Modelling strategic management for the development of competitive advantage, based on technology

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Abstract

Purpose – The purpose of this research work is to find a methodology for the strategic development of competitive advantage for information technology (IT) companies (Mezger and Violani, 2011). The ultimate aim of this project is to develop a methodological approach on this issue, based on dynamic simulation models (DSM) (Wirahadikusumah and Abraham, 2003). With the aid of DSM, senior managements of organizations will have the opportunity to make decisions of assured success. This success shall be guaranteed by the realization of entrepreneurial activity in a safe and inexpensive computing environment before actual investment.

Design/methodology/approach – This paper highlights the advantages of the dynamic modelling of systems aiming at developing competitive advantage for IT companies (Ordóñez de Pablos, 2006). In this research, we have used the science of design and the research methodology for testing the concept of modelling as well as the process of modelling. The models have been completed through a series of alternations and iterations in the design, development, simulation, testing and evaluation.

Findings – This paper examines the interface among several dimensions for the development of dynamic models. The validity and usefulness of those models in the process of decision-making has been confirmed by the usage of dynamic models in various sectors.

Originality/value – This paper applies the system and the concepts of dynamic modelling, which are pioneering elements as to their nature and evolution. Although the sector, where the modelling was applied, is an IT company, the concepts and principles investigated, developed and validated can be applied to most enterprises.

Keywords Dynamic simulation model, Strategic management, Competitive advantage, Information technology

Paper type Research paper

Introduction

The applied strategies of an information technology (IT) company can be of great assistance in understanding the methodology followed for achieving its goals. The interdependence of objectives and strategy implementation is of imperative need for industries, companies or organizations with a technological orientation but also for social organizations and systems (Lappa and Giannakopoulos, 2011). The factor of the harmonization of these elements is considered to be especially important, as it plays a key role in the ever-changing and rapidly evolving field of IT and new technologies. The environment of technology industries in developed economies constitutes a crucial point for the stock values, and because of its unstable behaviour the stock market of various states is entrained.

Journal of Systems and Information Technology
Vol. 16 No. 3, 2014
pp. 187-209

1328-7265
DOI 10.1108/JSIT-01-2014-0005

Primary role in new technology IT companies plays the part and the action of research and development (Kumar *et al.*, 2012). It is one of the modules that companies from small to very large ones fund with uneven distribution of resources to create innovative products. Excessive supply of resources takes place because many of the companies in the sector of new technologies cover a wide range from homing missiles with microcomputers to instant photography procedures. Successful companies should maintain in equal and high level both the innovation capacity and the strategic creation of a stable set of procedures concerning these technologies (Standing and Paul, 2007). This set will give a strong market position not only to the company itself but also to the technologies and/or the products as well.

An IT company, which bases its competitive success on technology, must ensure and enhance its position, in terms of technology, if it wants to maintain its success (Standing *et al.*, 2006). The position that the IT company holds among the others of the particular sector can be based on technology developed by the company itself or technology purchased from external sources. The expensive alternative of purchasing by cooperating suppliers of technological solutions is of crucial importance. However, under certain business conditions, this may lead to the introduction of competitive advantage for the company.

Strategic management of technology for the creation of competitive advantage

Strategy is a coordinated set of actions, which fulfils the goals and objectives of a business. The strategy is not a single action that occurs in a business. Especially, in the area of IT companies, strategy is always a part of a broader planning of routing business developments.

Many times, the meaning of strategy is confused with that of strategic planning. Strategic planning is the process that sets the foundations and defines the guidelines to be followed by an IT company, in upcoming periods. Usually, the result of strategic planning is a formal, written, strategic plan. However, strategy is something more than just several attempts of planning or written texts.

Strategic management in the sector of IT is a continuous process, during which the IT company defines the nature of its business activities. It also specifies the kind of economic and human organization that wishes to implement, as well as the nature of its various members. These key aspects of strategy act as an umbrella under which the IT company can establish policies and plans to ensure that its efforts will lead to the achievement of its goals and objectives (Figure 1).

Competitive advantage is the one that characterizes an IT company that makes something better than all its competitors. However, the ability to perform an activity better than its competitors will lead to a sustainable competitive advantage, only if the particular activity is something that customers appreciate and at the same time cannot be easily duplicated by the competitors. For example, the ability to create computer circuits of faster processing may constitute a strong competitive advantage for a circuit manufacturer, but only if there is a need in the market for something like that.

Therefore competitive advantage is not simply something that the IT company does better than its competitors, but something that affects the decisions of buyers, leading them to prefer the product of the specific IT company and not the one of its competitors. Relying on that competitive advantage, the IT company shall be able to lead the competition and create value for its stakeholders and its owners.

There are many ways to analyse the need for increased technological innovation in IT companies and its relation to the competitive advantage. In particular, the development of

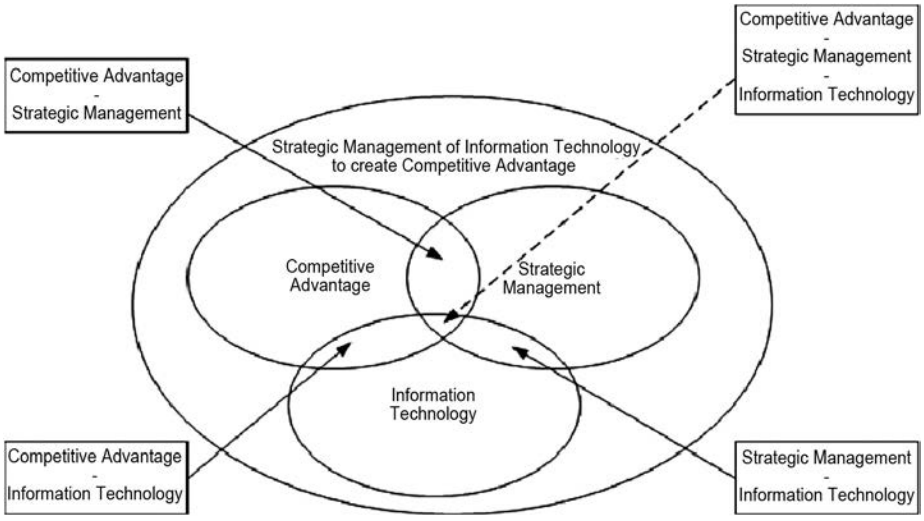

Figure 1.
Strategic management of IT to create competitive advantage

technology can be considered either as continuous or radical (Denning, 2010). Moreover, technology can be used either in an aggressive or a defensive way. Especially for IT companies, these different aspects of technology solutions are not mutually excluding.

The main reasons for modelling the problem

The study of systems either with mathematical methods or simulation is not performed with the system itself, but with a model of the system. There are many reasons, which lead to the construction of a model:

- *Ease in understanding:* the model is often much simpler to understand than the system itself because during the construction of the model, only the characteristics of the system, which are of particular interest in this study, are retained. In this way, the researcher is not lost in the details of the system, but focuses only on the important elements.
- *Ease in communication:* through the construction of a model is much easier to spread ideas for a system than through the description of it. For example, an architect builds a model of a building design, and using this model he gives much more information to the customer than with verbal description or architectural drawings.
- *The model is a tool of prediction:* some systems have very slow alterations of condition, which makes it impossible to predict their behavior for a long time. Constructing a model of the system, we achieve acceleration of temporal changes, so that we are able to predict the future behavior of the real system.
- *Lack of access:* sometimes, access to the real system is impossible or dangerous. Constructing a model, it is possible to study the system without jeopardizing the researcher or the system itself.
- *Training:* by constructing a model, it is possible to train the operators, without risking disaster by the trainees' mistakes. It is also possible to train operators of a system, which has not been constructed yet.

- *Design:* the construction of a model has a great contribution in designing a system, as it allows the detection of design errors and their correction, before even the system is constructed.
- *Finding of alternatives and optimization:* this reason for constructing models is similar to the previous one. During the designing of a system, it is possible that several different models are constructed and eventually select the suitable one for implementation. This selection is based on some specific criteria of optimization.
- *Improvement of the performance of the existing system:* by building a model, it is possible to control the behavior of the system for different values of parameters. Through the study of the constructed model arises the most efficient combination of parameters, which subsequently are applied to the actual system.

With the descriptions given until now, it is now understood the contribution of the model to the business activities of IT companies, which expect a technological business advantage.

Modelling the competitive advantage for IT companies

For this research study, it is necessary to visualize the entire model in a high level view, in Figure 2, so as to reveal the factors that are to be taken into account for the creation of competitive advantage.

Analysis of the dynamic model of the simulation system

This section deals with the individual dimensions of strategic management of technology for the development of competitive advantage, which was developed using the concepts of dynamic configuration systems. Our dynamic model consists of stocks, flows, converters and connectors. Each of these elements is further described in this section:

- a stock represents the accumulation of physical or non-physical quantity;
- a flow represents an activity that fills or reduces a pool. The arrow indicates the direction of positive flow, in or out;
- a converter can keep values stable or serve as an external input to the standard or convert inputs into results, through the user-defined algebraic relations or graphics functions; and
- connectors provide connections between the elements of models. Continuous cable is an action connector, and the dotted wire is an information connector (Figure 3).

Dynamic simulation model

Based on the results of our research, we are allowed to ascribe values to the dynamic simulation model (DSM), configuring all the factors involved in our research. The conjunction between IT, strategy development and competitive advantage development strategies, IT for competition development and IT competition increase is dynamic.

As seen from the DSM in Figure 4, the results change when altering the provision of resources to agents. Depending on the sources that are provided by the company resources, involving knowledge, technology coverage, system planning and business planning, marketing plan, etc., varies the percentage of competitive advantage from the use of IT.

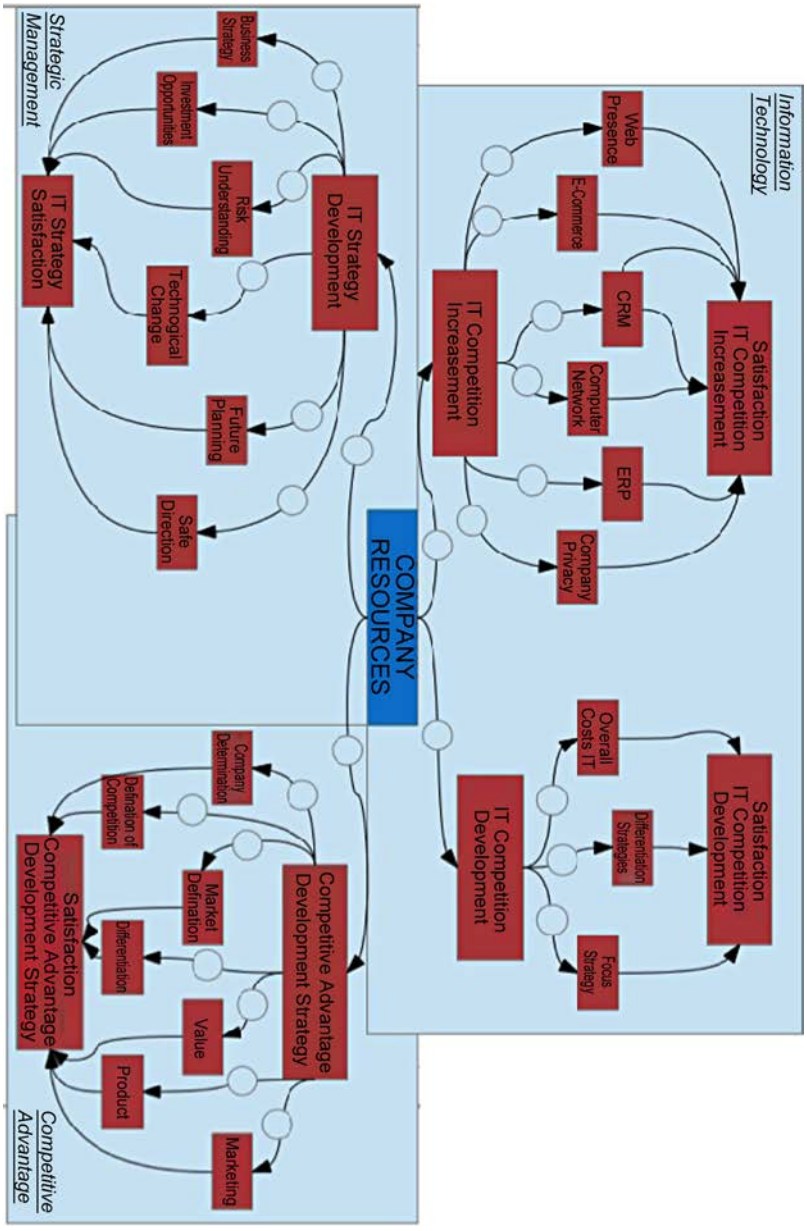

Figure 2.
Simulation model diagram

Model of strategic management

In the model of strategic management, all the actions that fulfil the aims, objectives and goals of IT companies are analysed. The model of strategic management includes the factors of business strategy, investment opportunities, risk understanding, technological change, risk understanding, future planning and safe direction. This process lays the foundations and sets the direction that the IT company will follow in the future years (Figure 5).

Model of competitive advantage

In the model of competitive advantage, the IT company's ability to perform a task better than its competitors is analysed. The competitive advantage model includes the factors of marketing, product, value and differentiation. The development of competitive advantage is the one that affects the decisions of buyers, urging them to select the product of the particular IT company, than that of its competitors (Figure 6).

Model of IT

The model of technology includes the procedures that an IT company follows, to alter what it receives in that it offers (the raw materials into a product). Also, this model includes the means an IT company uses for the production of a product as well as the know-how used to provide its services. Finally, in the model of technology are involved other factors, such as Web-presence, e-commerce, customer relationship management (CRM), computer network, enterprise resource planning (ERP) and company privacy. The use of technology gives a clear lead to the IT company, offering, thus, a competitive advantage (Figure 7).

Interactions

Competitive advantage development strategies

The companies that present profits are not successful by chance, although sometimes it may seem so. A closer look reveals that the necessary attention to important issues, such as location, product, services and/or product features constitutes a new way of offering incentives in the market. This is something that companies of the same sector either are not able to provide or they are not willing to offer, due to administrative ignorance or lack of strategic planning.

Once an IT company has developed a competitive advantage, comes up with a daily challenge: to maintain that advantage. Strategic planning is the "prediction" of the future by exploring the sources of trends and the methodology of the reorganization of the company. Unique ultimate goal is to stay ahead of the competition (Edmonds, 2011).

Differentiation

In the huge market of today, consumers have many choices. As for an IT company to obtain competitive advantage, its potential customers should have some reason to choose this one among the competitors. While the price reduction is definitely a viable way to select the product, there are other things that can make an IT company unique, simply, by using a little imagination and creativity (Teeratansirikool *et al.*, 2013). These are:

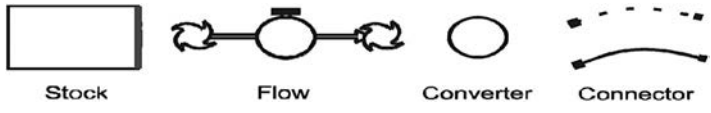

Figure 3.
Dynamic model elements

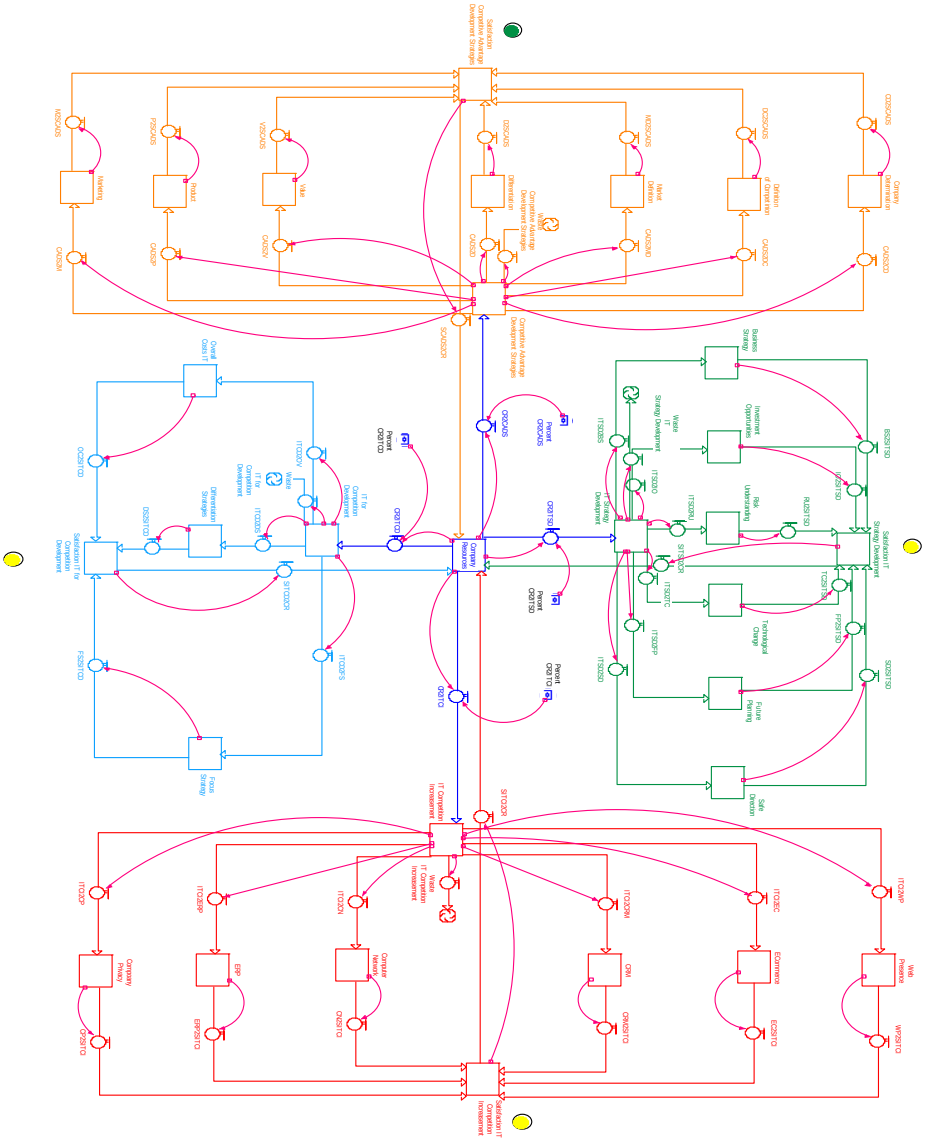

Figure 4.
Dynamic simulation model

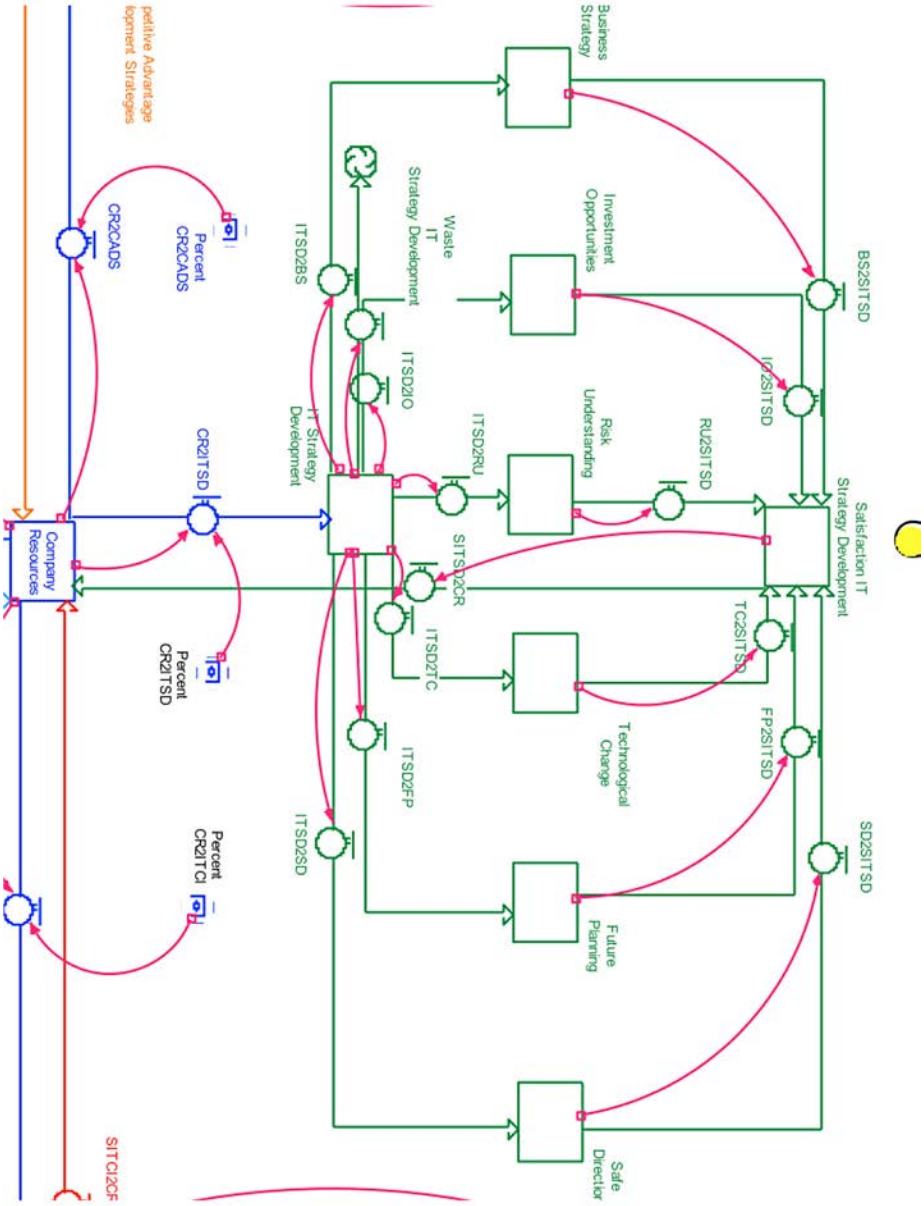

Figure 5.
Model of strategic management

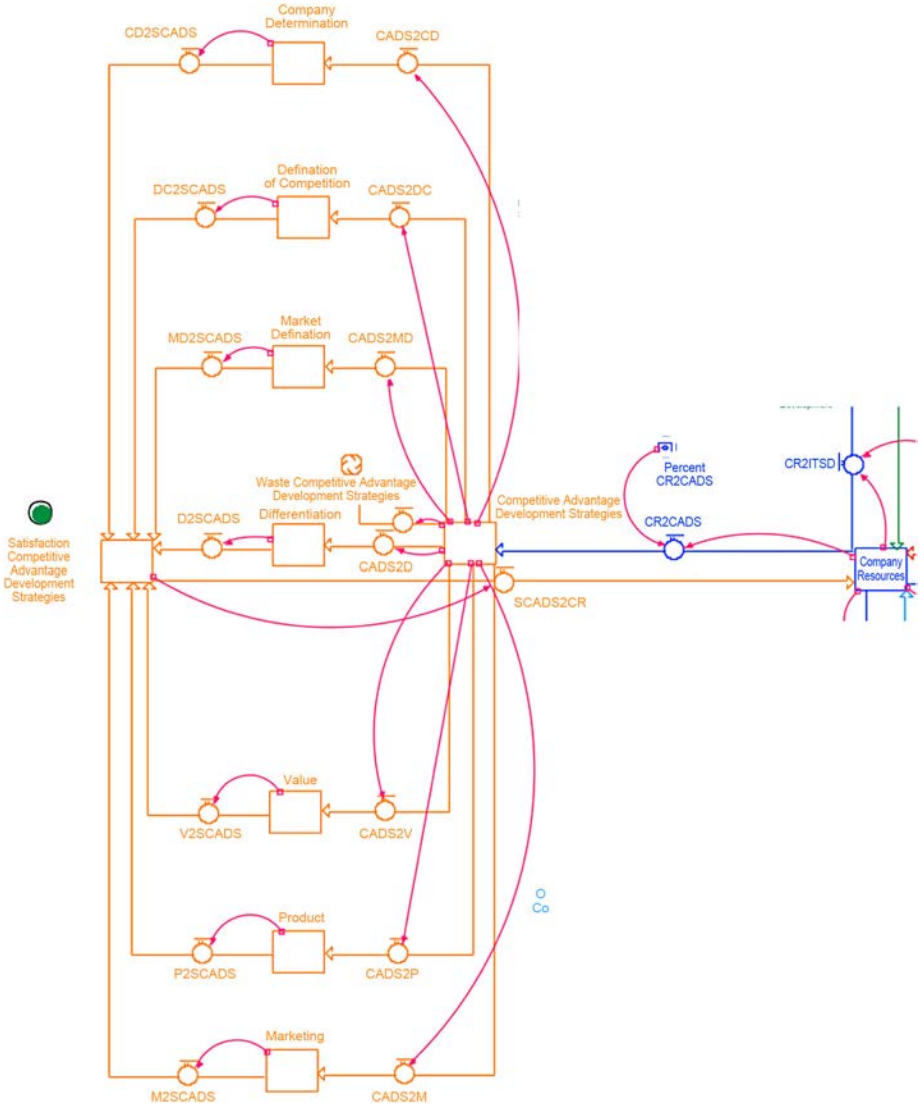

Figure 6.
Model of competitive advantage

- Assessing the product. New features could be added that could make the product more desirable or useful than competing products.
- New usage or new ways of packaging for the promotion of the product.
- Analysis of marketing strategy. There are ways to use publicity and advertising campaign, as an advantage.
- Products user friendly.

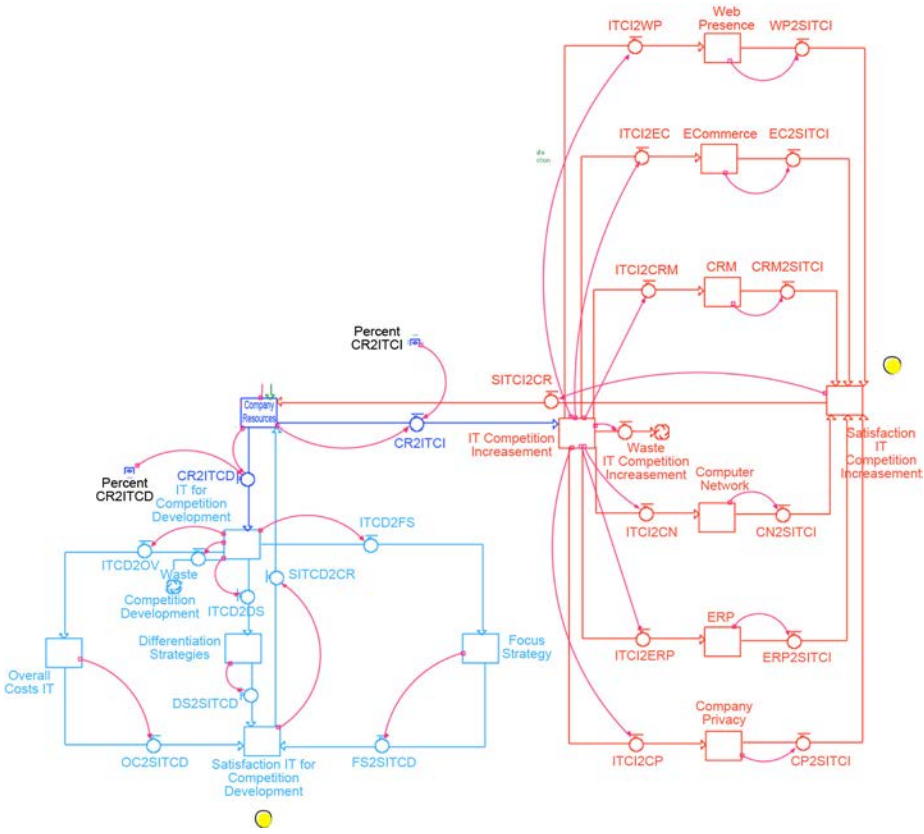

Figure 7.
Model of IT

- Customer service, opening hours of the IT company, product and/or services guarantees.
- Innovative services that the competitors cannot offer.

Price

Most people are willing to search the market to see where they will spend their money, in the best way. It is important to understand that it may not always be possible for the cheapest service or product to maintain a healthy profit margin. However, there are still many ways for an IT company to entice its potential customers, including some of the following techniques: Special offers for customers who show preference to a firm (firm customers)

- coupons for future purchases;
- sales and discounts;
- financing packages with many monthly instalments; and
- warranty and easy refund policy, if the customer is not completely satisfied.

Product

Here is the golden rule: the product and/or service of an IT company is the top of the pyramid. Without it, the business is nothing. It is possible that an IT company be placed at the best location, have the lowest prices and best possible customer service, but if it does not have the product people want to buy, the company is more than likely not to produce profits (Kropsu-Vehkapera *et al.*, 2009). Therefore, it is vital that the product or service, that an IT company offers, constantly goes under the microscope for study and review.

- the product produced by the company should last through time;
- the product must be credible;
- the product must be in reasonable prices;
- the product must be desirable thanks to the reputation it has gained, but also to evolve constantly;
- depending on the product, the company as well should enjoy recognition; and
- the product must be easily recognizable.

Marketing strategies

Now is the time to promote the product on the market. It is not possible that a product enters the market without specific marketing strategy. A good way for an IT company to start the promotion of its product in the target market is through competition. Making a comparison with similar products and analysing the position of competitors in the market, an IT company could discover the ways in which those competitors raised their sales, and on the other side, why they failed. This is an invaluable tool that an IT company should not overlook to use Stan (Stan and Svetla, 2007).

Every IT company must have its own strategic plan to be successful with the promotion of its product. A new, innovative product has many chances of success in the market, clearly based on a successful strategic plan:

- defining the target – market;
- highlighting the benefits of the product and/or services; and not its characteristics;
- create a feasible strategic plan;
- create a sub-strategic plan, especially if the primary plan is risky; and
- collection of facts, elements and important data before the implementation of the strategic plan.

There are many strategies that an IT company could follow aiming to promote its products in the market. However, there is a need to find out which will be the primary objective. That would be the low production costs, the differentiation of products, the uniqueness of the products or even the reputation of the company because its other products' promotion in the market has already been successful.

Development of strategy in the technological sector

It is commonly accepted that the sector of IT has emerged as a major force in determining, the success or failure of the IT companies on intense competitive conditions. Even if someone could invalidate for a moment the contribution of IT to the real competitive advantage, the results of several researches reveal that information

systems constitute a part that has to do with the sustainability in almost every aspect of an IT company.

However, as with any new technology, since the beginning of the technological revolution, the power of IT should be harnessed and controlled, to become a tool for progress and not an instrument for the destruction of the IT company (Pearson, 1999). Today, there is almost absolute dependence between technology and development of IT company systems. Nevertheless, an IT company is not limited to high-risk and high-performance technological applications. Excessive expenses in technology can bring about poor performance and deprive the IT company from other investment opportunities. Very little expense in technology leads to systems that limit the IT company's ability to react quickly to make the necessary changes so as to be led back to growth. Thus, in combination to the power of IT comes the responsibility of planning needs, with insight, attention and care that there will be no major changes in the central plan of the IT company.

Recognizing the urgent need created by this responsibility, the industry of information systems, has responded to this need with a variety of programming techniques, each of which has resulted in better application of the IT resources, while providing unique (and seemingly mystical) knowledge in relation to the use of IT for business advantage. Latest versions of these techniques, such as the long range planning or business systems planning, have focused primarily on the size of the IT and have tried to ensure that the individual components in an IT company (e.g. resources, applications, technology and staff) can work together properly. The next planning systems, such as the strategic system planning or information system strategic planning, emphasized more on the company, trying to identify systems that deepen in the enhanced efficiency of business operation.

Six (6) keys for IT planning

The planning, however, can reveal what is possible to be done, make clear what an IT company will need to reach success and help in the coordination of efforts for progress. The key points, according to the study that we have conducted, for successful strategic planning in IT, are revealed through six (6) simple rules:

(1) focusing, first, on business through the use of technology;
(2) selecting wise investing opportunities in IT;
(3) understanding of the risk and preparation of managing this;
(4) avoiding unnecessary technological change;
(5) future planning; and
(6) safe direction.

Focusing, first, on business through the use of technology

A good IT strategy starts with a good business strategy. Every IT company should be in search of the best way to achieve the objectives set, including the use of IT so as to enable the new processes, products and services or even to improve the existing ones.

The benefits that can arise from the use of IT include the improvement of productivity, the reduction of costs, the increase of revenue, the differentiation of the product and/or the service, which lead to an increase or maintenance of revenue and finally, to a better decision-making.

Selection of wise investing opportunities in IT

For each action of commodity purchase, product or service, the cost of investment should not exceed the income that is estimated to be earned by this investment. The net value of each investment in IT is equal to the value of the relevant costs, including both direct costs (i.e. systems development, hardware/software and human labour and indirect costs (e.g. staff training, software installation and upgrade).

It is important to calculate the total size of all costs – direct and indirect, present and future – before embarking on an IT solution. Here is the point, where the expert in technology should use the systems for the proper business decision-making. The technology specialist knows technology itself as well as its cost. The business operator knows the market and what the company can afford. These two factors are enough to determine whether and in which percentage the use or not of IT is required, in order to make the right business decision.

Understanding the risk

Every IT project is followed by a series of risks and dangers. There are risks even when the system develops in a successful way, when technology works as it should, even when the system is used properly (Kutsch, 2008). Just as with the costs, those risks need to be identified from the beginning, to be acceptable and actively manageable throughout the system's lifetime.

Many systems fail because of the lack of knowledge of the technology management, which is about to be applied as well as of unrealistic expectations from these technology management systems.

Avoiding unnecessary technological change

Any change in the current architecture of computer systems introduces elements of risk. Primary risk, among these, is the fact that the new ways of working will not be accepted by the employees and will not be followed by them. Furthermore, a change brings about additional costs and inconvenience. These two reasons can quickly undermine the potential benefits that technology may offer in an IT company.

Very often, the changes that take place in fact do not require technology to be implemented or can best be achieved by strengthening the existing infrastructure. By finding ways to make better use of the existing technology and by minimizing the "change for the sake of change", someone could improve the likelihood of success and the benefits brought about by the IT systems.

Future planning

Focusing on short-term needs without having solved the long-term consequences is the quickest way to destroy the business plan of the IT company.

The only way to avoid these situations is not to rely simply on luck, but to plan the future. Setting a long-term strategy for the IT systems and their periodic revision provides an architecture of IT systems, which is oriented towards the needs of the IT company, responds to the changing requirements and adapts to technological improvements.

Safe direction

Very often, projects seem to be left unexploited, not to be activated and the company to be on a continuum but counterproductive planning cycle. Participation in the planning

process of the future course of the IT company should be encouraged by the participation of all relevant members of the company, and eventually, all ways that could bring prosperity and progress to the company should be sought. The minimization of change, the choosing of the best bargain, the proper risk management and future planning are all pieces of the same puzzle that will help in the development of the IT company.

The plan itself should be realistic, clear and accessible and should meet with all the key points of the planning process.

The technology increases the competitive advantage

When the competition is fierce, something that always happens, the IT can help an IT company to be promoted and developed over its competitors (Ma, 2000). From the research we have done and the results deducted, we present the main reasons, how an IT company can increase its competitive advantage through the use of IT.

IT can help increase revenue

Presence on the Web. Initially, we can take advantage of the IT company's presence on the Internet. This can happen by creating a website for the business. Also, the website of the IT company should be easy to find in searches. Thus, more and more people will be able to visit the website and become a potential customer. We must ensure that the website of the IT company is quite useful and functional, so that the information given for the products and/or services of the company easily reach the prospective customer. In that way, converting visitors into customers will be easy. Take advantage of the competitive advantage that the Internet offers you.

E-commerce. Whether an IT company sells products or services, it can have a website on the Internet as well as an online shopping cart. In that way, potential customers that do not have time are given the opportunity to visit the store and shop quickly and easily. These methods require online payments. If companies of the same sector are mostly reachable to the buying public, only with the physical purchase of products, then an IT company, which maintains unique online store through IT, has a clear advantage. This can help the company to differentiate and increase its competitive advantage.

CRM software. A company that gives great importance in handling its customers and collects information from the management modes of the relation between its sales staff and its customers to manage all this information may only use CRM software (Nguyen and Waring, 2013).

The IT company that follows the sales practices with the aid of a management standard monitors sales personnel in real time, creates realistic sales targets and identifies sales performance, has under its control all the requests from its clients and enjoys the satisfaction and preference of them over other companies of the sector. The satisfied customers constitute a compelling competitive advantage.

IT can help increase productivity and reduce operating costs

Computer networks. There is a clear advantage of a company that can reduce the time of data transfer between computers of the working group of employees, having their computers on an internal network. This information between computers belonging to a network is transferred much faster than if we try, for example, to transfer some data using a flash drive or a CD. Also, employees in the same group and the same project can easily share the same files, read them, update them and print them.

Automation software. The support offered by technology in an IT company constitutes a daily necessity and covers all areas. Much of the work concerning the production process of a product and ultimately, until the product reaches the consumer, is made with the aid of technology. We are referred as "aid" because some processes could be different, but in much more time and costing the company many man hours.

Imagine this true story. Until recently, the system with which the customer had been making his daily transactions with the company was the MS Excel. The customer had been purchasing the product, and the employee had been filling the transaction details in MS Excel and had been printing a receipt; this was a system very prone to errors. The company had files of many years and a book of Excel for each month. Within each book, there were 30 or 31 worksheets, one for each day of the month. Everyday, the employee was obliged to send the last worksheet to someone else who had to copy and paste some of the transactions (one by one) on a page so as to submit the overall report.

Today, with the use of new technology, it only takes a few minutes to do what, under the previous circumstances, would normally take many hours. Furthermore, with a database, we can easily create a report to see, for example, who is the client who constantly buys, who brought the biggest gain for the company, etc. This allows having an active management over the customers, which means increase of capital and development of the IT company. This competitive advantage would not be possible to be acquired without a simple IT automation tool.

ERP software. Imagine the chaos that would arise if an IT company with multiple departments had failed to effectively coordinate these different departments to the final stage: the production of the product. The production process of a product goes through many stages until the final stage, the shelf of the store (Kakouris and Polychronopoulos, 2005).

Thus, while production is divided into different stages and each has its own department in the business, the workflow varies between different functional areas. The procurement process should be able to support different services. The accounting support should function positively to the integration cycle of the product. Through a good solution of an ERP system, IT can really make the operation of the business to stand out and create competitive advantage.

IT can ensure the confidentiality of customers and employees. Customer loyalty/retention of employees

Suppose that a company has all that the technology offers. It has a very good product and a website that is easy to find in searches. The basket for electronic purchases is outstanding and customer service is excellent (Duffy, 2003). The sales department is very active and is able to close big deals. The only disadvantage is that its network security is not sufficient, and due to reduced protection in the server, the credit card details of its customers are leaking, and in that way, the reputation that has built so painstakingly over years of presence in the market is damaged.

In this point, IT enhances the competitive advantage of the company. Its contribution may not be immediately apparent, but imagine the loss of revenue and the cost that would be brought about by the loss of personal data and the loss of the security of the company's database.

The factors above are some that we were able to collect to highlight the competitive advantage created by the use of technology. A big misconception, however, is that small

IT companies may think that they do not have enough time and money to implement a solid IT infrastructure. Having the open source software available, an IT company, every company, large or small ones, can easily and inexpensively obtain all these benefits offered by IT.

The application and the results of the simulation model

To apply the standards, we used the configuration tool iThink 10.0.2, from the iSee systems. The iThink uses the stock and flow diagrams to model and simulate the processes and scenarios of the model's function. It presents the outcomes of certain and defined by the user imports and links the interdependencies between processes and problems. The results can be presented in forms of graphs, tables and alerts. In this case, the dynamic modelling techniques of systems were used in the creation of this model.

The results of the DSM are shown in Figures 8–11 that we provide.

Support for decision-makers

There is a need to create the interface of the DSM to enable the user to change the values that the factors can get, studied in the research we have done. Figure 12 shows the main user interface of the simulation model. There are four main sections on this user interface:

(1) competitive advantage development strategies;

(2) IT strategy development;

(3) competition increase; and

(4) competition development.

The IT strategy development section allows the decision-maker to determine the business strategy, the investment opportunities, the technological change, the future planning as well as understand the risk. The competitive advantage development strategies section allows the decision-maker to define the company determination, the market definition, the value of the product and the marketing plan. In the IT competition increase section, the decision-maker can define the Web presence of the company, the e-business plan, the computer network and the ERP and CRM systems. Finally, the IT competition development section allows the decision-maker to define the overall cost of using IT, the differentiation strategy and the focus strategy of the company. To begin the simulation, the user chooses all the values of the inputs that are desired, and then clicks the run button. The simulation runs for a period determined by the user and pauses to allow the user to review the effects of the decisions made.

The prototype provides the decision-maker with various forms of support that guide them through the decision-making process. These guides range from the use of status alarms and notifications to the use of visual aids, so as to enhance learning and understating of various relationships in the context of IT. To aid the leading executives in making strategic decisions, the user interface of the sustainability model alerts the user with various notifications during the course of the simulation.

For example, if the competitive advantage development strategies and IT competition increase are low, then a message pops up to notify the user that the company has lost the target set. When IT strategy development, competitive advantage development strategies,

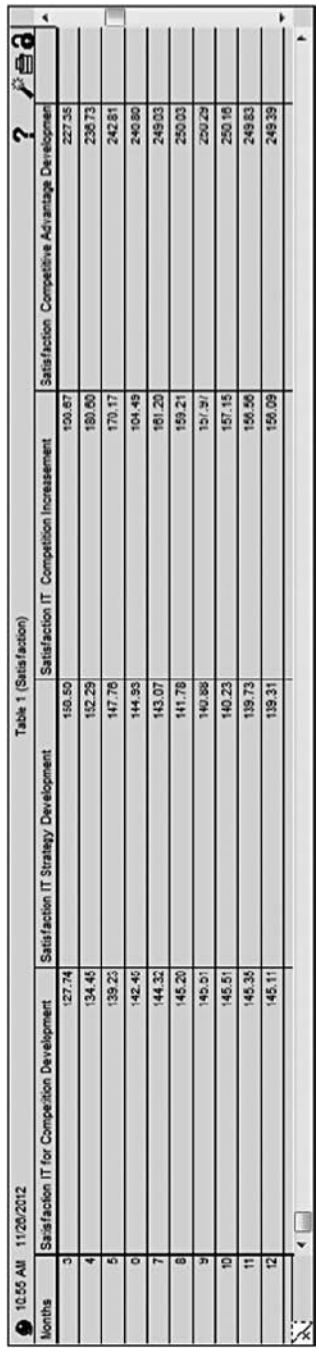

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Table 1 (Satisfaction)

Months	Satisfaction IT for Competition Development	Satisfaction IT Strategy Development	Satisfaction IT Competition Increasement	Satisfaction Competitive Advantage Development
3	127.74	158.50	100.67	227.35
4	134.45	152.29	180.60	238.73
5	139.23	147.76	170.17	242.61
6	142.46	144.53	104.49	240.80
7	144.32	143.07	181.20	249.03
8	145.20	141.76	159.21	250.03
9	145.51	140.86	157.97	250.29
10	145.51	140.23	157.15	250.16
11	145.38	139.73	156.56	249.83
12	145.11	139.31	156.09	249.39

Figure 8.
Satisfaction IT competitive advantage

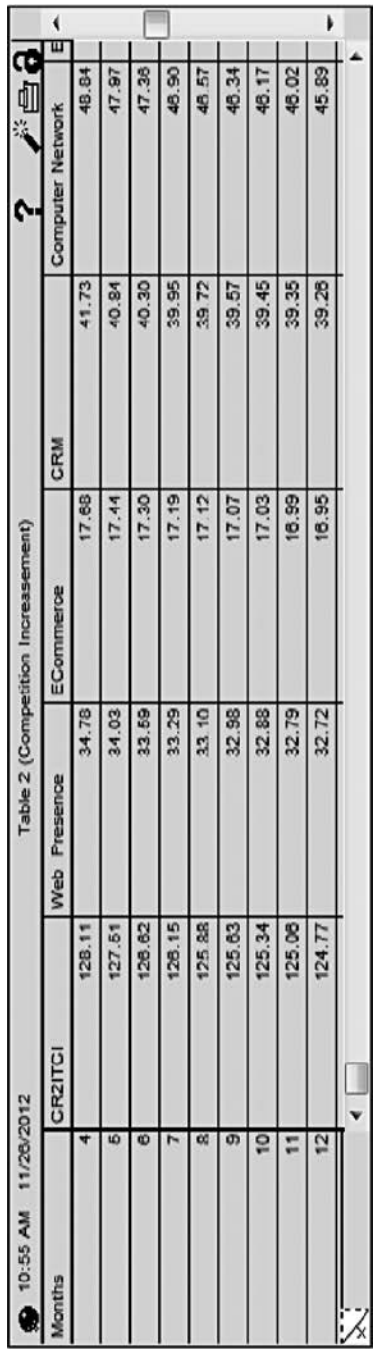

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Table 2 (Competition Increasement)

Months	CR2ITCI	Web Presence	ECommerce	CRM	Computer Network	E
4	128.11	34.78	17.68	41.73	48.84	
5	127.51	34.03	17.44	40.84	47.97	
6	126.62	33.59	17.30	40.30	47.36	
7	126.15	33.29	17.19	39.95	46.90	
8	125.88	33.10	17.12	39.72	46.57	
9	125.63	32.98	17.07	39.57	46.34	
10	125.34	32.88	17.03	39.45	46.17	
11	125.06	32.79	16.99	39.35	46.02	
12	124.77	32.72	16.95	39.28	45.89	

Figure 9.
Competition increase

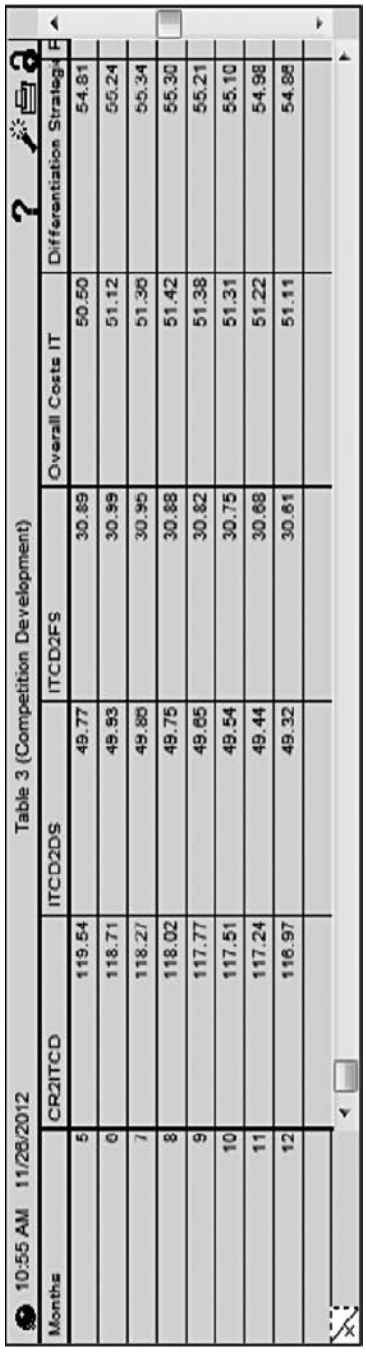

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Table 3 (Competition Development)

Months	CR2ITCD	ITCD2DS	ITCD2FS	Overall Costs IT	Differentiation Strategy R
5	119.54	49.77	30.89	50.50	54.81
6	118.71	49.93	30.99	51.12	55.24
7	118.27	49.85	30.95	51.35	55.34
8	118.02	49.75	30.88	51.42	55.30
9	117.77	49.65	30.82	51.38	55.21
10	117.51	49.54	30.75	51.31	55.10
11	117.24	49.44	30.68	51.22	54.98
12	116.97	49.32	30.61	51.11	54.86

Figure 10.
Competition development

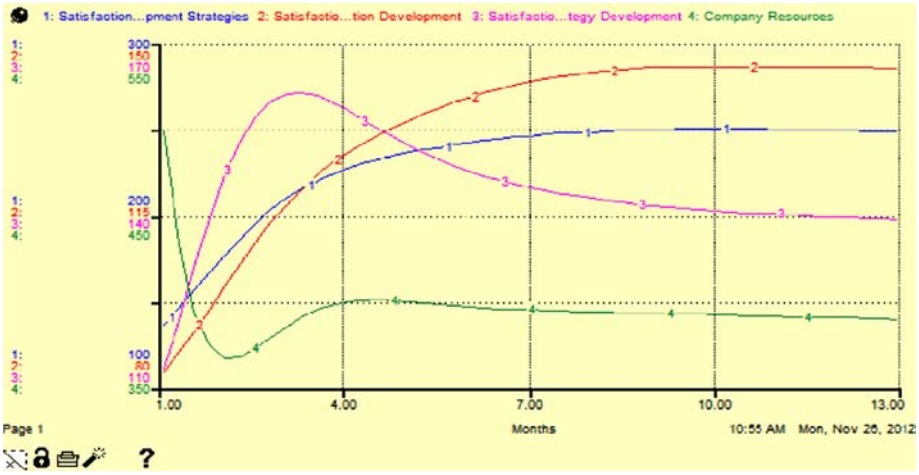

Figure 11.
The resources of the information systems in conjunction with the development strategies, competition development and IT strategy development

IT competition increase and IT competition development are satisfied, a message pops up to notify the user and some of the resources return to the IT company, etc.

Conclusions

In times of great economic changes and of broader redefinition of information systems, the investment in new technologies and innovation is identified as a strategic objective for each IT company (Standing, 1998). There is no doubt that we are through a transition, for many a chaotic period, the main feature of which are the international competition, the profound technological changes, the faster flow of information and communication technologies, the increasing complexity of business and the spread of globalization. In today's business environment, as many researchers find out, new business opportunities are constantly developed. The business world of these days, particularly through technological developments, creates not only a new business but often a new business activity, a new branch or a new business model.

The business reality based on the rapid development of information and communication technologies directs the traditional economy to a new knowledge-based economy, while creating new opportunities for growth, prosperity and quality of life. With the spread of IT, a process of simplification of economic activity is taking place. The economic wealth is being based less on possession of material assets (natural resources, land, machinery) and more on intangible assets, such as information, knowledge and research (Rowlands, 2003). The production process of material goods tends to fall towards the processes of production, processing and transmission of information. Therefore, in new economies, emphasis is placed on the transmission of information and communication.

In the modern environment, the most recent information and knowledge constitute the "keys" for the preservation of corporate success and maintenance of the competitive advantage of an IT company. It is a fact that with the increase of diffusion of the applications of e-learning and e-business, the transformation of information into knowledge is a decisive factor for the survival of the business. In other words, the long-term corporate success is inextricably associated with the company's ability to innovate and continually acquire competitive advantage over its competitors. Although

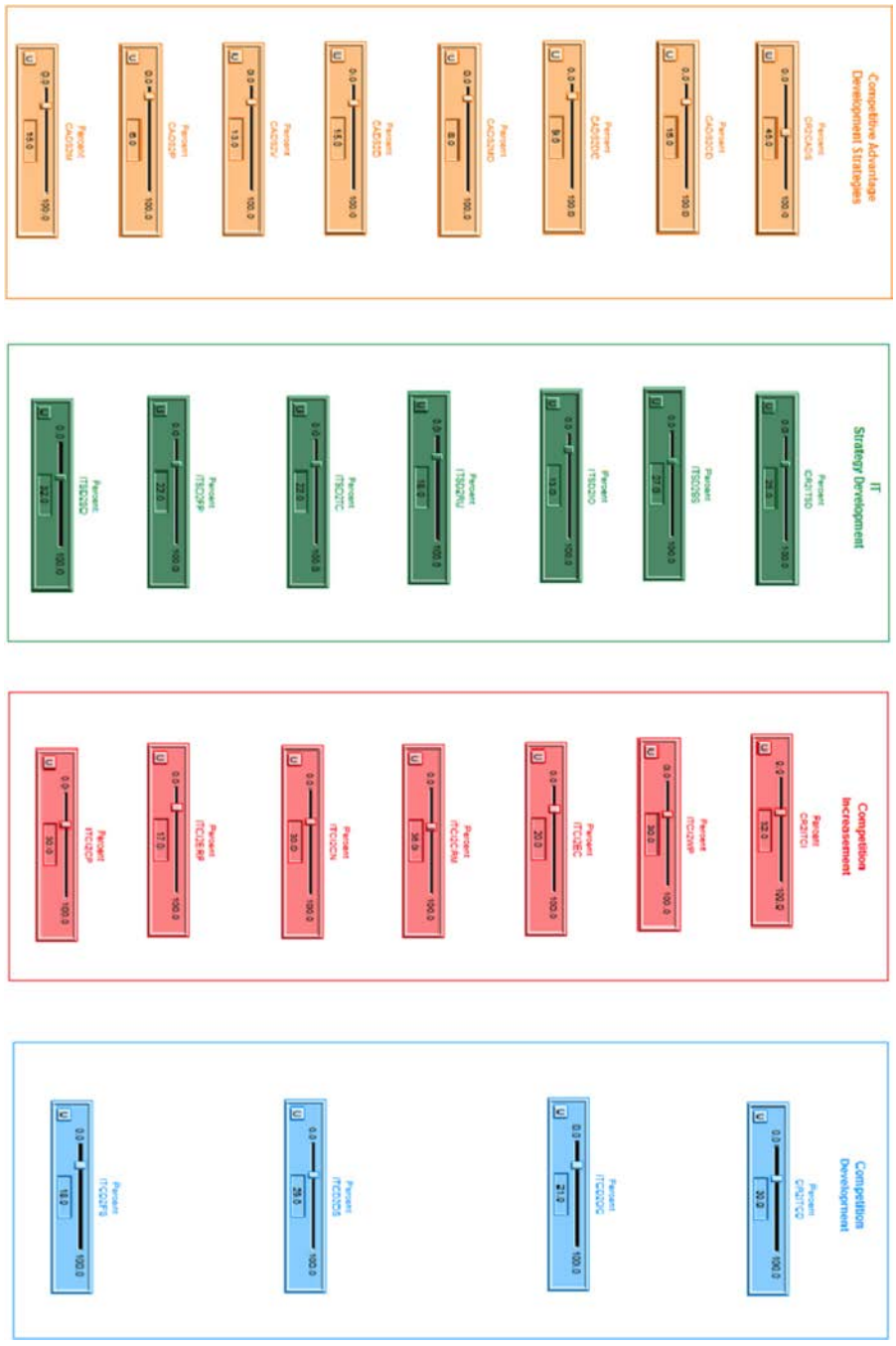

Figure 12.
Main user interface

corporate investments in "borderline" improvements of existing products and procedures are considered to be responsible for the growth of the company, it is clear, nowadays, that only radical changes lead to new markets, promote rapid development and lead to high investment returns.

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Further reading

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