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**Edit Németh**

The human and organizational concerns of the office  
environment development

PhD dissertation, booklet of thesis

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**Table of contents**

Introduction ..... 3

I. The aims and background of the research..... 3

II. Research methods..... 5

III. Scientific results ..... 6

    III.1. The human side of prosperous operation of companies ..... 6

    III.2. Human aspects of organizations’ internal communication and office construction ..... 9

    III.3. Human aspects of office construction for organizational change ..... 13

IV. Further research tasks..... 16

Publications ..... 17

References ..... 18

## Introduction

In the 21st century to stay in the competition companies have to adapt to a constantly changing market with unstable factors. Keeping up with the competition and fulfilling the corporate aims stands in the focus of decision making recognizing that the corporate aims can only be reached by gaining the commitment of the employee's. It is clear to the leaders that choosing an appropriate strategy is not enough in itself. The successful completion of a strategy requires a new, employee centered approach from the leaders.

Most of the people spend a great amount of time working which means moral and social responsibility for companies in forming a comforting environment for the employees. An employee satisfied with his work is more devoted to the company and performs better in completing his tasks. Higher personal efficiency consents to the improvement of the company's achievement. The employee's satisfaction can be improved by proper logistics, diverse tasks and with providing an environment supporting both the organization and the employee's work.

The dissertation focuses on the improvement of the office environment, concentrating on the effects of ergonomic constructions, highlighting the factors that help creating added value related to the improvement of the working and inner communication processes.

### I. The aims and background of the research

Using the scientific approaches of marketing, management and ergonomics disciplines I studied the interaction between the company and the employee. Combining the different scientific areas and delivering a complex analysis about how the office environment can support the work of the employees is quite unique and new. My dissertation aims to present the appearance and usability prospects of this approach. Furthermore the dissertation's aim is to form a multidisciplinary framework that determines a complex corporate view which by the use of its practical results contributes to the modulation of well-known theories and ensures a more efficient and successful cooperation between the employee and the company.

Within my ergonomic research I focus on office-ergonomic factors supporting efficient work, communication and work areas supporting new working styles, and on their factors of work environment. In a wider understanding work environment does not only mean the physical consideration of the surroundings (like lighting, air quality, noises etc.) it also refers to the equipment used during work (like office chair, screen, keyboard, mouse etc.) and the work manner and method no matter if its individual or team work (Murrell, 1965).

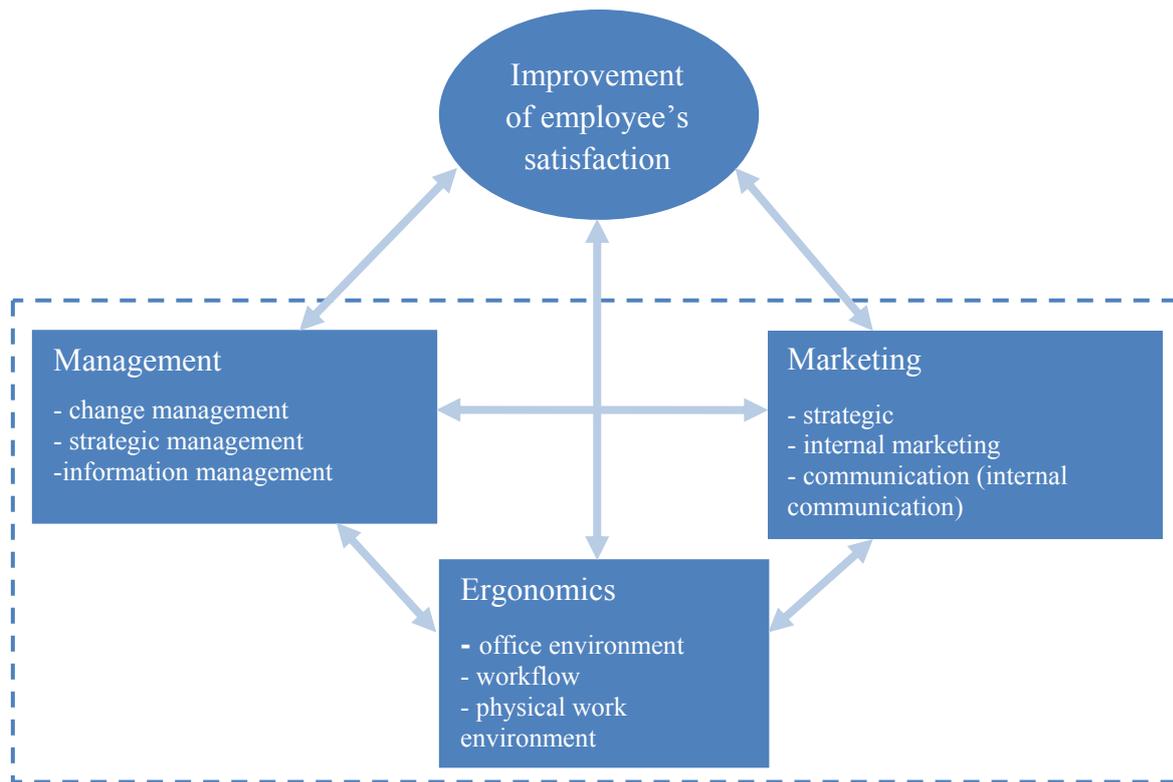
In the 1990s there was a change in view in the field of ergonomics and as an outcome the discipline was not only concerned with the construction of the work environment any more. The macro-ergonomic approach exceeds the observation of tight human-machine system and handles the company as a socio-technical system with an objective to optimize it (Hendrich, 2001). The appearance of the macro-ergonomic approach, the change of office-work and the turning up of new working methods made it reasonable to expand the field of research. Consequently, beyond the use of classical disciplines of ergonomics for studying an

organization and an office inside takes the flow of work, character of work, information technologies and communicational habits into account as well. The ergonomic reconstruction of offices became a complex process that requires the sparks of the whole company.

During my research I made attempts to narrow the above mentioned approach by forming an ergonomics-centered work environment development model supporting office construction, mapping the company itself, in favor of the growing efficiency of the company and higher satisfaction of the employee. In my work based on the human centered corporate management ideas I study the individual and corporate factors of the employee's work satisfaction that can play an important role in the course of office-construction. Through analyzing the internal marketing activity I explore the internal communication habits, especially focusing on the communication concerning change that also helps the spread of the ergonomic approach. I connected the companies' internal processes and communication with the tendencies in the construction of offices, and examined the relation between internal communication and office constructions. At last, after the theoretical introduction of ergonomically planned office workstation constructions and their practical use, I set the basis of an ergonomically centered development model for an office work environment and I also verify it through a project delivery.

The three key ideologies behind my work according to which I phrased my thesis are the following:

- employees are the means for success, determining the meaning of employeesatisfaction
- internal marketing, supporting the realization of corporate change, scenes and equipment of internal communication
- work environment, methods of work and physical supporting environment



**Fig. 1. Appearance of the different disciplines in my research**  
Source: Own formulation

During my researches focusing on the improvement of employee's satisfaction, some aspects of organizational change and office ergonomics, I study the effects of change management, strategic management, information management and internal marketing disciplines on internal communication and the efficiency, equipment and environment of office workflow.

## II. Research methods

As a secondary research source I compared the employees' satisfaction index of Hungarian companies with domestic and abroad research results. Through analyzing the data of the "best workplace research" between 2005-2009 in Hungary I studied the characteristics of employee demography, the field of industries and the employees headcounts, and the companies' internal communicational habits and the custom of coverage of strategic change in favor of the employees' satisfaction and devotion to the company. The survey concerning the employees' satisfaction was completed by 153846 people and the HR audit questionnaire was filled by 551.

During my primer studies I, as a member of an expert-team, revealed the weaknesses of the ergonomic aspect and identified the needs concerning office-construction at the examined companies. I used three methods to support my goals. To discover the operation of the company I used observation and also interviewed high and middle level leaders. The employees' needs and opinion on office construction was collected by an on-line questionnaire.

The first primer research aimed to examine the effect of a new office environment. In my study I compared the employees' satisfaction of work environment with an earlier (2004) and a recent construction (2006), where ergonomic aspects were taken into account. The analyses of 2004 covers the whole organization (n=351) while in the examination of 2006 the satisfaction level of employees (n=59) of a chosen directory was studied deeply. Besides discovering the ergonomic problems of office environment I also analyzed the communication habits of the chosen directory, such as the channels used within the directory, the formal and informal ways of communication and their parameters and the use of intranet.

The second of my primer studies pre-tested the office environment development model at a constantly growing company in the field of food industry, between June and September of 2007 when I was a member of an expert-team. The ergonomic review was motivated by the increased amount of employees which resulted in a no longer comfortable and supportive work environment. A five-day field-work was carried out by the expert-team which meant 26 interviews made with higher and middle level leaders and 142 questionnaires were taken.

The third primer study was about a new office construction concept's experimental use on an American company's offices which represent high ergonomic quality. Experts formed a new physical environment construction concept and I examined the effects of its introduction in an organizational unit's offices. The employees' way of feeling about their being was expected to be improved by the experimental use of the physical work environment model.

For the verification of my hypotheses I used the results of both the primer and secondary studies. The results of the different researches can be connected and lined up in a common framework.

### **III. Scientific results**

#### **III.1. The human side of prosperous operation of companies**

Hypotheses:

H1: "The improvement of employees' satisfaction is tightly connected with the employees' distinctiveness and the company's general parameters."

H2: "The fulfillment of internal communication strategy corresponds with the employees' satisfaction."

During my studies I stated that the companies for maintaining and improving their competitiveness constantly observe their employees' satisfaction with work. I used Herzberg's motivation theory when examining the employees' satisfaction with work, in which the forming of an appropriate work environment, the relationship with colleges and the boss and also the communication appear as hygienic factors. The absence of these factors causes dissatisfaction but their existence means the termination of dissatisfaction, not satisfaction. According to the model securing the hygienic conditions is absolutely necessary, they effect the existence of neutral attitude to work. Therefore primarily dissatisfaction should

be dissolved then motivators should be emphasized (Klein, 2001; Noé, 2004). In these days the studies of correspondence of employees' satisfaction and corporate and employees' achievements are standing constantly in the center of American and West European research (Iaffaldano, Muchinsky, 1985; Cully, et al., 1999; Topolosky, 2000; Saari, Judge, 2004). American researchers (Best, 2008) examining the correspondence of employees' satisfaction, corporate value and productivity used the annual data of 227 companies on financial, stock market results for their statement saying that a growth in employees' satisfaction leads to a growth in productivity. By that it can be said that the results of the examined companies are significantly better than the others' in that field of industry.

In my work concerning the factors of employees' satisfaction and connected results I looked through demographic parameters and the company's general parameters that come up in the phase of information collecting and analyzing during ergonomic examination.

Analyzing the secondary data of "best workplace research" it can be stated that in the phase of 2005-2009 the employees' satisfaction with workplace was constantly increasing (employees' satisfaction grew from 50% to 60% and their devotion grew from 44% to 55%). Assumedly a reason for this is that companies had recognized the need of paying attention to employees. The above mentioned growth in satisfaction and devotion can be explained by the fact that in satisfaction studies only those companies participate who assume a high employee satisfaction at the company (Best, 2008) which can distort the results gained. For the evaluation of the relations within "the best workplace research" I used linear regression analysis where the dependent variable was the factor of employees' satisfaction and demographic data were the independent variables. Based on this analysis it can be said that the length of employment time has the greatest impact on the employees' satisfaction and this is closely followed by the age and status factors. According to the results the longer the employment time, the lower the satisfaction gets. It can also be concluded that employees between ages 35-44 are the most satisfied with their workplace. All these results draw attention to individual differences, as Drafke (2009) said so, meaning that experiences gained during work can improve, while a not challenging work decreases the satisfaction with work. Furthermore I appoint that my preliminary concerns saying that employees with a higher status have a higher satisfaction with work (Hoppoch, In: Landy, 1985; Seligman, Csíkszentmihályi, 2000; Levy, 2003; Szlavicz, 2010) are right, employees in leadership positions are more satisfied. Between the headcount of companies and employees' satisfaction there is a weak correlation, where at companies over 1000 people have a lower satisfaction than small companies.

In companies reacting to environmental challenges in an appropriate strategic workout structural, conducting and organizational changes take place in an organization (Dobák, 2006). Leaders should be prepared to opposition to change because the postponing of reconstructions leads to efficiency loss and growing expenses (Bower, Walton 1973, In Kotter, et. al., 2009:20). When formulating a new strategy a holistic marketing concept is a help to companies because of its integrating role within the company and in case outer actors are involved (Vágási, 2007:31). Holistic marketing structure gives guidance in reforming the organizational structure (Kotler, et al., 2006:52) in which the appearance of human aspect is a sign of internal marketing views. Internal marketing handles employees as internal customers

and workplaces as internal products, therefore the internal product should fulfill the needs of internal customers (Berry, 1981).

In the motivation and keeping of qualified staff, internal marketing plays an important role, especially when the quality of services is the only differentiating factor among companies (Ahmed, Rafiq, 2002) and internal marketing also has a great role in accomplishing strategic change efficiently by decreasing conflicts by harmonizing the aims of different interest groups, educating employees and integrating them into the changing process (Winter, 1985). Proper workout of internal marketing and communication strategies is indispensable during the management of change process that results in an increase in the employees' devotion and satisfaction.

Based on the questionnaire (n=551) of „the best workplace research” I analyzed the method and frequency of sharing information with the higher and middle status leaders. I can state that middle status leaders get information on a monthly basis while in case of employees the frequency is a quarter of a year. no correspondence can be found between the information shared with high rank leaders and the field of industry they work in but the more open sharing of information leads to the satisfaction being higher.

Summarizing the result above I set my 1<sup>st</sup> thesis:

**1st thesis: Employee satisfaction is strongly correspondent with the company's satisfaction which is effected by the employees' individual characteristics, general company characteristics and internal communication characteristics as well. (C, I)**

## III.2. Human aspects of organizations' internal communication and office construction

Hypothesis:

H3: „A proper office arrangement for corporate needs and workflow helps achieving more efficient work.”

H4: “The arrangement of office workplaces to fit the work, shows a tight correspondence with the effectiveness of internal communication.

H5: “Improving environmental conditions (like physical environment, ergonomic quality of furniture) of office workplaces stands in correspondence with the growth of employees' satisfaction.”

H6: “Constructing an office environment that satisfies the requirements of the job and the ergonomic aspects has an influence on the employees' loyalty to the company.”

The more complex work requires better cooperation and communication from employees. However work pace fastened, employees became more diverse regarding their origin, education, skills and do different tasks parallel. More and more researches support the statement of efficient internal communication improving the employees' satisfaction and forming the company image that is also represented in financial performance (Smidts, Pruyn, van Riel, 2001). These days most employees believe that the most important part of work is communication (Baker, 2008). Leaders realizing the importance of communication, formed new and complex communication strategies that correspond with corporate strategies and fits them coherently taking into account all the above mentioned factors (Fehérvári, Szeles, 2001). Building up an efficient internal communication is supported by internal marketing tools, information technologies and also influenced by the appearance of new styles of work which triggered the change of all office work processes and communication habits. Team work, project based tasks and the widening of corporate knowledge stands in the focus of organizing office work. Out of the office supporting arrangements we can emphasize the one- and open area ones, which make personal communication between employees of the same job easier and faster. For the company it is financially efficient to construct open area offices and it makes it easier for them to check on the employees. On the other hand employees' satisfaction can be decreased by it if the arrangement is not right, for example if there is a great noise or there is no control over the environment or no individual space. Tasks that need high level of concentration are better supported by cell offices which provide better conditions in individualization but on the other hand it can also worsen the communication between employees. Community based space arrangement appeared step by step. The basic concepts of the theory are communication between colleges, sharing of information and improving formal and informal communication. So in performing tasks, ergonomic aspects, safety, effectiveness and comfort, have a great role for the individuals and to the company as well.

When constructing office environment demands were phased in four areas by literature (Margaritis, Marmaras, 2006; Kroemer, Kroemer, 2001) like

- office equipment such as screens or office tables,
- physical environmental conditions, like the work area, lighting, noise or the temperature
- software that raises questions of usability
- work organization in a macro-ergonomic point of view

The effect of physical work environment and circumstances on employees' satisfaction were studied by many. The results of Windler's examination's office activity index were summarized in an Office 21 study by the Fraunhofer IAO institute, which was made based on the observation of employees' satisfaction. The study focused on different criteria such as the quality of material used in the office, ergonomics and its relation with functions, climatic factors and smell, quality of light and ratios of the area. There employees rated bad ergonomic construction, inappropriate climatic and lighting factors twice as bad as any other factor. Therefore researchers could state that there is a negative correlation between office attractions and well being and being able to work, which last leads to low performance (Tomka, 2005). These soft factors that are based on the employees' own subjective judgment on their well being, have a great effect on employees' satisfaction, cooperation between employees and the quality of team work. In the construction of computerized office workplaces, various effects like the skeletal and muscle disorders or psychotic stress influence the effectiveness of work significantly (Aaras, et al., 2001; Bernard, et al., 1994; Buckle, 1997; Carayon, Smith, 2000; Hagberg, et al., 1995). To decrease the harmful effects and support the effectiveness of work a complex ergonomic view is essential (Ketola, et al., 2002; Nelson, et al., 1998; Sauter, et al., 1990).

In the first primer research I made a new office's construction's effect study by taking into account factors like the employees' cooperation, their satisfaction with work and communicational habits. In 2004, the company's departments were scattered. In 2006 the company moved to a different building which was constructed based on the results and development plans of the ergonomic study. In 2006 directorate "A" employees' satisfaction was examined more deeply. As an effect of the new construction, as previously considered, the satisfaction of the employees belonging to "A" directorate increased because of the better reach of organizational units. Comparing with the results of 2004 satisfaction grew by 34% that can be considered significant according to non-parametric tests. Analyzing the data I could furthermore state that the satisfaction of employees with the internal opportunity of keeping contact improved by 49%, significantly. Cooperation of employees was supported by placing the employees in open area offices.

In 2006 when studying the "A" directorate's communicational habits more deeply I come to know that by the level of communication we can differentiate same-level communication (62,2%) and formal communication (84,5%) that is typical for the directorate. Information within the company generally gets to the leaders and are forwarded electronically within the unit. At some units middle level leaders mostly communicate in electronic ways while in some other units personal communication is more typical. To explore the personal communication habits of the workers of directorate "A" I set a communication web. When I set the communication web for easier cooperation I also studied the employees' placement

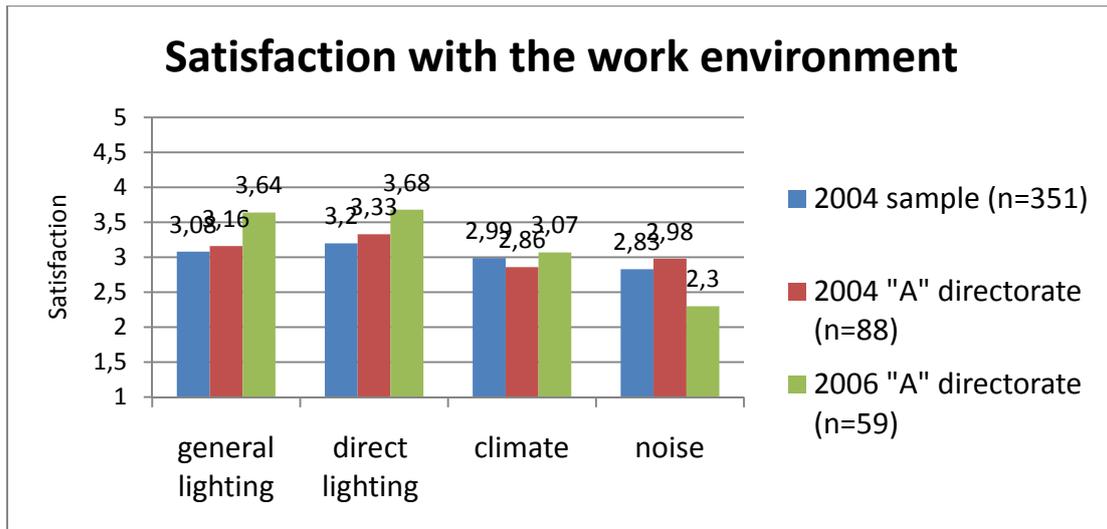
within the office. Internal communication at a company can be supported by forming formal and informal communication areas which was introduced in the new office center as a result of the 2004 ergonomic study. By the construction of communication areas, the satisfaction of employees increased by more than 30% in the aspect of the opportunity of holding ad-hoc discussions. Hence it can be said that employees working in the new work environment use the discussion room twice as often compared to the data of 2004.

Taking into account the factors of internal communication, arrangement of office environment and the satisfaction of employees I phased my second thesis.

**2. thesis: Creating an office environment satisfying the needs of organization and the work processes is in a tight relation with the employees working more effectively , which is also supported by the more efficient internal communication. D, F, H, J)**

When doing „the effect of the work environment arrangement study” I analyzed the employees’ satisfaction with their immediate work environment and factors affecting it such as the furniture or the physical environment. During my studies I appointed that employees’ satisfaction corresponds to the furniture’s design (like their accessible arrangement, work table, etc.). According to the linear regression test it can be said that the change in satisfaction with the close work environment is mostly affected by the accessible arrangement and work chair. The not proper arrangement of furniture has an inverse effect on the satisfaction and a higher satisfaction with their work chair also improves the judgment of close work environment.

Based on the examination of employees’ satisfaction with the factors of physical environment it can be said that satisfaction of employees’ at directorate “A” increased with factors like general lighting, direct lighting and climate compared to the data of 2004. According to results of 2006 lighting conditions were held better with 15%, while direct lighting with 10% and climatic factors with 7% compared to 2004. The growth of satisfaction concerning physical factors didn’t reach the presumed 20%. Non-parametric tests showed a difference within general and direct lighting (with a significance of  $p < 0,05$ ) but no difference was appointed in between the factors of satisfaction and climate.



**Fig. 2. Employees' satisfaction with the factors of physical environment**  
Source: Own formulation

Concerning noise strain in 2006 the employees of directorate “A” were less satisfied compared to the previous construction that can be explained by the improper arrangement of workers in an open office environment. This improper arrangement resulted in employees moving around more, cause great noise in the office.

Satisfaction with the work environment and terms as dependent factors correspond with the different factors of office environment as independent, so I could point out a moderately strong correlation between them.

Summarizing all these results I phased my 3<sup>rd</sup> thesis:

**3. thesis: The improvement of office work environment strongly correlates with the increase of employees' satisfaction. (A, E, G, H)**

In my 3rd primer study I examined the factors determining the way the employees felt when they were moving into an office with high ergonomic quality and I also studied how the new arrangement fit their ideas about the company. Based on the results it can be said that employees were totally satisfied with the construction in general and after the introduction of the new concept the 75% of the unit's employees was satisfied highly or totally with the office construction. Regarding the correspondence of office environment and the fulfillment of corporate image 5 people thought it is generally true and 18 that it is mostly true or totally true. After introducing the new concept I studied the relation between the above mentioned two and I found that there is a moderately strong, significant ( $p < 0,05$ ) correlation ( $r = 0,447$ ). The results of my studies carried out on a small sample indicate correspondence between the two factors, but for justifying the 6<sup>th</sup> hypothesis (*Constructing an office environment that satisfies the requirements of the job and the ergonomic aspects has an influence on the employees' picture of the company.*) further testing is

### III.3. Human aspects of office construction for organizational change

Hypotheses:

H7: "By using a macro-ergonomic corporate view the employees' satisfaction with work environment increases."

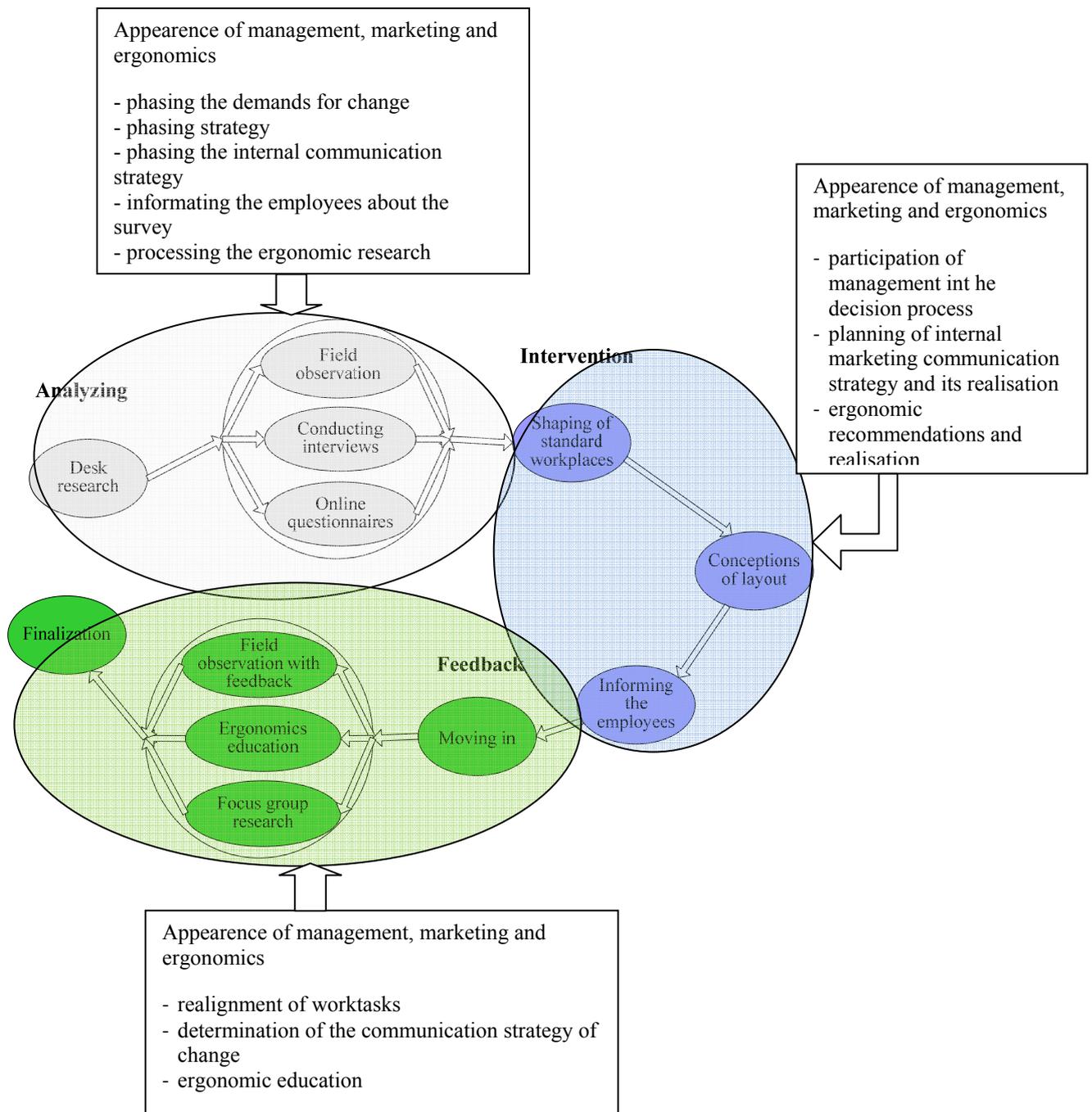
H8: "The harmonization of marketing, management and ergonomic disciplines is a requirement for adapting to the corporate environment."

One of the starting points of my work is that in order to maintain competitiveness, the employees must be satisfied, well informed and provided with the appropriate work environment and tool necessary to deliver their work, therefore it cannot be taken as a new statement. However the study of companies reacting on different market challenges by organizational improvement and workplace reconstruction conception is unique among companies.

During my research my aim was to work out a complex office construction/reconstruction method that integrates the marketing, management and ergonomic aspects of leadership, communication, area arranging and equipment usage. When I was working out my method I used models from marketing management and ergonomic development methods as a basis and highlighted the joint use of methods that can give special solutions to the companies.

I developed a three step observation model (analyzing, intervention, feedback). The model aims a methodic approach of surveying the needs, working out office concepts, constructions and introduction of use. In every step of the model the management of the company, the internal marketing professionals and employees were to appear. In the model, making further developments on earlier approaches, all examination methods and the results build on one another. By using theoretical models and empirical research results the "work environment

improvement model's factors and their relation was observed and checked during the second primer study.



**Fig.3. Work environment development model by harmonizing the principles of marketing, management and ergonomics**

Source: Own formulation

During the examination in the phase of analyzing and intervention I surveyed the employees' satisfaction with their working conditions and needs as a member of an expert team. After that the team constructed the concepts fitting the arrangement of organizational units and their workplace characteristics and a final concept was chosen with the involvement of leaders and representatives of the employees.

In the feedback phase the internal communication professionals give information through an electronic newsletter about the result of the ergonomic examinations and about the final office construction concept. Literature brings up guidance when introduces macro ergonomic aspect that makes it possible for employees to personalize their work environment and adjust to their needs (temperature, lighting, etc.) (McLaney, Hurrell, 1988; O'Neill, 2007; Robertson, Huang, 2006). All this can be used to improve the way employees feel themselves while they are working (Karasek, Theorell, 1990; Ketola, et al., 2002; Nelson, Silverstein, 1998; Sauter, et al. 1990). But in the examination of the office reconstruction project the last, feedback phase couldn't be followed up because it wasn't fully completed. Some units' reconstruction was interrupted and stopped. Therefore I couldn't study the employees' ergonomic consciousness examination that meant I couldn't study my 7<sup>th</sup> hypothesis.

The success of "office environment improvement model" is determined by the professionals appearing at the different stages of the examination. In every stage of the model, marketing, management and ergonomics aspects appear which are needed in the process of constructing a work environment. In the first phase, analyzing, besides phasing organizational needs, strategies (economical, human aspects) employee centered aspects should come up. Also the internal marketing professionals prepare the internal communication strategies and by involving outer and internal experts they analyze the work environment. In the second phase, intervention, during the assessment of ergonomic proposals besides internal marketing and management professionals representatives of employees have to participate in the process of construction of a proper work environment. In the third feedback phase with the cooperation of internal marketing and ergonomic professionals the development results can be more easily accepted, resistance can be decreased. The main aim of the experts is to give information to the employees, develop their ergonomic consciousness that ensures the sustainability of the created ergonomic values. For new development methods the measuring of the results of the development method can be important information for leadership, internal marketing professionals and ergonomists as well.

**4. Thesis: During the construction of office work environment the complex appearance of marketing, management and ergonomic disciplines at the company supports the longer maintenance of ergonomic quality. (B, C)**

#### **IV. Further research tasks**

The empirical research results of my studies are providing important information and are variously applicable by different actors and on several fields.. The improvement of employees' satisfaction with the development of work environment can open up new horizons for the professionals. The development of work environment supporting new working processes, types can give new tools in the hands of human professionals and human resources people. By the maintenance of the employees' health as a factor of the company's social responsibility the employees' healthcare has to get into the focus of management. During the development of the internal communication systems macro-ergonomic disciplines have to be taken into account to help the internal communication professionals to find new opportunities to improve effectiveness.

In my further researches I would put the emphasis on the third phase, on feedback. In the present dissertation I didn't have the chance to study the ergonomic consciousness of employees and to measure the effectiveness of ergonomic education. Ergonomic knowledge has a great role in the improvement of the effectiveness of work and in decreasing health problems. Measuring the effectiveness of training requires a tight cooperation from internal marketing and communication professionals. Resistance of employees appearing in office work, decreasing psychical inputs, physical work environment factors together with environmental psychological factors aspects serve as a basis for my future researches with a special respect to homeland specialties. Based on the efficiency review of education materials supporting training and of the communication channels and tools, guide of the communications tools of ergonomics can be created. At last, by longitudinal examinations I would explore the effects of training on the development of ergonomic views and on the number of skeletal and muscle disorders.

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