • Economical Instability • Global Economic Waves • Difficulties in Finding High Skilled Labor • New entrants • Currency Exchange Rates • Threat of Buyers
<p>Internal Strengths</p> <ul style="list-style-type: none"> • 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 	<p><u>SO :</u></p> <ul style="list-style-type: none"> • Improve Brand Recognition • Deploy Foreign Markets • Produce Innovative Standard Products • Increase capacity 	<p><u>ST:</u></p> <ul style="list-style-type: none"> • Balance Between Domestic Market and Foreign Markets • Produce Innovative Standard Products • Emphasis Employee Training • Decrease Time to Market • Target High Value Customers
<p>Internal Weaknesses</p> <ul style="list-style-type: none"> • Marketing and Advertising • Management Information System • Time to Market • High Employee Turnover • Non-institutional Structure 	<p><u>WO:</u></p> <ul style="list-style-type: none"> • Emphasis Solution Partners • Product Development Cooperation 	<p><u>WT:</u></p> <ul style="list-style-type: none"> • Emphasize Individual Software Products • Target High Value Customers • Improve Operating Efficiency • Emphasis Employee Training

Strengths and weaknesses of the company are determined by value chain analysis, resource based view and VRIO analysis. Strengths of company come from the value creating activities. These are clearly expressed mission and vision, information network among universities and research centers, scientific publications, product research and development capabilities, team spirit and experience of management, facility locations, employee capabilities and project based organization. Weaknesses of the company are; marketing and advertising capabilities, management information systems, time to market, employee turnover and non-institutional structure.

Opportunities and threats are generated using pest and five forces analysis. As presented previously, sector constitutes a lot of opportunity. The opportunities are; potential industry earnings, national and international funding organizations, exportation incentives, market potential of OPEC and Eurasia countries, computer and internet usage level, rising attention to health sector, tax policies, international business networks. The threats are; economic instability, global economic waves, difficulties in finding high skilled workforce, entry of new rivals to the market, threat of buyers and currency exchange rates.

The most desired situation for the company is the first quarter of the table. In the first quarter of the table strategies that use strengths to take the advantage of opportunities are defined. It is mentioned that there are many exportation opportunities. By using its strengths company can produce products for foreign markets and take the advantage of exportation opportunities. Moreover it can deploy to foreign market with its current products. Producing innovative standard health software products is proposed for this quarter of the table. Company can benefit from national and international funding organizations by producing innovative products. Company has a high potential for product development and there are projects at the pipeline so we

advice increasing capacity. By this way the project development times will reduce or the number of projects running at the same time will increase. Company will have choice to choose to reduce project development times or increase the number of running projects simultaneously or a balance between them. We can say that this quarter of the table constitutes the most aggressive strategic options for the company.

In the second quarter of the table there are strategies that use the strengths to avoid potential threats. In order to avoid economic crisis company can allocate its market in a balanced manner among domestic and foreign markets. By this way company can spread the risk and avoid or minimize the effects of global or domestic economic crisis. If crisis occur in domestic market company can protect itself by emphasizing foreign markets or if crisis occur in foreign markets company can emphasis other markets for reducing the effect of that crisis. Moreover company can target high value customers in order to avoid threat of buyers. By product development company can meet a huge percentage of its costs from governmental and international funding organizations. As mentioned before company's product development activities constitute research and development activities which are crucial for getting support and incentives from funding organizations. Then producing innovative standard health software products are proposed as a strategic option. Currently company does not have a lack of human resource. Moreover it has high skilled workers. As thought complete industry structure it is a fact that industry lacks high skilled work force. In the future this situation may constitute a risk for the company. For avoiding this situation company can use its current skills to develop a training program for employees. By this way company can employ new graduates and train them on its own so in the future it can protect itself from a work force deficit. For avoiding new entrants to introduce their products before company introduces its product to market the production times must be reduced. By this way the company can benefit from uniqueness of its products in the market.

The company can use the opportunities to minimize its weaknesses. For product development the company can benefit from cooperation with other companies. By this way company can reduce production times. For increasing marketing capabilities company can find foreign partners and benefit from their marketing and advertising capabilities for selling its products abroad.

The most unwanted situation is that creating strategies that minimize weaknesses and avoid threats. Here the proposed strategies are; targeting high value customers, Improve operating efficiency and emphasizing individual software solutions. The company can emphasize individual software solutions because for individual solutions the customer is defined at the beginning of the product development phase and all of the conditions such as; price and completion times are definite. By this wave company can protect itself from potential crises.

Generating Strategic Options

Company's management is aware of company's current situation: strengths weaknesses, opportunities and threats. Also company is aware of its position in the industry. However up to this study any strategic planning work had not been conducted. There were also activities that address to improve weaknesses; avoiding environmental threats benefit from environmental opportunities but these efforts were not in an organized manner. In this study strategy development process addressed crafting strategic options to pursue, benefit from environmental opportunities, avoiding from environmental threats and minimizing company's weaknesses. While developing strategic options we took into account of stakeholder expectations and company objectives. We paid attention the objectives to be consistent with company

objectives and stakeholder expectations. The strategic options generated throughout the analyses are given below.

Strategic Options

Produce Research and Development based standard health software products

Entry to new markets

Foster a balance between domestic and foreign markets

Decrease time to market

Improve marketing and advertising

Target high value customers

Emphasis employee training

Improve operating efficiency

Increase market share with HIS and LIS

Improve quality and services

Improve brand recognition

Emphasize Individual Software Products

Emphasizing Solution Partners

Emphasize product development cooperation

Increase capacity

CHAPTER 4

SUSTAINABILITY AND PERFORMANCE EVALUATION

For sustainability of the strategies determined in the strategy development phase and performance evaluation Balanced Scorecard technique is used. Although Balanced Scorecard is a significant performance measurement technique its implementation is a crucial and demanding topic. Here we use a structured methodology for putting Balanced Scorecard into action.

4.1 Balanced Scorecard Implementation

Phase I – Project Initiation

In the first step of BSC implementation project, the jobs; selecting the implementation team and gaining commitment from workers and creating the communication plan are done.

In the literature in many case studies the BSC implementation project teams are constructed with experts from various disciplines such as university members, managers from various units of organization, consultation firms etc. For a small manufacturing company accessing to these resources is very difficult and expensive. Moreover most of the small manufacturing companies especially in Turkey do not have specialized departments. Accessing to universities is very also difficult for most SMEs. Although there are recent efforts to close up industry and universities, a culture for working together with universities among SMEs has not been constructed

in Turkey yet. Getting assistance from a consultation company can be so costly for a SME. Moreover convincing SMEs to consult a consultation firm can be so hard in most situations. In our study we casted all of these situations and decided to implement BSC with our own resources. We constructed the team by five members who are already working in the company. Two of them are industrial engineers one is economist two are from top management. One is also the owner of this paper. The people from top management are also working in company one is the company's general manager who masters all the topics in the organization and the other one is the head of software development team.

BSC is a management system that is founded on transparency, thereby it makes visible the performance of different departments (Papalexandris et. al., 2005). In the literature in many studies it is mentioned that BSC can be seen by managers and employees as a monitoring and performance measurement tool therefore it often met by resistance by workers. In order to get over this situation firstly the top management's commitment is gained. Convincing two persons from top management being a part of project team, brought up top management commitment automatically. Then we conducted kick-off meetings with workers in order to give information, introduce the benefits of the BSC. Our aim was to minimize the resistance of employees moreover gaining the commitment of them. Finally we created a communication plan that will support our objectives in BSC implementation. The communication plan is given in the appendix A.

Phase II – Strategy Clarification

In this study strategy clarification phase uses the results of the analyses conducted in the strategy development chapter. In many studies in the literature, internal and external assessments, SWOT, market analysis for are conducted in this phase. In this

study we conducted these topics apart from BSC implementation process because we believe that strategic planning is a very crucial topic and it must be dealt apart from BSC applications. Here are the strategic options derived at strategy development section.

Produce Research and Development based standard health software products

Entry to new markets

Foster a balance between domestic and foreign markets

Decrease time to market

Improve marketing and advertising

Target high value customers

Emphasis employee training

Improve operating efficiency

Increase market share with HIS and LIS

Improve quality and services

Increase brand recognition

Emphasize individual Software products

Emphasizing solution partners

Emphasize product development cooperation

Increase capacity

In the literature in this phase many writers use prioritization techniques in order to prioritize the objectives. In the literature there are mathematical approaches for prioritizing the objectives. Fernandes et al (2006) mentions prioritization matrix, Papalexandris (2004) mentions giving weights to objectives; Huang (2007) uses analytical hierarchy process for prioritizing objectives. In this study we did not prioritize objectives. Instead we grouped similar objectives. The objectives in groups

are given below. The group members provided a basis for determining key performance indicators.

Product Development

- Produce Research and Development based standard health software products

- Emphasize Individual Software Products

- Emphasize product development cooperation

- Produce HIS and LIS

Reduce Time to Market

- Decrease time to Market

- Increase Capacity

Improve Quality and Services

- Emphasis Employee Training

- Improve Operating Efficiency

Improve Marketing and Advertising

- Target High Value Customers

- Increase Brand Recognition

- Emphasis Solution Partners

- Emphasis Employee Training

Reduce Financial Risk

- Balance Between Foreign and Domestic Market

Entry to New Markets

The design of the strategy map is perhaps the most critical part in the whole BSC implementation project (Niven, 2002). Finally we evaluated the objectives and created the final strategy map. The final strategy map is shown in figure 3.

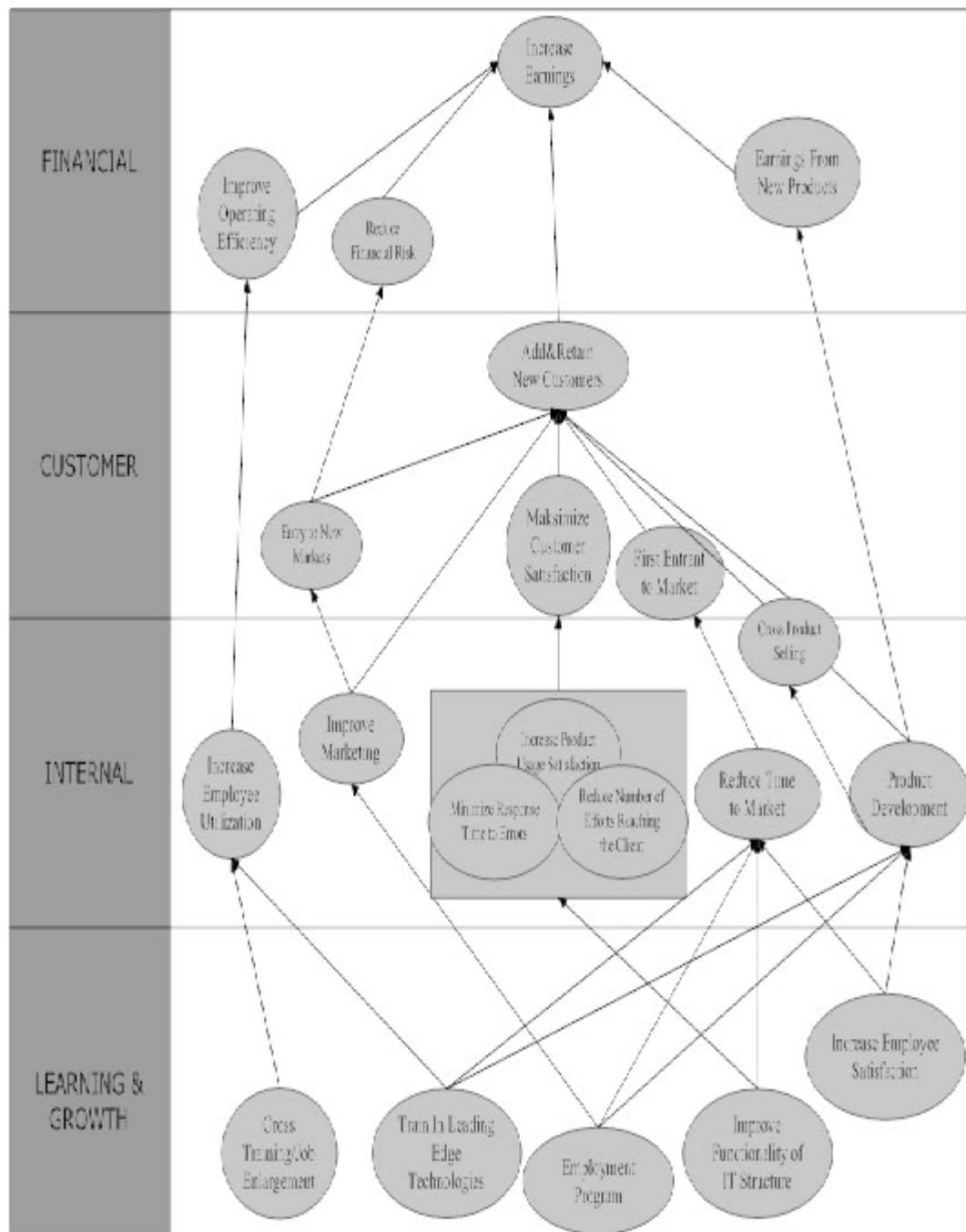


Figure 3: Strategy Map of the Company

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 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 the 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 the opportunities of being the first to market and hence can add and retain customers. Product development objective has connections with all the objectives previously defined objectives in the learning and growth perspective. At the financial perspective

this objective connects to earnings from new products. After forming all of these relations we found other relations with defined objectives and connected them with arrows.

Phase III – Selecting Performance Measures and Target Setting

The sub-strategies determined in the strategy clarification phase, translated in this phase 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. Final BSC is given on table 10.

Table 10: Balanced Scorecard

Perspective	Strategy	KPI	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 Foreign 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	
	Maximize Customer Satisfaction	Customer Satisfaction Index	
Internal Processes	Increase Employee Utilization	Free Time Percentage	Internal Processes Director
	Increase Product Usage Satisfaction	Product Usage Satisfaction Index	
	Reduce Number 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		

Table 10 (cont'd)

Learning and Growth	Improve Employee Satisfaction	Employee Satisfaction Index	Human Resources Director
		Employee Turnover	
	Cross Train/Job Enlargement	Cross Training Hours	
		% of People that can do different jobs	
	Improve IT Systems	IT Systems Access and Contribution	
		IT contributed System Solutions	
	Employment Program	Marketing hours/Required Marketing Hours per Month	
		Production hours/Required Production Hours per Month	
	Train in Leading Edge Technologies	Leading Edge Technologies Training Hours/Month	

In the table 11 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 90% employee satisfaction and 20% decrease in employee turnover rate. All targets are given in the table 11. The indexes such as customer satisfaction and employee satisfaction are determined through surveys which are mentioned in the communication plan. All information about performance indicators will be stored in databases.

Table 11: Balanced Scorecard Targets

Perspective	Strategy	KPI	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	% of Sales to Foreign 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	
	Entry to New Markets	Number of Countries Company Penetrates	33% increase	6 months	
	Maximize Customer Satisfaction	Customer Satisfaction Index	80%	6 months	
Internal Processes	Increase Employee Utilization	Free Time Percentage	10%	6 months	
	Product Usage Satisfaction	Product Usage Satisfaction Index	80%	6 months	
	Reduce Number Of Errors Reaching The Client	Number of Errors Reaching The Client	10% decrease	6 months	
	Minimize Response Time to Errors	Response Time to Errors/Maximum allowed response Time To Errors	10% decrease	6 months	
	Product 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	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	

Table 11 (cont'd)

Learning and Growth	Improve Employee Satisfaction	Employee Satisfaction Index	90%	3 months
		Employee Turnover	20% decrease	1 year
	Cross Train/Job Enlargement	Cross Training Hours	20% increase	6 months
		% of People that can do different jobs	20% increase	6 months
	Improve IT Systems	IT Systems Access and Contribution	20% increase	6 months
		IT contributed System Solutions	20% increase	6 months
	Employment Program	Marketing Hours/Planned Marketing Hours per Month	30% increase	6 months
		Production Hours/Planned Production Hours per Month	20% increase	6 months
	Train in Leading Edge Technologies	Leading Edge Technologies Training Hours/Month	20 % increase	6 months

As seen from the table frequencies are 6 months and 1 year. The target percentages can be seen very high at the first look. As thought companies current business situation, 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. For example product usage satisfaction index 80% means we want our customers to satisfy from our products at a rate of 80% according to surveys.

Phase IV – Operationalize The Project

Operationalizing the project consists of selecting the IT solution, determining the revision frequency of the Strategy Map and BSC. The defined initiatives are given in the BSC table. Being a software company we decided to produce the company's own BSC 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 BSC as six months.

CHAPTER 5

CONCLUSION

Strategic planning studies at the company try to propose a structured approach for the company in order to fulfill its mission and achieve its vision. 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 thesis did not follow a single approach from literature. Instead it combined several tools and techniques. It is also highlighted that there is no one perfect approach to strategic planning studies.

In order to completely understand the system, combinations of common tools from literature are used. For environmental analyses PEST and Five Forces model are used in combination. With the PEST analyses the macro environment and with the Five Forces analysis the micro environment of the company were analyzed. The challenge in the environmental analyses was the data insufficiency about market conditions of Turkish software industry. The researches about the sector are not yet at mature level. Moreover the market size, importation and exportation figures are not precise. This is mostly due to the characteristics of software products as being mostly embedded in other electronic products.

For the purpose of analyzing internal strengths and weaknesses, work flow charts, value chain analyses and VRIO analyses are conducted in combination. For complete understanding of the company' activities software value chain approach which is specially developed for software companies is used. With resource based view and

VRIO analyses the value creating activities of the company are determined and evaluated. While determining the strengths and weaknesses, to prevent limitations of subjectivity interviews with people from different departments of the company and the people who have sufficient information about sector and rivals have been made.

The determination of strategic options was among the most critical parts of the entire study. It's also mentioned that there is no perfect strategy for organization. There are several tools and techniques for strategic planning studies but what is the most important is choosing the best tools and techniques that best suit the company in its containing environment. In this study Porter's generic strategies, strategy development directions and TOWS analyses were used in combination. In this way we had the chance to look at the strategy development process from different aspects. Then we evaluated the generated strategic options through stakeholder expectations and company objectives. Derived strategic options mainly addressed improving weaknesses of the company and benefiting from environmental opportunities.

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 it can face resistant from employees and managers because of being a performance measurement tool. In our study we did not face a resistance because we took precautions as getting the support and commitment of top management and clearly explaining the objective of the study and their roles in achieving company objectives to employees. Strategy clarification was perhaps the most challenging topic in Balanced Scorecard implementation. 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". This is mostly a top-down approach but in our study we also defined the upper relations of objectives in perspectives. As

mentioned the perspectives are in order from top-down as financial, customer, internal processes and learning and growth perspective. 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. Then the final form of strategy map has been shaped. We assumed that all the objectives have equal importance for achieving the vision of the company. Objectives can be overlapped 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 the people from related departments of the company since realistic performance measures and frequencies are crucial for the success of overall study. As seen from the BSC learning and growth perspective mainly comprised of human resources objectives. It is not surprising because the main production factor of the company is human factor.

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 changes or no change in this methodology similar SMEs can adopt this approach. We believe that companies that adopt this methodology will gain sustainable competitive advantage against their rivals. For further research, strategic planning techniques used in this study can be an implementation part of Balanced Scorecard approach. Moreover new techniques can also be introduced for strategic options generation and these techniques can be adopted as a part of Balanced Scorecard implementation methodology. The prioritization of objectives with giving weights can also be used for creating strategy map. According to our experience from this study, we can say that the prioritization of objectives with mathematical approaches requires experienced executives in order to produce meaningful results.

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APPENDIX A

COMMUNICATION PLAN

Table 12: Communication Plan of the Company

Communication Plan			
Objective	to foster current communications practices through a strategic, integrated, company-wide approach and to develop communication systems to foster transparency, accuracy and message unification, furthering the strategies of the company.		
Audience	Message	Method and Tools	Objectives
Direct Public	Raise Awareness	<ul style="list-style-type: none"> • Brochures • Webpage • Meetings • Fair and Congress Participation • Training Activities • Scientific Publications 	To increase public awareness of health informatics by reaching larger audiences.
Service Receivers, Customers, Potential Customers	Marketing Programs and Services	<ul style="list-style-type: none"> • Brochures • Webpage • Meetings • Fair and Congress Participation • Special Engagements • Call Center • Surveys • Scientific Publications 	To increase customer base and evaluate customers' satisfaction level.

Table 12 (cont'd)

Support and Funding Organizations	Projects	<ul style="list-style-type: none"> • Presentations • Project Proposal Documents • Project Reports • All related documents about ongoing projects 	Strengthening relations.
Staff	All relevant Information	<ul style="list-style-type: none"> • Meetings • e-mail • Phone • Workshops • Briefings • Surveys 	Fostering communication and collaboration. Measuring satisfaction level. Evaluating special interests.
Consultants	All relevant Information	<ul style="list-style-type: none"> • Meetings • e-mail • Phone • Workshops • Briefings • Surveys 	Fostering communication and collaboration. Measuring satisfaction level. Evaluating special interests.
Other Agencies	To Continually Further Cooperative Relations	<ul style="list-style-type: none"> • Direct Correspondence: e-mail or letter • Personal Contact • Meetings • Special Project Development Programs 	Sharing resources and communication to benefit the community.

Table 12 (cont'd)

	To develop collaborative partnership	<ul style="list-style-type: none">• Direct Correspondence• email or letter• Personal Contact• Business Networks	Increase current capabilities and benefiting from resources of partners through creating partnerships.
	Hospitality	<ul style="list-style-type: none">• Thank You Notes• Greetings• Invitations	Express appreciation, maintain contact and awareness.