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**Information systems in
management**

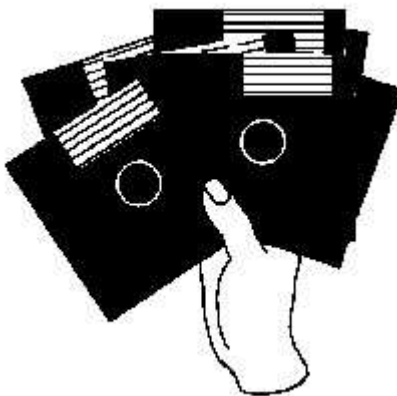
**Interactions between social and information
systems**

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1. Introduction

"Information systems are social systems that use information technology"

Land, 1986

Information systems are quite a complex issue and like all other human activities, they can be viewed from many different angles, depending on the preference of each author. The above mentioned Land's definition is naturally true, but it is only one of possible approaches. The viewpoint depends on our goal, what we want to achieve. Hardware technicians may see the information systems (IS) as a set of hardware and its interconnections designed to meet special requirements. Software experts will discuss

meet special requirements. Software experts will discuss the latest development in software packages and maybe its interdependence with used hardware. Other view will be used by people responsible for introducing IS into a company. For them the above mentioned definition may be truth, even though only partially. Their approach will be more organisational, taking into account social or better - human - aspects and HW and SW is to some extent unimportant. Other definitions might be received from telecommunication experts, from lawyers etc.

To conclude: **the definition of *Information systems* differs according to an author, his background and interests.**

This assignment is meant to analyse social impacts of IS and give an analysis of a situation in our and/or a fictive company (AMP). I'll try to cover both.

2. IS/Informatics in theory

In the world, the extensive introduction of IS is an issue of recent decade. In the Czech republic due to the political environment in the past this trend is much younger, but we "catch-up" quite succesfully. We are leaving the era of pure data processing and entering the era of informatics. The new technologies will more and more influence both our private and business lives. According to Bill Gates, this new era has already begun.

The words "*information systems*" do not cover all aspects of the problem. I will rather use the name "*Informatics*", due to reasons stated later.

2.1 Informatics

Informatics may be defined in many ways and from various viewpoints:

- From **technical** point of view, Informatics is a technological issue covering computer technology, telecommunications and automation technology.
- As an **activity**, informatics is a summary of all processes associated with development, delivery and utilisation of this technology. The organisation must be involved in this activity to be able to use the technology for its own success.
- as a **filosofy**, informatics represents a set of goals, meanings and responsibilities so different from these used withind first decades of computer using. Just now we witness the changes in this filosofy - the era of data processing ends and a new of informatics starts.

Information becomes a very precious merchandise and informatics is involved in its acquisition, processing, distribution and presentation. In business environment the information is used both to realize routine activities and to evaluate them and namely for decision making. Defining the sort of information necessary for these purposes can be done only with having on mind the system of control and management. This is why the informatics is closely interlinked with the control system in the organisation.

Informatics also influences the development of companies and its proper application may improve their competitiveness. The informatics strategy must be defined by the senior management of the company together with the organisational structure. **Not the information itself, but the way how we are able to use it , gives us a strategical advantage.**

2.2 Informatics strategy

Informatics and its strategy may be broken down into 3 components:

- information systems (IS) and their strategy
- information technologies (IT) and their strategy
- information management (IM) and its strategy

All of these components are firmly interlinked.

2.2.1 IS strategy

The IS strategy deals with a problem "**WHAT** to deal with in informatics". The business requirements serve as a base for decisions, what kind of applications should be introduced and which users will be served.

2.2.2 IT strategy

This part deals with a question **HOW** the problems will be solved. The answers and decisions from IS (see 2.2.1) implicate the IT architecture, standards and procedures. On the other side, IT and its possibilities affect heavily the IS design.

2.2.3 IM strategy

The IM tries to implement a management system into informatics. It answers the questions "**HOW to do it**", "**WHO will do it**" and "**WHERE will it be located**". The IM strategy is linked to a role of informatics in the organisation and its organisational and managerial system. The decisive role in all of this has the senior management which derives its decisions from the needs of a business and business environment.

2.3 Informatics in an organisational context

As mentioned above, informatics has an increasing

As mentioned above, informatics has an increasing role in all fields of business activities, including a great impact on organisational structure of the company. In recent years we've been witnessing a process of a rapid increase of informatic's importance which is reflected in an organisational charts of most companies.

This impact is twofold:

- growth in IT departments

There has been an enormous change in IT departments in most companies, namely in structure and importance and in some cases even in size. This development is caused by changes in technology and related tasks. The process has come much closer to its users and its nature has changed. The staff preparing the punchcards for mainframe computers was mostly replaced by experts dealing with much more sophisticated problems, like telecommunications etc. Informatics has now two faces - one as a service for all others and the second as a rules setter for its own future development.

- changes in all other departments

In most companies the introduction of informatics has brought a substantial change in everyday lives of all the staff. Most processes have had to be redesigned and this way prepared for IT implementation. This implied also some personal impacts - from requalification requirements to personal changes.

2.4 Informatics in a social context

The breakout of a new era of informatics has a serious impact on our everyday lives. It could even be said that we live in the era of "information revolution". The changes of business environment are much faster than they used to be some years ago and our reaction to survive must be corresponding to this. This puts a considerable pressure to all of us - namely those in economically active age. This brings along one of the most important social effects: there are groups of people who are not able or willing to follow this trend and cannot cope with the problems that an everyday life brings. In a short period of time they usually have to change their job and start to fall down in a social hierarchy. Consequently, if not treated properly, this might develop into a real social problem influencing a political stability of a the country.

The social impact of informatics and changes that it brings along may be broken down into two major groups:

2.4.1 New technology

Many people, especially in higher age, are reluctant to accepting changes (not only) brought by IT. In most cases they are not able to learn new things which are much more complicated than they were used to. This is a widely spread problem, maybe even generation one. There are

examples everywhere around and this means a serious handicap for these older people. For example, here in the Czech republic, one can read in classified sections of newspapers every day "Modern and dynamic company needs Requirements: languages, knowledge of computers and age under 35".

2.4.2 Business environment

New era in informatics brings new challenges and makes us all use new approaches. Everything seems to be in a permanent change. What was OK 10 years ago cannot be used anymore. This fact together with growing competition on the market contributes to changes in company's behaviour. Everyone who wants to maintain his competitiveness must carefully evaluate his own approaches and make necessary changes. This makes people think of the way they use for doing things and improve it. Nowadays this process is known as a re-engineering. Together with improvement in technology the process itself undergoes changes to reflect this improved technology. This has a social implication - there are some people who have their old habits and ways of doing things which they don't want to change. This may have two causes: they don't want to change ways which, according to their meaning, work well or they are not able to learn new things. The outcome is only one - these people are not acceptable under the changed circumstances any more.

Informatics also contributes to higher efficiency of a company. Together with changed organisational structure and a new system of management it can substantially contribute to company efficiency. The company is afterwards able to do the same business with less people of different specialisation.

This all brings two social impacts:

- *higher unemployment rate in higher age categories*

Unfortunately, this is not only a theoretical conclusion, but the practical impact is present everywhere around. Czech republic is no exception in this, similar situation is in highly developed countries as well.

- *higher unemployment rate in some professions (unskilled workforce) together with a lack of experts in other fields (computers, telecoms)*

The structure of workforce is changing. Unskilled workforce is being made redundant and replaced by modern technology. This applies both to blue and white collars. In the latter case the technology is just IT. On the other side the demand for IT experts grows and they are at the moment one of the highest earning categories. The

saturation of this workforce market is not expected within next 3-5 years.

2.4.3 IT impact on private life

A coming era of IT has also an influence on our private lives. Nobody is an exception. The whole population of developed countries knows the achievements of electronics and changed their lifestyles accordingly. Today's children spend a lot of their free time playing with electronic games, either NINTENDO or PC. Our new generation will use computers as freely as we did our pencils or typewriters.

The lifestyle is influenced by this quite a lot. One of examples - information. Now it is quite easy to get the required information through Internet or on any of many BBSs around the world. The only thing one has to is have a computer with modem and a telephone line. In the old days it took weeks to go through all possible libraries in one's home city and a success was not ensured.

Another example is the entertainment. Instead of going to the movies or theaters people sit at home and look at TV, video or their PCs. The social impact is obvious: people tend to separate from others in the privacy of their homes. The direct personal contact was to some extent replaced by indirect electronic and unpersonal ways of communication.

3. IT in electric power business

Electricity supply undertakings are currently facing a period of continuous change and uncertainty. Many countries are introducing new energy laws, including privatisation. Legislative changes are also proposed within the European Community aimed at opening up energy markets. Competition is therefore increasing between electric supply utilities (ESUs) both nationally and internationally. Other significant influences are environmental issues, technological developments and the state of national economies.

These factors will encourage changes in the organisation of ESUs. To ensure continued success, they must become more flexible, more responsive and more innovative. There will be strong pressures to reduce costs and increase productivity. ESUs will need to improve communications and training in order to achieve greater competitiveness and efficiency.

Managers will need to use Business Process Re-engineering to gain maximum benefit from redesigning their structures, systems and facilitating culture changes.

Organisational structures are becoming wider and flatter, with decision-making moving down the hierarchy. Culture changes will be crucial in ensuing successful change. ESUs are becoming more market-oriented with increased emphasis on competition and quality. New and improved systems are required which fully utilise technological developments.

The role of IT is altering and increasing. Its use must be planned to support organisational change and to help achieve other ESU objectives. As regards employment, there are changes in the nature and location of work as well as manpower reductions.

Although it has been suggested that the effectiveness of IT increases in relation to the degree of matching between IT organisation and the organisation of the ESU, this cannot be proved. It is generally accepted that IT has an amplifier effect, i.e. helps good organisations do better, and unfortunately can make poor organisations even less effective.

The use of computer networks allows access to distributed information and communications with other users, and can help remove internal and external barriers so creating a "Boundaryless Corporation". Popular networking techniques include Electronic Mail for the transmission of messages and Executive Information systems to provide managers with data about the business. In the current situation of increasing competition greater use should be made of Expert Systems, external databases to provide information and Electronic Data Interchange to transfer data between ESUs and suppliers. In attempting to match organisation change, consideration should be given to new IT architectures especially client/server. ESUs should fully utilise these IT developments to become more responsive and flexible.

In considering the organisation of IT support and services, ESUs must study the options of centralisation or dispersal of authority and concentration or dispersal of resources. Management strategies will lead to a combination of these possibilities after choices are made regarding transaction processing, data storage and data communication. Decisions must also be taken in selecting application software and environment, and a similar classification of alternatives can take place according to where authority for directives, working method and operations is held.

3.1 IT organisation in ESUs

Outsourcing is an alternative to in-house provision of IT support and services, with an external company providing either a part or a complete service. Before selecting this option, the ESU should fully evaluate the

costs and benefits including the impact on costs of change requests and ensure that they do not underestimate the cost of managing outsourcing. Outsourcing should be thought of as strategic in nature and any ESU adopting this approach should not abdicate the role of leadership of the information systems strategy for the company. It is also important that investigations are made into the outsourcing company and that the contract is carefully defined including changes relating to "divorce" and outsourcing company failure. References should be taken up and expert advice sought.

To conclude, here are a few words written by Michael L. Dertouzos (The Scientific American", September 1991) :

"Rich nations must also remember that if they become enamoured of and blinded by the glamour of the information era and neglect to produce and improve tangible resources and human services - the information colossus will lead to nothing and so will collapse.

Paraphrasing Dertouzos, ESUs must avoid creating an "information colossus" which is not in line with their needs and objectives.

3.2 Situation in ÈEZ, a.s.

After the political changes in 1989 the situation became much more "computer-friendly" compared to times of COCOM embargo. Very soon, in 1991 the Board of Directors decided to launch a so called Business Improvement Program, which included full computerisation of the work in ÈEZ. We have decided to implement a total unification of computer environment and provide for computer-aided communications. After 4 years I must say that our goal is almost met. Our office computers work in LAN in all our premises and use the same basic software: MS-Word as a word-processor, MS-Excel as a spreadsheet, MS-Access as a small personal database and Lotus CC-Mail as a communications package. For more advanced applications other tailor-made software is used. One of our major projects in present is the AFMIS - Accounting, Financial and Managerial Information System. This package will collect all financial, operational, personnel etc. data and present it to all levels of management.

The social impact of this development has not been tremendously dramatic in ÈEZ. Almost all our people were able to master the new IT and now they use it as naturally as e.g. a pencil. But this change was not painless. Here applied the same what I had described above - the reluctance to learn in the beginning. But now the same people say "I can't imagine this work without a computer!".

Even though the impact of IT implementation was

EVEN though the impact of IT implementation was not dramatic at all, in future it may change. And it probably WILL change, because compared to Electricité de France ÉEZ has three times as much employees per installed megawatt. These people have to be downsized - much of them replaced by IT.

4. IT implementation in Anglian Metal Products

During the third bloc we simulated being a consultant hired to help a company called Anglian Metal Products get out of red numbers. AMP was a typical company which grew from an originally very small family company into a medium-sized company, quite successful on the market. But unfortunately, AMP has frozen the old ways of management, which may have been appropriate for a small business in the beginning of its existence, but which can never work in a bigger, well established business. The more formalized and controllable methods are required.

AMP needs first of all to introduce a formalized decision-making process with well defined responsibilities. This applies namely to order processing and cost calculation. Only after this has been done, the company can think of implementing IT.

What kind of results can we expect from implementing IT ? First of all, if all the processes are formally described, there will be no space left for voluntarism in price settling. The higher profit may be expected. From a human point of view, I personally expect personal changes in the company. After discussing with Major Henderson, I don't expect him mastering computers and therefore I expect him leaving the company within a year. A formalized way of acting will probably be very soon disliked by a sales manager, who will leave too. This will help the company in planned restructuring and downsizing, as proposed by a consultant.

5. Reference

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