10. PEOPLE'S ATTITUDES TOWARDS THE APPLICATION OF INFORMATION TECHNOLOGY IN ESTONIAN COMPANIES

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Abstract

In order to apply information technology effectively, both technical and organisational as well as human factors should be taken into consideration at all levels of system planning; this has considerably increased the opportunities to involve people in the work process in the Estonian society. However, the technological progress has its drawbacks, one of them being people's inability to get used to computers and negative attitudes towards the application of information technology.

The aim of this article is to observe people's attitudes towards the application of information technology in Estonian companies. An explanatory survey was conducted to find out whether the application of new information technology instils fear or reluctance in employees.

Introduction

The influencing of people is often associated with the changing of attitudes, which in its turn is associated with the changing of organisational culture. Organisational culture is a set of values, attitudes and principles that forms a basis for the company's daily

activities. They serve as guidelines for the employees, indicating how one should work, what is allowed and what is not, what is the right or wrong behaviour, what the communication is like inside a company, and with clients and other companies. The experience of the companies shows that change-oriented organisations adapt better and faster to the changing environment and suffer less in the period of crisis. They are characterised by independence, creativity, entrepreneurship and readiness for innovation. (Takjas, 2000) The informational environment of an organisation is undergoing constant changes.

The informational environment of an organisation is established to ensure that the organisation and its people act to achieve the goals of the organisation. Sometimes an informational environment fails to achieve its goals. Often the reason for it is the non-adaptation of a person and the informational environment, which is often due to psychological incompatibility. When creating an informational environment, the knowledge (or the lack of it), motives and attitudes of the people in the organisation have not been taken into consideration. (Allik, 2003) This article deals with fear and reluctance felt by people when information technological innovations are carried out.

Manuel Castells, the most popular information theorist of the last decade, says that in the future the informational environment will be so changeable that it demands from people special flexibility and ability to learn. According to Alexander Kotchubei (2001), a leader has to develop positive attitudes in him/herself and his/her employees, to achieve the success of the company, more pleasant relationships between colleagues, customers, constructive work environment, etc. Also, a leader should use the inner potential of the employees (opinions, attitudes) as a factor of the company's development.

People's attitudes towards the application of IT

Several theorists have dealt with the formation of attitudes. No matter what definition is used, an attitude is more than just a set of ideas about something. An attitude is an inclination or tendency to respond or evaluate positively or negatively. An attitude is a general and relatively stable evaluative opinion of a phenomenon, which includes principles, feelings and behaviour (Gerow, Brother, Newell, 1989). This is one of the most widespread attitude theories.

Attitude formation is mainly affected by experience. Attitudes are considered very important in organisational behaviour because they enable to predict people's behaviour (Vadi, 2001).

Attitude strength depends on the extent to which these attitudes are related to each person's own deeply held philosophical and political values and are of concern to the person's social group (Boninger *et al*, 1995). This indicates the role of organisational culture in attitude formation. (Alas, Vadi, 2003).

Both measuring the attitudes and defining their essence cause problems. One problem is that people fear to reveal their attitudes that are not accepted and they often say what they think they should say. Another problem is the set of multiple choice answers, which may not include person's real attitudes and therefore they opt for an answer that seems appropriate in the given situation. (Hayes, 2000)

This article explores people's fear and reluctance to the application of new IT. Although fear is part of our life, it does not mean we are constantly aware of it. It could reach our consciousness at any time through an inner or outer experience. We usually tend to avoid it, we have got several techniques and methods to fight fear, to suppress, overcome or deny it. It is only the objects of fear and means and measures we use to manage fear that vary (Riemann, 1995).

The introduction of new IT brings about social changes and affects people's psyche: opportunities for continual refreshing of knowledge and rise of self-confidence, but also the so-called techno-stress. Craig Brod was the first to use the term techno-stress, primarily referring to difficulty in adapting to new computer technology. (Meltsas, 2003) Today, with computers forming an almost inseparable part of our lives, it is strange to think that they could cause fear. Fears related to computers and new technology can be broadly divided into two categories. First: fear of not being able to learn the new technology. Second: fear that technical improvements bring about the loss of a job (Karo, 2000).

Why have people reluctance to technology? There could be several reasons for it. (Veldre, 2002)

- People are afraid of unfamiliar things and besides, every change is painful.
- A person may avoid using a computer because of the fear of making mistakes and causing irreversible damage- corrupting or deleting sth.
- Some people fear that even if they learn one thing, there will be several new ones and the development of technology is never-ending and it is hopeless to keep pace with the progress.
- Fear and reluctance may also be caused by comparing oneself with others.

Changes cannot take place unless the people who carry them out support them. Employees' attitudes to changes are affected by the norms and beliefs adopted by a group, as well as relations inside an organisation, and trust or mistrust of the management (Alas, 2002). Changes calling for a change of behaviour in the employees in their turn affect organisational culture.

Organisation and method of the study of attitudes towards the application of IT

The aim of the study was to analyse and evaluate the extent of IT use in everyday work and how it affects people's attitudes. First a

list of keywords characterising attitudes towards IT application was compiled, then 37 statements were compiled based on these keywords. The questionnaire also included 3 questions about IT use inside a company, when communicating with customers and suppliers and 10 social demographic questions. This article gives a survey of fear- and reluctance-related attitudes, their connection with the extent of IT application, field of activity and the location of a company.

The list of keywords was compiled during the period from November 2002 to January 2003 on the basis of a primary survey conducted among 35 people aged between 18 and 65. A most reliable method for measuring attitudes is a scale developed by Likert in 1932; it comprises statements, each of which is accompanied by a multi-point scale. The participants were asked to express their opinion on a four-point scale: always, usually, sometimes or never.

37 statements were compiled using the received data, and on the basis of these statements the author conducted a survey in February–March 2003 among the students of the Department of Economics of the Open University, University of Tartu (in Tartu and in the Narva College). The participants were students of Diploma, Baccalaureate, and Master's studies in business administration and economics, and participants in intensive courses. Questionnaires were handed out at the end of a lecture and the students were asked to fill them in immediately. 360 questionnaires were handed out and 348 were filled in properly and returned. The author used MS Excel 2000 and SPSS 10.0 for data input and processing. In the course of statistical analysis, the author composed correlations between statements and drew up classification charts, to compare the extent of IT application in different fields of activity and different regions.

The intensity of IT use in companies was covered by 3 questions, which asked the participants to indicate on a ten-point scale how IT was used in the company when:
a) carrying out tasks inside a company,
b) communicating with customers,
c) communicating with suppliers.

There was a 10–point scale for the questions about the extent of IT use and the results were divided into groups. In this article we focus on the top (7–10 points) and bottom (1–4points) groups (see Table 10.1).

Table 10.1. Use of information technology (% of the respondents)

use of information technology	7–10 points	1–4 points
when carrying out tasks inside a company	74.00	10.60
when communicating with customers	67.80	14.40
when communicating with suppliers	60.60	19.50

Source: compiled by the author

To characterise the sample briefly, we can say that 56.6% of the respondents were women and most respondents were from small enterprises (10–49 employees). Regarding their jobs, the most common was that of a specialist (45.5%). 44.8% of the respondents had higher education, 30.2% of the respondents were of age 26–30.

The locations of companies (branches) were as follows. The biggest percentage of the respondents came from North Estonia (41.1%), followed by South Estonia (36.5%), East Estonia (8.6%), Central Estonia (8.0%) and West Estonia (5.5%). Four most common fields of activity were the service sector (19.25%), industry (15.5%), trade (12.9%) and finance (9.8%). Other fields of activity were represented by less than 6% of the respondents.

Results

Comparison of regions and fields of activity in terms of the use of information technology

The survey revealed that the statements "the application of new IT causes reluctance: why new programme now that I've only just learned to use the old one" and "the application of new IT causes problems and is therefore unpleasant" correlated strongly with one another and had most correlations with other statements, therefore we focus on the relations between these statements and other indices.

First we look at the statement "the application of new IT causes reluctance: why a new programme now that I've only just learned to use the old one", which 8% of the respondents answered "always", 28.8% "usually", 52.2% "sometimes" and 11% "never". There were no obstacles to the application of IT inside a company in 52.6% and outside a company in 39.4%. There are some companies where the relevant indices were only 2.6% and 5.2%, The largest number of "never" answers came from the service sector (12), there were no answers in public administration and transport. As for the location of the company, most respondents came from North-Estonia (19).

When analysing the choice option "never", it appeared that when using a computer for carrying out tasks inside a company, 32.1% of employees feel reluctance, for communicating with customers 21.4% and with suppliers 17.8%. In some companies these indices are 7.1%. By fields of activity, there were the most "always" answers in other fields of activity (7), no answers in construction, agriculture, and mediation. As for the location of the company, most respondents came from North-Estonia (17).

The statement "the application of new IT causes problems and is therefore unpleasant" got "always" answers from 4% of the respondents, 16.3% said "usually", 67.3% "sometimes" and 12.4% "never". The relation between this statement and the extent of IT application in a company reveals that there are always problems with a computer in 28.6% when carrying out tasks inside a

company, in 21.4% when communicating with customers and 35.7% with suppliers. There are also companies, where the figure for internal problems is 7.1% and outside the company, both with customers and suppliers, 14.3%. As for the fields of activity, there were the most "always" answers in industry (5) and no "always" answers in many sectors. As for the location of the company, most respondents came from North-Estonia.

When analysing the option "never", it appears that there are no IT-related problems for carrying out tasks inside a company in 51.2%, for communication with customers in 55.8% and with suppliers 48.8%. There were the most "never" answers in the service and mediation sectors (11) and the fewest answers in transport (9). As for the location of the company, most respondents came from North-Estonia (24).

Attitudinal barriers to the application of information technology

12 statements expressed fear and reluctance towards the application of new IT (Appendix 10.1). The author constructed Pearson's correlation using the statements in the questionnaire (Appendix 10.2). As there were many statements with strong correlations, the author selected the correlations starting from $r = 0.40$ ($p < 0.01$) (Borowditch, Buono, 1997) and drew up a correlation tree by means of these results (Fig.10.1). The symbols used in Figure 10.1 are explained in Appendix 10.1.

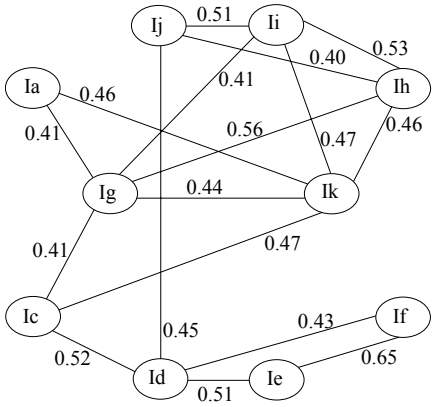

Figure 10.1. Correlation tree (compiled by the author).

Correlation analyses showed that the statements "the application of new IT causes excitement" and "the application of new IT does not cause any problems" had no correlation with the other statements.

As can be see in Appendixes 10.1 and 10.2, the statements "the application of new IT causes reluctance: why a new programme now that I've only just learned to use the old one" and "the application of new IT causes problems and is therefore unpleasant" had a strong correlation between themselves and the most correlative relations with other statements. In addition to these correlations, the statement "the application of new IT causes reluctance: why a new programme now that I've just learned to use the old one" had correlations of the same degree with the following statements: "the application of new IT causes tensions and stress", "the application of new IT instils fear of looking ignorant" and "the application of new IT causes adaptation problems".

The statement "the application of new IT causes problems and is therefore unpleasant" had the strongest correlation with the statements "the application of new IT causes adaptation problems" and "the application of new IT instils fear of looking ignorant". Then follow the statements "the application of new IT

causes tensions and stress" and "the application of new IT instils resistance to innovations",

The author developed the statements (Appendix 10.2) and statement pairs by grouping them, using a correlation tree method:

- Ie, If – fear of job loss;
- Ig, Ih, Ii – reluctance to innovations;
- Ic, Id – fear that knowledge/qualifications do not meet the requirements;
- Ik – causes problems;
- Ia – tension, stress;
- Ij – insecurity at work.

The author brings out correlations between the statements and statement pairs, which she intends to analyse more thoroughly in her next study (Figure 10.2).[1]

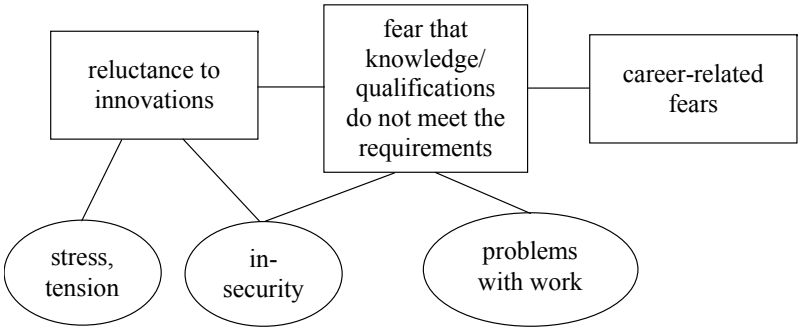

Figure 10.2. Correlations between the statements and statement pairs (compiled by the author).

The groups in this model "fear that knowledge/qualifications do not meet the requirements" and "career-related fears" have been referred to in the theoretical part as two most common groups of fear related to new information technology.

[1] The author is grateful to the reviewer Maive Suuroja for her advice on the compilation of the model in Figure 10.2.

Discussion

Although information technology has developed fast and it is supposed to simplify everyday work, this explanatory survey shows that one third of the respondents feel some fear or reluctance to the use of IT. The least IT-related problems and reluctance, both inside a company and when communicating with customers and suppliers, occurred in the service sector. As the majority of investments in IT have concentrated in big cities, especially in Tallinn; the higher rate of IT application is also reflected by the superiority of North Estonia to other regions in all the given indices.

The author used two contradictory statements, "the application of new IT causes tensions and stress" and "the application of new IT causes excitement" to measure emotion-related attitudes. The latter statement did not have any correlations with the other statements, which indicates that the use of IT caused tensions rather than excitement in the respondents. As we can see in the abovementioned article by Karo (2000), computer-related stress has been caused by the organisation of work rather than by the computer itself. It is understandable that:

- excessive work load,
- too complicated work tasks that are not in accordance with an employee's training or tools,
- pushing deadlines,
- discord in the labour collective or isolation, and
- lack of possibility to get advice and explanations exhaust employees mentally and emotionally.

As a result, they get tired quickly and feel irritation about everything related to their job, the computer included. How to overcome stress? One should find motivation and be willing to act in this field, which would help to decrease work stress and enable one to work more effectively. This, in its turn, will contribute to the success of the organisation.

Out of a pair of contradictory statements "the application of new IT causes problems and is therefore unpleasant" and "the application of new IT does not cause any problems", the latter had no

correlation with the other statements and therefore we can conclude that the use of IT is sometimes problematic for the respondents.

Attitudes towards innovations were measured, using these three statements: "the application of new IT causes reluctance: why a new programme now that I've only just learned to use the old one", "the application of new IT instils resistance to innovation", and "the application of new IT causes adaptation problems". We can conclude from the responses that the majority of respondents are not open to innovation. The given statements are based on the prejudice that the application of new information technology may cause problems. Also, employees' adaptation problems are connected with their openness to innovation. As Veldre points out in his article (2002), it can be difficult for an employee, who has adopted and mastered his tasks, to start thinking and working in a different way. As people get used to the routine and are not always willing to change it, everything new will cause problems. According to Takjas (2000), the formation of employees' attitudes and organisational culture are inter-related. Problems can be alleviated by explaining the goals of an organisation, talking to co-workers, in-service training at the workplace and access to necessary study-aids.

Responses given to the statements "the application of new IT instils fear of looking ignorant", "the application of new IT causes fear that employee's education does not meet the requirements", "the application of new IT leads to insecurity at work" show that when organising the staff's further training, one should consider the fast social and cultural changes and development of technical knowledge, because people are concerned about the impression they make. It can be concluded from Kotchubei (2001), that it is useful for a company if its organisational culture helps the employees understand the necessity of further training. This improves the atmosphere at workplace, relations with customers and thereby raises the value of the company.

Career-related fears were measured by the statements "the application of new IT causes fear of getting demoted in case of

problems" and "the application of new IT causes the fear of losing a job", which are directly related to the need for employees' further training. Alas (2000) points out that the organisational culture that strongly encourages its employees' further training, leaves them little chance to avoid it. Since the requirements for employees' IT skills are continually changing and the number of jobs is limited, people need to improve their professional skills in order to be more competitive.

In conclusion, it can be said that the explanatory survey showed that IT-related fears have the strongest correlation with people's careers and that their reluctance is closely related to innovations connected with IT. To make employees more confident in using IT, more attention should be paid to their further training. As the use of IT tools varies in different companies, it is necessary to give detailed descriptions of the required levels of IT skills needed for particular jobs. The culture of an organisation determines how independent its employees' performance is.

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KOKKUVÕTE

Inimeste hoiakud infotehnoloogia rakendamisel Eesti ettevõtetes

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Inimeste hoiakud peegeldavad nende väärtushinnanguid ja uskumusi ning on seeläbi seotud kultuuriga. Seega on töötajate hoiakute kujunemine muudatuste suhtes seotud ka organisatsioonikultuuriga. Organisatsioonikultuur mõjutab praktiliselt kõike, mis organisatsioonis igapäevaselt toimub. Seetõttu tuleb iga muudatuse korral arvesse võtta ka organisatsioonikultuuri. (Alas, 2002)

Autori poolt läbiviidud selgitavast uurimusest selgus, et IT-alastel hirmudel on kõige tugevam seos inimese karjääriga ning vastumeelsus on tugevas seoses IT-alaste uuendustega. Kõige vähem IT-alaseid probleeme ja vastumeelsust nii ettevõttesiseselt kui ka suhetes klientide ning hankijatega tekib teenindussektoris. Kuna enamus IT-alastest investeeringutest on koondunud suurematesse linnadesse, kajastub kõrgem infotehnoloogia kasutamise määr ettevõttesiseselt ja -väliselt Põhja-Eesti ettevõtete suuremas ülekaalus teiste regioonide ees kõigi toodud näitajate osas.

Ettevõtete infotehnoloogiline areng on jätkuv trend. Programmeerijad püüavad välja töötada järjest kasutajasõbralikumaid programme ning üha rohkem vajatakse nõuandeid töökorralduslikult kõige otstarbekamate IT lahenduste väljatöötamisel ja sellega seonduvalt ka inimeste hoiakute kujundamisel. Üheks võtmeküsimuseks sel teel on töötajate IT-alase kompetentsi tõstmine. Vastumeelsust uue infotehnoloogia suhtes aitab vähendada tegevuse lõppeesmärgi silmaspidamine, esmatähtsa seadmine esikohale ning koostöö, üksteise toetamine ja julgustamine. Eesti ettevõtetes tulekski rohkem tähelepanu pöörata töötajate teadmiste täiendamisele, hirmu ja vastumeelsuse vähendamisele uue infotehnoloogia suhtes ning muutustega seotud positiivsete hoiakute suurendamisele.

Appendix 10.1.

Statements in the questionnaire (keywords: fear and reluctance)

Many people in our company think that the application of new information technology causes:

	always	**usually**	**sometimes**	**never**
Ia) tensions, stress	4	3	2	1
Ib) excitement	4	3	2	1
Ic) fear of looking ignorant	4	3	2	1
Id) fear that employee's education does not meet the requirements	4	3	2	1
Ie) fear of being demoted because of problems	4	3	2	1
If) fear of losing one's job	4	3	2	1
Ig) reluctance: why a new programme now that I've just learned to use the old one	4	3	2	1
Ih) resistance to innovation	4	3	2	1
Ii) adaptation problems	4	3	2	1
Ij) insecurity at work	4	3	2	1
Ik) problems and is therefore unpleasant	4	3	2	1
Il) does not cause problems	4	3	2	1

Appendix 10.2.

Correlations between the statements in Appendix 10.1*

	Ia	**Ic**	**Id**	**Ie**	**If**	**Ig**	**Ih**	**Ii**	**Ij**	**Ik**
Ia	0					0.41**				0.46**
Ic		0	0.52**							0.47**
Id		0.52**	0	0.51**	0.43**				0.45**	
Ie			0.51**	0	0.65**					
If			0.43**	0.65**	0					
Ig	0.41**	0.41**				0	0.56**	0.41**		0.44**
Ih						0.56**	0	0.53**	0.40**	0.46**
Ii						0.41**	0.53**	0	0.51**	0.47**
Ij			0.45**				0.40**	0.51**	0	
Ik	0.46**	0.47**				0.44**	0.46**	0.47**		0

Notes:

* Correlations $r > 0.39$ are presented in the table.

** Correlation is relevant at the confidence level $p < 0.01$.