IT MANAGEMENT IN THE MONITORING OF THE ENTERPRISE ENVIRONMENT

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Streszczenie

Functioning in a turbulent economy forces companies to implement appropriate strategies which will be able to use these opportunities in the best possible way and overcome many threats to the market through its continuous monitoring. The research problem will be discussed based on the characteristics of the selected information tools, which affects the achievement of the mutual processes adjustment for monitoring the environment and implementation of information technology solutions based on an overall company strategy.

Keywords: strategy, IT, environment monitoring

1. Introduction

Modern business management is constantly adjusting to a turbulently changing environment. The strategy, by which the entire philosophy of activities is based, has to be flexible and must have a great potential to meet the most demanding customers. It has been said that the company does not exist if it is not in the Internet, but its mere presence as a tool does not guarantee success; cooperation with modern solutions in information and communication technology has become indispensable in everyday life within the global market. Integrated Management Systems was created by the continuous development of information technology, and thanks to this they are helping the company in all aspects of the global market competition.

The practical application of technical solutions and information technology entailed the opening for the new activities towards cooperation, particularly important for small and mid-sized enterprises, which may to exist in the market by using new technology to compete with stronger market position companies. The opportunity to benefit from "new" is possible through continuous monitoring of the environment (Fig. 1) as a source generating constant signals and important information for the company. The environment is a place where important decisions are formed but while imposing certain standards and shaping the future at the same time1.

The environment of the company is a very complex concept that is constantly evolving and growing; this is exactly in such a development of an environment that Ansoff distinguished several key trends relating to the growth of news in changes: the intensity of impact, the speed of changes, and the increasing complexity of the environment2.

1[12].  
2[2].
Environment of the company is identified with the concept of the competitive environment, particularly in terms of macro- and microenvironment. Porter in his conception determines the cause – effect environment impact on task implementation taking into account the structuring.

He lists five basic forces in determining the competitive enterprise environment: the bargaining power of buyers and suppliers, rivalry among competitors, the threat by new entries, and substitutive products and/or services\(^3\).

Figure 1. Selected methods of information obtaining and company environment


Economic landscape is determined by the two most important factors, e.g. technological development, especially networking and communications solutions, with a strong influence on the globalization processes and globalization of the economy, which applies to all areas of businesses by having more and more advanced IT solutions.

2. Information technology (IT) – information systems

The way to define information technology is manifold in the literature. Increasingly, next to the term appears "information and communication technology\(^4\)", focused on the integration of information technology with telecommunications. IT includes the following group of measures: hardware and peripherals, software, database technology, computer networks, and mobile technologies. They are used for collecting, processing, storage, data security, searches, presentation, and transmission. A user who has in his resources a set of such tools may gain access to new information or even some knowledge, which may be analyzed, selected, and processed, by allowing the management of it in order to meet the information needs\(^5\). The functionality of the
enterprise without information technology is not possible without its explicit participation in the areas of information systems and management systems. Information technology solutions are able to support many of the steps during the environment monitoring process such as sourcing, gathering, transmission, storage, and presentation of data about the environment, and managing the process of monitoring is made possible by information technology solutions. Building a competitive advantage requires from companies a relation between the potential that is concealed in the IT and the results achieved by the enterprise. Dewett and Jones, in their analysis, gave the role of IT to enhance the impact of certain characteristics (organizational structure, company learning processes, organizational culture and relationships within the organization), on the results of the organization (Fig. 2). According to the researchers, the strongest impact relates to information technology, which connects and allows one to recruit employees, allows one to modify excluding knowledge, gives the possibility to increase the efficiency and the range of activities, as well as the IT facilitating the implementation of innovations in the enterprise⁵.

Figure 2. Role of IT in the enterprise

Multi-nationality in information technology and the geographical spread of data and users constitutes certain problems for customers. Implementation of appropriate solutions increase the chances of effective actions in the supply chain, and the ability to provide rapid data analyzing allows for the efficient simulation of the distribution and supply processes, which reduces inventory costs and improves customer service logistics. In enterprise management processes, the use of information tools should be consistent with its purpose because investment in IT systems has, for the companies, a strategic importance and should be preceded by an extensive analysis of software solutions offered on the market⁶. Models of development of information technology are helping to understand the role played by information management support systems. An example of

⁵ [7].
⁶ [9].
such a model, which will be described with the reason for its contribution in development not only in the organizational structure, but also in the strategy with a particular emphasis on the improvement of competition, is an MIT’90 model. The model presents three types of organizational infrastructure for information technology:

- Independent – a lack of strategic concept, while the system plays the role of IT support, where the expenditures are part of the current administrative costs;
- Reactive – the role of computer support causes a greater awareness of the usefulness of IT in choosing and implementing the action strategy without taking into account its shaping, where the outlays are the operating costs;
- Contemporary – the strategic plan is long-term and provides the basis for carrying out the modification, and the expenditures are the economic investments.

Effective use of information technology in organization is closely related to an information technology development plan in this organization, and those in the vast quantities are governed by the generated expenditures. Managing an enterprise is necessary for systems support, which can be identified with newer and more difficult environmental conditions. Access to information and knowledge and analysis on all kinds of methods is one of the most important elements affecting the acquisition of the ever-increasing competitive advantage. In the modern economy, information and communication technology creates an environment, and its dynamic progress has caused the formation of the Age of Information and Knowledge. Tapscott asserts that social and economic development can be achieved by using ICT in joint cooperation with different (in terms of business) entities that combine information with knowledge, intelligence, with creativity and creates a few rules that apply in the Information and Knowledge Age:

- A contemporary economy is the information and knowledge economy: it bases its assumptions on the intellectual values and investment in human resources, where intellectual work is most important and the strategy is identified with R&D;
- The new economic order has a digital nature: data in electronic form by digital notation is more accessible, being processed faster, and the record is not limited by temporal form and geographical location;
- A virtual reality development: analog-digital real entities converted into virtual form causing a change in the importance of economic cooperation and realities in business;
- The molecularization of organization and economy: the designation "economy of the particles", which has a molecular structure of individual components; small and dynamic related entities react easily and quickly as their environment changes;
- The development of network organizations – such an economy is built on the integration and interaction of a company with entities in the supply chain and competitors and where the network organizations build a system of mutual relations based on the possibilities of eliminating the physical, time, organizational, and technological boundaries;
- The elimination of mediators: the activity of economic organization excludes the intermediate link in finding new market values for their contractors;

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7 [1].
8 [15].
The infiltration of the various areas of economic activity: the integration of processing and transmission spheres: the gathering and sharing of data and values create the basis for the development of economic information and knowledge;

• Innovation and creativity are the essential factors of success: promoting and highlighting employees who are creating new value through creativity and therefore innovative activities;

• The progressive disappearance of the strict division between buyers and suppliers: the supply chain in organizations allows for customer contribution in designing and developing products using one’s knowledge and skills;

• Functioning in real time: provides opportunities for meeting the current outsourcing services and business processes;

• The globalization of the economy: knowledge, data (information) have no restrictions on the mainland, thus providing a close economic cooperation among geographically dispersed organizations;

• The increased anxiety and risks: social unrest and threats occur through the gap between those individuals who dispose of and those who do not have access to information, which is the cause of the consistent release of co-operation with unqualified staff and the acquisition of new and highly paid professions.

The dynamic development and the disappearance of borders between areas of ICT such as computer hardware, software and databases, telecommunications, with a particular emphasis on the Internet as a global network, are creating new opportunities for businesses in the Age of Information and Knowledge.

3. Strategy in environmental monitoring

Competitiveness of enterprises, particularly those that are small and mid-sized, is resolved on the field of access to knowledge and information, where the acute observation and skillful analysis of changes occurring in the economic, technological, political, and social environment generates an organization's ability to learn more quickly than the competition. The functioning of an enterprise is not possible without an overall strategy for formulating the future that joins together goals with the activities; the plan should occur at the right pace to synchronize and harmonize the perception of the organization in the environment. IT strategy plays an important role in this (Fig. 3) because an information technology solution supports every element of the value chain. IT development should be planned in a strategic manner suited to the aims of the company; information technology solutions identify resources and services that are necessary to create value for the company.

Information in managing the company has a particular role in the strategic perceptions and planning role of information technology in organizations. Managers should pay attention to the need for a strategic focus for information on the occurrence of the following circumstances:

• when the environmental information should be organized;

• information resources are randomly placed and localization could be better;

\[^9\] [8].
\[^{10}\] [6].
• carrying out and adapting the changes is easier using the information strategy;
• an information strategy allows for the creation of information in a purposeful manner and skillful use.

The order of the various elements constituting the success of the organization must be interdependent and in full harmony, which reflects the concept of strategic harmonization, giving synergistic effects such as environmental monitoring assisted by information technology solutions. Peters and Waterman in the 1970s proclaimed a concept of strategic harmonization; they were convinced that the compliance of the seven factors such as strategy, structure, system, style, staff, shared values, and skills were the determinants of a company’s success\(^\text{11}\). There are many concepts of this issue in the literature where it is used in various fields of activities. Harmonization in the present reality defined by Luftman refers to an organization of business activities in conjunction with information technology as the use of IT to adapt to the strategies, needs, and objectives of the enterprise\(^\text{12}\).

![Figure 3. IT Strategy against the sub-strategies in the enterprise](image)


\(^{11}\) [13].

\(^{12}\) [10].
Harmonization strategy may be, and is seen, in two but very different ways for being treated as a result achieved by the classical approach, or the perception of harmonization as a dynamic process. The classic approach assumes that the company is mechanically constructed and characterizes the conditions relating to:

- companies participating in the economy are influenced by the environment through the implementation of changes and specific requirements;
- resources are defined as information technology solutions, depending on the location of their present-day needs and environmental conditions;
- the relationships between organizational development strategy and information technology for the characterization of technology and its potential allocation for fulfilling business objectives.

Harmonization treatment, as the process is:

- the rejection of the organizational "iceberg" in the form of bureaucratic plans and methodology;
- social values should be highlighted and should be the inertia of organizational structure;
- the gaining of a high competitive position is possible due to receiving IT as a resource and an instrument without the compulsion to achieve the state of adaptation.

Achieving and maintaining harmonization on the business level with opportunities offered by information technology is imported by researchers into several principles:

- determine the objectives and the appointing of the team – harmonization should be directed by the top executives and a team by leaders in the field of environmental monitoring and IT a person should be appointed to evaluate the possibility of harmonizing;
- an understanding of the relationship between the environmental monitoring process, and an IT solutions-appointed team can determine the path of improvement in the harmonization of the compound to determine its maturity;
- gap analysis and priority – to assess the level of maturity for a decision to improve relations between the organization and function of IT, the gap created at the time between the decision and its execution is a priority before taking the next step;
- identifying actions (project management) – knowledge of the company’s position allows one to combine tasks in the gap with specific results, responsible persons, resources, or time performance and its measurement;
- selection and evaluation criteria for the successful implementation of the project – implementation of a plan based on previous assumptions needs to be refreshed in order to study for a better understanding of the manner and cause of the objectives which are pursued, and these have not been reached;
- maintaining the harmonization – in order to meet the target, the more difficult it is to maintain the improvements, the benefits of implementing IT in the enterprise environment; monitoring at the level of harmonization should be developed and cultivated among its collaborators for the continuous maintenance.
Strategic harmonization of company environmental monitoring and information technology is a dynamic and continuous process (Fig. 4), and so a consistent team of sequential operations or related activities, interacting to obtain the support of IT in the implementation of monitoring and flexible approach to the strategies during implementation of innovations to the final result for the effects of favorably influencing the activities of the company. Transforming the input state into the initial state of taken strategic harmonization process needs certain rules that define the resources in the form of information resources, methods, equipment, knowledge, skills, applications, etc., which are selected depending on the area in which the strategy is implemented, such as management, IT infrastructure, and communications skills. Obtaining the entry state into the state of the output can be achieved through the implementation process and evaluation of strategic harmonization by the following steps (by Jelonek), defining specific objectives to achieve:

- highlighting important areas;
- determining the attributes of each area;
- collecting and preparing data;
- providing an assessment for a particular level of harmonization;
- generating an analysis of the results;
- mapping activities;
- establishing a date for the next assessment at a certain level of harmonization.

![Figure 4. Strategic harmonization concept as a dynamic and continuous process implemented in the enterprise](source: Based on Jelonek D. (2009).

Among these stages one should pay particular attention to identifying and evaluating the current level of strategic harmonization of enterprise environmental monitoring and IT for the assumed research area. The advantage of this procedure is the low cost of implementation because it applies only to staff time during implementation; the remaining expenditures relate to the results obtained when assessing the harmonization level\(^\text{16}\).

\(^{16}\) [8].
4. Conclusions

Streamlining the activities of the IT solutions to a large extent was dependent on accessible information technology in global markets; the same opportunities do not provide tangible benefits, however, such as their use in methods of company's management. The multitude of information technology is a very good starting point by the choice of such systems and equipment that the best method will be able to support the activities and allow for easier, faster, and a more professional manner to meet customer needs, and thus improve the competitive position of companies.

Implementation of IT solutions and the range of environmental monitoring should be carried out in the process of the strategic harmonization with regard to balance in the efforts for each factor. A situation where too much is invested in information technology can have positive effects for business; one should not lose sight of the strategy, which allows for the exercise of restraint and the alignment of the corresponding demand from companies for IT in the global market.

Bibliography

ZARZĄDZANIE IT W MONITOROWANIU OTOCZENIA PRZEDSIĘBiorSTWA

Streszczenie

Funkcjonowanie w turbulentnej gospodarce wymusza od przedsiębiorstwa wdrażanie odpowiednich strategii, które będą w jak najlepszy sposób wykorzystywać szanse oraz w równym stopniu przewyższać zagrożenia na rynku poprzez jego nieustanne monitorowanie. Problem badawczy omówiony będzie w oparciu o charakterystykę wybranych narzędzi informatycznych, które oddziałują na osiągnięcie wzajemnego dopasowania procesów monitorowania otoczenia i wdrażanych rozwiązań technologii informacyjnej w oparciu o strategię przedsiębiorstwa.

Słowa kluczowe: strategia, IT, monitorowanie otoczenia

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