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Ski Jumping – Talent Battle in a Learning Organization

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The concepts of learning organization and organizational learning have made a significant contribution to the development of some major global companies such as Nokia, Oracle, Microsoft and others. This article explores whether the learning organization concept has proved successful in sports, specifically in ski jumping. The study was conducted among ski jumpers who compete in the World Cup. The questionnaire was distributed to 130 ski jumpers, and 54 correctly completed questionnaires were returned. The study has indicated that ski jumping is a sport of distinct individualists. Individual talent is an extremely important factor for success in this sport. We can say with absolute certainty that all surveyed ski jumpers are able to take 16th to 50th place in a World Cup race. The differences between competitors are very minor, even in the biggest races. Therefore, when it comes to success, every single detail matters. We have identified a weak correlation between the best sporting achievement and collaboration in the testing of new equipment. In the past, some of the best results were achieved on the basis of experimentation, but contemporary coaches do not dare to over-experiment with the technique. Too frequent progress measurements place a burden on competitors. There is a positive correlation between the frequency of individual analysis and the success of a competitor, while the best achievement and variables from “team work” group are negatively correlated. The relationships within a team are obviously very complex.

Keywords: learning organization, sports organization, ski jumping

1 Introduction

The goal of any organization is to operate successfully and maintain a competitive advantage, both in the present and in the future. However, there is a question of how to achieve this, considering all current events. The answer can be found in the approach to the learning organization concept. The latter does not only represent a different attitude towards knowledge but also affects the entire concept of organization, leadership and way of thinking. In the context of this article, we want to determine whether learning organization elements also apply to the field of sports organizations, specifically to the field of ski jumping. Therefore, the article first presents the theoretical background based on the learning organization and its connection with ski jumping, namely with the dependence of ski jumpers' success on learning organization elements. It then explains the methodology and results of our study, which investigates the impact of learning organization and organizational learning attributes in the training process on the results of ski jumpers.

2 Theoretical background

2.1 Learning organization concept

The theory of learning organization concepts was established by Fiedler (1967), Argyris and Schön (1978), Senge (1990), Huber (1990), Nonaka and Takeuchi (1995) and others. The first comprehensive model of contingent process innovation in an organization was developed by Fiedler (1967). He believed that the key success factor in individual leadership is a leadership lifestyle. He tried to determine which basic leadership styles can be identified, presuming that they are constant. Nevertheless, a constant leadership style can be a problem when environmental conditions change or when an organization is not achieving its objectives. In this case, it has to alter the objectives or replace the leader.

Argyris (1978) considers learning organization as a process of detecting and correcting errors. According to him, an organization should learn through individual learning. Huber (1990) states in his book that a learning organization is associ-

ated with four constructs: knowledge acquisition, information distribution, information interpretation and organizational memory.

It is generally believed that the founder of the learning organization concept is Peter Senge. Senge's theory (1990) stems from the fact that the progress of the world is not achieved by some unrecognisable and imaginary forces but by the people who continuously expand their capacity and creativity, nurture and develop new ideas, have the possibility to freely associate with like-minded people and constantly learn how to learn together. In his opinion, learning organizations are those in which people continually develop their capacity to create the results they truly desire and in which new and expansive patterns of thinking are desired and natural.

In his book, Senge (1990) claims that a learning organization is based on five attributes: excellence of the staff and personal mastery of individuals, mental models, shared vision, team learning and systematic problem solving and systematic thinking.

The excellence of the staff in learning organizations mainly reflects in personal mastery of individuals and in self-control. The latter means that you are able to focus your active energy on the accomplishment of certain objectives in the long term, with the objectives usually being accomplished. The essence of a learning organization is to establish a link between an individual and the organization, i.e. between an individual learner and the learning of the organization.

In his book *The Fifth Discipline*, Senge (1990) describes "mental models" as one of the five disciplines of a learning organization. The term "mental model" is believed to have originated with Craik (1943). A mental model is a kind of internal symbol or representation of external reality. Individual's mental models are stereotypes, generalizations, preconceived notions and preconceived mental scenarios of how a certain thing should happen, what and how it should be and how someone should behave, act and even look (Craik, 1943). Mental models are often the cause or reason for a certain way of acting or non-acting. People mostly bring stereotypes, i.e. preconceived beliefs, into an organization. In a learning organization, it is therefore important to believe in goals, as this is also a kind of mental model. An organization as a whole has its own mental models and memory. Organizations have, according to Hedberg (1981: 6), cognitive systems and memories. Hedberg (1981) likens them to human beings, claiming that organizations can change and develop their personalities, habits, beliefs, and ideologies over time. He claims that organizational memories preserve certain behaviours, mental maps, norms, and values.

In creating a learning environment, it is important to replace confrontational attitudes with an open culture (McHugh et al., 1998).

Many people, including leading managers, have their own personal visions that never evolve into a shared vision or common goals of an organization. History has given us some examples of well-known people who had their own personal vision but were able to transform it into a goal of their organization and succeed. The reason for their success lies in their motivated staff that was capable of learning and willing to

attain the goal. The shared vision is often to succeed against a competitor (Wang and Ahmed, 2003).

Belbin (1981) first began studying teams in the 1970s. He found out that individuals play different roles in a team. In his book (Senge, 1990), Senge argues that a team is the basic unit of learning in an organization. Teams are formed in order to produce synergetic effects among individuals. Team learning is the process of working collectively to achieve common objectives in a team. In the learning organization context, team members tend to share knowledge and complement each others' skills. If there is no commitment and effort from team members, then working and learning from team work may fail. This is why teams should be given freewill to act, especially in the learning organization context (Decuyper et al., 2010). Team is a group whose feature is participation in decision making and mutual help in defining goals and their achievements (Hoerr, 1999: 56-62). Main difference between a team and a group is that a group does not need a common goal or a cooperation of members.

Members of a team discuss their own goals, assess ideas, make decisions and act together towards the set goals. (Heller and Hindle, 2001).

The systems approach means that a whole splits into parts. The latter are usually less complex and easier to understand. The systems approach explores how the nature of individual connections between these parts affects the functioning of the whole. All natural phenomena occur according to certain laws. Society is a part of nature. Therefore, all processes in the society take place according to their own laws. As organizations are parts of society, social and technical processes in organizations can be explained by the systems theory. Although it is true that many innovations occurred by coincidence or by means of intuition, systems thinking is considered to be a conceptual framework and an essential development tool in the last fifty years.

The well-known model of knowledge transfer within an organization was established by Nonaka and Takeuchi. Nonaka and Takeuchi (1995) claim that knowledge creation is the result of interaction between tacit/implicit and explicit knowledge. This interaction occurs through the processes of socialization, externalization, combination and internalization. Knowledge socialization begins with the construction of connections that both enable and allow the organization members to exchange experiences and, consequently, create hidden knowledge. Externalization allows team members to get involved in the process of converting hidden knowledge into explicit knowledge. Combination permits the employees to systematize and exchange the newly acquired explicit knowledge and concepts as well as to transform the existing knowledge into knowledge-based systems.

Richardson (1995) proposes the "model of six building blocks". The first one represents systematic problem solving. In a similar manner as Senge, Richardson highlights the need for systematic problem solving. The second building block embodies experimentation, which includes systematic searching and testing of the new knowledge, while the third one represents learning from past experiences, which requires the systematic storage and continuous evaluation and assessment of successes and failures. The aim of analysing the errors is not

to find the culprit but rather to point out the errors that should no longer occur in the future. The unproductive success is a success for which no one knows how or why it even occurred. Furthermore, learning from others requires developing an organizational culture that encourages so-called enthusiastic borrowing or (Steal Ideas Shamelessly). It includes benchmarking among people in the same sector. Knowledge transfer is necessary if you want to gain new knowledge, as it is very difficult to become wise and full of knowledge in a passive manner. Progress measurement enables process management.

Dimovski et al. (2005: 25) say that learning societies of the 21st century are based on equality, open information, low levels of hierarchy, a wide range of control and an organizational culture that encourages flexibility and team work. The FUTURE-O model (Dimovski et al., 2005: 121–369) dictates the integrated implementation of the learning organization concept and emphasizes the integrity and coherence of all processes and employees on their way from vertical to procedural organizational structure, based on organizational learning. Psychological and social aspects are particularly important. The FUTURE-O model includes performance monitoring and evaluation.

2.2 Learning organization as a factor in the evaluation of ski jumping

According to different sources Olaf Rye showed the first measured jump in 1808. The Norwegian landed at 9.5 meters. But soon longer distances were reached. An outstanding jump was shown by Sondre Auverson Nordheim in 1860. At the Huseby Hill in Oslo the first annual competition took place since 1879 before this event was moved to the world-famous Holmenkollen in 1892. Already at the first Olympic Winter Games in history, 1924 in Chamonix (France), a ski jumping event was part of the program. The year of the first Winter Games was also the year in which the International Ski Federation (FIS) was founded. The FIS then started organizing regular ski jumping competitions five years later.

In Planica (Slovenia) in 1936 Sepp Bradl was the first jumper in history to fly beyond the 100 m mark. 58 years after Sepp Bradl showed the first jump over 100 meter, Austrian Andreas Goldberger was the first to land beyond the 200 meter mark on March 17, 1994. Unfortunately, he could not stand this jump and so the Finn Toni Nieminen later the same day count as the first official jump over this historic mark.

The facility in Vikersund (Norway) is the world's largest hill with a hill record of 246.5 m (world record), set by Johan Remen Evensen of Norway (Feb. 11th, 2011) (<http://www.fisskijumping.com>).

Today ski jumping is one of the most popular disciplines in winter sports. Especially in Europe lots of fans come to the hills to watch the competitions and high ratings are reached with live TV coverage. At the moment this fascinating sport is practiced in about 20 countries on the World Cup level.

We often picture ski jumps as watching the final round of 30 jumpers. After the last competitor jumps, the story ends for the viewers. However, there is a huge organizational apparatus

in the background, including constructors of ski jumping hills, equipment manufacturers, coaches, physicians, nutritionists, physicists, chemists and many others. In addition, competitions cost large amounts of money. For instance, the Sky Flying World Championships in Planica in 2010 was the most expensive sports event in the history of Slovenia. The expenses amounted to EUR 2 million, and the renovation of the facilities cost EUR 3.5 million. The budget of the event in Planica in 2013 was EUR 1.8 million. The financial investment in the construction of ski jumping hills in Planica in 2013 will total EUR 16 million, while the overall cost of building the new Planica Nordic Centre will amount to EUR 46 million.

Throughout history, ski jumping has experienced a tremendous development of jumping technique, hill profiles, equipment (bindings, boots, connection cord, ski jumping suit and skis), sports medicine, training methods and selection procedures for ski jumpers.

We believe that the use of learning organization concepts has had a considerable impact on the development: personal mastery of individuals, experimentation, systematic problem solving, systems thinking, learning from others and measurement. Some concepts have been used intentionally and some without the agents being aware of it.

Personal mastery of individuals

The history of ski jumping has been marked by high-calibre individuals. To mention just a few ski jumpers, constructors of ski jumping hills and coaches: Matty Nykänen, Simon Ammann and Jens Weissflog are the only jumpers who won two Olympic medals in the period from 1984. Reinhard Hess was a German ski jumping coach. He was the national team's coach from 1993 until 2003. With 21 medals won in world championships and Olympic Games combined, Hess was Germany's most successful ski jumping coach. Janez Gorišek is the constructor of the two largest ski jumping hills in the world in Vikersund and Planica.

Experimentation and development of ski jumping technique

The evolution of ski jumping has largely been the result of experimentation. Throughout the entire history of ski jumping, experimentation has been most evident in the changes to ski jumping techniques. Experimentation is in many cases associated with the personal mastery of individuals. After World War I, Thulin Thams and Sigmund Ruud developed a new jumping style known as the Kongsberger Technique. This involved jumping with the upper body bent at the hips, a wide forward lean, and with arms extended at the front with the skis parallel to each other. Using this technique Sepp Bradl of Austria became the first to jump more than 100 metres when he jumped 101 metres in 1936.

In the mid-1950s, Swiss jumper Andreas Daescher became the first jumper to hold the arms backwards close to the body with a more extreme forward lean. Then in 1985, Swedish jumper Jan Bokloev started spreading the tips of his skis into a "V" shape. Initially ridiculed, this technique proved so successful that by 1992 all Olympic medallists were using this style (<http://www.olympic.org/ski-jumping-equipment->

and-history?tab=history). Successful experimentation always results in imitation.

Measurement and systems thinking – nutrition and sports medicine

Anthropologic data on ski jumpers have been collected at least since 1970, but more systematic collecting has begun in recent years. Since 1970, the average weight has decreased by 4 kg. Anthropometric data of ski jumpers was collected during the Olympic Games in Salt Lake City (2002; participation 81%, $n = 57$), during the Summer Grand Prix in Hinterzarten (2000; participation 100%, $n = 92$), and during the World Cup in Planica (2000; $n = 56$) (Muller et al., 2006).

Measurement and systems thinking – ski jumping technique

Ski jumping is a complex sequence of movement which should be realized in a very short period of time at 90km/h. The first reports on the systematic study of flight trajectory are almost two decades old. The K90 individual competition of the 1994 Olympic Winter Games was analyzed. The 2-D data (takeoff) were collected by a high-speed video camera, and the 3-D analysis (early flight) used an algorithm whereby two cameras followed the jumpers through the early flight phase (Arndt et al., 1995). Later it was found that the video camera was too large. Therefore, in 2011 experts from École polytechnique fédérale de Lausanne developed a new system for measuring the ski jumping trajectory within the project "Analysis of ski jumping performance using wearable sensors". The proposed system was composed of eight inertial modules (Physilog) fixed on torso, sacrum, thighs, shanks and skis. Each module, sampled at 500 Hz, included a 3D gyroscope, a 3D accelerometer and an embedded datalogger (Chardonens et al., 2012).

Measurement and systems thinking – ski jumping hill profiles

In 1936 the FIS started to regulate the construction of the jumping hills and issued international standards. Ski jumping hills, which are to be homologated by FIS, need to be constructed to the actual FIS standards. Charts and formulas are based on extensive studies of biomechanical and physical actions of the World Cup ski jumpers during December 2006 on the large hill 'Titlis' in Engelberg, Switzerland. The flight trajectory recordings, its analysis and the identification of the air pressure values were carried out by the Institute for Biomechanics of the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland under the direction of Dr Jachen Denoth and Dr Hans Gerber. Dr Hans Heini Gasser, member of the Ski Jumping Hills Sub-Committee, has prepared the geometric elements of a ski jumping hill by means of computer simulation of the flight trajectory and after the specification of the takeoff angle and the landing angle by the Sub-Committee for jumping hills. He has derived various construction specifications/calculation diagrams, which are to be used as a basis for a construction (Gasser, 2008).

Measurement and systems thinking – ski jumping equipment

History gave us several examples of innovative equipment resulting in a key competitive advantage. The ski jumping suit has had the greatest impact. Decades ago, ski jumpers wore trousers and a sweater. The first world record holder dressed in a ski jumping suit was Toni Innauer who jumped 176 metres in Oberstdorf in 1976.

In order to avoid the impact of the suit on the result, the fabric is prescribed. The fabric of ski jumping suits is made of 81% Polyamide gloss dtex 44f12 and 19% Elastane (Lycra) dtex 44f1; it has to weigh 180/190 g/m². The unstretched fabric must show a medium air permeability of a minimum of 40 litres per m²/sec with 10 mm water pressure. (Fédération internationale de ski, 2010).

Even the smallest improvement of the equipment can affect the result. The example of the 2010 Olympic event winner in Whistler is well-known in this context. Swiss Olympic ski jumping multichampion Simon Ammann used a curved metal binding that allowed him to increase his aerodynamic profile and so hang in the air longer.

3 Methodology

3.1 Research questions

A review of the literature and history of ski jumping proved the impact of jumping technique, hill profiles, equipment and sports medicine on the development of this sport. We identified components of a learning organization in all these elements. In the rest of the study, we focused on the organizational aspects of the training process. We tried to answer the questions below:

R1: Does the presence of learning organization and organizational learning attributes in the training process affect the results of ski jumpers?

R2: How big is the impact of each learning organization and organizational learning attribute in the training process on the results of ski jumpers?

3.2 Instrument

The responses were collected through an anonymous online survey. The latter was conducted from 8 August 2012 to 5 September 2012. The questionnaire was composed of the following sets of questions: ski jumper's age (junior or senior), national team in the 2012/2013 season, the best result in his career so far, his point of view regarding learning organization and organizational learning attributes in the team.

Point of view regarding learning organization and organizational learning attributes in the team was studied by 67 statements (Q1 to Q67) through which the respondents rated their agreement or disagreement. The statements were divided into 10 sets: systematic problem solving and systems thinking, experimentation, learning from past experiences, learning from others, knowledge transfer, progress measurement,

personal knowledge, shared vision, mental models and team learning.

Answers to the statements were closed-ended. The following answers were offered:

Answer	Agreement	Frequency
5	I fully agree	Always
4	I agree	Often
3	I do not know	Sometimes
2	I disagree	Rarely
1	I strongly disagree	Never

3.3 Sample

A link with an invitation to participate was sent to 130 ski jumpers from six different countries: Slovenia, Austria, Germany, Norway, Finland, Poland and the Czech Republic. We wanted to include the best ski jumpers in the world as well as other team members of these countries. 54 correctly completed questionnaires were returned. Although it was small, the sample is representative considering the size of the entire ski jumping population. Tables 1 and 2 show the age of respondents and their best results.

Table 1: Age of respondents

	Frequency	Percent
Junior (up to 20 years)	10	18.5
Senior (over 20 years)	44	81.5
Total	54	100.0

Table 2: The best results of respondents

Ans.	The best result (Q)	Freq.	Percent
1	Among the top 20 in a National Senior (or Junior) Championship	0	0
2	1 st to 30 th place in an FIS race	1	1.9
3	1 st to 30 th place in an Alpine Cup race	1	1.9
4	30 th to 50 th place in a Continental Cup race	3	5.6
5	6 th to 30 th place in a Continental Cup race	6	11.1
6	1 st to 6 th place in a Continental Cup race	5	9.3
7	30 th to 50 th place in a World Cup race	2	3.7
8	16 th to 30 th place in a World Cup race	9	16.7
9	4 th to 15 th place in a World Cup race	12	22.2
10	1 st to 3 rd place in a World Cup race, medal at the Olympics or World Championships	15	27.8
	Total	54	100.0

3.4 Results

For statements Q1 to Q67, we calculated the Cronbach's Alpha reliability of the measurement, which is 0.976. Answers to the statements are provided in Table 3.

We then analysed the connection between learning organization and organizational learning attributes and the best result of a competitor. We took into consideration that variables Q1 to Q67 are independent, while the competitive achievement of an individual is a dependent variable (Q). We calculated the Pearson correlation coefficients.

We identified a weak correlation between the best achievement and participation in the testing of new equipment (Q10, $r=0.256$, $p=0.05$) (Table 4). The results have revealed that not all competitors have the same opportunities for testing their equipment. In the large hill event at the 2010 Winter Olympics in Vancouver, the difference between Adam Małysz and Gregor Schlierenzauer was only 1.5 points. Therefore, according to a very small difference in some races, cooperation with equipment suppliers can represent a significant competitive advantage.

The study has demonstrated that, before a race on a ski jumping hill, competitors rarely analyse footage from the hill by themselves. Nevertheless, there is a weak correlation between the frequency of individual analysis and the competitor's result, but it is not statistically significant (Q16, $r=0.256$, $p\geq 0.05$) (Table 5).

The study has shown that in most national teams the coach and ski jumping profession measure progress. Competitors find this important. However, there is a weak negative correlation between the best achievement and the importance that a competitor attaches to testing (Q35: $r=-0.205$, $p\geq 0.05$) and comparing his progress with his teammates (Q38). This indicates that too frequent measurements place a burden on competitors and have a negative impact on their competitive achievements (Q38: $r=-0.268$, $p\geq 0.05$) (Table 6).

We also performed a correlation analysis of the impact of variables (systematic problem solving and systems thinking, learning from others, knowledge transfer, personal knowledge, shared vision, mental models, team learning) on the best competitive achievement of an individual. Statistically important correlations for these variables were not found. However, this does not necessarily mean that they do not exist. At this point, we would like to emphasize that, as an opinion survey, our study had certain limitations. We also allow the possibility that the training process elements of the leading teams in the World Cup are so alike that their impact on the result cannot be identified by our research method.

Table 7 illustrates the correlation between team learning elements and the best achievement.

We then carried out a hierarchical regression analysis. The constant value is 7.796 (sig.=0.000). This implies that all surveyed ski jumpers are undoubtedly able to take 16th to 30th place in a World Cup race, even if training in different environments. These conclusions indicate the extreme importance of individuality for successful participation in ski jumping.

The hierarchical regression analysis (Table 8) suggests a low negative impact of progress measurement in the training process on competitive achievement (Beta=-0.396,

Table 3: Answers to the statements

Qn		Mean	Median	Mode	Std. Deviation
	SYSTEMATIC PROBLEM SOLVING & SYSTEMS THINKING				
Q1	Training is based on a systematic and quality approach.	4.37	5.00	5	1.033
Q2	We have a training schedule.	4.11	4.00	4	1.076
Q3	I respect the training schedule.	4.26	4.00	5	.975
Q4	I am placed in the national team or in a race on the basis of the measurement of achievements.	3.52	4.00	4	1.145
Q5	If a problem occurs, my coach makes a professional analysis.	3.98	4.00	4	.981
Q6	The management is responsible for my personal material existence.	3.24	3.00	4	1.045
Q7	The management is responsible for my overall personal development.	3.48	4.00	4	1.041
	EXPERIMENTATION				
Q8	The management of the national team always tries to find new knowledge and improvements.	4.02	4.00	4	.961
Q9	Competitors actively try to find new knowledge and improvements; the management encourages us in doing so.	3.87	4.00	4	.933
Q10	We collaborate with equipment suppliers when testing new equipment.	3.59	4.00	4	1.125
Q11	Due to experimenting, we have a separate/different training programme.	2.69	3.00	3	1.179
Q12	The coaches deliberately do things that I find unusual.	2.76	3.00	3	.889
	LEARNING FROM PAST EXPERIENCES				
Q13	I analyse my successes and failures by myself.	3.98	4.00	4	.981
Q14	I individually analyse my successes and failures by myself.	3.78	4.00	4	1.040
Q15	I analyse our approaches from previous seasons by myself.	3.54	4.00	4	1.077
Q16	Before a race on a ski jumping hill, I analyse training footage from this hill or the ones taken in previous seasons by myself.	2.44	2.00	1	1.208
Q17	We analyse our successes and failures with the coaches.	3.56	4.00	4	.904
Q18	We analyse our approaches from previous seasons with the coaches.	3.11	3.00	4	.984
Q19	Before a race on a ski jumping hill, we analyse training footage from this hill or the ones taken in previous seasons with the coaches.	2.09	2.00	2	1.033
	LEARNING FROM OTHERS				
Q20	I evaluate the successes and failures of other competitors by myself.	2.57	3.00	2	.983
Q21	We evaluate the successes and failures of the other teams with the coaches.	2.31	2.00	2	.948
Q22	In the national team, we share experiences with each other.	3.54	4.00	4	1.004
Q23	Everyone in the national team can bring a "stone to the mosaic" with his experience.	3.91	4.00	4	1.086
	KNOWLEDGE TRANSFER				
Q24	I write notes about my trainings.	2.98	3.00	4	1.236
Q25	We systematically collect and store scientific literature.	2.69	2.50	2	1.146
Q26	I read my notes about trainings from the past.	2.26	2.00	2	1.031
Q27	I watch the videos of other competitors' jumps by myself.	2.43	2.00	3	.903
Q28	I watch the videos of my trainings by myself.	4.13	4.00	5	1.047
Q29	I read scientific literature.	2.63	2.50	2	1.138
Q30	The coach encourages me to be active in gaining experience and knowledge.	3.26	4.00	4	1.102
Q31	Together we are active in acquiring knowledge.	3.41	4.00	4	1.037

Table 3 (continued)

Qn		Mean	Median	Mode	Std. Deviation
Q32	We keep an archive of the videos of competitors' trainings.	3.80	4.00	4 ^a	1.279
Q33	We have access to an archive of notes, videos and scientific literature.	3.57	4.00	4	1.002
	PROGRESS MEASUREMENT				
Q34	The coach and ski jumping profession measure my progress.	4.09	4.00	4	.875
Q35	I find regular testing very important.	4.02	4.00	5	1.124
Q36	I have access to measurement data of other competitors.	3.02	3.00	4	1.310
Q37	I have access to my own measurement data.	2.89	3.00	2	1.355
Q38	I compare my progress with my teammates.	2.76	3.00	3	1.080
	PERSONAL KNOWLEDGE				
Q39	The coach has profound theoretical knowledge of ski jumping.	4.35	4.50	5	.894
Q40	The coach has profound theoretical knowledge of training methods.	4.28	4.00	4	.834
Q41	I have profound theoretical knowledge of sports psychology.	3.37	3.00	4	.958
Q42	I have profound theoretical knowledge of ski jumping.	3.94	4.00	4	.920
Q43	I have profound theoretical knowledge of training methods.	3.56	4.00	4	.839
Q44	World-class specialists are always available to help.	3.72	4.00	4	1.106
Q45	Each team member can gain personal knowledge.	3.74	4.00	4	.935
	SHARED VISION				
Q46	I have my own competitive goals.	4.65	5.00	5	.828
Q47	The coaches are familiar with my goals.	4.04	4.00	5	1.027
Q48	The team has its team goals set.	3.61	4.00	4	1.204
Q49	Every team member is familiar with team goals.	3.24	3.00	3	1.164
	MENTAL MODELS				
Q50	I am especially pleased with a teammate's success.	3.74	4.00	4	.935
Q51	Regardless of the ski jumping level (good/bad form), I try to maintain the same level of behaviour.	3.41	4.00	4	1.190
Q52	The coach has the authority based on profession.	4.06	4.00	4	.899
Q53	We acknowledge the coach's professional authority.	4.09	4.00	4	.830
Q54	I am willing to accept the fact that I could be wrong in a particular case.	3.93	4.00	4	.908
Q55	Other teammates are also willing to accept the fact that they were wrong in a particular case.	3.26	3.00	3	.805
	TEAM LEARNING				
Q56	I prefer training with other teammates to training by myself.	3.89	4.00	4 ^a	1.192
Q57	I do not consider my teammates as my opponents.	3.09	3.00	3 ^a	.996
Q58	Every team member wishes all the best to the others and is happy when they succeed.	3.59	4.00	4	1.000
Q59	Team members are compatible in terms of personality.	3.72	4.00	4	.878
Q60	Team members play different roles in the team.	3.52	4.00	4	.818
Q61	Team members acknowledge each other's roles.	3.33	3.00	4	.869
Q62	Team members are aware of our roles.	3.33	3.00	3	.869
Q63	Team members have a leader.	2.94	3.00	3	1.071
Q64	Team members acknowledge the leader's role.	2.85	3.00	3	.979
Q65	We all benefit from team membership.	4.04	4.00	4	1.009
Q66	I am willing to listen to the other team members as I know this may broaden my knowledge and views.	3.85	4.00	4	.979
Q67	In the national team, we often talk and look for possible solutions and improvements.	3.61	4.00	4	1.017

Table 4: Correlation analysis – experimentation

	Q	Q8	Q9	Q10	Q11
Q8	-.079				
Q9	.171	.592**			
Q10	.256**	.531**	.524**		
Q11	-.018	.372**	.151	.556**	
Q12	-.055	.337*	.280*	.391**	.503**

Table 5: Correlation analysis – learning from past experiences

	Q	Q13	Q14	Q15	Q16	Q17	Q18
Q13	.095						
Q14	.120	.773**					
Q15	.031	.581**	.446**				
Q16	.256	.262	.305*	.248			
Q17	-.008	.544**	.395**	.463**	.219		
Q18	.089	.413**	.264	.530**	.497**	.311*	
Q19	.008	.095	.090	.328*	.647**	.328*	.491**

Table 6: Correlation analysis – progress measurement

	Q	Q34	Q35	Q36	Q37
Q34	-.069				
Q35	-.205	.689**			
Q36	-.071	.311*	.397**		
Q37	-.084	.200	.138	.044	
Q38	-.268	.324*	.485**	.256	.136

Table 7: Correlation analysis – team learning

	Q	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63	Q64	Q65	Q66
Q56	-.211											
Q57	-.285*	.549**										
Q58	-.013	.547**	.550**									
Q59	-.089	.511**	.505**	.685**								
Q60	-.129	.370**	.172	.378**	.388**							
Q61	-.152	.310*	.182	.268	.346*	.761**						
Q62	-.182	.219	.313*	.203	.371**	.575**	.750**					
Q63	-.045	-.005	.005	.172	.204	.313*	.405**	.426**				
Q64	-.032	-.031	.130	.226	.302*	.263	.436**	.525**	.855**			
Q65	-.201	.317*	.466**	.520**	.502**	.548**	.524**	.524**	.299*	.311*		
Q66	-.252	.357**	.382**	.534**	.632**	.451**	.414**	.436**	.316*	.331*	.636**	
Q67	-.180	.477**	.558**	.490**	.553**	.292*	.320*	.470**	.188	.301*	.474**	.604**

sig.=0.043), a negative impact of team learning (Beta=-0.942, sig.=0.001) and a low positive impact of learning from others (Beta=0.423, sig.=0.045).

4 Discussion

The analysis has led to some interesting findings. Training is in most cases carried out systematically and follows a training

programme. Problems are also mainly handled systematically. Nevertheless, it has been observed that competitors are not necessarily placed in a race on the basis of their achievements. We are worried about the general lack of concern for the overall personal development and personal material existence of competitors. This conclusion is confirmed by the examples of some top ski jumpers from various countries who had problems after having ended their career (e.g. Matti Nykänen, Andreas Goldberger, Primož Peterka).

Table 8: Regression analysis

Model	Unstandardized Coefficients		Stand. Coeff.	t	Sig.
	B	Std. Error	Beta		
(Constant)	7.796	.264		29.520	.000
REGR factor score 1 for analysis Systematic problem solving	-.198	.530	-.090	-.374	.711
REGR factor score 1 for analysis Experimentation	.343	.501	.156	.684	.497
REGR factor score 1 for analysis Learning from past experiences	.061	.454	.028	.134	.894
REGR factor score 1 for analysis Learning from others	.928	.448	.423	2.070	.045
REGR factor score 1 for analysis Knowledge transfer	.068	.491	.031	.139	.890
REGR factor score 1 for analysis Progress measurement	-.868	.417	-.396	-2.081	.043
REGR factor score 1 for analysis Personal knowledge	.704	.555	.321	1.270	.211
REGR factor score 1 for analysis Shared vision	.744	.513	.339	1.450	.154
REGR factor score 1 for analysis Mental models	.313	.587	.143	.533	.597
REGR factor score 1 for analysis Team learning	-2.066	.592	-.942	-3.492	.001

a. Dependent Variable: My best result is

Ski jumping is a sport where some of the best results have been achieved on the basis of experimentation. This applies to equipment improvements as well as to revolutionary changes to jumping technique (e.g. position of the arms during the flight phase, position of the arms during the crouch, the crouch itself and style changes). V-style pioneer Jan Boklöv amazed in Oberstdorf in the 1986/87 season when he jumped differently than all the other ski jumpers. He reached up to 10 m longer distances.

The study revealed that the ski jumping profession constantly seeks new knowledge and improvements. However, coaches do not dare to take risks and rarely do things that ski jumpers find unusual. Perhaps the reason lies in the fact that the coaches are not familiar with learning organization concepts. Jafari and Kalanaki (2012) state that there is a significant relationship between the dimensions of learning organizations and readiness-to-change.

Garvin, Edmonson and Gino (2008) indicate the importance of learning from past experiences in the case of the U.S. Army's After Action Review. This process is framed by four simple questions: What did we set out to do? What actually happened? Why did it happen? What do we do next time?

Our study has found that ski jumpers often analyse their successes and failures by themselves. It is very surprising that they rarely watch footage of the relevant ski jumping hill from previous seasons before a race. Wade Boggs, third baseman for the New York Yankees, winner of five batting titles in 12 years, videotapes all of his at bats. The morning before a game, Boggs arrives early at the ballpark and watches videos

of his past bats against that day's opposing pitcher (Barret, 1995). Among all questions in our questionnaire, we identified the lowest level of agreement with the following statement: "Before a race on a ski jumping hill, we analyse footage from this hill with the coaches." (Q19: Mean=2.09, Median=2, St.dev.= 1.033)

Team members exchange experience with each other but not as often as one would expect. It is surprising that competitors rarely analyse the successes and failures of the other teams.

Competitors rarely collect and store scientific literature, rarely read notes about their trainings from the past and rarely watch footage of other competitors' jumps, although the coaches encourage them to acquire knowledge. On the other hand, they often watch footage of their own jumps.

Progress measurement is quite common in ski jumping. Competitors often do not have access to data of other ski jumpers.

Competitors generally do not doubt the profound knowledge of the coaches. Nevertheless, we have noticed that they do have doubts about their knowledge of sports psychology. We believe that this kind of knowledge is important for competitors in a sport like ski jumping.

Among all questions in our questionnaire, we identified the highest level of agreement with the statement about personal competitive goals (Q46: Mean=4.65, Median=5, St.dev.= 0.828). As for the team goals, many are not familiar with them.

Competitors generally acknowledge coaches' authority. Team members wish all the best to their teammates and are

often happy when they succeed. On the other hand, they are not necessarily willing to admit their own mistakes.

Competitors are aware that they all benefit from team membership. However, the relationships within a team are obviously very complex. They can consider their teammates as their opponents but do not necessarily acknowledge each other's roles. They are aware of different roles within their team. Attitude towards the leaders is also not entirely clear.

The study proved that ski jumpers are individualists. Those who prefer training alone to training with their teammates, consider their teammates as their opponents and are willing to listen to their teammates have statistically significant advantage over the others. There is a negative correlation between the "best achievement" variable and the following variables:

- I prefer training with other teammates to training by myself.
- I do not consider my teammates as my opponents.
- We all benefit from team membership.
- I am willing to listen to the other team members as I know this may broaden my knowledge and views.

5 Conclusion

The learning organization concepts have made a significant contribution to the development of some major global companies. Creating a learning organization remains the ideal for many managers around the world. The case of Samsung Electronics transformation under the leadership of Lee Kun-hee has been approached under multiple theories as proposed by the concepts of communication, paradigm shift, strategic vision and intent to bear a series of multiple strategies under the process of learning organizational theory (Hur Chul-boo, 2010). For Microsoft to build up a learning organization's strategy, it can be concluded into 3 ideals: the first is self-criticism, the second ideal is message feedback and the third one is a wide-ranging exchange.

In addition, the importance of learning organization elements has been proved in some team sports. Shamsie and Mannor (2013) have done the analysis of a large sample of Major League Baseball teams from 1985 to 2001. The analysis provides significant support for the importance of tacit knowledge for the performance of a team.

Based on our study of ski jumping as a complex system, development of ski jumping technique, development of hill profiles, development of equipment and development of sports medicine, we believe that the development of ski jumping was not the result of a coincidence. It was, rather, influenced by learning organization elements: personal mastery of individuals, experimentation, systematic problem solving and systems thinking, learning from others and measurement.

How do learning organization elements in the training process affect competitors' results?

We have identified weak positive connections between competitive results and preliminary analyses of the jumps on the relevant hill, possibility of testing new equipment and willingness to learn from others. Too frequent progress measurements have a negative impact on results.

Correlation coefficient numbers hardly give us answers regarding their actual importance. Therefore, we analysed the results in recent major competitions. There are two series in a ski jumping race: the overall score is the sum of points from both jumps. We have found that the differences between the best ski jumpers in the biggest races are extremely small. At the 2006 Olympic event in Pragelato (normal hill), the winner was Lars Bystøl (266.5 points) and Matti Hutamäki took second place (265.5 points). The difference between them was therefore only one point, i.e. less than one meter. A similar thing happened at the 2010 Winter Olympics (Normal Hill, Whistler Olympic Park). The difference between the second (Adam Małysz) and third competitor (Gregor Schlierenzauer) was only 1.5 points, which on this hill signifies less than 1 meter in length.

To conclude, even the smallest element of the training process can contribute to a success or failure.

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Smučarski skoki - bitka talentov v učeči se organizaciji

Koncept učeče se organizacije in organizacijskega učenja so najpomembneje prispevali k razvoju nekaterih velikih svetovnih podjetij: Nokia, Oracle, Microsoft in mnogih drugih. Avtorji članka raziskujejo, ali se koncept učeče se organizacije izkaže za uspešnega tudi v športu, konkretno v smučarskih skokih. Opravljeno je bilo anketiranje med smučarskimi skakalci, ki nastopajo v svetovnem pokalu. Anketni vprašalnik je bil poslan 130 skakalcem, vrnjenih je bilo 54 pravilno rešenih vprašalnikov. Raziskava je pokazala, da so smučarski skoki šport izrazitih individualistov. Za uspeh je izjemno pomemben talent posameznika v tem športu. Z veliko gotovostjo lahko trdimo, da so vsi anketirani skakalci sposobni uvrstitve na mesta med 16 do 50 na tekmi svetovnega pokala. Razlike med tekmovalci, tudi na največjih tekmah, so zelo majhne. Zato je za uspeh pomembna prav vsaka malenkost. Prepoznali smo šibko korelacijo med najboljšim tekmovalnim dosežkom in sodelovanjem pri testiranju nove opreme. Nekateri najboljši rezultati so bili v preteklosti doseženi na podlagi eksperimentiranja, sodobni trenerji pa ne upajo preveč eksperimentirati s tehniko. Prepogosta merjenja napredka tekmovalce obremenjujejo. V raziskavi se je zelo pokazal pomen individualnosti posameznika. Med pogostostjo individualne analize in tekmovalnim uspehom obstaja tekmovalca korelacija ($r=0,256$, $p=0,05$). Ugotovljena je bila negativna korelacija med spremenljivko »najboljši tekmovalni dosežek« in spremenljivkami iz skupine »teamsko delo«. Odnosi v ekipah so očitno zelo zapleteni.

Ključne besede: učeča se organizacija, šport, smučarski skoki

Identification Elements of Optimal Organisational Model of Tourism Education in Slovenia

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The main aim of the research was to identify the elements of a suitable organisational educational model for tourism in Slovenia. Our research was based on the need of inner circular reflexive performance of the individual in the tourism education model, institutionalised concept of education, which is viewed by outer reflexive model of tourism educational institutions performance and functional practical interaction of individuals and tourism institutions at the development of innovative potentials in the field of tourism. Tendencies to develop complex and qualitative services coming from permanent strengthening of innovative potential of tourism services are common in this field. It is necessary to develop a suitable model in the field of tourism education that places an individual in the educational process taking into account his/her conscious reflection, rational reflection and acquired motivation for solving complex projects in various levels of tourism.

Suitable tourism education model, which is level-structured, is expanded in two ways. It includes the active role of an individual in rationalising practical knowledge and strengthening the innovative potential in developing his/her competences, and the role of tourism education institutions. The organisational cultural dimension can be observed as dual activity structure distinguishing between conscious reflection of the external environment on the level of educational institution and internal practical consciousness on the level of individual development of competences. Giddens structuration theory is used as a conceptual frame explaining the organisational-cultural dimensions of suitably structured educational model for tourism in Slovenia.

The conclusion is based on the fact that an individual does not acknowledge the multilevel structure of study at higher education where there is an absence of conscious, practical and motivational reflection. Organisational cultural environment in the field of tourism education in Slovenia prefers practical and functional ways of acquiring competences on a higher and postgraduate (Master's) level of study. Due to the structured changes implemented by the Bologna process, competences are not realised on the higher education level but on the postgraduate (Master's) level, which demands a systematic review and a suitable education model change.

Key words: structure, education, reflection, competences, tourism, Slovenia.

1 Introduction

Tourism education has a special role in the process of changes. Its role is to change knowledge that directs the operation of tourism systems. The latter is possible only if tourism education programs follow changes and try to grasp them by new transmitting knowledge to pupils and students. Osman-Gani (2004, p. 282) proves the need for continuing education and claims that Far East countries, where tourism develops quickly, stress the education and development of human potentials. The results of ESC (*Economic Social Commission*) research show that the network of qualitative education institutions,

developing new methods and methodological tools, is needed for tourism prosperity.

The tendencies for change in the educational institutions have grown due to the Bologna process in Europe. The implementation of change is challenged by legislation and factual educational processes (Medveš et al., 2008). The functional complexity of the European educational system presents the first problem, the economic crisis endangering the implementation of the Bologna process (*EHEA*, 2012, p. 28) the second.

Initial desires to design a harmonised European Higher Education were followed by European political and economic tendencies, which deliberately or unintentionally change

the path of education planning by changing the educational systems from outside (Markelj, 2006, p. 113). The generally accepted common rules on course design are being ignored. The latter influences and decreases university autonomy i.e. diminishes the autonomy of education subsystems. The external pressure, which influences Europeisation of higher education, is a consequence of rational and institutional approach to education that neglects the dynamics of educational environment, which changes quickly and accordingly to changes on a national and especially global level.

The Bologna process is contradictory. European countries understand and implement it differently into its own educational process (Kwiek, 2004, p. 770). Problems often arise from misunderstanding the general principle on a national and European level. The idea of universal implementation of the Bologna process is in a way naïve and optimistic as various cultural, economic, social, demographic and environmental conditions do not make that possible.

EHEA (2012, p. 52) claims that the adaptation of universities, which form the structure of educational subsystem on a national level, is difficult because national countries propose deep education cuts and force universities into seeking funding elsewhere. There is a serious danger of functional and managerial approaches simplifying educational programs and thus diminishing opportunities for educational structures functioning on the conceptual level. Useful competences will diminish students' abilities for functioning and gaining competences on a more comprehensive and conceptual level. In a long run this may lead to reduction of comprehensive knowledge and competitive ability of a social system on a national level. The damage done by the Bologna process might thus be irreversible.

On the other hand some research results show (Ovsenik R., 2007, p. 132) that the level of education, as one of the criterion of excellence of employees in tourism in post socialist countries, is on extremely low, which disables the exploitation of opportunities and suitable responses to changed business conditions on the international tourist market. Such condition derives from the current state of tourism education, which is not well adjusted to knowledge need in tourism. The employment of highly educated people possessing the right competences in tourism is more of an exception. Such condition blocks the development of tourism, which is permanently changing and offering more complex services to please the needs of modern consumers of tourist services. It is true for tourism systems that the management of changes is vital for survival, growth and development, but they do not show any particular interest for educational programs in this field. Usually tourism systems take part in planning the educational programs only on a principal level and give only verbal support.

The transfer of knowledge from tourism to educational organisations and vice versa is almost absent in the process. There are no mentors for practical training in tourism educational organisations. Tourism faces similar problems when planning new tourism educational programs (Ovsenik R., 2006, p. 5). Program updates, content and method of realisation basically do not change. Programs are rarely designed in a way that they coincide with the economic needs and the

development of a specific area of expertise. The conditions are not any better on the postgraduate level. The difficulties, which are a consequence of partial structure of tourism educational institutions, are the basis of elements identification of suitable tourism education model, which will make conscious reflection possible in tourism education, rational-practical educational model design and thus encourage external structural motivation of educational organisations and participants to achieve excellence in the field of tourism. Identification model elements will simultaneously allow the possibilities for designing the level structure of tourism educational programs.

2 Conscious Reflection of Tourism Environment

Occupational Outlook Handbook (<http://www.bls.gov/ooh/>, 2012) expects a strong growth of educational services in 21st century. Poslad et al. (1999, p. 1) note that tourism is undergoing the important changes and facing new challenges, which are developing new perspectives on the functioning of tourism systems. Tourism is also experiencing structural and paradigmatic changes that have a significant impact on the development of regional tourism policies and strategies.

In the field of tourism education there is still no real willingness to undertake training, which begins with the introduction of practical knowledge in the educational process in which this knowledge is supplemented on a conceptual level, and then returned to a specific economic environment (Ovsenik, R., 2002).

Tourism systems survive only if they reinforce their self-productive and self-performed power (Fayos-Solá, 1996). In the systemic sense, the tourism systems need to enhance the integrity and dynamic complexity of their operations. Therefore, the intellectual capital plays an important role in the field of tourism. Despite growing awareness of tourism industry about the importance of qualified workforce for providing quality services to consumers, mobility and promotion, a significant part of the employers do not want to invest in human capital. They cut down the labour costs and employ cheap labour and thus reduce the quality of services. All this affects the cooperation between tourism industry and educational institutions.

The success of education ensures the consistency of development trends in tourism with tourism knowledge and tourism programs that provide such knowledge (Tribe, 2001, p. 440). According to Airey in Tribe (2005) the problem is that most of the tourism courses are designed by the teachers. Tourism industry usually does not cooperate in the process. Haywood in Maki (1992, p. 172) share the same opinion that the participation of the tourism industry in the preparation of curricula is modest. Sheldon et al. (2011) claim that educational institutions must be able to detect and follow the knowledge needs of companies at the right time. The flow of information and knowledge between educational institutions and economy is according to the overall assessment on a low level. Thus the education should not follow the economy needs but a direct transfer of knowledge from the study process into practice and back to the study and the research process that

creates the added value (Ovsenik, & Ovsenik, 2008, p. 40). This way we could innovate the knowledge and contribute to the development of educational structures.

The study (Airey and Johnson, 1999) has shown that educational programs pursue "professional liberalism", which combines academic and vocational aspects. Ambrož (2004) has described them as an aggregate approach to education, whose starting point is to provide knowledge and skills that will enable the graduate employability. Integration of both types of knowledge (academic and practical) in the future, is essential for the development of different learning paradigms. We need a shift from a passive role of an individual into a responsible one, because of his/her own learning and professional development that is consistent with his/her maturity, knowledge, skills and experience.

Knowledge development in tourism in Slovenia has in the educational programs as important role as useful knowledge, which can be immediately and directly used. The thought that the traditional academic knowledge as a general criterion for the development of skills and as a prerequisite for business success in the professional field, still dominates. Due to general pressure of the user's knowledge economy, higher education institutions particularly emphasize useful knowledge and skills. On the contrary, the university teachers have a different view as well as different realistic possibilities for carrying out such a course, especially because the academic knowledge in educational, scientific and research environments has a much better image than useful, profession-oriented knowledge. Lack of teachers who have applied knowledge in the field of tourism, often determines the nature of knowledge given to students by their teacher. It is very likely that course designers do not well know the needs of the companies in the field of tourism. The needs for specific skills are dynamically changing. Especially those higher education institutions that are not directly involved in the business processes of companies cannot keep up with these changes. Despite the fact that most of the short-term and long-term documents in the field of higher education reflect the need for participation of companies in the planning process, execution and continuous improvement of programs, there is no real cooperation among them. Situation in the field of education at this time supports the trend towards the development of academic skills in conflict with practical, skills-oriented profession. Situation in the field of education currently supports the trend towards the development of academic knowledge in contrary with practical, profession-oriented knowledge.

3 Factors of Educational Model for Tourism

Renovation of programs, in the sense of duality of Slovenian tourism education, raises a number of dilemmas. One of the central is the question of the company as that factor of interactions with the environment which provides adequate transfer of knowledge into practice and from practice back to the conceptual sphere, and on the other hand contributes to the self-organised individual, who is determined by the attitude towards the environment.

To identify the elements of optimal organisational model of tourism education in Slovenia we use Giddens structuration theory (Giddens, 1984, p. 5), which determines how to interact with the environment. Since it is a level-structured educational process where the structures must be distinguished from each other and from other structures and the environment, Giddens structuration theory is appropriate. Without proper distinction, individual levels do not produce differing competences. This way they deny their existence. Bologna reform emanates from the importance of the distinction between structures, where they should be identifiable, levels clearly structured, and as such the product of interaction with the environmental needs. The process is thus becoming interactive and permanent.

Giddens structural model is based on the interaction with the environment and provides an open structure allowing the flow of knowledge and information, and adapting to the needs of the environment. Thus the individual understands the conceptual and practical models. The programs that differ in both, conceptual as well as empirical part can ensure reflexivity of knowledge. The individual continually reviews the adequacy of competences in the sense of environmental demands. Reflexivity also relates to the acquisition of practical skills, since they contribute to the competences of individuals, which provide a useful value and the ability to use project-based approach at individual skill levels. Suitable educational model for tourism guarantees that the individual adds a new value. He/she acquires competences transferred to the project space as innovation in all five stages/levels of organisational model: secondary, post-secondary, higher education, master's and doctoral level.

Programs, classified according to the level of institutions implementing the program, must as a basis have a clear recognisability of levels. If the principles of the Bologna reform work, the conceptual knowledge refines with experiential knowledge at the appropriate level, and produce competences adequate to the level of education and environmental needs. If it is only about simplifying the programs (and their reduction), and practical skills remain a matter of declarative interpretation, the Bologna reform failed to achieve its purpose. The model of the Bologna reform should contribute to the development of competences of individuals, which are transferable to the environment and also allow continuous, independent coordination and innovation.

4 Purpose and Objective of Research and Hypotheses

The main objective of the research is to identify the elements of a suitable organisational education model for tourism in Slovenia, which can directly contribute to the development of specific and general competences of students at all levels of education and thus also to competitive abilities of tourism industry in Slovenia. We formed the following working hypotheses:

Hypothesis 1: A suitable tourism educational model reflexively accompanies changes in internal and external tourism environment and responds to them effectively.

Hypothesis 2: A suitable tourism educational system rationalises its function by creating practical knowledge for tourism needs.

Hypothesis 3: A suitable tourism educational system motivates individuals to use their knowledge in tourism actively and innovatively.

Hypothesis 4: A suitable tourism educational system functions level inclusively.

5 Structural approach to education

Knowledge is the primary driver of economic and social development. In order to cope with social action in the knowledge society, the educational subsystem that allows reflexive monitoring, rationalisation of practical knowledge and raises motivation for applying that knowledge in a particular social environment is of great importance. Educational subsystems have in all societies in the past been the focus of various social structures that have been changed, transformed, phased out and re-established in accordance with the current societal views and needs. In the twenty-first century we are facing new approaches to teaching and learning. Among the first to move away from the major theories of education was Rorty (1982), one of the constructivists. He argued that learning is an active, constructive process. The learner in the learning process is the creator of information. After Rorty (1982) people actively create their own subjective interpretation of objective reality. New information is always related to prior knowledge, thus mental performance is always subjective.

An important role in postmodern pedagogy has also Lyotard (1984, p. 47), who was convinced that knowledge is created and will be created in order to sell. Nuyen (2005, p. 93) rejects his vision for the future by claiming that a teacher should not teach a student general skills, but should be his/her role model inspiring and encouraging him/her to reach a higher level of creativity and imagination. In doing so, the new information and communication technology can be of a great help (Zepp 2005, p. 105).

Students will need to be trained to learn from the emerging future, which is according to Senge (2008, p. 46), no longer a science fiction. Increasingly dynamic business environment is creating common situations when you are no longer able to learn from past experience, because you should be looking for answers to the challenges that have not happened yet. Knowledge creation is a complex multi-level process that has its limitations. Duality of educational structure makes us realise that there are different facets of a single central question about how to produce a suitable educational system, contained in a memory trace of individuals, enabling them to actively learn and have effective interaction with the environment. An important role is played by the excellence of educational institutions. The quality of education and training is a major challenge for researchers, practitioners and educational organisations.

Giddens (1984, p. 7) sees the ability as a necessary part of a special knowledge acquired by an individual or organisation. Capable people are aware of their knowledge and have the confidence to use it in different contexts. In addition, they

have the ability to develop this knowledge even after finishing their formal education. We are talking about the competence of human resources; competences are the knowledge, skills and abilities to function effectively in uncertain and changing circumstances on the basis of our own judgement and in an ethical manner. Competences are developed at the appropriate educational environment. The starting point for the implementation of changes in the organisation should be in the change of organisational culture. The concept of "culture" describes a wide margin impact on how people behave in organisations, social communities and national communities.

Organisational culture in educational organisations has a dominant influence on their efficiency and effectiveness (Baldrige, Deal and Ancelle, 1975).

6 Research Methods

The purpose of a research was to develop a tool for the analysis of organisational culture and competences and skills of graduates in three steps. First, we created a set of arguments based on literature analysis, and then we collected the data we have obtained from 165 respondents, based on which we carried out the factor analysis - the principal component analysis. In the third step we eliminated the questionnaires that did not fit and used 149 left for testing of the model by means of regression analysis.

6.1 Instruments and Sample

The questionnaire consisted of three parts. First part comprised thirty-two variables describing the organisational culture of educational institution dimensions: (1) inclusion, (2) mobility, (3) expertise, (4) employability. The second part comprised nine variables describing the tourism skills and competences. The third part comprised demographic variables: gender, status, tourism educational program. The fourth part included questions: (1) How many invited experts from tourist organisations lectured in your course last year? (2) What is the percentage of mentoring in the learning process in your institution? (3) What is the percentage of available e-learning materials?

Respondents' gender has asymmetrical distribution of 30 % males and 70 % females. This is a typical gender distribution of population in tourism educational programs in Slovenia, where the labour characteristics of the tourism and hospitality industry reflect the international trend of hospitality being considered a rather feminine economic activity. In the structure, there are 20% respondents from a master program, 14% respondents from accredited school, 25% respondents from college, and 41% respondents from high school.

7 Factor analysis of observations

Factor analysis of observations is trying to simplify the complexity of the relationships between the multitude of observed variables, dimensions, or disclosure of joint factors that provide insight into the underlying structure of the data.

Our research data were analysed by using factor analysis - the method of principal components. Our aim was to reduce the number of variables and create new latent variables, which can be then further explained in the analysis. We were trying to find a new set of variables, the number of which will be lower than the measured variables and represent what is common to the observed variables. The factor analysis tried to reveal the factors, which would explain the dimensions of organisational culture of tourism educational institutions participating in the survey. We used data for measuring dimensions of organisational culture (Table 1).

We have found that the R2 (the coefficient of determination R2 measuring the power relationship between the two variables) is greater than 0.20 in all variables, which is the first indication that the factor analysis of the variables in the model can be carried out successfully. Adequacy of the data for factor analysis was tested by Kaiser-Meyer Olkintestom (KMO) and Bartlett's test. This tests the correlation matrix of a unit. The higher the rate of KMO test, more data are suitable for analysis. If the rate of KMO is greater than 0.8, which is in our case the calculation (KMO = 0.804), the optimal adequacy of the data can be used.

The variables in constant factor matrix are not distributed sufficiently among factors. Therefore, the factor matrix was rotated using Varimax normalized rotation method. Rotated matrix has given satisfactory results. Variables with a correlation lower than 0.39 were excluded from the analysis.

The reliability test with Cronbach's alpha test showed that the most appropriate factor structure, which consists of five latent factors, adequately describing the dimensions of organisational culture, educational institutions and together explains 46.19 % of the variance. We researched the organisational culture in educational institutions on secondary, post secondary, higher education and postgraduate level.

The first factor "Participation" (see Table 2) explains the most variance, 23.227 %, and confirms ten statements. "Cooperative communication among teachers, administrative staff and students" (0.690) explains the highest variance in the factor.

Involvement is the dimension of organisational culture, which includes central beliefs, values and norms of educational institutions. If pupils and students do not perceive their active role in the educational process, discrepancy with their own self-esteem might occur. The analysis of the dimensions suggests that respondents from tourism educational institutions place the greatest emphasis on the cooperative communication between teachers and pupils or students. In this process the educational institution actively communicates their values, beliefs and norms in the educational process.

It is particularly important that it communicates with all internal and external participants and equally includes them in the educational process, in its reform and continuous improvement of educational programs and thus also in the design of specific and general competences of students. The involvement of students in the educational process is supported by excellent teachers, qualitative educational programs and the support of programs with new information technologies. The active involvement of students is also supported with educational institutions activities, promoting the development of self-organisation and self-help of pupils and students in the educational process, the introduction of best practices, case studies and team work in a favourable environment among pupils, students and teachers.

The central assumption of the involvement of all participants in the educational process is that an organisation must constantly maintain equality in the educational approach, transmit common values, beliefs and norms to all participants in the educational process and encourage the participation of all participants. If the educational organisation is not efficient enough, obstacles of the educational process may occur. They are reflected in the incomplete conscious reflection of the internal and external environment that is in complete self-evaluation and external evaluation of educational programs.

The second factor "Competency" (see Table 2) explains a slightly lower variance, i.e. 7.936 % and confirms five statements. Most of the variance in the factor is explained with the statement: "The ability to research, application of research procedures and processes in marketing" (-0.729).

The second factor in the analysis has a negative sign, which means that it has its own meaning within the factor model. The latter is particularly expressed in the research, the use of independent research procedures and processes in marketing and research methods management, procedures and processes in the process of reflection of internal and external environment. The ability of anticipating problem solving contributes to conscious reflection in professional ethics. Conscious reflective functioning of the education program is possible with continuous, independent, active and ethical action in tourism education. New knowledge acquisition in the educational program is based on qualitative research process developing responsible and independent research on all levels, which is the result of conscious reflective observation of the environment.

The third factor "Comparison" (see Table 2) explains even less variance (5.996 %) and confirms seven statements. Maximum variance in the factor is explained with the statement: "Educates professionals, whose expertise is comparable

Table 1: Appropriateness of factor analysis

Test	Parameter	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		,804
Bartlett's Test of Sphericity	approximation of chi-square difference	1368,032
	statistical significance	,000

Table 2: Factor analysis – method of principal components

Code	Claims	F1	F2	F3	F4	F5
INCLUSION						
P1	Dynamic learning process supported by ICT	0,562	0,045	-0,021	0,036	0,247
P2	Continuous renewal of curricula	0,660	0,040	0,016	0,081	0,323
P3	Consistency in the curricula and equalization with technology	0,587	0,127	0,182	0,164	0,308
P4	Tutors' assistance and advice to students	0,507	-0,141	0,005	0,294	0,262
P8	Use of best practices and case studies	0,499	0,233	0,154	0,190	0,146
P10	Promotes new forms of self-organization and student self-help	0,524	0,014	0,373	0,072	0,147
P16	Effectively develops general and specific students' competences	0,605	0,177	0,303	0,065	0,025
P21	Has highly qualified and motivated teachers and administrative staff	0,593	0,253	0,207	-0,100	0,100
P22	Provides a favourable relation between the number of students and teachers	0,402	0,178	0,365	-0,177	0,022
P23	Provides a cooperative communication among teachers, administrative staff and students	0,690	0,133	0,219	-0,032	0,083
COMPETENCY						
KD	Competences providing autonomy at professional work and decision making	-0,126	-0,688	-0,181	0,050	0,086
KE	Ability to analyse, synthesize and predict solutions and factors resulting in international and domestic/national tourism	-0,133	-0,597	-0,099	-0,216	0,061
KF	Development of ethical reflection and commitment to professional ethics	-0,275	-0,569	-0,019	0,253	0,015
KG	Ability to research, use of research methods and processes in marketing	0,009	-0,729	0,012	-0,118	-0,159
KH	Management of research methods, procedures and processes	-0,073	-0,635	0,117	-0,078	-0,167
COMPARABILITY						
P19	Develops new professions and adds new skills to individual profiles in tourism	0,226	-0,002	0,461	0,258	0,239
P25	Uses methods for measuring and knowledge monitoring of employees in educational institution and structural knowledge of organisation	0,028	-0,014	0,618	0,141	-0,059
P26	Reputation ranking (by the model of marketing school home page) in the environment and expressing concern regarding the image	0,214	-0,091	0,574	-0,025	0,225
P27	Consistent with global, regional, and local trends of tourism development and all changes in tourism	0,266	0,158	0,590	0,125	0,172
P28	Educates professionals whose knowledge is comparable with the knowledge of experts from different tourism educational institutions	0,246	0,204	0,697	0,158	0,119
P17	Enables students cooperation in various tourist/culinary events	-0,133	-0,028	0,447	-0,160	0,335
P20	Pays attention to students' identification and evaluation of achievements	0,371	-0,029	0,436	0,177	-0,111
PRACTICAL KNOWLEDGE						
P5	Has a developed system of practical training and education in and out of the institution	0,290	-0,068	-0,065	0,667	0,019
P6	Makes sure that students have frequent enough consultations with teacher at school and during professional practice	0,049	0,151	0,190	0,615	0,174
INNOVATION						
P 13	Enables the development of business ideas in business incubator (own and foreign)	0,278	0,206	0,304	-0,076	0,609
P 29	Organises events intended for self promotion.	0,289	0,081	0,006	0,001	0,527
P 12	Includes students in teachers and researchers' project work and research	0,084	0,024	0,175	-0,010	0,645
P 14	Enables its students the support of professional career development with its career centres	0,214	0,073	0,069	0,162	0,162
P 15	Has internal labour market	0,265	-0,234	0,010	0,145	0,400

Table 3: Eigenvalue factor

	Eigenvalue	% variance	Cumulative eigenvalue	% cumulative eigenvalue
1	6,968	23,227	6,968	23,227
2	2,219	7,396	9,187	30,624
3	1,799	5,996	10,986	36,620
4	1,536	5,121	12,522	41,741
5	1,336	4,453	13,858	46,194

to expert knowledge from other educational institutions in tourism” (0.697).

The third factor follows a logical sequence of reflective observation of the internal and external environment and a systematic and independent research of this environment. Education of future professionals, who will have internationally comparable knowledge, is the result of appropriate reflection and new knowledge creation in the educational program. Educational institutions in the survey continuously monitor the performance of their pupils and students in the field of tourism and measure their performance. In doing so, they recognise students’ competence compliance with global, regional and national development in tourism.

The fourth factor “Practical knowledge” (see Table 2) explains 5.121% of the variance and combines three statements. The maximum variance in factor is explained with the statement: “It has developed a system of practical training and education in the institution and outside it” (0.667).

The fourth factor emphasizes the importance of testing practical knowledge in tourism. Educational institutions in our research have a developed system of practical training and education, which covers the internal learning and external business environment. Practical knowledge application, acquired by pupils and students in the educational program, is monitored by the employment possibilities of their graduates in tourism.

The fifth factor “Innovation” (see Table 2) explains 4.453% of the variance and combines five statements. The maximum variance in the factor is explained by the statement: “Let’s support students’ career development with their career center” (0.657).

With the help of eigenvalues, we have found out that the maximum variance in factorial model explains five factors.

8 Regression Analysis of Educational Model

We have used a regression analysis for model analysis to determine how tourism educational institutions work when integrated on a multi-level and according to findings of structural theory based on conscious and practical knowledge reflection and creation of motivational potential to use the knowledge mentioned. Independent, dependent and moderating variables were included in the model.

Independent variables are represented by inclusion, e-materials accessibility, mobility, motivation for the use of practical knowledge and innovation. Dependent variable is represented by excellence competence and moderating variable is represented by multi-level structured program.

The result of the regression analysis is positive, independent variables show statistically significant variance in

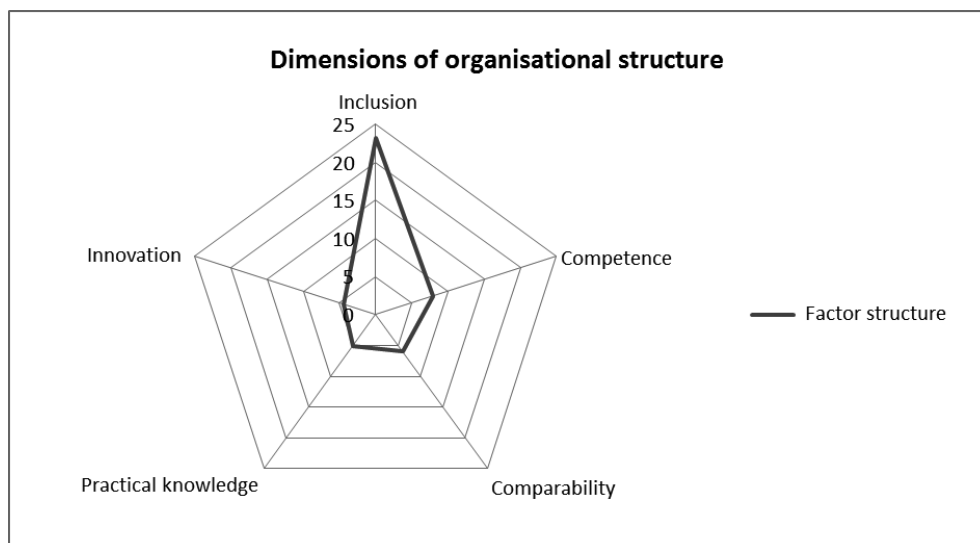


Figure 1: Dimensions of organisational culture

Table 4: Predictive power of the regression model of program stratification in tourism education

Dep. var.	Multiple - R	Multiple - R ²	Adjusted - R ²	SS - Residual	df - Residual	F	p
KOMP	0,479	0,229	0,179	9,356	154,000	4,580	0,000

independent variable ($R^2 = 0,18$; $p = 0,0000^{***}$). R^2 (0,48) shows moderate foretold power.

Furthermore, we have tested correlations in the regression model against univariate test (Table 4). The correlation relationship between independent variable Inclusion and dependent variable Competency ($F = 12,468$; $p = 0,001^*$) is the strongest and statistically significant. The second strongest

is the correlation between independent variable E-materials accessibility and dependent variable Competence ($F = 4,144$; $p = 0,044^*$). A bit weaker is the correlation between independent variable Innovation and dependent variable Competence ($F = 4,068$; $p = 0,045^*$). The weakest is the correlation between categorical predictor Program and dependent variable Competence ($F = 2,959$; $p = 0,087$), while the independent

Table 5: Univariate test of statistically significance of correlation with dependent variable

	SS	Deviation	MS	F	p
Intersection		0			
Number of experts	0,000	1,000	0,000	0,008	0,930
Status		0,000			
Distance learning	0,180	1,000	0,180	2,959	0,087
E-materials accessibility	0,252	1,000	0,252	4,144	0,044*
Inclusion	0,757	1,000	0,757	12,468	0,001*
Comparability	0,016	1,000	0,016	0,260	0,611
Practicality	0,011	1,000	0,011	0,173	0,678
Innovation	0,247	1,000	0,247	4,068	0,045*
Program	0,418	2,000	0,209	3,444	0,034*
Error	9,356	154,000	0,061		

Standard field of estimation error = 0,246

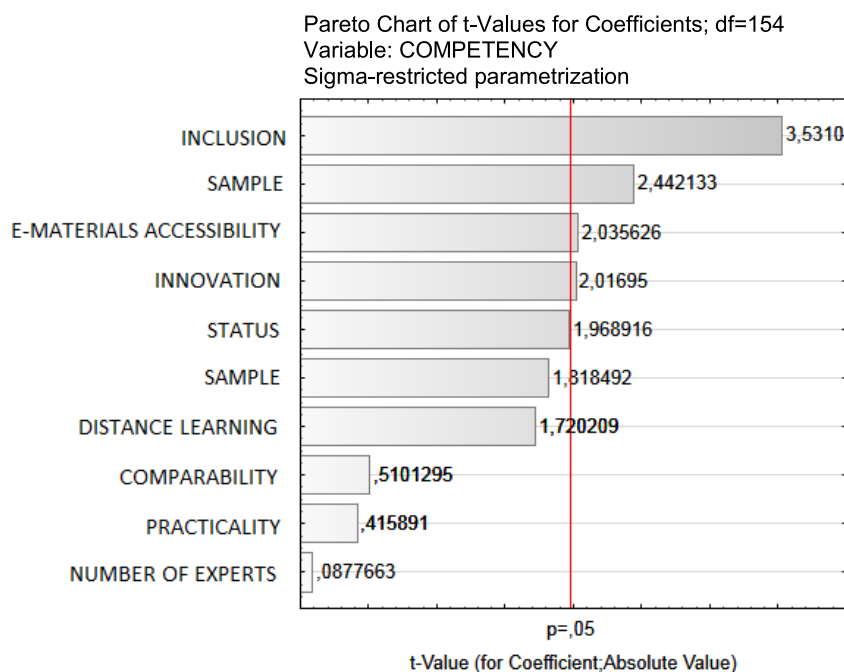


Figure 2: Pareto diagram for t - value of the coefficients

variables Program comparability and Practicality contribute little to the model and are statistically non significant. The same applies for variable Number of experts.

Figure 2 shows foretold power of individual independent variables within the regression model. Maximum variance is shown by the Inclusion ($t = 3,531; p = 0,05$) variable. A bit less explanatory is the Vocational College level (sample) ($t = 2,442; p = 0,05$). Pupils and students develop competences most if educational programs reform, change dynamically and if communication is present among participants during the process of program reform. Vocational college educational level contributes most to competence development.

Categorical predictor program is statistically significant correlating to dependent variable Competence. Table 5 shows that maximum variance is in dependent variable Vocational college and (arit. mean = 2,438; stand. deviation = 0,383) in MSc Tourism (arit. mean = 2,386; stand. deviation = 0,325). The latter levels have the maximum standard deviation, which points to a bit higher respondents' inconsistency.

Statistically significant correlation occurs between levels of educational programs and competence development. Figure 14 shows a covariance among the educational level and dependent variable Competence and independent variables and is statistically significant ($F(2,154) = 3,4441; p = 0,0344$). The highest competence development is chosen by respondents attending Vocational college.

Figure 3 shows a covariance significant between educational programs and competences; the maximum on post secondary (vocational) level. The lowest covariance is on the secondary educational level. Results show that post secondary students determine strong correlation between the program and competences they experience.

The results of regression analysis further show that maximum model variance explains the post secondary level in categorical predictor Program ($\beta = 0,462; p = 0,006^*$), followed by independent variable Inclusion, which explains ($\beta = -0,367; p = 0,001^*$), and independent variable Innovation ($\beta = 0,196; p = 0,045^*$).

Table 6: Descriptive statistics by levels of factors (categorical variable) for dependent variable Competency

	Factor level	N	Arithmetic mean	Standard deviation	Standard error	-95,00%	+95,00%
Total		163	2,293	0,255	0,020	2,254	2,333
Program	MSc Tourism	29	2,386	0,325	0,060	2,263	2,510
Program	Vocational College Tourism	21	2,438	0,383	0,084	2,264	2,612
Program	Professional College Tourism	37	2,301	0,262	0,043	2,214	2,389
Program	Tourist Technician	76	2,214	0,118	0,014	2,187	2,241

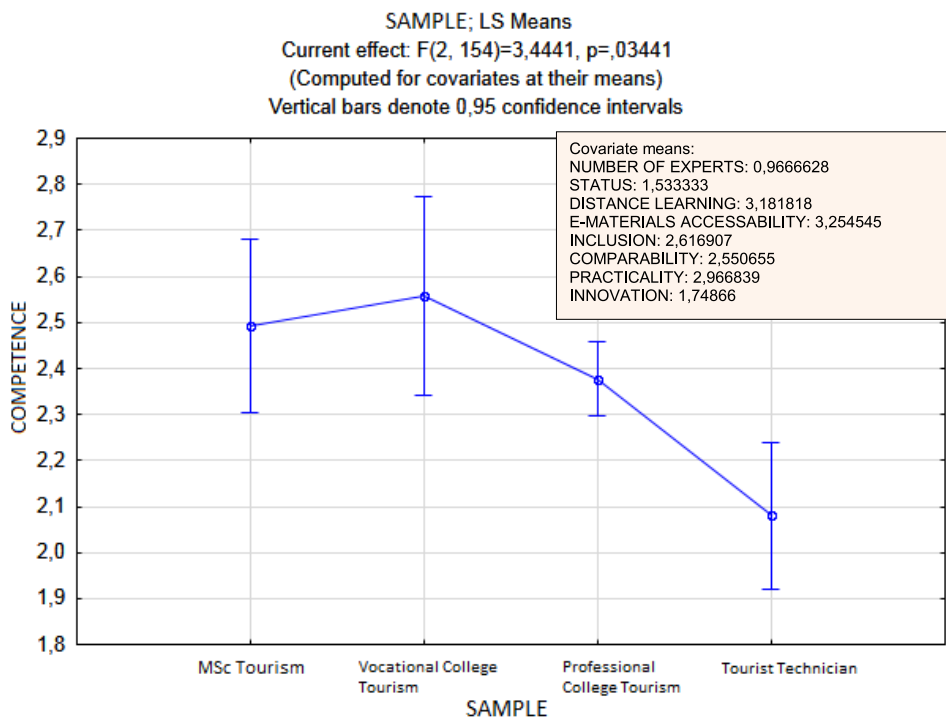


Figure 3: Arithmetic covariance between levels of categorical predictor and dependent variance

Results show that post secondary level is the most structured level in the model due to strong link to competence development. Based on the results, one can conclude that the program gives direct insight into competence development known to the survey participants. The variable Inclusion is important as its correlation to the competence development is negative. The result may be explained as respondents' need to directly co-create educational program according to their knowledge and the need to develop certain competences. Overview of independent variables tolerance presents a heterogeneous image. Tolerance is marked 1 minus square multiple correlation variable with all other independent variables in the regression equation. Lesser tolerance means little variable contribution to the regression model. Independent variable status in the educational program (pupil/student) and all categorical predictor Program levels contribute the least to our equation. The tolerance in all the other variables is normal indicating the relationship between them and other independent variables low multi-linear.

9 The Confirmation of the Hypotheses

Hypothesis 1: Conclusions of the empirical analysis of the competence model confirm a hypothesis that a suitable tourism educational model reflexively accompanies changes in internal and external tourism environment and responds to them effectively. A suitable educational model creates rational knowledge working on the principle of circularity when interacting with internal and external environment. Results of the regression analysis confirm the hypothesis that pupils and students of tourism have the ability of inner reflection and that suitable educational program provides effective conscious external tourism environment reflection. In doing so it provides conditions for rational knowledge reflection in terms of individual's competences.

Hypothesis 2: Suitable tourism educational system rationalises its function by creating practical knowledge for tourism. It uses various sources from external and internal environment classifying them systematically thus providing their direct access. This system functions routinely, dynamically and responsively to external and internal environment of an individual, who is included in the competence system. Qualitative competence system operates on the basis of practical consciousness using long term consciousness including previous individual's memory traces. The hypothesis can be confirmed according to the regression analysis results.

Hypothesis 3: Suitable tourism educational system motivates individuals to use their knowledge on tourism actively and innovatively. The hypothesis is confirmed as results show that the competence development, which is motivationally sufficient, is both rational and conscious. The results assume that those individuals who have excellent competences develop their own motivational potential, which does not need to be encouraged by environment changes. An individual, who knows what s/he does and is aware of his/her potentials and competences, is capable of functioning in complex and level structured projects and establishing effective interaction with others and tourism structures.

Hypothesis 4: The hypothesis that a suitable tourism educational system functions level inclusively can be confirmed as results on the empirical level, i.e. post secondary and postgraduate (Master's) level, confirm individual's ability to rationalise his/her knowledge. The absence of other levels in the model shows that present model does not enable knowledge rationalisation on all levels. The latter can be linked to insufficient level structure and means of employment in tourism. Employers are known for employing people with lower educational levels. They do not show any interest in employing highly qualified workers.

10 Discussion

The research shows the meaning of tourism educational models' suitability, actual educational dimension and the roles of individuals and educational institutions in educational process. In modern educational systems, based on the Bologna Process, competence is accepted as legitimate and professional basis for valuing and developing educational programs. The same applies for tourism.

The competence model is used for orientation of human resources on the labour market. Social circumstances have established the concept of competence based on memory traces, accounting for the role of educational institutions in circular movement producing knowledge and individual's active role. The prevailing recognition is that a diminished role of educational institutions or tourism decreases the role and effectiveness of educational systems and competences of graduates. A rational response to both strategies is imperative. The Bologna Process principles bring dual educational system creating useful and structural knowledge. Suitable educational models are a consequence of controversial contradictions among individual's autonomy, his/her inner reflection and other participants in the educational system.

From individual's point of view, a competence model derives from the absence of possible inner individual's reflection according to individual's achievement and independence. Competences, based on qualitative education, should become the main criterion for organisation's success. We need a level structured tourism educational model allowing conscious, rational and motivational reflection on all educational levels to contribute to knowledge rationalisation and making level education possible. The research results show the educational system structure insisting upon multi level educational program, which defines the quality of inter-level learning approach reflecting on individual's competences. Structures, which are competent and excellent, launch the educational process development advancing individual's competence according to the level and ability of problem solving in tourism.

On this level of discussion on the development of suitable tourism educational model, one can talk about the positive components of classical educational model, where all academic institutions have a prevailing role, functional components of educational model, which takes into account dynamic needs of tourism and positive components of inner reflexive model, which takes into account decentralisation, personal values, autonomy and responsibility.

11 Final Thought

Conclusions summarised from the research, refer to the facts that:

- The level structure of educational programs in Slovenia is unclear (only higher education and postgraduate students note a relationship between educational level and competences. As educational programs do not reflect qualitative higher level of competence development, new approaches, which encourage problem solving according to its complexity, must be integrated into education.
- The results of the inclusion level of individuals into the process of conscious reflection show that educational programs do not adapt to environmental needs, global trends and economic needs. We need a shift in the education, change from passive (factual) to active project learning approach, which is based on individual's active cooperation and research. It also promotes additional teacher training.
- There is a positive connection between individual's competence development and subconscious motivation on motivational unconscious level, realised primarily on higher education and postgraduate level. The analysis results show that educational programs encourage competence development only on these two levels.
- We acknowledge a positive connection between active research of environment, which is a basis of adaptation and improvement of educational programs and individual's expectations in the field of tourism, on the conscious reflexive level manifested by active environment observation.

New educational programs, acquiring competences for effective and successful function in tourism, following the principle of level structure, are still emerging. The study provides some answers on how to help a level structured approach to develop students' skills to enable the efficient and effective functioning of the ascending complex environment. Integrating qualitative and quantitative approach has shown positive results and guidance for further systematic reflective observation of the environment.

The need for more sophisticated methods of research and learning in tourism educational programs indicates the need for development in order to creatively respond to a changing environment. It is possible to achieve competence acquisition for in-depth analysis of the environment, responsiveness to change, and ultimately the autonomy of individuals, which would prove successful for tourism education by providing enough open organisational culture of educational institutions.

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Identifikacija gradnikov optimalnega organizacijskega modela izobraževanja za turizem v Sloveniji

Poglaviti cilj raziskave, ki jo predstavljamo, je bil identificiranje gradnikov in razvoj kompetentnega modela za izobraževanje na področju turizma. Izhajali smo iz potrebe po notranje krožno reflektivnem delovanju posameznika v izobraževalnem modelu za turizem, institucionalnem pojmovanju izobraževanja, ki se izraža v zunanjem reflektivnem modelu delovanja izobraževalnih institucij za turizem in v funkcionalno praktični interakciji posameznika in institucij turističnega gospodarstva pri razvoju inovativnih potencialov na področju turizma. Na tem področju so vse pogostejše prisotne težnje po razvoju kompleksnih in kakovostnih storitev, ki nastanejo zgolj ob nenehni krepitvi inovacijskega potenciala storitev za turizem. Na področju

izobraževanja za turizem je nujno potrebno razviti kompetentni model, ki socialnega akterja aktivno vključuje v izobraževalni proces in pri tem upošteva njegovo zavestno refleksijo, racionalno refleksijo in ponotranjeno motivacijo za reševanje kompleksnih projektov na različnih ravneh turizma.

Kompetentni model izobraževanja za turizem, ki je nivojsko strukturiran, je dvorazsežen. Vključuje aktivno vlogo socialnega akterja pri racionalizaciji praktičnega znanja in kreptvi inovacijskega potenciala pri razvoju lastnih kompetenc ter vlogo izobraževalnih institucij za turizem v tem procesu. Na organizacijsko kulturni razsežnosti zaznavamo dvojno strukturo delovanja, ki razlikuje med zavestno refleksijo zunanjega okolja na ravni izobraževalne institucije in zavestno refleksijo notranjega okolja na ravni razvitosti kompetenc socialnega akterja. Na osnovi Giddensove teorije strukturiranosti pojasnjujemo dimenzije organizacijsko kulturne razsežnosti kompetentnega modela izobraževanja za turizem na področju Slovenije.

V sklepnem delu ugotavljamo, da socialni akter ne zaznava nivojske strukturiranosti študija na visokošolski ravni, za katero je značilna odsotnost zavestne, racionalne in motivacijske refleksije na tem nivoju izobraževanja. Organizacijsko kulturno okolje v Sloveniji na področju izobraževanja za turizem daje prednost praktičnim, funkcionalnim načinom pridobivanja kompetenc na višji in magistrski ravni študija. Zaradi nivojskih sprememb, ki jih v študij vnašajo bolonjska načela, se kompetence ne realizirajo na visokošolski ravni študija ampak na magistrski ravni, kar zahteva sistematičen pregled in spremembo kompetentnosti modela za izobraževanje.

Ključne besede: strukturiranost, izobraževanje, refleksija, kompetence, turizem, Slovenija

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Systemic Outlook in Technology-Management Trends of Best Technology/ICT Companies

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In the last time, new technology generations in many industries are presented every 2-3 years. The next technology revolution is expected to be different from the previous ones because technology is present in every aspect of our society. Technology processes have more and more an interdisciplinary character, therefore must be carried out systematically and if possible in a planned form. From integration of technology processes; to customer insights that drive product and brand extensions; to spotting emerging voids that competitors miss; technology-management trends are of tremendous importance for optimum business growth and profit. The main goal of this paper is to examine particular trends related to technology-management, as well as selected business indicators of the most successful technology/ICT companies in the world. The research methodology was based on the extensive study of innovative activities described in the annual and related reports of the most profitable technology businesses.

Keywords: Technology management, technology trends, technology development, technology synergies

1 Managerial relevance statement

Currently, managers are forced to act on the changes that expected technology-management trends will bring. Their role is to make sense of what matters most and when to take the right actions. The emerging trends described in this paper have become the top issues that technology managers must solve with their executive colleagues. This discussion must be based on the competitive principles – in terms of what impacts the new technology-management trends will have on business effectiveness, revenue growth, profit margins, cost structure, life-cycles, etc. How these trends will affect the organization as a whole? The implementation process requires answers to questions such as: What should TM do if technology is to be leveraged for maximum value? How these trends can facilitate technological processes and improve the quality of production and business efficiency? As the new data is applied for competitive advantage, how do companies start blending ICT and technological teams? And, who will be responsible for the implementation of these new trends? These lines of thinking

can raise also some of the questions about TM skills and ICT structures that need attention.

2 Introduction

The history of technology is the history of more and more sophisticated technology knowledge, tools and devices, and appearance of the technology-based society in recent years. If we look at history, the evolution of Technology management (TM) can be found in the 20th century related to the improved social standard of people. In 1911, *Schumpeter* proposed that technological changes could induce emergence, evolution, fusion, and disruption of industries over time. The systematic roots of TM can be traced to the *post-war industrial boom* especially in the U.S. But, in that time, the U.S. was in high technology competition with the Soviet Union. In Europe, the success of the *Marshal plan* (European Recovery Program, 1948-1952) speeded up technology development processes. Within this Plan, the Economic Cooperation Administration initiated the *Technical Assistance Program* that funded groups of European engineers and industrialists that visited the U.S.

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and toured mines, factories, and smelters and then copied the American advances at home. At the same time, several hundred American technical advisors were sent to Europe, for the same reason. (Schain and Judt, 2001) In 1950s, the Nobel Prize holder – *Robert Solow* was the first to develop an economic growth model that was based the new capital produced through new technology (Solow, 1957).

Before the 1960s, the main goal behind the internationalisation of technology R&D was to enter to a new market. In the 1970s, telecommunications and computer industries became leaders in managing international R&D and technology. Later, pharmaceutical, chemical and new material industries became even more science-based. (Reddy, 1997) Until the 1970s, many innovation solutions had been mostly technology-driven. The term '*strategic*' was added to TM in the 1980s as a tool to offer better potential solutions for managing ambiguity, complexity and business dynamics that were caused by technology development. Along with the technology progress, increasing R&D and manufacturing cost were among the top issues of TM (Bohr, 1996). In the 1980s, bigger corporations started to conduct a part of their strategic R&D activities in developing countries in order to exploit cost advantages and local markets (Reddy, 1997). Since that time, TM has become a part of international managerial strategies and processes in many institutions (companies, research and financial organizations, governmental institutions, etc.) (Pelc, 2002). *Strategic TM* has become a process that connects strategic objectives of a company with its technology infrastructure and socio-environmental conditions (Sahlman and Haapasalo, 2009). While, detailed technology identification and implementation are the task of *operative TM*. Thus, managers have been forced to mix traditional strategic thinking and demands of the developing high technology society. (Sahlman, 2010) Decisions on technology have been based on guidelines in business strategies. Technology strategies must have been in conformity with plans of strategic business units and functional departments so as to determine technology objectives that would be realizable in every part of this organization. This strategy could have following elements: technology goals and tasks, R&D and technology portfolio, technology acquisition plan, technology budget, etc. Thus, technology planning has become a part of business and product planning and budgeting (Sahlman – Haapasalo, 2009). Later, seeing the change towards a service and knowledge oriented economy, technology innovation has required more radical innovation also in the TM theory.

In the 1980s, the processes of *more radical innovation* stimulation caused the increasing importance of the TM development (Leifer et al., 2000) that meant more significant business opportunities in the long time, but required also more systematic managerial efforts. These efforts enable many companies to improve their organizational effectiveness (Farrukh et al., 2004). Radical technology innovations have brought the changes to industrial and market structures and allowed companies to developed so-called '*global products*'. For example, the invention of high-tech – *neural computing* as the dawn of a new era in IT in the 1980s (Guice, 1999). IT have enormously influenced a management practice, including an integrated accounting system, design, logistics, marketing, control or sale (Roberts, 1996). Another important

determinant in the TM history has become so-called *trade-offs* between achievement of quick profits, through the technology imitation or transfer, and on the other side – requiring higher investment in technology R&D in a long period. Afterwards, efficient technology investment has become the basis for the success of many companies and projects. Increasingly, there have been more successful many technology specialized companies (*IBM, Microsoft, Dell, Apple, later Intel, Cisco, Corning, Google, etc.*) that have integrated their R&D with emerging needs of customers, more and more using venture capital, and applying new cooperative business models (JVs, holdings, alliances, clusters, etc.). In the 1980s, TM received broad attention from both managers and academics (Drejer, 1997).

Since the 1990s, approximately 25 of the most innovative companies in the world have had in about 3% higher the average profit margin than the first 1200 companies ranked by Standard & Poor's (Larson, 2007). For these reasons, many companies have started to create a new business, i.e. *sale/lease of technology*. At the same time, there was a boom of *start-up science invention and intellectual ventures*, i.e. companies that were primarily focused on R&D of new technologies. The trend was in technology simplification and integration, use of artificial intelligence in TM, while technology solutions have become more complex (Rubenstein, 1994). In the 1990s, TM techniques were already resources limited and based more on retrospective understanding of the problems, rather than integrated into planned design procedures. Later, governmental pressures towards *collaborative R&D, leaner organisation of R&D, product-process integration, etc.* – dominated in TM. (Hodgson and Cardew-Hall, 1998) More and more technology services were provided by companies together with more sophisticated technology innovation. At the same time, networking have become the driving process in technology industries, and replacement of technology as hardware (HW) by software (SW) and services delivered via the Internet, so-called *technology dematerialisation. Technology modularity* has been a necessary precondition for technology innovation, otherwise it would soon become outdated (Poole and Simon, 1997). In that time, technology development was mainly pushed by project needs, but it appeared to be a more reactive approach not proactive in many cases (Farrukh et al., 2004). *Systematic proactive technology planning and audit, networking of divisional technology, advanced expert systems, etc.*, these were the trends in TM in the 1990s (Rubenstein, 1994).

In 2012, China overtook the US as the world's biggest market for ICT. Germany and France have become the biggest ICT markets in Europe (Kaplinski, 2009). The expansion of *intelligent ICT* in many areas has caused higher requirements also for TM. TM more and more supports and integrates different processes in a company, from research, product/technology development, production and technology maintenance, to marketing. All this processes should be linked to other business processes and a strategy. *Classification, modeling and simulation* of technological processes increasingly reduce innovation time, but also production and operating cost (Larson, 2007). So-called traditional in-door TM is being completed by cooperative TM within *open-innovation networks, or Living Labs*. Integrated TM within a variety of participants and capacities

and taking advantage of the higher openness of technology strategies have become the important factors of business success. TM methodologies tend to be more expert-based, while TM applications are more and more problem-oriented (Liao, 2005). Over the time, there have been evolved 5 main methodologies of IS that help to implement TM process: decision support systems, object oriented method, computer aided system engineering, knowledge-based systems, and database applications (Kim et al., 2003). Today, TM processes require effective identification, selection, acquisition, research, development, implementation, use and protection of technologies (elements, processes and infrastructure) necessary to achieve and sustain market positions and business performance in conformity with business objectives. ICT help TM simplify communication, planning, coordination, design, consultations, data exchange, organizational learning and memory (Archint and Batanov, 2003). Focus of TM is especially given to the front-end of innovation (Brem and Voigt, 2009). TM education has more 25 years. And, almost all main universities provide educational programs in TM, technology strategy/planning/foresight, technology-based entrepreneurship, technology innovation, technology transfer, etc. (Yanez et al., 2010). However, TM is still ill-defined in terms of the accepted methodology, tools, frameworks, with little insight in practical implementation (Farrukh et al., 2004). *Table 1 indicates the development of the trends in Technology-management.*

This article aims to specify the main trends in the TM, a secondary goal is to indicate possibilities of TM and business management to cope with and use these trends to improve own processes and business results. The research was based on a

comprehensive study of the available scientific literature, the annual reports and related reports of the top ten technology/ICT companies.

3 Trends in Technology-Management in the 21st Century

The best technology companies achieve their outstanding results by creating specific *TM teams* to systematically analyze new market opportunities and trends, technological infrastructures, and to innovate their integrated (written) technology strategies and programs, for better optimization of a technology and related processes (Kepczyk, 2004). Among the most developed technological/ICT companies belong: *Apple, Microsoft, IBM, Intel, Google, Oracle*, etc. In the *Rank of the most profitable technology companies in 2012*, the most significant growth recorded *Google*, while this company was not included in the assessment in 2008. In the last time, the company has faced over 120 Google+ integrations to date including Google Search, YouTube and Android (Google 2011). Although, the first place in this rank belongs to Apple that has overcome the long-term world technology leaders: Microsoft, IBM or Intel. *Apple* continues to systematically innovate its technologies to upgrade existing products and to increase the portfolio of its product offerings through targeted R&D, licensing of its intellectual property (IP) and acquisitions of third-party businesses and technology (Apple, 2011).

Table 1: Development of selected trends in Technology-management

1985	1995	2005	Present
Technical entrepreneurship inside companies	Technology simplification, miniaturisation and integration	Enterprise mobility	Well integrated and communicated technology strategy
Debilitating central role of corporate research laboratories	Leaner organisation of R&D	Fluid collaboration	Technology cooperation
Networking of divisional technology	Governmental pressures towards collaborative R&D	Web 2.0	Open technology strategy
Increasing role of long-term technology planning	Product-process integration	Virtualized infrastructure	Complex ICT solutions and »clouds«
Concurrent R&D and production interface		Standards based interoperability	Platform-as-a-service architecture
Technology audit	Technology services	Process-centric IT	Converging data architectures
Boom of expert systems			Industrialized data services
Make or Buy strategy	Technology dematerialisation	Adaptive enterprise intelligence	Context-based services
Technology policy and embedded technology capacities			Social-driven technologies
Software development process	Technology modularity	Industrialised system development	Orchestrated Analytical Security
Higher effects of SBU on technology			

Source: (Accenture, 2010-2012a; Bohr, 1996; Guice, 1999; Hodgson and Cardew-Hall, 1998; Poole and Simon, 1997; Reddy, 1997; Roberts, 1996; Rubenstein, 1994)

Although, we can identify a certain decrease in above-average results in Apple in the last time.

In the *Global 500 rank*, among the technology companies dominates HP, followed by IBM. In this rank of the best global corporations, HP and Apple reported substantial growth compared to 2008. As part of the *HP business strategy*, HP commonly acquires complementary companies to divest non-core technologies or assets, enters into strategic alliances and joint ventures and makes investments to further business rise. HP has recently acquired for example: 3Com (€125mn), Palm (€124mn) and 3Par (€33mn), all from the USA (HP, 2011). More significant drops in this rank experienced Oracle and Cisco, despite the fact that *Oracle* is the world's largest enterprise software company and the leading provider of computer hardware products and services. *Cisco* is the dominant supplier of computer networking HW. Both companies have lately implemented aggressive acquisition programs to acquire supporting technology firms and thus to improve their market positions. *Cisco* acquired Tandberg, Norway (€8mn) and Starent Networks, USA (€36mn) (Oracle, 2011; Cisco, 2011). *Qualcomm*, the American global telecommunications equipment corporation (21 000 employees) is not in the Global 500 rank even though it ranked second in the Fortune Networks

and other communication equipment rank, just behind the first Cisco (71 800 employees) (Fortune, 2012). (See Table 2 and Figure 1).

3.1 Financial indicators of the most successful technology/ICT companies

If we look at the financial results of the most successful technology/ICT companies according to *revenues*, then the highest revenues had *HP, Apple and IBM*, while, *Qualcomm and Oracle* had the smallest revenues in 2011, among the listed companies. Apple and HP increased their revenues in 4.5 and 3.6 times compared to 2008. But, Cisco decreased its revenues by 60% in that period. The higher differences were also in revenues per employee, while at HP and IBM it was \$363 429 and \$246 676 per employee, at Apple it was \$1 791 391 per employee in 2011. *This is 4.9 to 7.3 times higher labor productivity in favor of Apple*. Hence, the sales and marketing programs of Apple are interesting to mention. *Apple* sells its products and resells third-party products in its key markets directly to customers, but also businesses

Tab. 2: Most successful technology/ICT companies worldwide

10 most profitable tech companies 2012 (2008)	Global 500 Rank 2012	R&D investment in 2010 (bil. USD)	Revenues 2011 (bil. USD)	Profit 2011 (bil. USD)	Global 500 Rank 2008	R&D investment 2008 (bil. USD)	Revenues 2008 (bil. USD)	Profit 2008 (bil. USD)	R&D investment accrual 2010-2008 (bil. USD)	Revenues accrual 2011-2008 (bil. USD)	Profit accrual 2011-2008 (bil. USD)
1. Apple (8.)	111.	1,8	108,2	25,9	337.	1,1	24,1	3,5	0,7	84,1	22,4
2. Microsoft (1.)	120.	6,7	69,9	23,2	136.	9	60,4	14,1	-2,3	9,5	9,1
3. IBM (2.)	52.	3,8	106,9	15,9	46.	6	98,8	10,4	-2,2	8,1	5,5
4. Intel (5.)	195.	6,6	54	12,9	462.	2,8	18	4,3	3,8	36	8,6
5. Google	325.	3,8	37,9	9,7	-	0,7	5,9	2,2	3,1	32	7,5
6. Oracle (6.)	364.	3,3	35,6	8,5	188.	5,7	38,3	7	-2,4	-2,7	1,5
7. HP (4.)	28.	2,2	127,2	7,1	218.	5,2	34,9	7,3	-3	92,3	-0,2
8. Cisco Systems (3.)	215.	3,9	43,2	6,5	41.	3,5	104,3	7,3	0,4	-61,1	-0,8
9. Qualcomm (9.)	-	2,5	15	4,3	-	2,2	8,9	3,3	0,3	6,1	1
10. Dell (10.)	124.	0,6	62,1	3,5	106.	0,7	61,1	2,9	-0,1	1	0,6

Source: (Fortune, 2009a and 2012; JRC, 2009 and 2011)

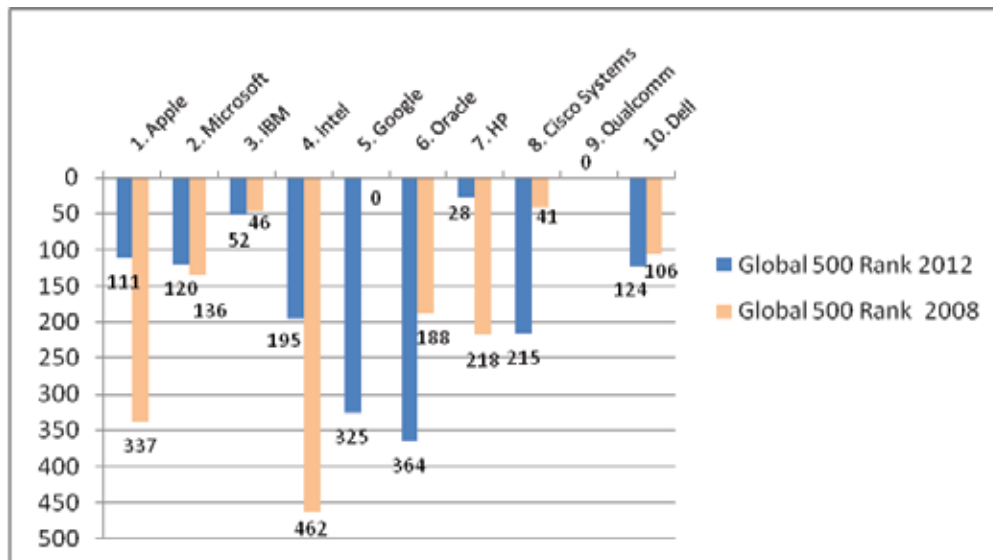


Figure 1: Most successful technology/ICT companies according to Fortune Global 500 Rank, Source: (Fortune, 2009b and 2012; JRC, 2009 and 2011)

through its unique *retail and online stores*. Through the *Apple Premium Reseller Program*, third-party resellers sell the Apple platforms by providing specific product expertise, integration and support services (Apple, 2011). *HP* is the top global provider of electronic products, technologies, software solutions and services to individual consumers, SMEs and large institutions, including governments, health and education organization, etc. The HP's customers are organized by the consumer and commercial customer groups: retailers, distribution partners, independent distributors, original equipment manufacturers, systems integrators, etc. The *HP Enterprise Sales and Marketing organization* covers most of the business and public sector customer relationships and has the primary

responsibility for simplifying sales processes. (HP, 2011) *IBM* operates in more than 170 countries. IBM has the first position in the mainframe computers business. As it is known, IBM has radically changed its business portfolio, reducing the hardware products, while increasing its presence in higher-value markets such as services, SW and integrated solutions. As part of this business change, the company has acquired over 120 companies since 2000 (IBM, 2012b). The *Cisco's* products and services portfolio consists of individual and integrated offerings to connect personal and business computing devices to networks. The company provides products and services that allow customers to switch their various networks to a single multi-service data, voice, and video network, thereby enabling

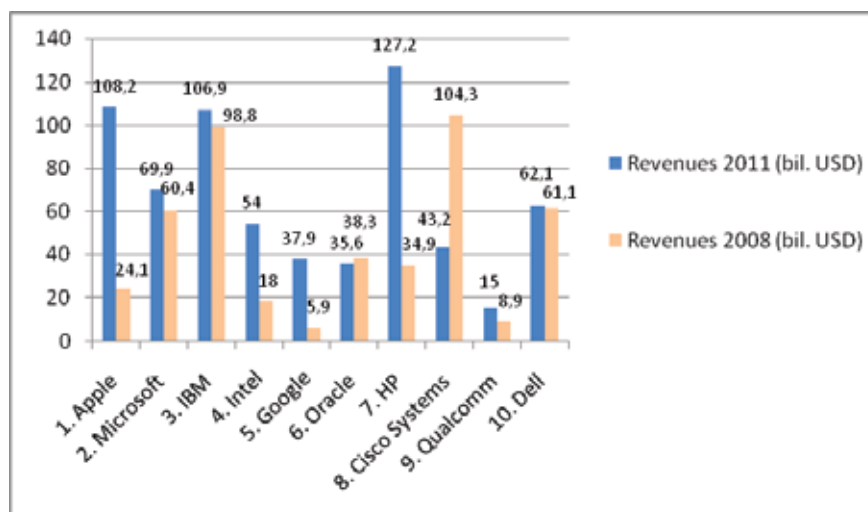


Figure 2: Most successful technology/ICT companies according to revenues, Source: (Fortune, 2009b and 2012; JRC, 2009 and 2011)

economies of scale. The Cisco's revenues problems have been caused by four main factors: a momentum shift to the high growth internet and networking markets; the transition from an emerging to mature company; growing competition from Alcatel-Lucent, HP and other companies, and an inability to keep up with competition in recent years (Cisco, 2011). The U.S. chip maker – *Qualcomm* develops and supplies integrated circuits and system SW for use in voice and data communications, networking, application processing, multimedia functions and global positioning system products. The revenues from Samsung Electronics and HTC created more than 20% of the *Qualcomm*'s revenues in fiscal 2011 (*Qualcomm*, 2011). (See Figure 2).

Figure 3 illustrates the best technological enterprises in terms of their profits, which are *Apple*, *Microsoft* and *IBM*. The lowest profits reported in this rank *Qualcomm* and *Dell*. As it is known, stock markets have experienced extreme price and volume fluctuations during the Global economic crisis that have affected the stock price of many technology companies. The *Apple* stock price has reflected higher growth and profitability expectations. In 2011, *Apple* increased its profit 7.4 times, *Microsoft* "only" 1.6 times, and *IBM* 1.5 times compared to 2008. The companies with the lowest profits in this rank: *Qualcomm* and *Dell*, increased their profits 1.3 and 1.2 times compared to 2008. The more significant differences are again in the profits per employee, while at *Dell* and *IBM* it was \$33 881 and \$36 690 per employee, at *Apple* – it was \$428 808 per employee in 2011. What is 11.7 to 12.7 times higher profit per employee in favor of *Apple*. *Microsoft* and *Qualcomm* achieved profits approximately \$257 778 and \$202 830 per employee in 2011. The *Microsoft* profit rise has been expected after unveiling its tablet (*Surface*, with the new Windows 8 OS) that should better enable to compete with *Apple*, *Samsung* or *HP*. Making its own HW, it can be a new beginning for *Microsoft*, which business is based on licensing

SW to other manufacturers within the "Windows ecosystem" (Reuters, 2012). Global integration of all our major enterprise functions, from service delivery to marketing – has enabled *IBM* to increase its enterprise productivity savings in more than \$5 bil. over the past 4 years while improving quality. A globally integrated model allows *IBM* to focus its capacities on client-oriented work and high growth markets. Among the key profitable factors of *Qualcomm* belong: higher performance, level of integration, quality, compliance with industry standards, price, time-to market, system cost, design and engineering capabilities, etc. (*Qualcomm*, 2011). *Qualcomm* attributes its business success to the increased popularity of smartphones, higher adoption of 3G technologies and the patent portfolio that drives business revenues and profits (Telecoms, 2011). In order to increase its profit, *Dell* as the top integrated technology solutions provider, will more focus on shifting its portfolio to higher-margin and recurring revenues over time, improving its core business, and maintaining a balance of liquidity, profitability, and growth. The company will support the strategy of supplying everything from HW to SW for corporate customers. *Dell* has recently tried to expand beyond a consumer arena dominated by mobile devices such as iPad. The shares of the company derive more than 30% of its revenues from corporate solutions, services and SW (*Dell*, 2012).

In 2011, the largest expenditures on research and development (R&D) had *Microsoft*, *Intel* and *IBM*. *Microsoft Research* (MR) is one of the world's largest IT research organizations. MR closely collaborates with the best universities and research centres to advance the state-of-the-art in IT. The *Microsoft* R&D investment in the last years represented 13%, 14%, and 15% of revenues each year. *Microsoft* invests in R&D across a wide spectrum of technologies, tools, and platforms including communication and collaboration; information access and organization; entertainment; business and

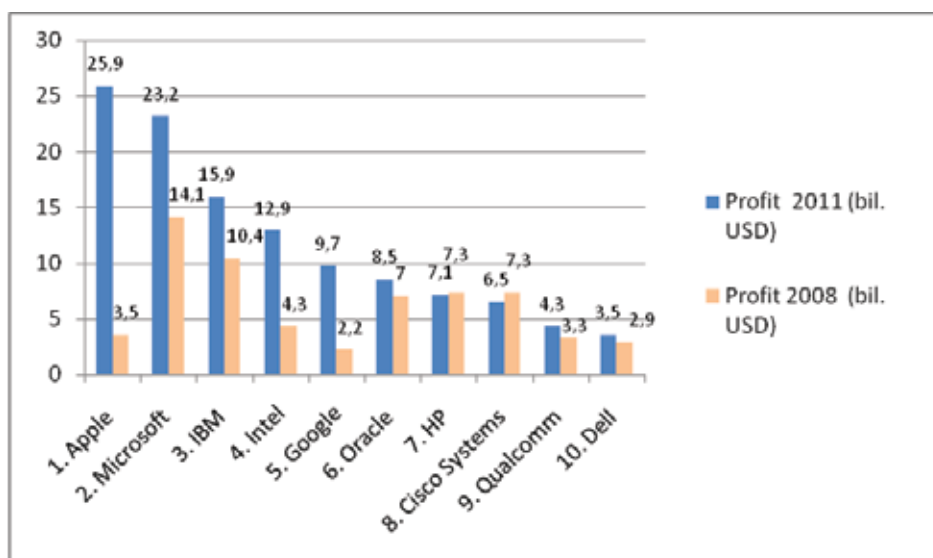


Figure 3: Most successful technology/ICT companies according to profits, Source: (Fortune, 2009a and 2012; JRC, 2009 and 2011)

e-commerce; advertising; and devices (Microsoft, 2011). *Intel* invests in world-class design and manufacture of integrated circuits. The company develops technology innovation, such as three-dimensional Tri-Gate and Hi-k metal gate transistor technology. As part of its R&D, the company plans to introduce a new microarchitecture for notebooks, Ultrabook systems, desktops, and Intel Xeon processors, i.e. approximately every two years. The company refers to this cycle as “tick-tock” *technology development cadence*. The Intel’s R&D model is also based on the global organization with a team-work approach to identifying and developing new technologies, leading standards initiatives, and influencing regulatory policies. But, the company centralizes its core cross-business group product initiatives to align and prioritize its R&D activities across the world (Intel, 2011). *IBM* equally invests approximately \$6 billion in R&D every year, focusing on high-growth, high-value opportunities. The intellectual property rights (IPR) income of about \$1 billion per year enables the company to investment in R&D. *IBM Research*, the global network of researchers works with clients and IBM business units on near-term and mid-term innovations and solutions in the areas from mathematical and material sciences, through chemistry, services, to key computer science. The company has pioneering contributions in artificial intelligence, high-speed processor design, computer architecture, natural language processing, or programming languages. In 2011, the company was awarded the patent leader for the 19. consecutive year with 6 180 patents in 2011 (IBM, 2011). In 2011, the lowest expenditures on R&D in this group had *Dell* and *Apple*. The highest share of R&D expenditures in the profit had *Cisco*: 89%, *Qualcomm*: 70%, and *Intel*: 65% in 2011. In 2008, it was at *Cisco*: 48%, at *Qualcomm*: 67%, and at *Intel* similarly: 65%. The highest growth of this share reported *Cisco*. For example, *Apple* invested only 9% of its profits into R&D in 2011, while in 2008, it was 31% (Figure 4).

The *Apple*’s ability to compete depends highly upon its ability to secure a continual and timely flow of its products, services and technologies to the market. The company continues to expand the range of its product offerings through R&D, IP licensing and acquisitions of third-party businesses and technology. The company holds IPR to patents and copyrights relating to its iPhone, iPad, Mac and iPod devices, peripherals, SW and services (Apple, 2011). *Google* invested about 54% of its profits in R&D in 2011, while in 2008, it was 32%. The *Google R&D philosophy* is to launch innovative products early and often, and then to invest highly in order to make those products better. The company often discloses early stage products at test locations online or directly on Google.com (Google, 2011). Then, it uses user feedback to decide if and how to invest further in those products. *Google* proprietary technology is not dependent on any single patent or copyright or groups of related patents or copyrights compared to other technology companies.

3.2 Trends in TM in most successful technology/ICT companies

New emerging technologies are oriented to overcome existing technology limits, to increase technology performance or to reduce the resources consumption (Westkämper, 2007). The complexity, flexibility and adaptability of new technologies are pushing us to change thinking about how companies do business, how customers are served, how we conduct our work, or how we have fun. The edges between corporate and consumer technology are blurring. Therefore, it is the time to focus on technology as a key driver for growth of our society. In the business, companies must be prepared to recognize and take advantage of new opportunities and risks coming from the new technology trends like *context-based services*, *converging*

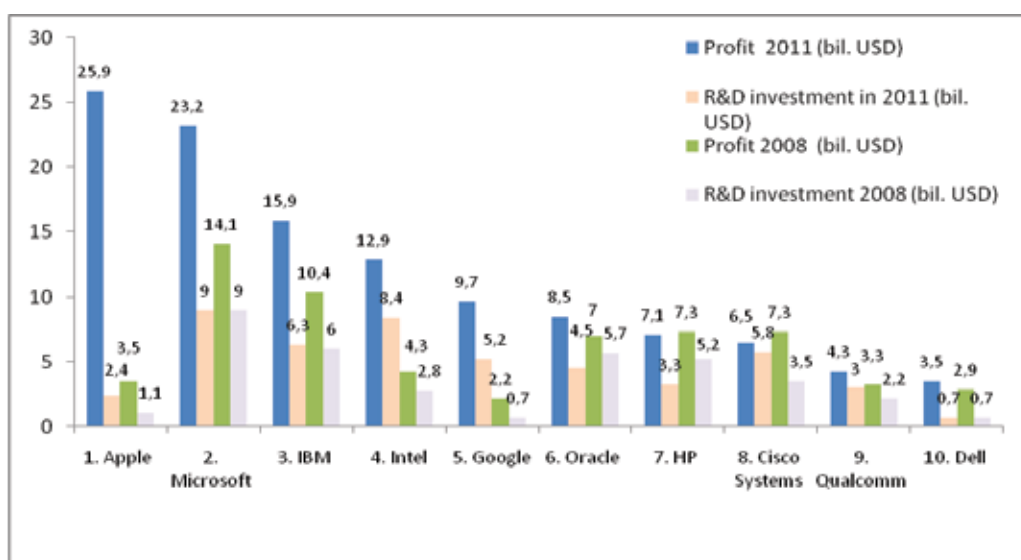


Figure 4: Most successful technology/ICT companies according to profits and R&D investment, Source: (Fortune, 2009a and 2012; JRC, 2009 and 2011)

data architectures or *social technologies*. Driven by technology trends, TM must be performed more systematically and effectively, in terms to increase impacts of new technology trends on customer satisfaction, business growth, cost structure, eco friendliness, etc. TM requires systemic participative planning and design so that every technology project can take a company a step forward. *Among the 5 key trends in TM of the best technology/ICT companies belong:*

- A. Value-added of technological processes mainly depends on *systematic and systemic approach to TM, a clear technology vision and strategy*, good internal and external relations, on corporate culture that accepts changes and creativity of employees, as well as on flexibility of technological solutions (Boomer, 2006). A business vision should have a clear specification of technology roles in achieving strategic business objectives (Zamora, 2010). Successful technology companies have clearly defined their core technologies in technology strategies or visions. For example, the *IBM vision and strategy* have enabled the company to stabilize its results in core business areas, while expanding business offerings and targeted markets. The IBM vision is called „*Smarter Planet*“ that presupposes a technology-enabled world that is more instrumented, connected, and intelligent than ever before. The key principles of the IBM strategy are: to deliver value to enterprise clients through integrated business and technology innovation; to shift the business mix to higher-value areas; and to become the premier globally integrated enterprise. These priorities reflect a broad shift in customers' requirements towards integrated solutions, while companies seek higher levels of business values from their IT investment. The IBM priority is to accelerate business progress by equipping its clients with the integrated capabilities such as *business analytics, business process management, social business and cloud computing* (IBM, 2011). To assist SMEs, many corporations establish so-called 'value-added sellers' to deliver their customers tailor-made solutions. For instance, the *Apple Value Added Resellers* help companies to simplify and enhance their technology processes leading to improved business processes and economic results. Working with the VA Resellers, a company can obtain customized integrated technology solutions, professional experience, proficiency in the Apple and complementary IT products, and additional services, such as: technology planning, system design, or training (Apple, 2011). Many companies are increasingly employing external technologies within their technology portfolios (Stock and Tatikonda, 2008). TM should keep track of planned core technology paths with expected changes and their impacts on the whole technology system. This means to systematically analyse own technology processes, but also to follow trends/risks outside a company that can have an impact on the competitive advantage (Zamora, 2010). The useful tools in this context are systematic *Technology/innovation radar, Technology assessment and subsequent Foresight*.
- B. *TM creates preconditions for proper applications, implementation and realization of strategic objectives* of an

enterprise through the technological system and constantly monitors technological processes, as if it was the *main strategic business asset*. For example, before a company begins a technology implementation project for *Intel® AMT* (Active management of technology), it must have a clear understanding of technology capabilities, how they can be utilized within its environment, and it must review the scope of organizational impacts that the implementation will have. Having identified opportunity areas, this will provide the basis for the technology implementation project and allow embracing the framework for creating technology teams, developing roadmaps for technology improvements, creating infrastructure, project schedules, and deploying the new technology (Intel, 2007). *Technology intelligence* is a capability of TM that allows companies to determine the technological opportunities and threats with effects on their future growth and survival. It enables to capture and broaden technological information necessary for strategic planning and decision making (Lee et al., 2011). For another example, *Oracle Business Intelligence* is a complex set of analytical SW products that provide customers with information they need to make better business decisions. These products include: Oracle BI Suite Enterprise Edition, a complex query and analysis server; Oracle Essbase, an online analytical processing server; Oracle BI Publisher, a self-service production and operational reporting device; and Oracle Real-Time Decisions, a real-time data classification and optimization tool. Customers can access these products from various user interfaces including browser-based interactive dashboards; ad hoc query and analysis; proactive detection and alerts integrated with e-mail; Microsoft Office integration including support for Excel, Word, and PowerPoint; and mobile analytics (Oracle, 2011). New technology thus enables TM to create new technology intelligence capabilities that enable to better achieve strategic business objectives through the technology.

- C. The main document that characterizes TM and its relevance to strategic business objectives should be a *well communicated technology strategy*, preferably formulated as a result of Technology foresight or open technology planning. Many companies look for partners to help them and their stakeholders to work up and implement more complex technology strategies. For example, *HP* works with thousands of clients (within its Strategic IT Advisory Services) to establish a technology strategy that would adequately detail technology requirements. HP also develops technology strategies and transformation plans as services to their clients. The company widely maps relevant data associated with various technology processes and assigns a value to it that justifies introducing new technology and changing existing technology strategies. Clients can engage with HP to plan and implement new technology and realize technology synergetic plans (ALTO, 2011). A main element of the *IBM technology strategy* is to focus on becoming the best globally integrated enterprise. The company has implemented a

complex set of processes and standards worldwide to reduce technology costs and improve collaboration. Since 2005, this global integration has enabled IBM to deliver over \$6 bil. in productivity and improve service quality, speed and risk management. With about 3500 strategy professionals, the IBM business strategy and change practice prioritize IBM Global Business Services, one of the worlds leading management consulting group. IBM has technology expertise across more than 12 industries: from communications, distribution, financial services, to industrial and public sectors. The IBM technology services offer: establishing an overall technology strategy, helping to establish/evaluate a business architecture or SOA (service-oriented architecture), and helping to improve IT processes to reduce technology cost in a company (IBM, 2011). For another example, the *Apple technology strategy* prioritizes design and development of own operating systems, HW, application SW, and services to provide customers with new products and solutions including superior ease-of-use, seamless integration, and innovative design. Apple offers customers superior innovation and integration of complex solutions such as the HW (iPhone, iPad, Mac, and iPod), SW (iTunes), and distribution of digital content and applications (iTunes Store, App Store, iBookstore and Mac App Store) (Apple, 2011). Technology strategy should form the bases for measuring efficiency and effectiveness of TM, and for alignment of operational plans and programs even in SMEs.

- D. Technological innovation is often a long term incremental process that requires *longer-term sources of investment*. At the same time, its returns are often longer and more risky than product innovation. Excellence in timely selection and exploitation of technologies that bring the highest benefits is the key process of TM (Farrukh et al., 2004). Therefore, technology innovation processes often require an effective investment strategy and cooperation. Among capital investment possibilities are to buy shares in R&D companies, acquisitions, mergers, or joint ventures (Spath et al., 2009). As the example, the *Qualcomm Ventures* (QCV, formed in 2000) with the \$500 mil. fund commitment to make strategic investment in an early-stage of high-technology ventures. QCV has funded numerous companies in the wireless sector, and set up several exclusive regional funds to spur development in key strategic markets, including the \$100 mil. fund in China and the \$100 mil. fund in Europe (QCV, 2011). Strategic technology partnerships and acquisitions have always played the important role also in the *Microsoft innovation financing*. In 2010, Microsoft finished up the integration of Yahoo! search with Bing, and these companies together powered more than 25% of all U.S. searches. In 2011, Microsoft created the well-known joint venture with Nokia aimed at building a new mobile ecosystem. Within this partnership, Nokia will primarily sell Windows-based phones. Despite the problems of Nokia, both companies work together on mobile technology development and marketing that should bring these new joint products to wider market segments and geographies across a broader range of price

points (Microsoft, 2011). With 100 million users active on *Google+* and over 120 Google integrations to date (including Google Search, YouTube and Android), the Google inter-companies integrations create an important element of its technology strategy and capital investment (Google, 2011). An important element of the *Oracle's technology strategy* and product innovation efforts is to develop technology solutions in collaboration to obtain higher efficiencies and provide increased IT performance, reliability, and security to customers. These pre-integrated and optimized combinations of SW and HW products are called '*engineered systems*'. Two of the important engineered systems are Oracle Exadata Database Machine and Oracle Exalogic Elastic Cloud. These have high performance, scalability and ability to be shared by multiple applications; they are well suited for IT consolidation and cloud computing (Oracle, 2011). Despite the fact that these external technology integrations dominate in the technology industry, TM has to consider also their side effects such as: operating difficulties, dilution, and other dangerous consequences that may adversely impact on business results.

- E. An important factor in success and efficiency of TM operations is an *Open technology strategy*, which implies creation of a functional network with other businesses, not only from the technology sector, but also with R&D, education, finance, or marketing companies. The *Cisco technology strategy* offers an open interoperable technology architecture that enables its customers to collaborate on the Cisco product development regardless of a device, content, location, or an interaction style. In 2011, Cisco presented several new collaborative solutions including: Cisco Quad, an enterprise social software platform; Cisco Social Miner, a social media solution for proactive customer care; Cisco Jabber, an enterprise application for presence, instant messaging, web conferencing, desktop sharing, voice and video on mobile devices, laptops and applications; Cisco WebEx for web-based collaboration with presentations, applications, documents, integrated audio and high quality video on tablets and desktops; and new desktop virtualization endpoints for thin client collaboration applications (Cisco, 2011). For another example, *Oracle Application Integration Architecture* provides an open framework for creating adaptable, cross-application business processes. These software products are sold as integrated sets or on a component principle, and all are built on open architectures that are designed for flexible configuration and open, multi-vendor integration. Oracle is an open standards leader. Its technology solutions are based on open industry standards so that the products could simplify customers' interoperability and security, and decrease costs of deployment. Within this open technology strategy, Oracle cooperates with about 100 standards-setting organizations, 300 technology managers, 600 technical working groups, and about 90 policy committees (Oracle, 2011). Despite the already mentioned disadvantages, this approach helps companies avoid vendor lock-in, enables an open access to technical

details and interfaces, lowers barriers to innovation, and reduces cost of technology investment.

Among the 5 key trends in technology innovation of the best technology/ICT companies belong:

A. Currently, significant support for TM can be provided by *complex ICT solutions and 'clouds'*. Social robots, intelligent software applications, and staff who can work remotely, all using ICT. The trends will be in the future of communication technology and advanced data sharing – from desktop and mobile applications through the cloud to telepresence. A majority of business information of companies is being situated outside their corporate databases; therefore, an unstructured content analysis and a text analysis have become imperative. Content management, technology classification and categorization are one of the most important processes in TM, because these help managers to manage important information about a technology. A knowledge management portal within TM should include tools to organize content, elements, processes, inputs, outputs, business intelligence, knowledges and capacities related to the use of a technology in a company. Thus, this portal impacts all the managerial levels in the company (Nieto et al., 2010). In the next decade, a profession of application developers will record the largest increase of all IT professions. These are particular jobs of mobile applications developers, whose numbers will increase by almost a third to 2020. According to the U.S. Bureau of Labor Statistics, there were more than 500-thousand of SW developers in the U.S. in 2008, and in six years, this should be in 175-thousand more (BLS. GOW, 2012). The increase in demand may be expected also in other professions such as network and security specialists, computer game designers or web developers. The mobile platform will have become the main communications and interaction platform by early adopting best-practice organizations and by SMEs. The capabilities afforded users of smartphones and tablet devices grow rapidly. Tablets will become virtual classrooms, and an emerging class of tools will enable companies manage almost all aspects of their business digitally. For example, the *digital factory* modeling in a standardised 3D system display has become a trend in many production businesses (Westkämper, 2007). Microsoft offers *Windows Small Business Server* for SMEs as an affordable server solution providing networking, security, databasing, line-of-business support, and remote access, etc. This server enables to optimize technology processes and costs by using an intuitive management interface, one that presents relevant system information and matching set of tasks (Microsoft, 2012a). Cloud computing has become a popular way to increase own IT capacities without investing in new HW, training people, or licensing new SW. Cloud computing means a subscription-based or pay-per-use service on the Internet. As the example, *Oracle Cloud Services* offer complex SW and HW management and maintenance for customers hosted at Oracle data center facilities, select partner data centers or physically on-site at customer facilities. Advanced Customer Services provides support,

both onsite and remote, to Oracle customers (Oracle, 2011). *IBM SmartCloud™ Entry* is a cloud SW offering a web-based interface. A company can monitor and manage this environment for improved efficiency and utilization of their data (IBM, 2012a). Cloud services enable TM to simplify storage of big data; to cut off time to value for new workloads from months to a few days; to simplify administration with an intuitive interface for managing projects, users, workloads, resources, billing, or metering.

B. Another trend, which can be used to draw the future of MT, is the flood of data that are available to firms. *How can TM manage the so-called 'big data'?* According to IBM, every day about 15 petabytes of data is created, which is 8 times more than can be found in all libraries in the USA (Gartner, 2011). Big data are data sets so large and complex that they become difficult to work with using on-hand database management tools. These difficulties include searching, capture, storage, sharing, analysis, or visualization. The trend to large data sets management includes searching for the additional information derivable from analyses of a smaller data set of related data, and then allowing correlations to be found, linking citations, combat piracy, etc. There is also a growing demand for people who will be able to manage the onset of both structured and unstructured data, such as photos, videos or audio recordings. Appropriate *converging data architectures* to structured forms of data enable TM to appropriately control them. But, as information becomes the most valuable asset for many companies, data architectures require a change and link between traditional and new databases and systems to keep the business value. New approaches to managing data provide a completely new concept of data control – the ability to turn data into new values and *'bridge technology'* that will enable companies to mix old and new database forms are expected (Accenture, 2012a). For example, the Oracle SW products enable integration within public and private clouds, including identity and access management, Service-oriented architecture and process integration, and data integration and master data management. The *Oracle Fusion Middleware SW* includes the following functions: application server and application grid; and business process management; SOA; business intelligence; identity and access management; data integration; content management; portals and user interaction; and development tools (Oracle, 2011). TM is thus forced to seek resources and tools for large data management and to initiate new data architectures development to more effectively processing both structured and unstructured data.

C. *Industrialized data services*: Many technology companies indicate the tendency that their data bring a higher value when they are sharing and different stakeholders are involved in that broader data sharing. Companies can broader share their data because there have been a dramatic improvement in the technology and capabilities used to manage, process, and store data. Many of these processes have been incubated by the technology-based

companies, such as *Amazon, Facebook, Google, Yahoo, or Netflix. Microsoft SkyDrive, Apple iCloud, Evernote, and Box* are all intended to store and share customers' content. For example, with *Google Drive* tool, customers can store documents, photos, music, videos, etc., all in one place. This enables to syncs with a mobile device or PC. When a customer makes a change from one device, it will automatically show up in other devices (Google, 2012). A data sharing approach can accelerate companies toward the trend of standardized and industrialized data management. The emergence of standardized data platforms may enable TM to share its data as a new business. These data services are based on an as-needed approach as new use cases appear (Accenture, 2012b). The main question here is who will be responsible for the data at each stage of their life cycle? At the beginning, it can be TM, then specialised Data management, but the next step would involve 'open data exchanges', i.e. sharing data with external partners such as suppliers and customers. This requires the establishment of special capacities for open data management. In the future, the best technology companies will be necessary to strike the balance between constraints and availabilities for their data, based on well defined data management strategies.

- D. *Orchestrated Analytical Security (OAS)*: Companies are more and more connected also through other non-traditional forms: intranets, radio RFID tags, GPS devices, bar code readers, etc. These data links can increase business risks, therefore companies are forced to improve data security management. In efforts to more flexibly understand and anticipate needs of customers, companies analyze and process data in real-time (Hempfield, 2011). *Real-time analytics* may require developing 'datacentric mentality', leveraging new data platform concepts to design, to implement, and to run systems that continually improve levels of business protection. By taking a data-centric view toward security and running the equivalent of analytics-driven security, these can help companies struggle with data risks. OAS can help prioritize the risks of IT security breaches; especially, specify data, systems, and initiatives that are most important for the business (Accenture, 2012b). As the example, *Cisco security solutions* span network and content security systems that are designed to enable highly secure collaboration. The products in this category include firewall, intrusion prevention, remote access, virtual private networks, unified client, web and email security and network security (Cisco, 2011). For TM, it means more intensive collaboration with IT security teams; aligning their strategies and goals and ensuring that data security will not be a barrier to technology and business priorities.
- E. *Social-driven technologies* have become a strong catalyst that is changing the ways companies use social applications to interact with the environment. For example, *Facebook* to a large extent substitutes e-mails and text messages as a primary tool for communicating with family, friends, etc. Social media has become important for

companies as well, although many times as an additional marketing or PR tool. Online forums and Twitter feeds are important sources of business feedback for marketers, TM or product developers to recognize what consumers really want. Many companies use social platforms and social design mechanics to better organize their interactions with stakeholders. Business call center applications, web presence, customer relationship management, or other consumer channels are integrated and 'socialenabled'. Companies need to search for new trends and opportunities via social media, such as social polling – *WayIn* or *Yahoo's IntoNow* (Accenture, 2012a). But social-driven technologies also move beyond social communication, towards *analysing social intelligence*. This activity is realized by studying and modeling social behavior, by capturing human social dynamics, by creating artificial social agents, by generating and managing actionable social knowledge (Fei-Yue et al., 2007). For example, The *Microsoft Machine Learning and Applied Statistics (MLAS)* group is focused on building methods and means to learn from data, by creating SW with social-oriented applications. Among the current applications belong: *Online advertising/eCommerce; Recommendation systems/collaborative filtering* – means for predicting customers' preferences based on the information about user preferences or demographics; *Computational biology* – machine learning technology that analyses biological data. Etc (Microsoft, 2012b). These processes can be a very important source of information in TM within technology identification processes, for better Technology assessment or Foresight.

4 Conclusions

The development of TM can be characterized as a gradual process of dissemination, updating, and an integrated use of new technology and related know-how. Today, Technology management education has more 25 years. And, almost all main universities provide educational programs in TM, technology strategy/planning/Foresight, technology-based entrepreneurship, technology innovation, technology transfer, etc. (Yanez et al., 2010). Modern TM requires effective identification, selection, acquisition, research, use and protection of technologies (elements, processes and infrastructure) necessary to achieve and sustain market positions and business performance in conformity with strategic objectives. Companies must be prepared to recognize and to take advantage of new opportunities and risks coming from the new technology management trends like: *open technology strategy, 'clouds', industrialized data services* or *social technologies*, which can bring new more efficient ways of business management. Driven by these trends, TM must be performed more systematically and effectively, in terms to increase impacts of new technology trends on customer satisfaction, business growth, cost structure, eco friendliness, etc.

Among the most successful technological/ICT companies belong: Apple, Microsoft, IBM, Intel, Google, Oracle, etc. If we look at the financial results of these companies according

to revenues in 2011, then the highest revenues had HP, Apple and IBM, while, Qualcomm and Oracle had the smallest revenues in 2011. The best technological enterprises in terms of their profits are Apple, Microsoft and IBM. The lowest profits reported within this rank Qualcomm and Dell. In the Global 500 rank, among the top technology companies dominates HP, followed by IBM. In this rank of the best global corporations, HP and Apple reported substantial growth compared to 2008. In 2011, the largest expenditures on R&D had Microsoft, Intel and IBM. While, the highest growth (+200%) of these expenditures reported Intel compared to 2008. And, HP reported the largest decline (-37%) in its R&D investment compared to 2008. The reason may be in the shift of investment to better protect organization against a wide range of security attacks. HP has established a global network of security analysts who look for vulnerabilities that were not publicly disclosed, in an effort to proactively reduce business risks.

In summary, there are two key differences between developed and developing countries related to the TM agenda due to the different intensity of a national R&D support system. Developed economies mainly support enforcing innovation performance, while developing countries more support managing existing technologies (Cetindamar et al., 2009). This has an impact on trends in MT in different countries and industries. In the last two decades, the expansion of intelligent ICT in many sectors has caused higher and higher requirements for TM. Classification, simulation and modeling of technological processes from development of a technological concept, zero series, and beta-testing to commercial production increasingly reduce innovation time, but also production and operating cost. Traditional in-door TM is being completed by cooperative TM within open-innovation networks, or Living Labs. The most common trend in any sector is integrated TM within different range of participants and capacities, and taking advantage of higher openness of technology strategies, these have become the important factors of business success.

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Marek Jemala currently teaches and conducts research at the School of Engineering and Management of the University of Nova Gorica. His research interests include topics on technology and innovation management, strategic foresight, open innovation, IP management and related issues. He is an author of 5 books and numerous scientific articles covering these topics.

Sistemski pogled na trende na področju managementa tehnologije v najboljših tehnoloških/IKT družbah

V zadnjem času v številnih vejah industrije nove generacije tehnologije predstavijo na vsaka 2-3 leta. Videti je, da bo naslednja tehnološka revolucija drugačna od prejšnjih, ker je tehnologija prisotna v vseh porah družbe. Tehnološki procesi imajo vse bolj interdisciplinaren značaj, zato morajo potekati sistematično in po možnosti na načrtovani način. Trendi managementa tehnologiji ogromnega pomena za rast poslovanja in dobiček: od integracije tehnoloških procesov, poznavanja kupcev, ki poganjajo razvoj izdelkov in blagovnih znamk, odkrivanja pojavljajočih se niš, ki so jih konkurenti spregledali. Poglavitni cilj tega članka je raziskati specifične trende, povezane z managementom tehnologije, v najbolj uspešnih družbah s področja IKT tehnologije na svetu. Raziskava temelji na obsežnem študiju literature o inovativnih aktivnostih in letnih poročil najbolj donosnih družb na področju IKT.

Cost-Effective Restructuring Based on Process Approach

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Different authors agree that designing the organizational structure in accordance with the business processes can bring numerous advantages, which improve business performance of the organizational system. This article aims to show how cost-effective restructuring, through modification of organizational structure according to business processes that exist in the organization, can bring numerous benefits. Successful implementation of process organizational model does not necessarily demand large investments, but only adequate structural changes and internal reorganization. The data used in this paper were gathered during the project of restructuring one transportation company from Belgrade, which consulting team from Faculty of Organizational Sciences, University of Belgrade, performed in year 2012.

Keywords: organizational structure, business process, restructuring, organizational change, process organizational model

1 Introduction

Different authors identify organizational structure as one of the key elements in every organization (Kates and Galbraith, 2007; Waterman and Peters, Phillips, 1980). There are two diametrically opposite views on organizational structure design and development. First one is based on the opinion that the organizational structure appears spontaneously, over operations in the organization (Janićijević, 1995). Organization faces certain issues and challenges during operating, which leads towards formation of organizational parts and relations between them, in order to find the most efficient and effective way to overcome those challenges. Based on this standpoint, certain authors define organizational structure as a group of patterns, developed and integrated as a mutual activation entity by individuals from the organization (Dulanović and Jaško, 2009). It is a set of prepared solutions for aroused business situations (March and Simon, 1958). Such point of view appears to be very logical, especially when companies are growing from being just small entrepreneurship to large enterprises. Increase in number of employees causes the grouping of people who perform similar jobs into departments. Department formation and formalization of the relations among them are the cornerstones of successful organizational structure development.

However, there is an opposite view which identifies organizational structure as a functional element of every organization, and not just as its attribute. As such, organizational structure should lead to better management of organizational system (Dulanović and Jaško, 2009). This opinion is based on the perspective that organizations exist in order to achieve specific goals and that the role of organizational structure is to facilitate the accomplishment of these goals. It should be compatible with the management concept and with an adequate stability level, in order to ensure efficiency, which is not possible if organizational structure is developed or adjusted spontaneously. Organizational structure presents the way how organizations assign their work and tasks and achieve coordination of realization (Mintzberg, 1979). The problem is that experts usually ignore the second part of this definition in their analysis of the organizational structures. They often take in consideration only vertical relations on organizational schemes, graphical representations of organizational structure, as well as hierarchical relations, control range and other elements that are directly related to management.

However, missing parts of the scheme, horizontal relations among departments, which are necessary for functioning, are often real cause of the problems and they carry significant potential for improvement (Komazec, Todorović

and Jevtić, 2012). Therefore, there are three key components of organizational structure definition that must be considered equally (Daft, 2004). The first one are reporting relations, including number of hierarchical levels and managers control range. Second is departmentalization, which considers grouping of individuals into departments and, furthermore, departments into organizational units of higher hierarchy level. And the third one is the system that will ensure effective communication, coordination and integration of all the activities across the organization. The first two components describe structural framework, which is necessary for organizational functioning, while the third one focuses on the interactions between employees.

We can see that managers are responsible for organizational structure design, because of their immediate influence. Although there are many external factors that affect organizations and cause changes in organizational structure, managers are those who analyse and evaluate those factors and their impact, and perform necessary measures. They are constantly challenged to design an organizational structure that will lead towards better efficiency and effectiveness of employees (Robins and Coulter, 2005). After all, managers define strategy and set goals, and in this way they directly affect the organizational structure.

1.1 Process approach to organizational structure design

Another very important element in organizational design are business processes (Kates and Galbraith, 2007). They permeate through entire organization and create the pathways for satisfying needs of customers. In every organizational system, business processes are core of the transformation mechanism, which is generating new value and enables the organization to differ from competitors (Osterwalder and Pigneur, 2010). Process can be defined a set of interrelated activities that transform inputs into outputs (Scheer, 2009). Taking into account this definition, purpose of each organization can be understood as usage of certain inputs and their transformation to desired outputs, by using set of interrelated activities, which results as services providing or products manufacturing (Komazec, Todorović and Jevtić, 2012). This explains why business processes are essential for the viability of every organization (Carmeli and Tishler, 2004).

Having this in mind, it seems very logical and acceptable to consider business processes as a ground base when designing organizational structure. Process approach considers the application of system of processes in organization, their identification, mutual interaction and management (Filipović and Đurić, 2009). As it was mentioned before, organizational structure is usually designed using the functional units and vertical hierarchical relationships among them. In this way organization managing is influenced. In most cases, organizations are controlled through vertical hierarchical relationships, and functional organizational units are responsible for outputs and business results. Application of process organizational model leads towards identifying all key stakeholders in each business process. It also enables the establishment of an effi-

cient system for managing core activities, where duties and responsibilities are defined unequivocally (Todorović et. al, 2013).

One of the most important outputs generated when applying process organizational model are the frontiers between key activities across the functions in the organization. This can be used as the cornerstone for organizational structure improvement, without significant expenses. The idea is to adapt relationships between existing resources to business processes, avoiding large investments. This paper aims to describe cost-effective restructuring on example of one shipping company from Belgrade. All the data presented in this article were generated during the restructuring project which consulting team from Faculty of Organizational Sciences, University of Belgrade, performed in year 2012.

2 Methodology

Analysis was based on standard management consulting practice. Content analysis provided research team with basic data about current situation in the company. Existing organizational structure was analysed using widely accepted theoretical models. Existing documentation, consisting of job classifications, job descriptions and quality standards, was analysed carefully.

However, actual tasks divisions were slightly different from those that can be found in formal documents. For this reason, project team had to perform real-time observation, a qualitative research method, which is a very useful tool for hypotheses creation and modification during the project (Todorović, Čudanov and Komazec, 2012). Consultants had to become familiar with the business processes within the company, in order to define specific organizational solutions. Since analysis of all processes through observation requires lot of time, a whole set of meetings with employees was organized. Consulting team held large number of individual meetings with the top-level executives of organizational units, in order to gather more information about functioning of each main part of the company. There were also meetings with employees at lower hierarchical levels, for the purpose of developing solutions at the process level. These employees ought to be the experts for the processes performed in their departments.

This way more accurate image about the situation in the company was created, comparing to content analysis. Described research method provides the opportunity for deep analysis and identification of problems on all hierarchical levels, which is why it presents the strong base for improving organizational structure.

3 Company analysis

The core business of analysed company is the transportation of goods on rivers. Its portfolio of services also contains certain non-core businesses, but the income they generate has no significant share in total revenues. The usage of transportation capacity in the company is on a high level, which means that most of the time all the available ships are utilized. However,

not all human resources in this company are used optimally in this company. Number of employees that perform ship maintenance activities is larger than necessary. There are also certain problems with control of certain activities and costs, especially when it comes to ship maintenance costs, which reduces the ability of the company to gain more profits. And the appropriate level of profitability is necessary for making the fleet investments possible. And constant appropriate condition of ships is precondition for persistent answering to market demands.

The analysed company used to have one of the largest fleets in South-East Europe in the 1980s. In that period, there were more than 2000 employees. However, during 1990s and the crisis in this region, significant part of market share was lost. The fleet became obsolete, while best experts left the company. Smaller business scope was followed with reduced number of employees. One of main problems, which causes the overheads and lack of control, is inadequate organizational structure. Although today the company employees only 399 people, this significant reduction in number of employees was not followed with the appropriate changes in organizational structure. On top hierarchical level, company is divided into four sectors, as presented on Figure 1.

Core processes occur in Commercial and Transportation Sector and Techniques and Maintenance Sector, while non-core activities are performed in other two sectors.

For the purpose of improving market position, fleet investments and modernization are demanded. New management of the company decided to apply cost minimization strategy. This is essential for being competitive on this kind of market, since it is very difficult to offer differentiation in shipping services. Company strategy, as fundamental purpose of operating and starting point in defining the organization, is associated with corresponding organizational structure model (Jevtić, Čudanov and Krivokapić, 2012). Consequently, functional model of organizational structure is present in this company. Within functional organizational structure, all similar activities along with their executors are grouped into one organizational unit, managed by one person, which should be an expert in relevant area of business (Dulanović and Jaško, 2007).

3.1 Problem identification

Every model of organizational structure has some advantages and disadvantages, and is applicable in certain situa-

tions, while in others is completely inadequate. One of the main disadvantages of functional organizational structure is its tendency to generalize efficiency and contributions of different organizational units to total business success (Hansen and Mouritsen, 2006). It is very difficult to determine individual contributions of different organizational units in organizations where this type of organizational structure is present. In analysed company, Commercial and Transportation Sector generates almost all income. Other sectors, on the other hand, generally produce costs. Nevertheless, these sectors are providing supporting services to Commercial and Transportation Sector, which is their contribution to total business results of the organizational system. It is very difficult to evaluate business success of these sectors, since their services are not sold at the market. For this reason, when functional organizational structure is present, performance evaluation of organizational units that provide support processes is often based only on transactional costs and capacity usage data (Jaško, Jaško and Čudanov, 2010).

In this company, the largest identified problem is the performance of employees from Techniques and Maintenance Sector, together with the undefined relationship of this organizational unit with Commercial and Transportation Sector. Techniques and Maintenance Sector produce high operating costs because of large number of employees. This issue may often cause necessity for restructuring the organization (Čudanov, Jaško and Šavoju, 2012). About 30% of all employees are organizationally positioned in this sector. Simply, scope of maintenance required for the ship fleet does not justify such large number of employees working on maintenance. However, if we check their working hours, we will find very high capacity usage in Techniques and Maintenance Sector. The reason for this is lack of control and inadequate power balance.

Techniques and Maintenance Sector, as shown on Figure 2, consists of three organizational units. In Technical Department is kept all the documentation about ship repairs. Employees from this department plan and organize ship repairs. All the maintenance operations are performed in Shipyard, in Production and Control Service and Electronic Service. Current condition of vessel is analysed first, in Technical and Technological Preparation unit, after which is decided whether the repair can be done internally, or it has to be outsourced. After the internal repair, the operations are documented by the employees from Shipyard and forwarded

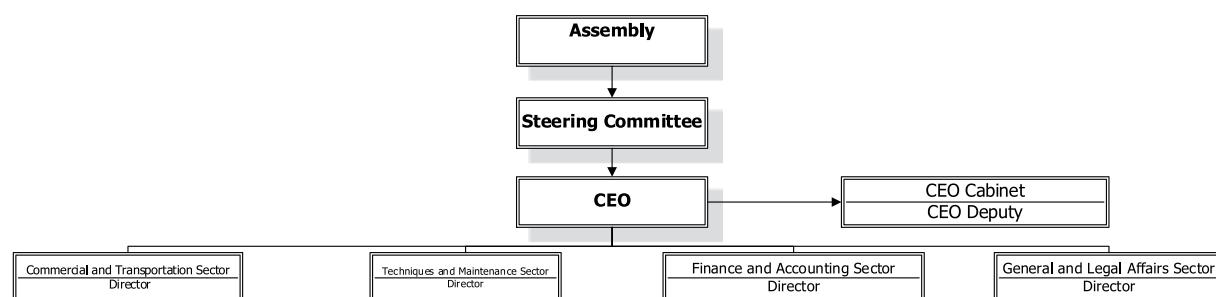


Figure 1: Top hierarchical level of current organizational structure

to Technical Department. In Cleaning Complex vessels are cleaned and prepared for repairs and sails, and refuelled.

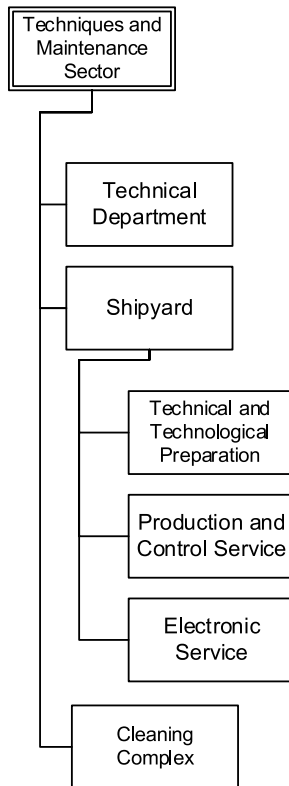


Figure 2: Techniques and Maintenance Sector

Complete ship maintenance process is performed in Techniques and Maintenance Sector, as shown on Figure 3, which is resulting in inadequate concentration of monitoring, management and governance power, unfit for federalist paradigm (Handy, 1992). Commercial and Transportation has almost no control over the maintenance process, although they are in charge for ship exploitation. For this reason, there is a lack of records about provided maintenance services, and about their values, which is very important for evaluating performance of employees from Techniques and Maintenance Sector. They usually magnify their efforts and working hours, which creates wrong image about their performance and about capacity usage in whole sector.

This would be the same situation as if our car service was responsible for arranging regular inspections of our cars instead of ourselves. Not all drivers pass equal distances, so it is not possible for the service to book inspections for drivers. Even if they could follow the distance we travel, they would still have to contact us before making appointment, to check if we are available.

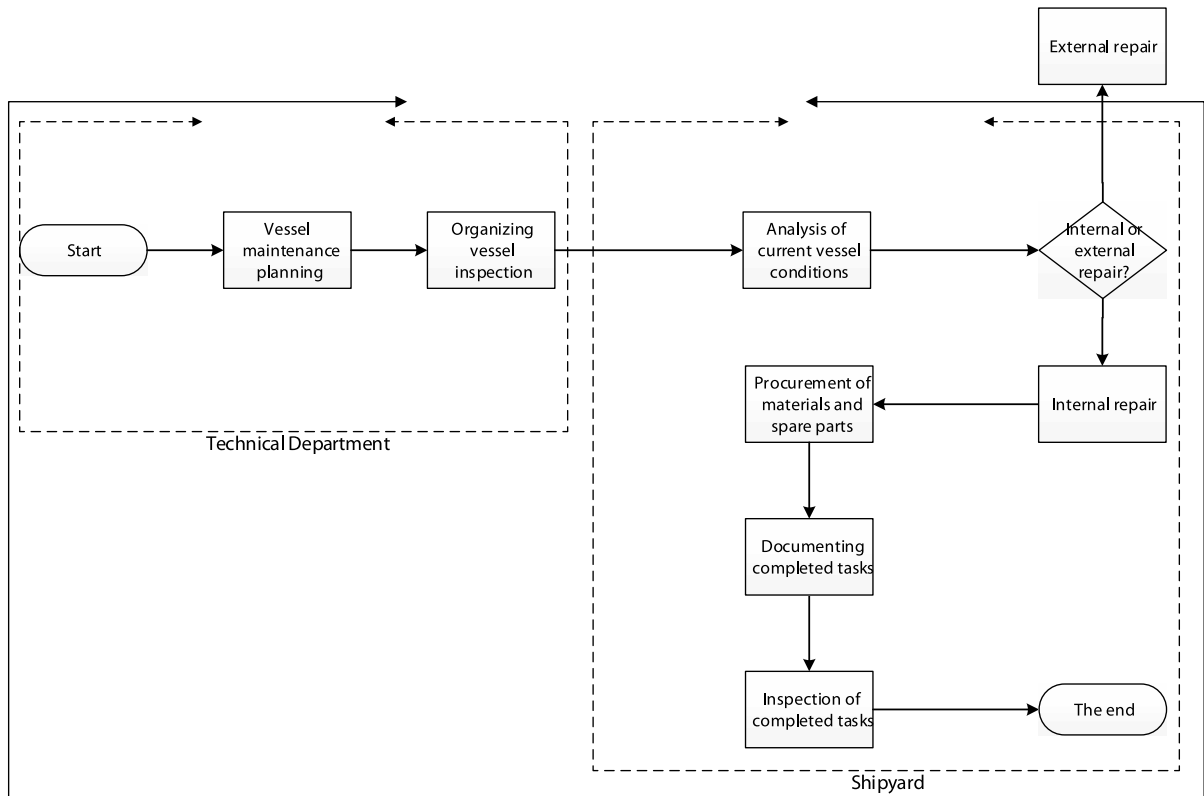
As we can notice, there is no integration and coordination of the core activities between two largest sectors in the organization. Maintenance process potentially can be the cornerstone for coordination between two sectors, but the problem is that it currently occurs almost entirely within just one organizational unit. Application of process approach would overcome this issue.

Another very important problem which had been identified in the company is the control of procurement process. Materials and spare parts procurement used to be done in Commercial Department of Commercial and Transportation Sector. However, that department was only executing procurement process, without analysing validity of procurement requests. All the requests for materials and spare parts are specified in shipyard. After that, Commercial Service sends all the documentation to Finance and Accounting Department, for appropriate record keeping. Finally, there is no adequate control mechanism to determine whether the delivered materials and parts were really used in shipyard the way it was specified in the procurement request. As we can see, there is no clear responsibility for procurement process in the company, which causes large procurement overheads.

4 Solution

Each proposal that the consulting team offered was developed using the process approach and with process organizational model as ground base. The goal was to increase control level in maintenance process, in order to reduce the costs caused by malversations during ship repairs and procurement of materials and spare parts.

Consulting team first suggested formation of Maintenance Planning Department in Commercial and Transportation Sector, which ought to be responsible for certain parts of ship maintenance process. In this department could be hired some of the current employees from Technical Department in Techniques and Maintenance Sector, while the others should be transferred from some other department within in Commercial and Transportation Sector, in order to achieve better control of whole process. This new department ought to cover complete first phase of maintenance process, maintenance planning. Records of all maintenance operations performed on a ship would be kept in Maintenance Planning Department. This way, this department would be able to coordinate the maintenance process with the ships exploitation. It was also suggested that this department takes part in the next phases of maintenance process, in order to improve process control. Maintenance Planning Department must consist of maintenance experts, since all works and repairs, before even being started, must be approved as justified by these experts. Their job description should also include field work, through monitoring repairs. This should prevent unnecessary staying of ships in shipyard, as well as the appearance of fictional works. When works are approved, repairers from shipyard should make specification of materials and parts required for further operations. These plans also have to be approved by Maintenance Planning Department. When all this is completed, the specification should be sent to the organizational unit responsible for procurement, in form of formal procurement request. In the very end of the process, Maintenance Planning Department should perform technical inspections of all the operations performed on the ship and compare them to corresponding plans. Such inspections also ought to be formally documented.



Techniques and Maintenance Sector

Figure 3: Ship maintenance process

Current structure:

New proposal:

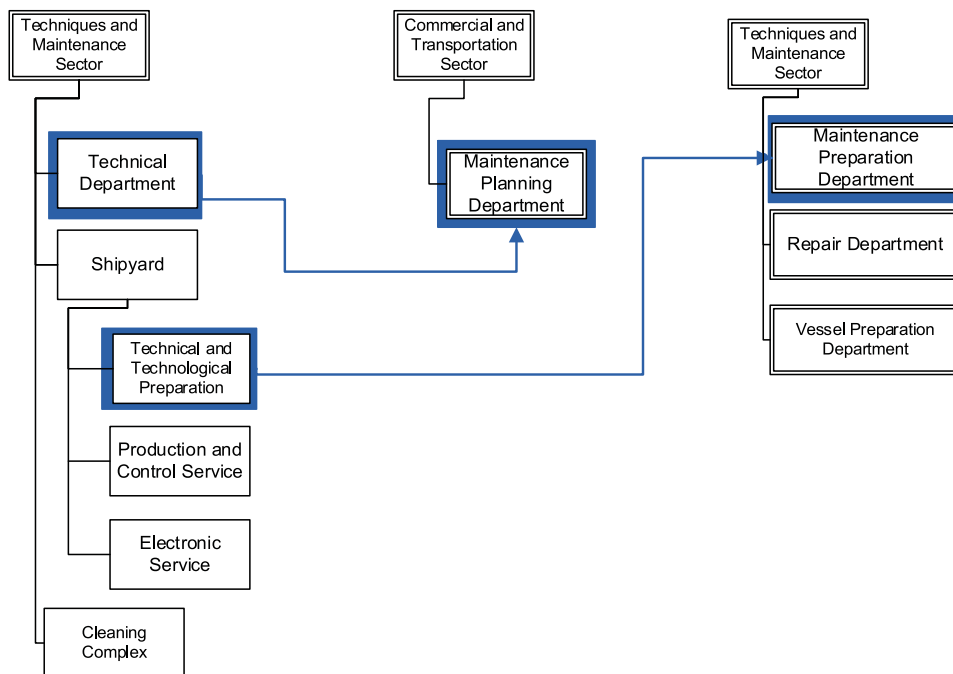


Figure 4: Proposed reorganization of Techniques and Maintenance Sector

Maintenance Preparation Department, previous Technical and Technological Preparation unit, where condition of vessel is analysed, should be independent from Repair Department, previously named Shipyard. Besides this, new suggested name for Cleaning Complex is Vessels Preparation Department. Described organizational change is presented on Figure 4.

Implementation of suggested organizational changes would significantly reduce the opportunities for malfeasances, since all maintenance costs and operations would be monitored closely. It would also improve the coordination between two largest and most important sectors in the company. Maintenance planning should be moved completely in Commercial and Transportation Sector, where services could be planned in accordance with capacity utilization and ships exploitation. Furthermore, Techniques and Maintenance Sector would then be able to focus on repairs and other maintenance operations exclusively, which were identified as core business in this organizational unit. However, all these activities would be controlled by Maintenance Planning Department, in order to avoid fictive works and reduce the overheads.

Another proposed change in organizational structure that is based on maintenance process is the complete relocation of parts and materials procurement, performed in Procurement and Warehousing Jobs, in Commercial and Transportation Sector, to Economic Affairs Sector, which was previously named Finance and Accounting Sector. Proposed organizational change is presented on Figure 5. In order to point out its importance for the company, this organizational unit ought to be renamed to Procurement and Storage Department. Fuel and oil procurement would continue to be performed within

Commercial and Transportation Sector, more precisely, in Commercial Department, because of its specificity and close connection to everyday operations of the ships.

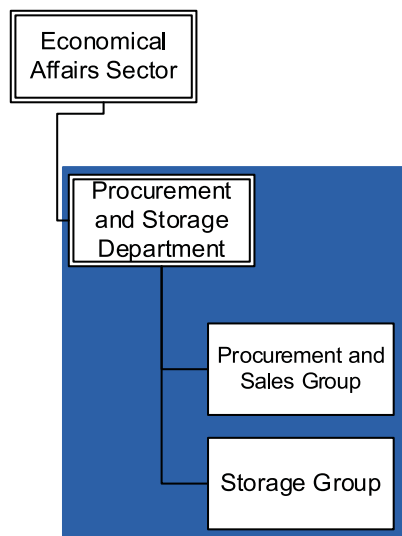
After such reorganization, the whole responsibility for procurement process would be assigned to single organizational unit, Procurement and Storage Department. For this reason, its employees would be motivated to establish tight control of supply process, which would reduce the possibility for malversations during parts procurement. Besides this, moving this department to Economic Affairs Sector, where all the financial data are kept and analysed, should enable corrective actions and improvements of procurement process.

5 Conclusion

Overheads control and minimization can considerably improve profitability of any company. Concrete example presented in this paper describes how the adjustment of organizational structure according to business processes performed in the organization can significantly improve cost control in whole organizational system. Such organizational change does not demand complete organizational transformation, followed by capital investments. Modifications of current business model are neither requested.

Through applying process organizational model, organization will be able to make significant improvements only by harmonizing organizational structure with identified business processes (Komazec, Todorović and Jevtić, 2012). Certain activities should be reassigned to different organizational

New proposal:



Current structure:

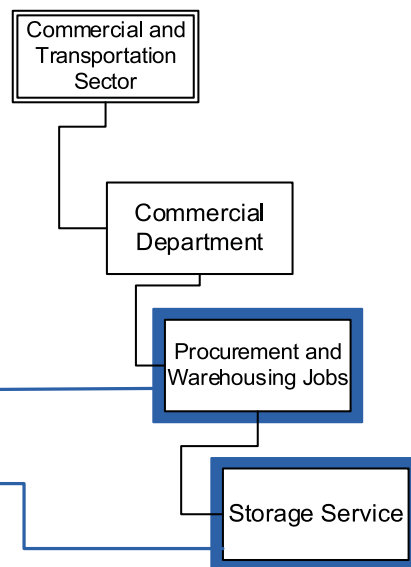


Figure 5: Proposed positions of procurement and storage organizational units

units, using existing business processes as the ground base for coordination and harmonization of the activities within the organization. From the illustrations shown in this article, we can conclude that application of process approach is one of the most efficient methods for rapid and effective improvements of organizational structure.

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Stroškovno učinkovito prestrukturiranje na podlagi procesnega pristopa

Različni avtorji se strinjajo, da lahko oblikovanje organizacijske strukture v skladu s poslovnimi procesi prinaša številne prednosti, ki izboljšajo poslovno uspešnost organizacijskega sistema. Ta članek želi pokazati, kako lahko stroškovno učinkovito prestrukturiranje, s spremembo organizacijske strukture glede na poslovne procese, ki obstajajo v organizaciji, prinese številne koristi. Uspešno izvajanje procesnega organizacijskega modela ne zahteva nujno velike naložbe, temveč le ustrezne strukturne spremembe ter notranjo reorganizacijo. Podatki, uporabljeni v tem članku, so bili pridobljeni v projektu prestrukturiranja prevoznega podjetja iz Beograda, katero je izvedla svetovalna skupina s Fakultete za organizacijske vede Univerze v Beogradu v letu 2012.

Ključne besede: organizacijska struktura, poslovni proces, prestrukturiranje, organizacijske spremembe, procesni organizacijski model

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Human Resource Development in a Small Company

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The small business sector is often overlooked in human resource development researches, despite representing a large portion of the total economy. Very few studies exist on the subject of human resources development needs analysis in small organisations. Development plans remain mostly unwritten, which can lead to the impression that development is not being implemented or planned and is therefore not valid. This paper presents case study of the existing human resource development system in a small company PAN-JAN d.o.o. The research included 80% of all employees, which is 20 out of 25. The research examined the correlation between the additional education and better business performance, analysis of variance on age and number of courses and discriminant analysis on age, years of service, levels of education and legally required education and training programmes. In discussion are proposed changes or improvements, as well as a human resource development model.

Keywords: human resource development, planning, training activities, business performance, small company

1 Introduction

Today, human resource development is one of the major key for successful company as well as for employee satisfaction. It is a distinctive function within companies. Without development of knowledge as a unique resource there is no progress. Many researchers are defining employee knowledge as part of human capital (Birashav, Rangnekar and Dalpati, 2010; Longo and Mura, 2011; Destre, Garbona and Sollogoub, 2008,) although human capital also includes skills and abilities of individuals – employee competencies (Hsu, 2008). Kesti (2012) explains that human resource development may contribute better business performance through improved employee competencies.

Brian L. Delahaye (2000) defines four stages of human resource development: investigation, design, implementation and evaluation. Investigation stage identifies the individual development needs. Development needs investigation identify the gap between what is currently happening and what should be occurring. Qin and Mu (2012) claim, that human resource needs are therefore in correlation with employee's work heterogeneity (job positions, job responsibilities, organizational size, organizational nature and industry). Define work heterogeneity is one of the major task of human resource

management and is bottom line of human resource development. Design stage is focusing on content to be learnt and the learner. There are used three variables: the learning strategies, the learning outcomes and the learners. None of them is useful if there is lack of employees' learning motivation. Tsai, Yen, Huang and Huang (2007) claim, that two criterions – the relationship with colleagues and the relationship with the family significantly influenced on employees' learning motivation, which can be increased by cognitive restructuring (Figueira and Duarte, 2011). Third stage, implementation involves three major operations: managing and coordinating the program, utilising micro skills and conducting the learning strategies. Managing and coordinating the program involves to notify all learners of their attendance, arrange the training room, check all equipment, etc. Micro skills include techniques as questioning, responding and constructing appropriate learning objectives. Conducting the learning strategies involve structured and unstructured strategies of the discussion. The last stage, evaluation, is about assessment of learning. DeLuca and Searle (2009) defined evaluation as the partnering of evaluator(s) and members to engage in joint collaborative programme evaluation. Evaluation stage is defining ways of assessing learning. All four stages can be used in large, medium or small companies although most studies are focusing on

human resource development in large companies (Chen and Huang, 2009; Žnidaršič and Jereb, 2011; Kelemina, 2009), but just few of them about human resource development in small companies.

The organisational structure for a small business is often adapted to competencies and interests of key individuals. It is structurally less complex, easier to coordinate and monitor, with one person performing multiple functions. Small systems with few employees very rarely need a human resource clerk, for the manager carries out multiple tasks, including human resource recruitment (Uyar and Deniz, 2012). It can be said that small organisations undertake development activities in response to needs and specific situations, as well as based on personal observations and opinions of managers or even employees, while the development that is the result of the organisation's strategy is more characteristic of larger organisations. Human resource development is linked to the owner and can also be influenced by family (Kopriva and Bernik, 2009) and colleagues. The owner, who is also the manager, often identifies with the organisation. This person is expected to simultaneously perform the tasks of an executive director, human resource and financial manager, marketing manager, salesman and accountant.

The actual form and content of education programmes in small businesses can be expected to be less general, more goal-oriented and with a high practical value. As stated by Merkač Skok (2005), small organisations typically implement legally required educational programmes (health and safety at work). Due to the small number of employees, small organisations mostly participate in externally run education programmes, for the internal education would not prove justifiable.

2 Methodology

The empirical part of this paper is based on a research employing a questionnaire. The first set of questions in the questionnaire was designed to provide general information on the respondents: gender, age, years of service, level of professional education, participation in vocational education and training in the years 2009 and 2010. In the second part of the questionnaire, consisting of 16 statements and 2 questions, the respondents were asked to express their opinions. The statements have been grouped into the following three topics: education and training, work performance evaluation, rewards and promotion.

Respondents completed the questionnaire by specifying their level of agreement with the given statements, using the five-level Likert scale ranging from 1 for »I strongly disagree« to 5 for »I strongly agree«. The acquired data was analysed and presented in the form of graphs and tables using MS Office Excel 2003. Hypotheses testing was performed with SPSS.

Through the research, we tested following hypothesis:

H1: Employees believe that additional education and training activities have a positive correlation to better business performance.

H2: Older employees with more years of service attend more courses as younger employees with fewer years of service.

H3: Older workers with more years of service and higher levels of education are more inclined to believe that the organisation mostly implements legally required education and training programmes than younger workers with fewer years of service and lower levels of education.

Participating in the research were 20 currently present employees in production and trading company PAN-JAN d.o.o. PAN-JAN d.o.o. is a car dealership for ŠKODA, KIA and SUZUKI. They also sell used cars and conduct vehicle roadworthiness tests. At the time of writing, the organisation also runs a petrol station, a car wash and a restaurant-bar as part of the petrol station. 20 questionnaires were distributed and all of them were returned and completed correctly, providing a 100% response rate. The research included 80% of all employees (20 out of 25 employees). Because of the small sample, the research results cannot be generalized to other small companies.

In the research thirteen (65%) of the respondents are male and seven (35%) are female. The respondents' profile by age is as follows: there are no employees under 20 years of age, 25% aged 21-30, 55% aged 31-40, 10 % aged 41-50, and 10% over 51. Representing the biggest group, 6 respondents, are employees with 15-19 years of service. 5 respondents have 10-14 years of service. There are 3 respondents with 5-9 years of service and 3 with 30 years and more. 2 respondents have 20-24 years of service.

The educational attainment profile of the respondents is as follows: the highest number of respondents (6) have completed secondary vocational training, followed by those who have completed general and technical secondary education or higher education, with 5 respondents each. 2 respondents have completed higher professional education.

3 Results

Data on internal education or training activities in the years 2009 and 2010 show that in 2009, 9 respondents did not participate in internal education or training. The same 9 respondents also failed to participate in education and training in 2010. Overall, between years 2009 and 2010, there was a slight increase in participation in internal education.

Data on the constancy of external education or training in the years 2009 and 2010 reveal that the company is providing further education. If in 2009 employees did not participate in education or training programmes, they compensated for that in the following year. The respondents' opinions on education and training provided by the organisation have also been analysed. The statement 'Additional education and training result in better task performance' holds the highest mean value (4.45 on scale 1 to 5). Also obtaining a high mean value (4.25) was the statement 'Effectiveness of education and training is reflected in better company performance'. Respondents gave the lowest rating (mean value 3) to the statement 'I am sufficiently qualified for the work I perform and do not need additional training'. It can be concluded that the respondents

believe that education and training activities are needed and reasonable.

The questionnaire also contained two open-ended questions. The first question was: What additional education and training would you wish to receive? Only 6 respondents expressed a wish for additional education and training. Respondents would wish to further their education and training in the following fields: foreign languages, management, marketing, employee relations, insurance, computer skills, and new technologies.

The second open-ended question in the opinion section of the questionnaire was: Should the employer make any changes with regard to education? 9 respondents stated their opinion. The necessary changes regarding additional education provided by the employer suggested by the respondents are mostly the amount of education activities and the participation of all workers in education activities.

Next is the analysis of the respondents' opinion on work performance evaluation in the organisation. The respondents believe that they 'Know the goals and standards relevant to their position', with the mean value of 4.2. They also agree with the item 'I am familiar with what is expected of me'. The mean value is 4.15. The results show that the respondents believe they are well acquainted with their work scope and with what is expected of them. They believe in the efficient evaluation of their superiors to a slightly lesser extent.

Lastly, promotion and reward systems in the organisation have been analysed. The respondents show a lack of satisfaction with advancement opportunities, for the statement 'The company offers many promotion opportunities' obtained the mean value of 2.85. They believe that, with promotion, the required level of education (mean value 3.3) has a slight advantage over practical experience (mean value 3.15). The highest mean value in this set of questions was obtained by the statement 'I prefer financial rewards to non-financial' (4.1). It can be concluded that the respondents are not overly satisfied with rewards and promotion opportunities offered by the organisation. The organisation's size can be seen as an obstacle to promotion opportunities, with each employee occupying a specific position. Promotion is only possible if a vacancy is created. However, in such a small family business, positions are already very systematically filled.

3.1 Hypotheses testing

Hypothesis 1: Employees believe that additional education and training activities have a positive correlation to better business performance.

Education and training activities have been analysed using the Pearson correlation, which is correlation coefficient (r) between the opinion that additional education and training result in better task performance and that the effectiveness of education and training is reflected in the increased business performance is $r=0.632$. The level of statistical significance (sig.) 0.003 is significantly lower than 0.05, which suggests that the correlation is statistically relevant. The employees believe there is a correlation between additional education and training and better business performance. It can be con-

cluded that additional education and training correlate with the organisation's performance and H1 is confirmed.

Hypothesis 2: Older employees with more years of service attend more courses as younger employees with fewer years of service.

Table 1: Analysis of variance results for total number of education activities in relation to age and combined years of service

Total number of education activities					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	34.267	5	6.853	1.487	.256
Within Groups	64.533	14	4.610		
Total	98.800	19			

Table 2: Analysis of variance results for total number of education activities in relation to age and total years of service

Total number of education activities					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.555	3	4.185	.776	.524
Within Groups	86.245	16	5.390		
Total	98.800	19			

Analysis of variance has been performed – a research on the total number of education and training activities in correlation with age and years of service, as shown in Tables 1 and 2. The value yielded by the ANOVA test is greater than 0.05, meaning there are no statistically significant differences between groups differing in years of service and age. It can be concluded that older employees with more years of service attend more courses than younger employees with fewer years of service and H2 is confirmed.

Hypothesis 3: Older workers with more years of service and higher levels of education are more inclined to believe that the organisation mostly implements legally required education and training programmes than younger workers with fewer years of service and lower levels of education.

Discriminant analysis has been performed, as shown in Table 3. The analysis included the first set of questions, providing employees' opinions on quality and effect of education and training.

When interpreting the results, we must take into consideration that:

1. the first group consists of younger workers with fewer years of service and a lower level of education,
2. the second group consists of older workers with more years of service and a higher level of education.

As shown in Table 3, a positive coefficient indicates a higher level of agreement among the second group, while a negative coefficient indicates a higher level of agreement in the first group.

Table 3: Employees' opinion on the effect and quality of education and training

Standardized Canonical Discriminant Function Coefficients	Function
	1
My wishes are being considered in education and training plans.	-0.242
Additional education and training result in better task performance.	1.788
The effectiveness of education and training is reflected in better company performance.	-1.197
I am sufficiently qualified for the work I perform and do not need additional training.	1.066
The company provides sufficient education and training.	-0.431
The company mostly implements legally required education and training.	0.180

A positive coefficient of 0.180 regarding the statement that the organisation mostly implements legally required education and training programmes indicates that older workers with more years of service and higher levels of education agree with that statement to a greater degree than younger workers with fewer years of service and lower levels of education. We concluded that, compared to the younger workers with fewer years of service and lower levels of education, older workers with more years of service and a higher level of education believe that the organisation mostly implements legally required education and training and H3 is confirmed.

4 Discussion

Human resource development model, as shown by Figure 1, is adapted to the needs of PAN-JAN d.o.o.. Implementing the model would help the company predict future personnel needs, manage the existing personnel and improve employee satisfaction. The model is adapted to small family businesses, where certain human resource processes are not being implemented.

The objective of human resource planning is to provide the company with the required number of suitably qualified people within a given time. A human resource needs plan is developed taking into consideration the planned number

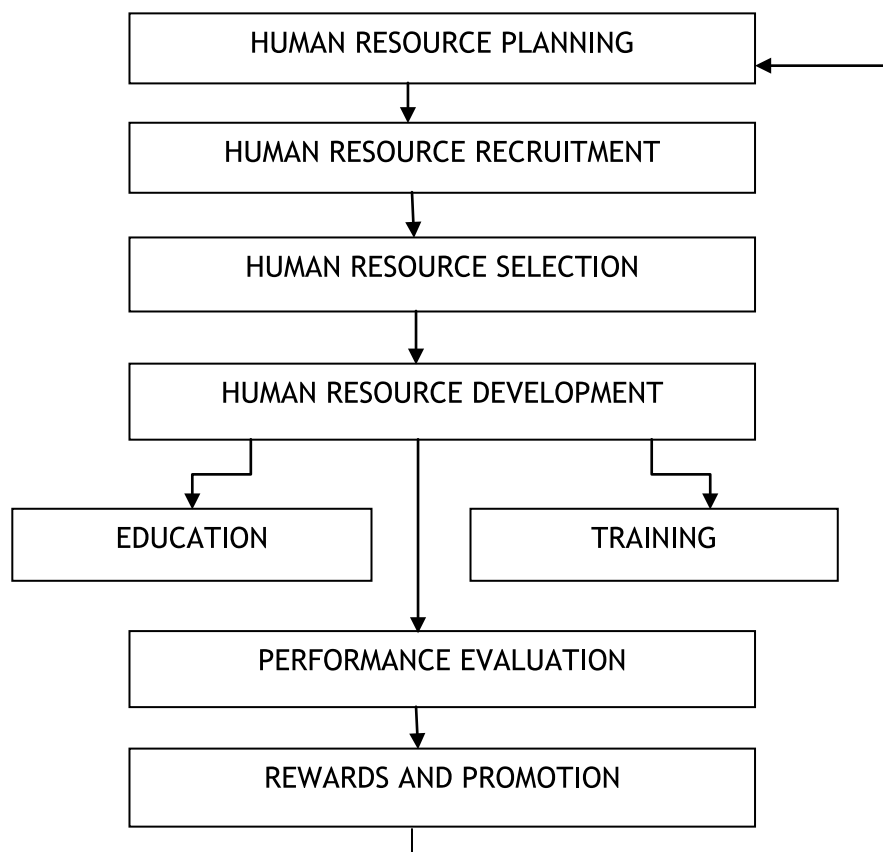


Figure 1: Human resource development model for PAN-JAN d.o.o.

of employees the company wishes to recruit and the human resource supply in the labour market. Managers must decide which vacant positions must be filled, plan tasks and assignments for this position and determine the qualifications of the employees that would be suitable for the job. If the supply of qualified human resources is not sufficient, the organisation must turn to external sources for human resource acquisition.

Human resource selection is a two-way process of selecting a candidate that best meets position requirements. The company is looking for a worker that possesses all the necessary, as much of the desired and none of the undesired qualities. All unsuitable candidates are sent a note by the company and are no longer considered. Suitable candidates are invited for an interview. The organisation must make sure that the chosen candidate still seeks employment. The candidate must then undergo a medical examination and, having acquired a medical report, may enter into an employment contract with the organisation.

In addition to education and training, human resource development also encompasses the development of employee competencies, motivation, stimulation, counselling, development of employee potential and advantages, mentoring programmes to help employees perform their tasks, etc. Within an organisation, further education and training for all employees is of utmost importance.

An organisation undertakes employee performance evaluation in order to achieve better performance and efficiency as well as to improve and test new work processes. In this article we propose monthly employee performance appraisals, with a more in-depth evaluation carried out once a year. Performance evaluation criteria may include: workload, quality of work, attitude to work, co-workers and clients, creativity, problem solving and the achievement of results.

Performance must be evaluated and also justly rewarded. Rewards can be financial or non-financial and must take into account the individual's interests. Promotion is a long-term aspect of rewarding performance. Promotion can be vertical, diagonal or horizontal. In a small organisation, each position is strategically filled, which can present an obstacle to career advancement. In case of promotion, human resource planning needs to be re-designed and the process continued.

Questionnaire data analysis in this case study indicates that employees, given their small number, participate in education and training activities to the greatest extent possible. Employee performance represents a company's capital, which is why it is important to ensure its continuous improvement. Based on the findings, we suggest that the company collects data on the employees' performance through special interviews between the manager and other employees, in order to jointly evaluate past events and determine what should change in the future. The system would include the analysis of achievements during a specific period and a comparison to planned goals for that period, new ideas and paths to goal realisation and a programme for improving the work process and for making better use of working time. Employee activity would be monitored monthly, using specific evaluation techniques, with a more in-depth evaluation carried out once a year. The company must invest in the development of its employees as

well as human resource management. Promotion opportunities are mostly hindered by the small size of the organisation, with each employee occupying a specific position. Promotion is only possible when a vacancy is created. However, in such a small family business, positions are already very carefully planned. Employees mostly expect financial rewards. The company should introduce more communication tools for better communication between the management and employees. In this paper, we recommend periodic meetings several times a year, themed meetings, surveys, ideas exchange ... Regular annual interviews are becoming increasingly popular, but this methodology may prove too extensive and demanding for a small family business such as PAN-JAN d.o.o..

Research on human resource development in PAN-JAN d.o.o. and the specific elements of human resource development indicates that the company provides education and training, but does not enable further employee development. The workers are not satisfied with the performance evaluation. They believe it is not being carried out, for they rarely receive additional financial rewards for their work. The results also show that the employees are not satisfied with the opportunities for advancement, which is expected in such small company. Human resource development in selected company is therefore different from a human resource development in larger companies. That does not mean that such small companies must not try to improve their human resource processes, although there are not many opportunities for workplace advancement. In small companies, and according to our research results, one of the major parts of human resource development is participate in education and training activities. It leads to personal and professional development of human resources. The activities should be evaluated and results rewarded. This is important particularly in small companies, where the motivation for education and training is one of the most important human resource processes.

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Razvoj kadrov v malem podjetju

Ko govorimo o razvoju kadrov, pogosto spregledamo mala podjetja, kljub temu, da predstavljajo največji delež podjetij v gospodarstvu. Na področju razvoja kadrov v malih podjetjih ne obstaja veliko raziskav. Plani razvoja kadrov v malih podjetjih običajno niso definirani, kar ustvarja občutek, da razvoj kadrov v malih podjetjih ne obstaja. Članek predstavlja študijo primera obstoječega sistema razvoja kadrov v malem podjetju PAN-JAN d.o.o. Raziskava je zajela 80% zaposlenih, kar predstavlja 25 zaposlenih od 25. Izdelana je bila korelacija med dodatnim izobraževanjem in boljšim poslovanjem podjetja, analiza variance glede starosti in številom izobraževanj ter diskriminatorsna analiza glede starosti, delovne dobe, stopnje iC-Cobrazbe ter zahtevane izobrazbe in usposabljanjem. V sklepu so predlagane spremembe in izboljšave obstoječega sistema kot tudi sam model razvoja kadrov.

Ključne besede: razvoj kadrov, planiranje, usposabljanje, uspešnost poslovanja, malo podjetje



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Z vod v management sprememb

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Založba  Moderna organizacija

