“Cheap and clever – symbiosis of frugal innovation and knowledge management”

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ARTICLE INFO	Andrea Bencsik, Renáta Machová and Zsuzsanna Tóth (2016). Cheap and clever – symbiosis of frugal innovation and knowledge management. *Problems and Perspectives in Management*, *14*(1), 85-93. doi:10.21511/ppm.14(1).2016.10
DOI	http://dx.doi.org/10.21511/ppm.14(1).2016.10
RELEASED ON	Wednesday, 02 March 2016
JOURNAL	"Problems and Perspectives in Management"
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES **0**

NUMBER OF FIGURES **0**

NUMBER OF TABLES **0**

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Cheap and clever – symbiosis of frugal innovation and knowledge management

Abstract

To operate knowledge management system has become an accepted method and a part of everyday life in the biggest companies. The full circle exploitation of advantages and possibilities of this system does not show a hopeful picture. It is especially true when we examine relationships and constructions with other key processes in the operation of a company. Innovation belongs to above mentioned processes. Though every outsider and professional way of thinking sees clearly that knowledge is needed to innovate and knowledge is a basis of knowledge management, but the close connection of the two important processes has not been realized on behalf of success. Defectiveness is especially true in cases of the newest innovation methods. The paper shows the connection of frugal innovation and knowledge management, its theoretical and practical possibilities.

Keywords: frugal, innovation, knowledge, knowledge management, enterprise.
JEL Classification: A11, C12, D83, J53, O30.

Introduction

In the changing business environment, in terms of adaptability and remaining competitive, development and operation of knowledge management systems have become an extremely important factor. It has a significant role in such business processes which seek synergies between data, information processing capability of IT as well as between creative and innovative capabilities of people.

Knowledge management is not a new phenomenon, if it means managing existing knowledge. Partly it may include some tasks of human resources, or even the exchange of experience between employees. It is a concept and methodology that is applicable in many different fields of business activities.

Nowadays, economies and also societies are being transformed. Values, that were previously unknown and considered elusive, come to the front (Marosi, 2013; Tóbiás Kosár, 2014) which include organizational knowledge. Therefore, the age of information society leads to knowledge society and knowledge-based economy. In order to maintain the market position, unique knowledge of a company, its development and reuse are the competitive advantages of a company.

Companies of the 21st century must take into consideration that their often expensively acquired knowledge should be utilized in time, otherwise it can disappear. That is why continuous innovation is crucial nowadays. It is supported by the fact that while in 1990 development of a new car model took 6 years – today it needs only 2 years. Or consider the fact that the vast majority of Hewlett-Packard's revenues come from products that did not exist a year ago. Knowledge management and innovation, these two categories that define a company's success are inseparable.

After a brief presentation on the logic of innovation and knowledge management system, this paper reveals, how to exploit the opportunities in corporate life as a result of combination of knowledge management and frugal innovation, and how to implement the two factors successfully which determine the success of a company.

1. The importance of knowledge

Companies are being challenged by the world market and world economy situations, including the fierce competition caused by globalization, and the rapidly and unpredictably changing external and internal environment. Changes, that often turn up and vary, must be managed and not only experienced (Tóth-Bordásné, 2014). However, this is impossible without the existence of adequate resources.

Knowledge is individual. It develops during practice and experience, and this process is non-transferable. There is a great need for human resources with excellent skills in the harsh market competition, and with their individual competencies they make companies unique and competitive. Therefore, to obtain and maintain human resources with special skills, continuous development of high and/or special skills of human resources, exploiting their knowledge and keeping their ideas and innovation skills up-to-date are the key tasks of management. If these criteria without any problem join business operations as a whole, the issue of knowledge sharing, integrating shared knowledge of products/services can be the challenges of the management. This is supported by construction and operation of knowledge management

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system, which besides knowledge sharing requires the implementation of further steps, too.

1.1. Model of knowledge management and its reason for existence. "Knowledge management is a business model that in order to achieve competitive advantage uses knowledge as the asset of an organization. It is a management tool that is supposed to support, in an integrated approach, the identification of the intellectual capital of an organization, its evaluation and utilization, creation, enhancement, protection, sharing and application" (Davenport-Prusak, 2001). Probst and his fellow workers' model is one of the most famous one. It explains the stages of the operation of the business system in eight steps (Probst et al., 2006). The logic is being shown in Figure 1 below.

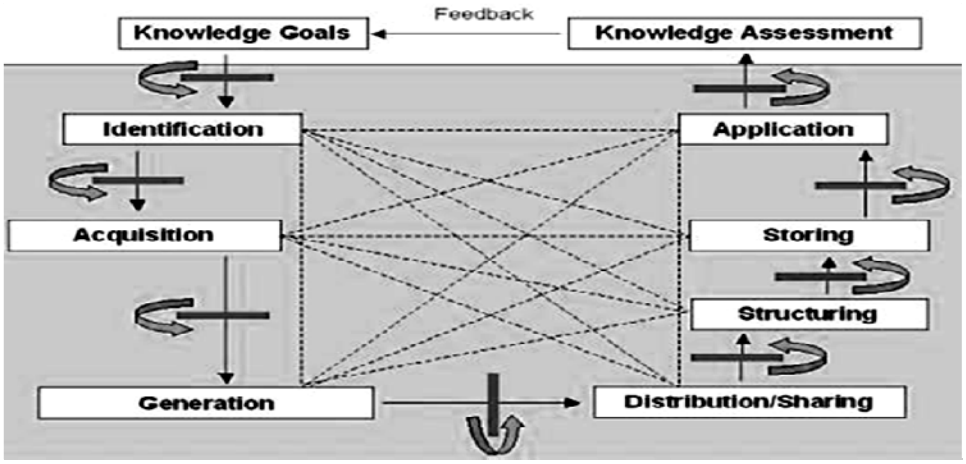

Fig. 1. Probst's model

Source: Probst et al., 2006.

1.2. Knowledge sharing as a critical issue. Development of organizational knowledge sharing practice, which is an important part of knowledge management, is a significant challenge for managers. Competitiveness of organizations and sometimes even their survival lies in shared knowledge. If this knowledge is not able to flow properly in an organization, and people do not share it with others, then new solutions, ideas and innovations may disappear. Task of the management is to make the employees able and willing to share their knowledge with other colleagues. For the sake of the cause, corporate culture has to be restructured, and atmosphere must be supportive in which employees know that sharing their knowledge will not have any drawbacks, and it will help to achieve the common goals (Marosi, 2013; Dobai Korcsmáros, Seres Huszárik, 2012).

Why do not the employees share their knowledge?

- with knowledge sharing an employee will become worthless;
- competition leads to knowledge retention;
- there is no receiver;
- there is no time and energy;
- they do not know what to share etc.

In addition, there exist many other causes of non-distribution of knowledge which can be different in national and corporate cultures (Tomka, 2009; Mura, Rózsa, 2013).

Besides knowledge utilization and sharing information, there is a strong need for information and knowledge that can be linked to innovation.

The concept of innovation and its corporate importance were introduced by Schumpeter (1980), who said that "…innovation can be defined as the design of a new form of production. Innovation involves the invention of a new product, new markets, or studying a new form of an organization…" This statement has had a number of phases of development recently, and now it is in the focus of attention. Definition that is being described below refers to the – above mentioned – relationship with knowledge management system.

Innovation can be defined as a new technology, new management methods, new markets, new materials, new products, a new production organization, and the expression of the interaction between human-human relationship, and evaluation of the results of the feedback (Bucsy, 1976).

According to Peter Drucker, innovation is "…a purposeful and focused effort to change the economic or social opportunities of a business" (Drucker, 2003).

The concept of innovation is linked to the concept of value chain management, according to Michael Porter. The main point of his model is that a company can meet the needs of the consumers effectively, if the main activities are supported by activities that help in the production process. Innovation is such a supporting activity (Porter, 1980).

Innovation is based on the knowledge of people, their ideas and thoughts. Similarly, knowledge management is based on the systematization of knowledge. Both areas have the same starting point that is human resource and its knowledge. In addition to human capital, another important trend appears in management, and this is the innovative corporate culture, the concept of an innovative company.

2. Why is organizational culture important?

Organizational culture is largely influenced by the behavior of employees, their attitude to work, the management, colleagues, values, innovation and participation in innovation activities (Marosi, 2013b). Culture may increase or freeze creativity, collaboration, knowledge sharing, namely the innovation process. According to Stephen Shapiro (2011): "Innovation culture is the primary source of competitive advantage of businesses and it pays off. (...) If employees adopt this approach, innovation becomes part of their lives. This ensures that all human capital is used with appropriate effort in order to produce the values from the company".

Stephen Shapiro (2011) collected the most important managerial tasks in order to achieve innovation culture, and the results of innovation are based on the success of their implementation. Essential characteristics of the innovative organizational culture according to Stephen Shapiro:

- creating a shared vision and to achieve a common goal;
- development of internal communication;
- involving employees in important decisions and plans;
- job enlargement;
- supportive managerial style;
- continuous improvement as a common organizational value;
- promoting teamwork;
- knowledge sharing (Shapiro, 2011).

Characteristics of innovation-friendly organizational culture are very similar to the expectations of learning organizational culture that enable the functioning of the system of knowledge management.

3. Learning organizations

Learning organizations are responsible for the quick and flexible operation of knowledge management system. The main characteristics of these organizations are: a flexible organizational structure, shared vision, team learning, collective organizational culture, self-management ability, innovation ability (Senge, 1998). Most of the employees in a learning organization are highly skilled and educated, their main task is to transform information into knowledge, and in their work their competencies are used at the highest level (i.e. Microsoft and Google). Therefore, these companies also acknowledge the principle of "shared knowledge is power." Their resources will not run out because they share their knowledge (Sveiby, 2001).

Human resource is the main resource of learning organizations, and their cooperation is the key to success. Proper communication is essential, and cooperation with partners is particularly important. If an organization accepts these principles, it can become a knowledge-based organization and it can be able to convert the knowledge of employees into a competitive advantage. Knowledge management and innovation, based on the organizational culture, can be connected.

A wide range of innovative solutions are known in international practice, but in this paper we present such a solution that is almost unknown in Hungary and it provides a corporate vision.

4. Symbiosis of innovation and knowledge management

Common elements of the concept of innovation and knowledge management based on the definitions described above are the following:

- system;
- people-to-people contacts;
- development;
- feedback.

Common elements, the 5th generation innovation model and the features of Probst et al. (2006) logic can be identified as follows:

- strategic thinking – system approach;
- people-to-people contacts – networking;
- intellectual abilities;
- transfer of knowledge – knowledge network.

Logical steps of knowledge management and innovation models can be defined with the following:

- purpose of knowledge – research focus;
- knowledge identification – co-workers;
- knowledge acquisition – information;
- knowledge development – developing innovative ideas;
- sharing knowledge inside – development of innovative ideas;
- sharing knowledge outside – networking;
- knowledge utilization – prototypes (development);
- knowledge capture – know-how, inventions, management of intellectual property;
- knowledge control – market feedback;
- new era.

It is clear that these two factors of success work are in close interaction with creative days of corporate life. However, according to the classical concept of innovation and thinking, research and development, innovative solutions do not mean reality for many organizations, as financial difficulties often make the realization of new ideas difficult.

4.1. Frugal innovation. Cost-effective management, sustainable development and reduction of the negative effects of globalization are the most serious challenges that businesses have to face nowadays. Companies do everything to match successful operation with sustainable growth. In the area of innovation a new trend has emerged recently, which has helped several large companies in the eastern world to become successful. This new area of innovation, that is a completely different approach, is frugal (thrifty) innovation. The concept is less known in our country, foreign experts use several different names as well (green, Asian or jugaad innovation). Frugal innovation is the implementation of a new business strategy that enables companies to create much more business and social values while saving resources. The world's leading factories, like Renault, Siemens and Unilever use this type of innovation strategy.

Frugal innovation and strategy originate from India, where businesses had low budget from the very beginning. It could be said that this new kind of approach was founded by necessity, and this approach helped India to become a dominant player in the global market.

Slogan which characterizes this innovative strategy could be "more from less". It allows to manufacture such products that are both qualitative and yet affordable. Frugal innovation is not only a new strategy. It is a brand new and flexible way of thinking, in which companies are aware of the limitations of resources, they are able to grow sustainably and continuously though. It is an excellent strategy in developing markets such as India, Africa, China and Brazil. But it can be applied very well in crisis-ridden areas, where there is a need for affordable quality (Radjou & Prabhu, 2013). Frugal innovation treats poor markets as an opportunity rather than as aid targets.

This strategy has been applied by more and more western companies, because cost-conscious operation is a priority for them as well. Environmental management is one of the expectations of "modern" consumers, and they are looking for such solutions. Recycling is flourishing. Frugal innovation offers such solutions during product development of businesses. Businesses operating in western countries were the world's leading companies, because they always launched the newest, the most expensive and the best quality products. The process was complicated and expensive. Over time, growth began to slow down more and more, and the latest developments did not result in breakthroughs either.

In contrast, in underdeveloped and developing countries, companies began their operations in the simplest possible way, they always wanted to meet the current consumer needs. This strategy is applied in India ("jugaad"), Brazil ("gambiarra"), China ("Zizhu Chuangxin") and Kenya (called "JuA kali"). English counterpart of the strategy could be "do it and fix it", eventually, it was named frugal.

Large western companies began to use Tata Motors' strategy. Tata Motors is one of India's largest companies. It produces "stripped" products, they offer their products in small packages and they develop newer and newer solutions (Gardiner, 2013).

The role of frugal innovation is the creation of cheaper but qualitative products, including services as well. Low cost does not mean cheap technology; it often requires the latest technologies and knowledge as well.

Precise understanding of the concept of frugal innovation is important because it may be identified as cheap and poor quality products. Successful frugal innovation does not only mean cheaper products (Singh et al., 2012). The essence of the new approach is presented below.

4.2. Frugal innovation – "jugaad" way of thinking. It does not only mean that with fewer resources we add more value to our customers. This solution means a new business strategy and an entirely new way of thinking. Basically it is difficult for companies to develop and implement a new strategy, but in this case even employees have to understand and accept the idea since they all must work together to achieve their goals. This can only be achieved if everyone is involved in the creation and implementation of the strategy. The term jugaad comes from India, and its uniform meaning has not developed yet. Experts characterize it with three words: modest, flexible and receptive.

Need for continuous innovation is a major challenge for companies worldwide. In many cases, cost-effectiveness limits traditional innovation, since research and development is an expensive process (time, infrastructure, human resources, capital, etc). A lot of money has to be spent on research, since more money is invested in it, more inventions can be achieved.

However, capital investment did not recover at the same rate as it was expected by western companies (especially in electronics, computer science, health care and automotive industries, which are really "innovation-demanding" industries). It points to the fact that money does not solve all problems, and is unable to offer solutions for every task.

Based on the above, a new trend is being emerged in R&D and innovation. Innovation process has to be organized frugally, flexibly and receptively. It should have an "out of the box" thinking. In recent years western countries have started to observe the efforts in India, Brazil and China, which despite being flexible and frugal, resulted in sensational innovations in the emerging markets.

They discovered that behind frugal innovation there is an entrepreneurial spirit that can be observed in Argentina, Costa Rica, Kenya, Mexico, the Philippines, in the above mentioned and other developing countries. "Jugaad" entrepreneurs are flexible, frugal, adaptable, receptive, empathic and passionate. Frugal thinking and innovation do not offer development opportunities only to the emerging markets, but to those western economies that are struggling with recession and budget cuts (Santander, 2013). Several books have been published that present frugal innovation which is flourishing in the emerging markets (Govindarajan – Trimble, 2012; Radjou et al., 2012). According to the authors, "jugaad" means clever improvization. Studies and interviews of Navi Radjou are extremely popular (Radjou, 2014). He has become a real expert in this field. Together with the co-authors of his book (Radjou, Prabhu, & Ahuja, 2012) he writes about western companies which are able to introduce frugal innovation in their own organizational structure and culture. This trend is likely to accelerate in the future (Schumpeter, 2012).

In the next part some solutions and ideas will be presented that have already been implemented and used in practice, and which began to "conquer the world" and fundamentally questioned the previous innovation trends.

4.3. Frugal innovation in practice. "Frugal" ideas spread from east to west. Companies with limited resources and budget have few opportunities for development.

Tata Motors developed one of the world's cheapest car in 2009, Tata Nano, which had become a symbol even before the first item was finished. The Tata Group – India's best-known company – named this product as an "incarnate revolution". This product was the foretaste of frugal innovation which, with its price of $2,000, made new car purchases available in India and China. According to Schumpeter, Tata Nano did not change the world, but frugal innovation will do (Schumpeter, 2012).

General Electric invented an ECG machine that is affordable and simple. They ship not only to India and China but to Europe and America as well. It is portable and thus it can be used anywhere. **Walmart** created its "small mart stores" in Argentina, Brazil and Mexico to be able to compete.

The Indian **Mahindra & Mahindra** provides small tractors to American hobby farmers. **Vivian Fonseca** contributed to the development of an SMS system, which sends a message to poor and elderly diabetic patients to assist them in controlling their disease. Jane Chen – the CEO of **Embrace** – sells low-cost infant warmer for premature and low birth-weight babies in India and some emerging markets.

It is a general concern in western countries that this strategy destroys the markets based on the existing expensive technology. Why would someone buy a $10,000 product if the same company sells a little simpler machine for $1,000? According to some experts, this attitude is too pessimistic.

The world does not change completely. There will always be a group of customers who search for high-tech, luxury or unique products.

Information about the new business strategy started to spread around the world in the first months of 2013. Using the process, companies will be able to cut costs and other "unnecessary" procedures. Frugal innovation builds upon the fact that limited resources involve a potential for growth.

Eco-conscious experts call it "green innovation". Unilever, which produces health and welfare products, applies this strategy. Paul Polman, the CEO of Unilever recognized that by 2030 two planets would be needed if we continue the current pace of consumption to serve our resource requirements. He aims to double the company's revenue by 2020, while environmental pollution is reduced by 50%.

The company's frugal innovation developments were small packaged soap and shampoo products developed for cost-conscious customers.

Western companies need to change their mentality to Jugaad thinking in order to have the strategy successful. This includes the development of creative thinking and innovative ideas, which is the fastest solution to the problems. The CEO of Nissan-Renault, Carlos Ghosn said that: "In the west, if we run into major problems and resources are few, we usually give it up (too) easily. The main point of Jugaad is to never give up!" (Chan, 2013).

Three key elements of frugal innovation are affordability, understanding customer needs and supply chain makeover.

In the east price is a very important factor in customer decision making in contrast to western countries. The new type of thinking requires the change of the supply chain, as processes have to be adapted to new arrangements. It is not enough to follow a few steps. Operation has to be considered and should be organized flexibly in order to respond to various needs. Companies focusing on these three areas can be successful in emerging markets (Mukerjee, 2012).

5. Jagaad thinking in Hungarian environment

The following case study is an example of a real domestic company which can attract attention of executives with similar way of thinking. Presenting a potential partner should be the starting point.

5.1. Mahindra & Mahindra group, as a potential partner. Mahindra & Mahindra was set up as a steel trading company in 1945 in India. It joined automotive industry in 1947. It expanded into manufacturing and selling its iconic vehicle, Willys Jeep. It was divided into several branches in order to meet customer needs. The company follows a unique business model, so called entrepreneurial independence. There are already more than 180,000 employees, and it operates nearly in 100 countries. It operates in 18 key industries including automotive and farming industries. Today, it is the world's largest tractor manufacturer due to a significant increase in sales volumes. The company structure allows each business unit to develop its own vision and at the same time to take advantage of the potential impact of group synergies. Due to diversity the company is able to maximally satisfy customers' wide range of needs. Mahindra & Mahindra has an alternative way of thinking, which means that problems are solved in a completely new approach (using less resources and entering into such markets that have seemed inaccessible so far).

Mahindra defines itself as a business with a conscience. The company tries to serve and positively influence people and community. Production processes are becoming "greener", and M&M tries to act as a good employer.

Their main motivation is to offer the very best to their customers every day. Mahindra's mission is to replace traditional way of thinking with innovative attitude, and using all their resources. Their aim is to change the lives of communities around the world. Their products and services improve their customers' standard of living, and their serious business behavior positively affects the lives of communities (employment, education). As a sustainable enterprise they use green technology, and their awareness appears also in their products, services and production processes.

Commitment to sustainability is based on – social, economic and environmental – core competencies. Customers' demands have priority, in this way they can produce creative solutions. Respect applies equally to everyone. Appreciation to employees and partners is just as important as to customers. Quality and proficiency make it possible to produce such products and services that could mean a solution in emerging markets. Social responsibility is clearly apparent in the company's mission and corporate culture, and it is seen as the main competence. Their core values are in accordance with their objectives and vision, which is exemplary for all business organizations (Mahindra & Mahindra Group, 2014).

Mahindra has been present in the Northern American market with selling tractors since 1994. In less than two decades the company achieved that it belongs to the top three tractor manufacturing companies in the United States. One of its main signals was when in 2013 tractor sales in the region increased by almost 40%. The secret of their success is mainly their excellent leadership and strategy, as well as their mentality. Their aim is – still with frugal solutions – to produce products that are valuable and qualitative. Cheapness is not equal to poor quality, and frugal solutions are not extreme cuts. The company is very proud of its success in 2013, but they do not lean back, they constantly think about new solutions to be successful in the future as well (Mahindra Group USA, 2014).

From the presentation of Mahindra & Mahindra it can be seen that the company has a long history with great experience. With its value and customer focus, frugal way of thinking and innovative approach it could become one of the leading organizations of the world in nearly 70 years. Its presence is significant both in the automotive and agricultural sectors. Demand for their products and services is growing.

5.2. Dropping orders and their solutions. The current problem of the examined Hungarian company (with automotive industry-related activities) – the number of continuously dropping orders, a shrinking customer base – urges the involvement of a potential new partner and the possibility of entering the eastern markets. Traditions are important at this company. They build on the past and their strategy is based on that. Currently, they have partners also in the eastern region, but their main customer base can be found in

Europe and in the west. With their products they are the first and second round suppliers in the market. Both economic events and the tightening of legal requirements in recent years have resulted in decreasing operating profits. There have been several attempts to reverse the process, unfortunately with no success. The currently expected main result could be to have similar results as in the previous year.

However, the management is open and willing to change and find new opportunities. This strategy corresponds to building new partnerships with companies such as the above described Mahindra group. The main goal of this Hungarian company has always been the production of high value-added products. This approach has to be continued also in this new strategy. The company's management has to be excellent as well, because good leadership is the basis for success. One of the most important steps is to focus on the stakeholders, as in eastern cultures people and knowledge are the most valuable resources. At this point frugal thinking meets again the expectations of knowledge management.

Frugal way of thinking is based on simplicity. This innovative approach teaches employees to listen to their instincts, rely on their knowledge and skills, which are also important features of the eastern culture. Common use of knowledge can create a solution-oriented environment in which more new ideas, innovative solution can be achieved. Blue-collar workers are the company's real engines, because production would not work without them. It is important that they should also understand the essence of the new strategy, and adopt the vision and goals of the company. Then business development may begin. Finally, a value and quality focused operation may develop, which is based on trust and respect, and is in accordance with the expectations of the earlier mentioned knowledge and innovation culture.

This is a long process with person-centered thinking, because if the change does not start with the basics, strategy will not be successful. Lean organization, as a rational, simplified and minimalist approach to doing business, combined with a frugal way of thinking and a culture which prefers knowledge sharing, can work wonders.

The second figure shows a viable business model which is meant to reverse the current downward operation by applying a frugal way of thinking. Joining a business organization can be a possible way. However, search for partners and further successful cooperation depend on a number of other conditions.

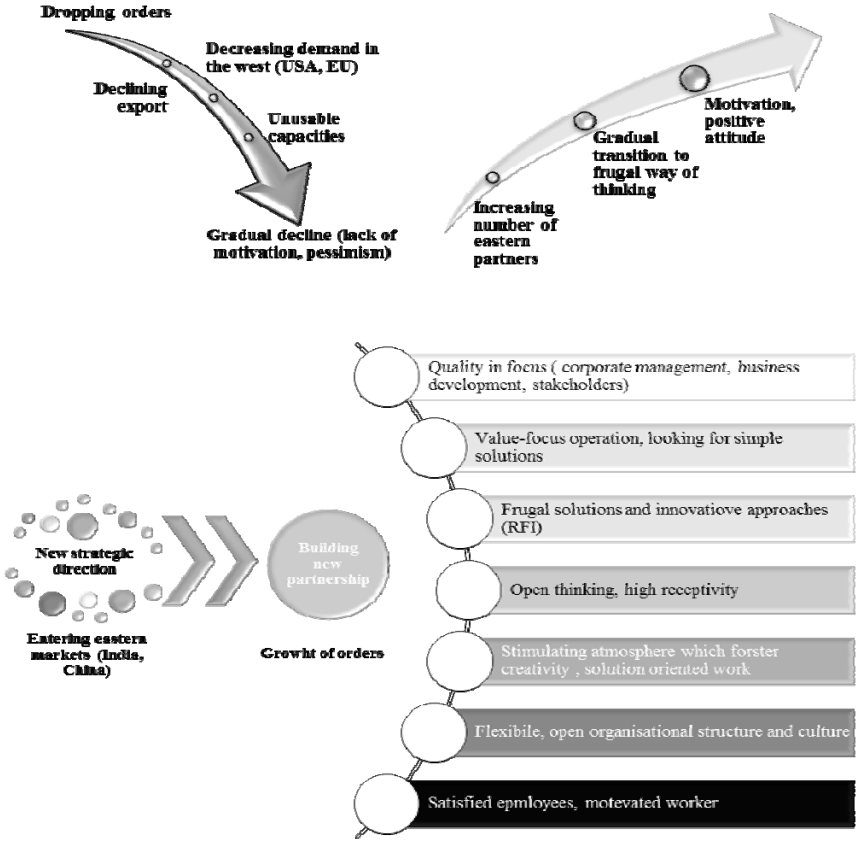

Fig. 2. A possible new business model

Source: G. Probst – S. Raub – K. Romhardt (2006). Wissen Managen Wie Unternehmen ihre wertvollste Ressource optimal nutzen. Wiesbaden: Gabler GmbH.

Conclusion

Frugal way of thinking and innovation come from the east and came to America across Europe. Companies with a long history and good corporate reputation have also adapted this method, because they saw the possibility of sustainable development, the key to the efficient and economical operation. At the same time they managed to produce high value-added products with fewer resources in order to reduce prices. More and more people can get the products of these companies. They trust companies more, and social responsibility is improving as well. In addition, even harmful environmental impacts have been reduced, because companies introduce more and more eco-friendly solutions. This innovative approach results in a win-win situation, if it is used wisely and carefully. It is not advisable to confuse this method with radical reduction of costs or with "innovation" at the expense of quality. The essence of frugal innovation is to build a new, open and flexible way of thinking in order to reveal human knowledge and creativity, hereby to develop unique and economical solutions.

The method is closely related to the operating logic of knowledge management system, since innovation and knowledge enable to provide unique and sometimes groundbreaking results, and in both cases creating the right organizational culture is a requirement.

In the eastern region, values and ways of thinking, which emphasize humans, relationships, knowledge and creativity, can fit also in the mentality of Hungarian companies. This mentality values human resource, and is aware that an organization can be developed only by human capital, and innovations and new solutions can be created only in this way. Personal development, development of skills and competencies are essential. In this way employees not only develop, but they can become motivated, because they can satisfy one of their main demands, their need for self-realization. Investment in human resources, which is similar to the logic of knowledge management system, is a key in the process of frugal innovation.

Frugal innovation in a few years has become a mature business model opposing traditions. The number of its followers has been growing. In Hungary it can be applied mainly in companies with adequate knowledge base and which are open to novelties, but they are not able to compete with the huge demand for resources needed by research and development and traditional and continuous innovation.

Acknowledgement

This paper was supported by scientific grant VEGA 1/0381/13 called "Assesment of innovative potential of entrepreneurial networks in the early stages of its formation", of the Faculty of Economics of J. Selye University in Komárno.

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