

**A Quarterly Journal of Nowy Sacz School of Business
– National-Louis University**

**KNOWLEDGE, PARTICIPATION AND
WASTE MANAGEMENT – SELECTED
PROBLEMS**

**Edited by
Anna Ujwary-Gil**

**Volume 9 Issue 4
2013**

Contents

From the Editor	3
Wahyudi Wibowo Technology Transfers and Knowledge Management in Developing Economies: Case Study of an Indonesian Manufacturer	5
Katarzyna Mika, Ryszard Stocki, Agnieszka Bożek Total Participation Management: Toward Psychological Determinants of Subjective Well-Being at Work	29
Olaf Flak, Adrian Pyszka Differences in Perception of the Participants in the Management Process and Its Real Trajectory	53
Christian Hoops, Michael Bücken Determinants, Moderators and Consequences of Organizational Interaction Orientation	73
Muhammad Yusuf Innovations Under the Concept of 'Turning Garbage into Gold' in Fisheries Waste Management	101
List of Reviewers cooperating with us in 2013	123

From the Editor

Management is an interdisciplinary field of science covering numerous concepts and approaches to analyzing organizational problems. Issue 4 of JEMI contains at least three such concepts, which we would like to present to our readers. These are: knowledge management, determining company ability to absorb advanced technologies; participation management and waste management. Beside the above-mentioned concepts, the volume also includes the issues of managers' behavior in the context of implemented projects and interaction orientation, understood as the ability of a company to interact with its clients and to gather information.

The first article is a very good example of a case study illustrating various mechanisms of technology transfer in a developing economy and developing effective ties between the practice of knowledge management and learning. Its Author presents the evidence for international technology transfer and examines its influence on development of technological capabilities of a national company as well as on knowledge management. The next article shows a successful search for the dilemma of what management style influences employees' well-being, confirming that there is a positive relation between subjective well-being and total participation in management. Another area of research focuses on discovering differences between processes undertaken by managers, self-awareness of their actions and perception of those processes after the project is completed. The Authors of the next article dealing with determinants, moderators and consequences of interaction orientation focused mainly on examining the synergic relation between interaction and market orientations, analyzing also the influence of strategic orientation on company efficiency. One of the most interesting ideas presented here is the comparison of several orientations. This JEMI issue ends with an article on innovative use of fishing industry waste and creating a new business based on crab shell waste, which brings the analysis and commercialization of the idea, as well as shows how to use technology to maintain balanced relations with the natural environment.

We give this issue of JEMI to our readers, hoping they will be interested in this combination of various approaches to management and research problems whose sheer number and subject are related to organizations in all development stages. We would like to thank the Authors for helping us to produce this issue and to Reviewers for their invaluable comments which have been reflected in the final edition of Knowledge, Participation and Waste

Management – Selected Problems. We hope that the articles presented here will be of interest to scientists exploring this area of knowledge as well as related fields.

Anna Ujwary-Gil

Editor-in-Chief, JEMI

Technology Transfers and Knowledge Management in Developing Economies: Case Study of an Indonesian Manufacturer

Wahyudi Wibowo*

Abstract

International technology transfers are crucial for developing economies since they may operate as one of the key drivers in the economies' development path. Previous studies have acknowledged some channels of technology transfers for developing economies. Nevertheless, the precise mechanisms of how the technology transfers would occur and take effect in each of the recipient economies and their domestic companies are still to be explored. Furthermore, understanding domestic companies knowledge management is important since it would determine the absorptive capacity of the company toward advanced foreign technologies. This study uses a case of technologically intermediate-level Indonesian manufacturer to show evidence of international technology transfers and their impacts on the development of indigenous technological capabilities of the domestic company, as well as to examine the company's knowledge management.

This study confirmed some benefits of international technology transfers for the domestic company, especially through the major mechanisms of technical license assistances, capital goods imports, turnkey projects, technical consultancies, backward-vertical flows of foreign direct investment, and participation in overseas markets. However, the impacts toward the domestic company's technological capabilities were generally at intermediate level. This implies that the domestic company needs to spend more investments on in-house R&D activities and to improve its knowledge management systems.

Keywords: *technology transfers, technological capabilities, research and development, knowledge management, developing economies.*

* Dr. Wahyudi Wibowo, Business School, University of Pelita Harapan Surabaya, corresponding address: University of Pelita Harapan Surabaya, Tokyo Tower, 7th Fl., Cito Superblock, Jl. A. Yani no. 288, Surabaya (60234), Indonesia, email: wahyudi.wibowo@uphsurabaya.ac.id or yudiwbw@yahoo.com.

Introduction

One of the most important factors which explain the remarkable economic development in many developing economies during the past four decades is the existence of international technology transfers. The involvement of international technology transfers has been acknowledged as bringing positive roles on the economic developments of some East Asian and Latin American developing economies since 1970s. This includes their roles in encouraging the accumulation of indigenous technological capabilities (hereafter referred to as TC) in the manufacturing sectors (Tolentino, 1993).

However, the roles of international technology transfers have apparently appeared to vary in each of the developing economies. Some successful economies have made a technologically closer catch-up with the developed economies, for instance, in the cases of the newly industrialized economies of Hongkong, Taiwan, South Korea, Singapore, and Brazil. But many others performed moderately or poorly in their technological developments. Furthermore, while technology transfers may occur in an economy, eventually the true challenge is how the domestic companies or workers in the host economy could absorb and master the transferred technologies and how not to let the technologies remain isolated in the foreign companies or expatriate workers (Thee, 2005).

In this regard, there are two clear observations. First, many developing economies have benefited from international technology transfers. The majority of the world's research and development (hereafter R&D) activities is in hands of few industrially developed economies, yet productivity gains are widespread across developing economies. Second, international technology transfers are not frictionless and their impacts on the productivity of the recipient economies are neither automatic nor evenly distributed (Xu and Chiang, 2005; Unesco, 2010). The latter implies that technology transfers might be stipulated under certain conditions, in which absorptive capacities of the economies such as human capital, technological level, and other institutional factors play important roles (Thee, 2005). This raises a question on the precise mechanisms of the technology transfers and how they give effect to the recipient economies.

The main objective of this paper is to give a case in point on the impacts of foreign technology transfers on the TC level of domestic company which operated in developing economy. Furthermore, it aims to study how the company manages its absorptive capacities toward the foreign technologies. This is particularly discussed in relation to the knowledge management of the domestic company.

The evidences revealed in this study may enrich the previous findings and contribute to deepening the analysis on the studies of international technology

transfers in developing economies. Moreover, the focus on the impacted domestic company will give more understanding on the developments of indigenous TC in a developing economy. This offers a distinctive feature compared to the previous studies in this field which often did not exclude the case of foreign companies in their examinations. The results also suggest several important managerial implications regarding the issue of knowledge management for domestic companies in developing economies.

Literature review

This section provides a survey on the theories of international technology transfers and knowledge management in developing economies, including some of the related empirical works. To begin with, these are some definitions of the key terms used throughout this paper.

Technology is broadly defined as the production methods, managerial practices, codified know-how and other tacit knowledge by which a company transforms capital, labor, and materials into a product (Blalock and Gertler, 2005). Another useful definition is to describe technology as the knowledge and machinery needed to run a company, which include both hardware (machineries and other capital equipment) and software (blueprints and manuals) of the whole company (Thee, 2001; Chee, 1981).

International technology transfers are acknowledged as the cross-border transfers of embodied technology in imported machineries and other capital equipments, as well as other diffusions of skills and technical know-how. International technology transfers can be divided into two categories, based on their modes of transfer. Technology transfers that come from direct economic activities are categorized in the formal mode, while ones that come from indirect economic activities are categorized in the informal mode. The formal mode of technology transfers is made possible because technology as a form of knowledge has an important property of economic commodity. Technology is a nonrival good that can be disseminated and used simultaneously in many economic entities (Grossman and Helpman, 1992).

When the technology transfers take place indirectly, it is usually called technology spillovers. Technology spillovers apply when: (1) companies can acquire knowledge created by others without paying for that knowledge in a market transaction, and (2) the creators or the current owners of the knowledge have no effective recourse, under prevailing laws, if other companies make unauthorized use of the acquired knowledge (Grossman and Helpman, 1992).

Technology transfers in developing economies

International technology transfers have been intensively studied in the literatures. In this regard, there are some channels of technology transfers available for developing economies. First, the formal mode of transfer which consists of FDI, technical licensing agreements (hereafter TLA), imports of capital goods, foreign education and training, turnkey projects, and technical consultancy. Second, the informal mode of transfer which may take place via participation in overseas markets and reverse engineering (Thee, 2005; 2001).

The next parts of this section will discuss the importance of each of the channels of technology transfers. TLA, imports of capital goods, foreign education and training, turnkey projects, and technical consultancy are often considered as important channels of technology transfers where domestic companies in developing economies can utilize them through direct transactional ways. They often involve the transfers of older technologies from advanced industrialized economies that do not offer the recipient a long-term competitive advantage in the global market. However, for companies in developing economies these channels provide affordable ways to increase their level of technological development. In addition, imports of intermediate inputs are also regarded as formal mode of technology transfers (Grossman and Helpman, 1992; Markusen, 1989). Companies which import intermediate inputs from advanced economies may also enjoy productivity gains.

With regard to FDI, it is important to note on the aforementioned classification that technology transfer through FDI is often considered in the literatures as a formal mode of transfer. That is to see it as technology transfer from the parent multinational corporation (hereafter MNC) to its own foreign affiliate. However, technology transfer from FDI to the non-affiliated domestic companies actually occurs informally. Hence, as much of the concern of this study, technology transfers through FDI will be regarded as an informal way of transfer. Another way to explain it is to see that MNCs have to be good at preserving their specific advantages from domestic competitors. Therefore technology transfers through FDI may only take place indirectly in terms of technology spillovers (Dunning, 1993).

Moreover, technology transfers from FDI toward domestic companies can be distinguished into two major channels, namely horizontal- and vertical-flows. In the horizontal-flow spillovers, MNCs may provide positive technological spillovers to domestic competitors through several mechanisms. First, domestic companies can learn simply by observing and imitating the MNCs' product innovations and business practices (demonstration effects). Second, increased competition from foreign owned companies may induce

domestic companies to reduce their inefficiencies (competition effects). Third, employees may leave MNCs to create or join domestic companies.

The vertical-flows of spillovers may occur through the supply chain relationships in either backward linkage, i.e. from MNCs to domestic suppliers, or forward linkage, i.e. from MNCs to domestic buyers. In this regard, there are two arguments which suggest that the spillovers may more likely to take place through backward linkage mechanism. First, while MNCs seek to minimize technology leakage to competitors, they have incentive to improve the productivity of their domestic suppliers, especially in the areas of training, quality control, and inventory management. Second, while the technology gap between foreign and domestic producer may limit within-sector full technology transfer, MNCs likely procure inputs requiring less sophisticated production technology for which the gap is usually narrower (Blalock and Gertler, 2005).

Participation in overseas markets can also be a channel of technology transfers when domestic companies do learning by exporting. Interactions with foreign customers and competitors provide important information on new products and technologies that allow domestic companies to efficiently produce and improve their product qualities. Exporting creates opportunities of direct contacts with various levels of demand and preferences in foreign markets, and doing export to technologically more sophisticated markets presumably generates higher spillovers (Thee, 2005). Furthermore, foreign customers from advance economies may offer technical assistance to exporting companies to adapt their products and technologies to the requirements of international markets. This is particularly evidenced in the cases of developing economies' outsourcing manufacturers (Pack and Saggi, 2001).

Reverse engineering is another important channel of technology spillovers in developing economies, especially regarding their limited R&D spending (Unesco, 2010). Reverse engineering is a process of discovering the technological principles of a machine through the analysis of its structure, function and operation. This process in developing economies often involves taking apart a machine from technologically advanced economies and analyzing its functions in detail for the purpose of maintenance work or sometimes in order to make a new machine that does the same function but with minor modifications.

Indigenous technological capabilities and knowledge management

International technology transfers may increase the level of indigenous TC for companies in developing economies. TC means the skills, technical, managerial and institutional capabilities that enable manufacturing enterprises to utilize

capital equipment and technical information efficiently (Thee, 2001). TC can be differentiated into two types, i.e. know-how and know-why. Know-how is about practical knowledge of certain production processes, maintenance, or application of a product and of its sales. Know-how is acknowledged in the form of formula, designs, procedures and methods, together with the accumulated skills and experience which are usually known as tacit knowledge. In contrast, know-why is about the scientific knowledge which represent the understanding of the principles of nature and usually codified.

At the early stage of TC development, transfers of one type of TC named know-how are needed. However, in order to let companies from developing economies catch-up with the same level of development of the companies from developed economies, another type of TC named know-why is required. Therefore, in order to further develop TC at a more advanced level of development, purposeful investments in searching for new technological innovations through R&D are essentially needed (Tolentino, 1993). In this respect, technology-importing economies have the challenge to maximize the transfers of the most relevant technologies. This is not simply about importing advanced technology machineries or acquisitions of the formula of sophisticated materials, but more importantly, its relation to the development of TC. Further development of TC, particularly a forward from know-how to know-why through investments in R&D, is crucial for the competitive advantage of manufacturing companies in developing economies (Thee, 2005).

Furthermore, the level of TC at the company level can be classified as follows: (1) Production or operational capability, which refers to the knowledge and skills required for the efficient operation and control of production process and the machinery in the plant, including maintenance and repairs; (2) Investment or acquisitive capability, which refers to the knowledge and skills required to search, assess, negotiate, and procure the relevant technologies. Moreover, it includes the capability to install and start-up the new production facilities; (3) Adaptive or minor change capability, which refers to the knowledge and skills required to digest the transferred technologies and to carry out minor modifications or improvements in the existing process or product technologies in response to changing circumstances and/or to raise productivity; (4) Innovative or major change capability, which refers to the capability required to carry out significant in-house R&D in order to make radical process or product modifications and develop new products or processes (Thee, 2005; Kim, 1997).

The development of TC, with respect to the influence of international technology transfers, will need a proper organizational learning. Organizational learning is considered as the company's absorptive capacity toward foreign

technologies (Dutrenit, 2000; Cohen and Levinthal, 1990). Organizational learning here is understood as the process through which companies create knowledge and acquire TC.

The process of organizational learning is created via a rather complex mechanism. The process basically takes place at two levels: individual and organizational. Learning process at the organizational level is not an automatic process of the accumulation of individual knowledge and, vice versa, what an individual learns depends on what is already learnt by the other members of organization at the organizational level (Dutrenit, 2000). Learning process usually first occurs at individual level and afterward needs to be intentionally converted into organizational level, in order to spread the individual knowledge to the other members in the organization. This process is typically made possible by effective coordination of learning and knowledge integration.

The more complex innovational activities faced by an organization, the higher the need to integrate knowledge across technological and organizational boundaries. Companies need to integrate knowledge all the time at different organizational levels in a way that allows the internal structure and processes to: (1) identify and develop specialized knowledge within technological fields, business functions and production divisions, (2) exploit this knowledge through integration across technological fields, business functions and production divisions (Dutrenit, 2000; Pavitt, 1991).

Therefore, knowledge management is fundamental for a company to build its TC. Knowledge management is a set of purposeful efforts in an organization to coordinate learning processes and to integrate knowledge across functions and at all organizational levels. This is a departure from the traditional method of knowledge specialization. The objective is to get the strategic use of the acquired knowledge at the organizational level. In this sense, the knowledge management of a company in developing economies is suggested to proceed at different stages (Dutrenit, 2000). At the initial stage, a company has to build and accumulate a minimum essential knowledge base of TC to engage in innovative activities. This initial stage of TC includes the capabilities to reduce costs, improve product's quality and upgrade the equipment to achieve parity with the leading competitors. This stage deals with the accumulation of some basic to intermediate-innovative level of TC.

Afterward, the company needs to move into the transition stage to pay adequate attention to two particular issues: (i) the organizational and managerial aspects of TC building throughout the company, and (ii) as the company approaches the internationally technological frontiers and seeks to build more complex and integrated knowledge bases, an advanced stage of technological accumulation is needed to make the strategic use of that

knowledge. At this transition stage, the emergence of embryonic strategic capabilities in some technical-functions or knowledge fields are expected. Therefore this stage deals with the accumulation of some intermediate- and advanced-innovative levels of TC.

Then, at the final stage, the company is expected to build its strategic capabilities which distinguished the company competitively from its competitors. At this stage, the company should also continually maintain and renew its strategic capabilities. This stage especially deals with the accumulation of advanced-innovative TC in all of the technical functions.

Major channels of technology transfers in Indonesian manufacturing sector

Indonesia has long ranging aims on industrialization. After some periods of isolation, since 1967 the economy has gradually opened for foreign investment in order to boost productions and to speed up its technological development. Since the mid of 1980s the economy has also adopted greater openness to trade, including imports of machineries and intermediate goods, in order to enhance its exports of manufactures. In this regard, like many other developing economies, Indonesia is categorized as a net importer of advanced technologies. However, its level of technological development, when compared to the East Asian's newly industrialized economies, is relatively still under-developed (Thee, 2005); suggesting its low level of absorptive capacities.

Comprehensive assessments by Thee (2005, 2001) toward international technology transfers across industries in Indonesia, which include the textile, garment and electronics industries of the late 1990s, indicated that there had been only four major channels of technology transfers in Indonesian manufacturing sectors. Those are FDI, TLA, capital goods imports, and participation in overseas markets. Moreover, the studies concluded that the technology transfers typically took place successfully only at the production or operational level of TC. There are only a few of them performed at the investment or acquisitive level. Note that the study observed the cases of international technology transfers in foreign-owned companies in Indonesia. Most of them were under large controls of foreign managers and technical experts. Hence local workers did not learn much from the imported technologies.

Lipsey and Sjolholm (2005) conducted a survey of empirical studies on technology spillovers in Indonesian manufacturing industry. The study found statistically significant effects of intra-industry technology spillovers, with only little effects that came from inter-industry mechanism. It means that backward-vertical flows of FDI spillovers, through supply chain transactions

between multinationals and domestic companies, had been an important conduit for technology transfers, for example, in the cases where some of the American, Japanese and German MNCs conferred technical and production advice to their qualified domestic suppliers (Blalock and Gertler, 2005). Some other multinationals even provided useful guidance on how to access international loans, expand the production capacity and how to design new products.

Another study by Jacob and Szirmai (2007) found that the involvement of Indonesian manufacturers in international trade, both via imports and exports, was also regarded as an important channel of technology spillovers. In this sense, capital goods imports from advanced economies were positively associated with technological learning. However, the contribution from exports was found to be less important than imports.

Research method

In order to pursue its objective, this study reviews the case of technology transfers in TRST, an intermediate-level technology Indonesian manufacturer. The company's data for the period of 1979-2008 was gathered through various ways, i.e.: literature survey on the company's official documents, in-depth interviews with some of the executives and plant managers, and several direct observations. The observations were conducted via plant visits which were combined with seat-in attendances on some of the daily operational meetings and employee training events during the periods of 2006-2008. The status of the company as a public listed entity gives advantage for the disclosure of the data.

The utilization of company-level data allows this study to focus on the detail mechanisms of the technology transfers throughout the company, as well as on the many aspects of the company's knowledge management systems. Hence this study is expected to give more explanation on the transfer mechanisms of foreign technologies. Also, this may help researchers in this field to further examine their econometric model and statistical analysis. This is in relation with the nature of a case study analysis which gives advantage of being rich in details. However, a caveat for this approach is that the findings might be merely indicative than explanatory, thus the findings may not be generalized.

TRST: a forward move from domestic to global player

TRST is a flexible packaging manufacturer which was established in November 1979. The company started its initial commercial production with the installed capacity of 4,500 MT per annum in 1986. Currently, its total production

capacity is 65,000 MT Biaxially Oriented Polypropylene (BOPP) per annum and 32,000 MT Biaxially Oriented Polyester (BOPET) per annum, making the company the largest flexible packaging film manufacturer in Indonesia. The development of the company's production capacities is presented in Table 1.

Table 1. Production capacities of TRST, 1986-2007.

	1986	1989	1993	1995	1996	2003	2005	2007*
BOPP	4,500	12,000	24,000	24,000	40,000	50,000	50,000	65,000
BOPET	-	-	-	12,000	12,000	12,000	32,000	32,000

* The additional capacity in this period was due to the acquisition of a production plant in China.

Source: PT. Trias Sentosa, Tbk., various periods.

TRST envisions to be the most innovative and preferred business partner in flexible packaging industry with a globally recognized brand. The company has been engaged in domestic and global markets. Its clients range from cigarette, snack and food, MSG, printing and lamination, electronic, to adhesive tape industries. Since 2007, the company has commenced its international production in China.

Flexible packaging industry covers the manufacture, supply and conversion of plastic film for retail-food packaging such as snacks and non-food packaging applications such as cigarettes, personal care, household detergents, pharmaceuticals, and labeling. The products can be made from single-web substrates such as flexible plastics (PE, PP, or PET) or can be coated or laminated with other materials like aluminum foil and paper. Product grades are determined by the combination of clarity, surface gloss, stiffness, heat sealability, and deadfold properties. Therefore product innovation is the key competitive advantage for the industry. Technology wise, according to ISIC classification, flexible packaging products are categorized at intermediate-level.

While in the global market the degree of competition is high, domestically the flexible packaging industry tends to create oligopoly structure, due to the protections from import tariffs and investment regulations. The Indonesian flexible packaging industry is concentrated into three key domestic players, where each of them has strong affiliates in the domestic tobacco and food industries.

The Indonesian Ministry of Industry in 2007 forecasted flexible packaging industry to continue to develop sustainably, following the growth of food and pharmaceutical industries. However, due to the poor development of chemical industry in the domestic market, the industry is still highly dependent

on raw material imports, especially on polypropylene and polyethylene resin. Therefore the industry faces critical challenge from the rising cost of oil-based raw materials.

The following parts will present the milestones of the company's TC development, where a large portion of them shows the company's reliance toward various channels of international technology transfers. Afterwards, further parts will discuss the mechanisms in which international technology transfers give effect to the TC development of the company. The last part will present the assesment on the company's knowledge management.

Start-up period (1979-1988)

The start-up period was indicated by the company's dependence on high-skilled foreign engineers and technicians to set up its initial operation. The early times of this period were situated under the condition where knowledge on flexible packaging production was considerably new for the Indonesian economy. This was as well true for the operation of the fully and semi-automated machines used in the plant. Therefore, in this period the installation of major imported machineries and equipments was primarily conducted by foreign engineers and technicians provided by the suppliers. On the other hand, the construction of plant facilities and other minor equipments, such as water and energy utilities, were installed by the local engineers.

When the company was built in 1979, there were not enough local engineers who have the capabilities to set up the plant operation. The local engineers at the middle supervisory level consisted of few inexperienced engineers who graduated from local universities, except only one of them who had been educated and trained abroad. The majority of the workers at the first supervisory and operational level were graduates from high-school or vocational school with many of them having some years of experience in low-level technology manufacturing.

Therefore, in the early periods of production the company relied on few key foreign engineers to lead the set up and operation of the plant. The overall set up and operation of the plant were actually done by foreign engineers through a turnkey project. Those engineers were hired for their experience in the same industry abroad. In this period local engineers and technicians learned much about the new tacit knowledge and technology from their foreign companions. In addition, the local engineers also benefited from the technical assistance and support from foreign technicians of the machine suppliers.

The company started its initial commercial production of BOPP products in 1986, which at that time primarily focused on serving its domestic affiliates.

Over the next years, in order to enter foreign markets, the company also hired other foreign professionals at the managerial level. They were hired especially due to their knowledge and networks on foreign markets and technical product licensing. As a result, in March 1987 the company began exporting abroad. This practice of hiring expatriates has been continued in the following periods. However, the number of foreign professionals decreased to reach the minimum level while the number of local professionals holding key positions continued to grow.

In summary, in this period TRST was in the early stage of building its minimum essential knowledge base. The focus was to develop some basic TC, especially to acquire and master some technical functions which related to the daily operations of production and maintenance. In regard to the managerial functions, the company was a beginner in learning how to market its products overseas, where most of the knowledge was in hands of its foreign workers.

Rapid growth period (1989-2006)

This period witnesses a rapid development of TRST's production capacities as well as its TC. TRST had gradually increased its production capacities by the installation of several new plants and product lines, namely metalizing, BOPET, PVdC, and thermal-lamination. The development in the company's TC was indicated by huge investment in new imported machineries, extensive products diversification, a growing number of skilled local workers in the technical and managerial functions, and significant organizational developments.

In this period, the company made huge investments in the utilization of advanced automated machineries imported from Japan and UK, especially for the major machines such as extruder, winder, and cutter; while most of the heavy equipments were imported from Germany. The utilization of cutting-edge technologies from abroad was based on the reasoning that technological development in the production systems is a crucial part for the overall productivity of the company.

Furthermore, it is important to recognize that during this rapid growth period, all of the major projects including the assessment and installation of new production machineries and the building of new plant facilities were successfully conducted by the company's local engineers of the Project Department. This department was basically responsible for the evaluation of new production facility, procurement of the appropriate machineries, and the supervision of the installation and start-up processes of the new production investment.

During this period local engineers showed their technological developments in maintaining and to some extent in making several minor

modifications to the machineries. This was apparent, considering that some of the imported machineries were second-hand machineries from different manufacturers, therefore they usually needed additional adjustments and modifications. Still, most of the main parts for the machineries repairs were imported. Also, to fulfill the need of high-quality raw materials, which can not be afforded locally, the company depended on foreign supplies mainly from Thailand, Japan, Singapore, and South Korea.

In this growing period, R&D activities were first introduced. The activities were initially delivered to seek more efficient methods in the production processes, particularly to help reduce the rate of defects. Afterward, the research activities aimed to discover new product innovations in support to the product diversification strategy and to serve the growing demand of specialized products. However, within the limited budget of R&D, the company was able to conduct only on a small number of research projects which all employed fewer than ten researchers. As a result, there were no product innovations produced. In one of the big R&D projects, new product development was almost realized. However, the stability of the product's quality was difficult to achieve, so the new product was never brought into production. Therefore to acquire the knowledge of new products formula the company relied a lot on the TLA mechanism, mostly from UK based institution, which was considerably less costly.

To support its growth strategy, TRST initiated some important progress regarding its organizational development. New functions of R&D, quality assurance, and technical project were taken over by independent departments and embedded into the organizational structure of the company. In 1990 the company entered the Indonesian stocks market. Furthermore, as the opportunities of international sales continued to increase, TRST opened its international representative offices in the USA, Singapore and China, where all of the international sales managers were Indonesians. The company also actively participated in some international packaging exhibitions.

Since 1995, the Quality Management Systems of TRST has been meeting the ISO 9002 standards and it received certification from the Llyod's Register Quality Assurance Ltd., London. The certification was a remarkable achievement for the organizational development of the company. This development was initially delivered in response to the requirements of becoming a preferred supplier for MNCs operated in Indonesia, such as Unilever and British American Tobacco. Likewise, in the early 2000s the company decided to make a huge investment in the implementation of ERP system, named SAP. This was intended to adopt to the world's best manufacturing systems, and opened wider opportunities toward global supply chains.

Following the technological and organizational developments in the production and managerial fields, in this period human resources development began to attract more attention. For example, the employee profile in 2006 presented a development toward the first period. The total number of employees was 971 people. It was about five times higher compared to the figure in 1988. Importantly almost a quarter of them were university graduates. Training and development activities were also introduced and conducted regularly. Training programs were primarily intended to endorse the dissemination of tacit knowledge in the production and maintenance processes from senior engineers to new engineers and operators. This was important since the company continued to expand the production capacity through the addition of more plants and production lines, and thus consequently needed a lot of new engineers and technicians to handle the daily operations. In contrast to the previous period, where training programs were all conducted by foreign engineers, many training programs in this period were delivered by the local senior engineers. Later in the mid of 2000s training programs also included some managerial and behavioral trainings.

Other developments were made under the knowledge management systems of TRST, i.e.: the implementation of daily production meeting and the establishment of Engineering Department. The daily production meeting of all managers and engineers in the production units was an important medium for the company's organizational learning. The daily meeting was conducted through online conference network that enabled persons at all plants to have a meeting at the same time. The daily meeting was quite conducive to generate knowledge sharing across production units, especially on the many issues of daily technical problem solving and quality improvement. Next, the establishment of Engineering Department, which consists of all senior engineers, was also another conduit of organizational learning. This department primarily functioned to facilitate the dissemination of tacit knowledge in the production processes and the regeneration of engineers and technician, as well as to give assistance on non-routine improvement activities in the production units.

During this period, TRST significantly improved its domestic sales performance by acquiring large sales contracts as main supplier for foreign MNCs operated in Indonesia. One of the MNCs operated in personal care industry, while the others operated in tobacco and MSG industries. The contracts demanded a lot of endeavors for the company, especially in fulfilling the standard requirements of quality management (ISO) and logistic management systems. This condition was different from the cases of domestic buyers who did not require high standards on quality management or logistic management systems.

In the early time of 2000s, the company signed a valuable insourcing contract with a Japan based manufacturer, the accomplishment of which required great efforts. Before the agreement ensued, the Japanese manufacturer sent its managers for a plant visit, in order to assess the plant's facilities and particularly its concern for the quality management systems and other product quality standards. The Japanese manufacturer then asked the company to send its product samples. After that, consecutive technical assistance and joint quality control were conducted by the Japanese technicians in the TRST's plant to ensure common language on the products' qualities. Considering the value of the project, the company dedicated one of its production lines to serve the contract.

Another big project which was accomplished in this period was a sales contract with a U.S. based MNC. Before the U.S. MNC appointed TRST as its supplier, some managers had come for a plant visit. Unlike the Japanese manufacturer, the U.S. MNC preferred to conduct a comprehensive and procedural audit toward the plant's production systems and facilities as well as the quality management systems and other requirements such as safety and health standards, security systems, and some of the environmental concerns. The result from the first audit was quite satisfactory. However, it left few requirements to be completed, especially on the implementation of CT-PAT security systems. Responding to the feedback from the prospective buyer, the management of TRST then assigned a special task force to fulfill the requirements. The MNC also asked the company to send its product samples. Within several months afterward, the company had successfully completed the requirements and won the buyer's trust.

The years of 2005 to 2006 were tough for TRST, facing the increase of the raw materials prices following the hike of oil prices. Therefore, the company strived to conduct the production processes more efficiently, especially in terms of material and energy consumption. Since 2005 there had been serious efforts to improve production efficiencies by learning and adopting new production management systems, such as: 5S, Lean Production Management, and Total Productive Maintenance. As informed by one of the company's executives, these efforts were in accordance with the guidance from a multinational company, Unilever-Indonesia, where the company once had a chance to conduct a benchmarking study, under the MNC's supplier development program.

In summary, this was a very dynamic period where the company showed some significant progress in its TC development, particularly strengthening its minimum essential knowledge base in the technical functions of production and maintenance. The company also made some valuable progress in some of the managerial functions such as in the quality management, logistic

management and security systems. All this progress was caused by two determinant factors: large influence of international technology transfers and the building up of organizational learning and knowledge management in TRST.

Additionally, in this period TRST also performed beyond its initial stage of TC development to move to an early phase of transition stage. The early phase of transition stage was indicated by the facts that the company paid some concerns regarding the organizational and managerial aspects of TC development. However, the emergence of embryonic strategic capabilities was not evidenced.

Internationalization period (2007-2008)

This period was indicated by the fact that while technologically TRST's developments was at its early phase of transition stage, the company's growth was mainly driven by its capital intensive investment abroad. In July 2007, TRST took over the full ownership of a BOPP plant in China with a production capacity of 15,000 MT per annum. The plant was previously owned by a Japanese MNC. The investment cost the company 5.5 million dollars and was expected to create additional sales of 23.5 million dollars. During this period, local engineers were often sent to the plant in China to conduct technical consultations with their partners in China. This overseas investment gave another evidence on the capabilities of the company to asses the feasibility of international investment.

While the company's production methods in many areas had been standardized and therefore required a higher ratio of unskilled labors, in 2008 a new President Director was appointed. He had wide experience in product development and supply chain management in a world-class manufacturing MNC operated in Indonesia. His expertise and international experience were expected to be a value added to TRST, especially to nurture the culture of innovation throughout the company. Following the expansion, the company continued to hire more local professionals preferably thpse with experience in multinational companies and in the areas of supply chain or quality improvement management systems. In this period, traning programs which focus on Lean Production Management and Total Productive Maintenance were also emphasized.

In summary, in this internationalization period TRST focused on improving its TC in some important areas of supply chain and quality improvement management. Some additional capabilities in these areas were due to the contribution of more capable human resources. However, up to this period it was not yet clear what will be the strategic capabilities of TRST, indicating that the company's transition stage was still at its infancy.

Discussion

The formal mode of transfers

In the two subsequent parts, we provide a discussion on each of the modes of technology transfers and how it impacts the the company’s level of TC. This part discusses the formal mode of technology transfers which may take place through the mechanisms of TLA, imports of capital goods, foreign education and training, turnkey projects, and technical assistance. The informal mode will be discussed separately in the next part. Table 2 presents the distribution of each of the mechanisms of technology transfers in TRST, while Table 3 summarizes the analysis on the impacts of each of the mechanisms of technology transfers.

Table 2. Technology spillovers matrix in TRST, 1979-2008

Modes	Initial Period (1979-1988)	Rapid Growth Period (1989-2006)	Internationalization Period (2007-2008)
Formal	- TLA - Capital goods imports - Technical consultancies - Turnkey project	- FDI (backward-vertical flows) - TLA - Capital goods imports - Technical consultancies	- FDI (horizontal flows)*
Informal		- Reverse engineering* - International trade	

*Minor spillovers.

Table 3. Impacts of technology spillovers on the TC development of TRST, 1979-2008

Mechanisms	Level of Technological Capabilities			
	Production	Investment	Adaptive	Innovative
TLA	S (S)	S (S)	S (S)	NS (NS)
Capital goods import	S (S)	S (NS)	S (OS)	NS (NS)
Technical consultancies	S (S)	S (NS)	OS (OS)	NS (NS)
Turnkey project	S (N/A)	S (N/A)	PS (N/A)	NS (N/A)
FDI (horizontal)	N/A (S)	N/A (OS)	N/A (OS)	N/A (NS)
FDI (vertical, backward)	S (N/A)	S (N/A)	OS (N/A)	NS (N/A)
Reverse engineering	OS (N/A)	OS (N/A)	OS (N/A)	NS (N/A)
Participation in overseas markets	S (PS)	S (S)	PS (PS)	NS (NS)

Explanatory notes:

S = Successful PS = Potentially Successful

OS = Occasionally Successful NS = Not Successful

N/A=Not Applicable

() : comparison with the aggregated data of Thee (2005)

With regard to TLA, it was apparent that since its start-up period the company has relied on this mechanism as the prime source of knowledge for production. Likewise, choosing turnkey projects as a mode of technology transfers during the start-up period was a great success. Moreover, imports of capital goods and technical assistances of suppliers from advanced economies played a significant role in the development of the company's TC. The impacts ranged from the operation and autonomous maintenances to the assessment and even the modification capabilities of the production processes along all of the periods. Nonetheless, the impacts of foreign education and training were low compared to technical assistance. This was because technical assistance was generally more practical in use.

Additional minor impacts from the turnkey projects became visible in the internationalization period, when the company took over a plant in China. It proved TRST successful in applying its production and investment capabilities into a ready-to-operate plant. More importantly, this particular TC may potentially be employed in the company's future international investments.

Since most of the technologies were acquired through direct transactional mode, then it was secure for the company to maximize its usage throughout the periods. However, this mechanism will not bring the company to have competitive advantage in product innovation. Therefore the future challenge is to endorse the contribution of the company's internal R&D function in order to make radical product innovations to fight fierce competitions locally and globally.

The informal mode of transfers

Some informal technology transfers in TRST has taken place through the mechanism of FDI, particularly through the vertical spillovers mechanism. However, the case of horizontal spillovers from FDI practically had no effect since there was no foreign investment operated in the Indonesian flexible packaging industry; except for a minor indication that was likely to take place in the internationalization period, when the company hired some local professionals with extensive previous experience in MNCs.

The influences of backward-vertical flows of spillovers were revealed in the cases where the company was appointed as the preferred supplier for MNCs which operated in the domestic personal care, tobacco and MSG industries, during the rapid growth period. The MNCs assisted the company in improving its managerial functions in terms of the adoption of ISO and better logistic management systems.

In the case of TRST, the evidence of reverse engineering as a mechanism of spillovers was not conspicuous, shown merely by the ability of the

engineering team to conduct minor modifications into the imported production machineries. In many other cases, they still depended on technical helps and assistance from foreign suppliers. Product modifications were also quite small to consider.

Participation in overseas markets had been one of the important sources of technology spillovers, as revealed in the cases of insourcing activities to the Japanese and U.S. buyers. Opening the international representative office as well as the participation in international exhibitions offered many advantages of better communication with international buyers, understanding the global market trends and at the same time learning from the advancement of other producers. Accordingly, TC developments through this mechanism were modest. It is indicated by the abilities of the company to broaden its investments through the opening of several international representative offices and the participation in many international exhibitions.

Assesment toward the knowledge management systems

Considering that TRST was highly dependent on foreign technological innovations, the company implemented some initiatives to improve its TC, namely through building some mechanisms of knowledge management. The previous sections have pointed out some major mechanisms of knowledge management in the company.

First, since its fast growing period, the company has introduced intensive human resources training and development programs. This was intended to cover knowledge diffusions of both technical and managerial functions at all organizational level and across units. Second, the company has established some units which functioned as the knowledge centers. This includes several independent units of R&D Department, Projects Department, and Engineering Department. The R&D Department was responsible for developing TC in new product development. The Projects Department was particularly in charge of developing TC in assessing and setting up new investments of plant facility. The Engineering Department functioned to facilitate the dissemination of tacit knowledge in the production processes, the regeneration of engineers and technician, and to give assistance on non-routine improvement activities in the production units. Third, the company had instituted a unique medium of knowledge sharing through the daily online meeting in the production units. All of these had shown the high concern of the company toward the importance of coordination of learning and knowledge integration.

Furthermore, facing the increased challenges in the industry, TRST eventually expected to acquire TC in product innovations, which is the key competitive advantage in the industry. For instance, the establishment of R&D Department in the rapid growth period was intended to discover new product

innovations, that is in support to the company's product diversification strategy and to serve the growing demand of specialized products. Nevertheless, while TRST was able to learn from advanced foreign technology to operate, invest, and to a certain extent make minor changes, the company has not yet shown its capabilities in making product innovations. A clear evidence on this was the fiasco of the R&D Department in producing new innovative products. This may indicate some limitations in the company's knowledge management systems especially in the processes of making the strategic use of the acquired foreign technologies. In particular, the R&D function in the company has not yet been able to upgrade its TC from acquiring the know-how to the know-why of product innovations.

Overall, TRST has been successful on accumulating a minimum essential knowledge base during the three periods of development, especially on the technological and managerial functions of the production systems. Knowledge integration at this stage allowed the company to reduce costs, raise product quality, and improve its production technology to achieve parity with other advanced manufacturers in this industry. From this point of view, the company has done well in upgrading its indigenous TC to the intermediate-innovative level. However, this achievement was not enough to maintain the competitiveness of the company. TRST needed to continue doing its best efforts to upgrade the company's TC to the advanced-innovative level. At that moment, the company was still at its early transition stage to build its embryo of long-term and strategic capabilities.

Conclusion

In support to the previous studies, for instance by Thee (2005, 2001) and Blalock and Gertler (2005), the result of this study found some evidence on the influences of foreign technology transfers on the domestic company of a developing economy. In this case, along its development periods TRST benefited from international technology transfers especially through the major mechanisms of TLA, capital goods imports, turnkey projects, technical consultancies, backward-vertical flows of FDI, and participation in overseas markets (see Table 2).

This study also found that the impact of technology transfers toward the domestic company's indigenous TC is at intermediate level, indicated mostly by the production and investment capabilities and few indications of adaptive capability (see Table 3). This is generally in accordance with the aggregated 'national data' compiled in Thee (2005), except that the results on Table 3 seem to give a more promising figure. There was also an indication of the role of technology transfers toward the company's TC to assess and deliver its

international production. This is following the typical development of MNCs from developing economies (Tolentino, 1993).

With regard to the findings, there are some managerial implications that can be suggested. First, in order to absorb more benefits from foreign technologies, a domestic company in developing economies needs to make more effort and investment on in-house R&D activities as well on the human resource and organizational developments. All of these could work as catalysts of higher TC developments, especially for a company which produces technology-intensive products.

Second, a domestic company in developing economies needs to make improvements in its knowledge management systems, particularly with the intention of serving its innovative capabilities. In this sense, the domestic company needs to pay more attention to the aspects of coordination of learning and knowledge integration at all organizational levels. This would include some integrative mechanisms of: building small cross-functionals teamwork with broad tasks, settling overlapped problems among different stages of projects and production functions, creating a pool of knowledge and expertise, setting boundary spanning integrators (i.e. individuals who stand at the interface between different specialized units or internal and external knowledge bases), making strategic rotation of personel, and inducing informal communication networks in the organization (Dutrenit, 2000).

References

- Blalock, G. and Gertler, P. J. (2005). Foreign Direct Investment and Externalities: The Case for Public Intervention. In: T. H. Moran, E. M. Graham and M. Blomstrom (Eds). *Does Foreign Direct Investment Promote Development?* Washington, DC: Institute for International Economics and Center for Global Development.
- Chee, P. L. (1981, August). *EEC Investment in ASEAN and the Transfer of Technology: A Malaysian Case Study*. Paper presented at the First Conference on ASEAN-EEC Economic Relations, Singapore.
- Cohen, W. M. and Levinthal, D. A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, 35 (1).
- Dunning, J. (1993). *The Globalization of Business*. London: Routledge.
- Dutrenit, G. (2000). *Learning and Knowledge Management in the Firm: From Knowledge Accumulation to Strategic Capabilities*. Massachussetts: Edward Elgar Publishing.
- Grossman, G. M. and Helpman, E. (1992). *Innovation and Growth in the Global Economy*. London: MIT Press.

- Jacob, J. and Szirmai, A. (2007). International Knowledge Spillovers to Developing Economies: The Case of Indonesia. *Review of Developing Economics*, 11 (3).
- Kim, L. (1997). *Imitation to Innovation: The Dynamics of Korea's Technological Learning*. Boston: Harvard Business School Press.
- Lipsey, R. E. and Sjöholm, F. (2005). The Impact of Inward FDI on Host Economies: Why Such Different Answers? In: T. H. Moran, E. M. Graham and M. Blomstrom (Eds). *Does Foreign Direct Investment Promote Development?* Washington, DC: Institute for International Economics and Center for Global Development.
- Markusen, J. R. (1989). Trade in Producer Services and in Other Specialized Intermediate Inputs. *American Economic Review*, 79.
- Pack, H. and Saggi, K. (2001). Vertical Technology Transfer via International Outsourcing. *Journal of Development Economics*, 65.
- Pavitt, K. (1991). Key Characteristics of the Large Innovating Firms. *British Journal of Management*, 2, 41-50.
- PT. Trias Sentosa, Tbk. *Annual Report of 2005-2008*. Retrieved from <http://www.trias-sentosa.co.id>, accessed at 14 May 2010.
- Thee, K. W. (2001). Channels of International Technology Transfer in Indonesia: A Brief Survey. *Working Paper Series of the International Center for the Study of East Asian Development*, 2001 (32).
- Thee, K. W. (2005). The Major Channels of International Technology Transfer to Indonesia: An Assessment. *Journal of the Asia Pacific Economy*, 10 (2).
- Tolentino, P. E. E. (1993). *Technological Innovation and Third World Multinationals*. London: Routledge.
- Unesco. (2010). *Measuring R&D: Challenge Faced by Developing Countries*. Montreal: Unesco Institute for Statistics .
- Xu, B. and Chiang, E. P. (2005). Trade, Patents and International Technology Diffusion. *Journal of International Trade & Economic Development*, 14 (1), 115-135.

Abstrakt (in Polish)

Międzynarodowe transfery technologii są niezbędne dla gospodarek krajów rozwijających się, ponieważ mogą one działać jako kluczowe czynniki napędzające rozwój gospodarczy. Dotychczasowe prace potwierdzały istnienie pewnych kanałów transferu technologii w krajach rozwijających się, niemniej jednak, dokładne mechanizmy opisujące transfer technologii oraz jego skutki dla gospodarki kraju przyjmującego pozostają niezbadane. Ponadto, zrozumienie przez krajowe firmy zarządzania wiedzą jest ważne, ponieważ określa zdolność firmy do absorpcji zaawansowanych technologii z zagranicy. Niniejsza praca wykorzystuje studium przypadku technologicznie średnio-zaawansowanego indonezyjskiego producenta, aby pokazać dowody międzynarodowych transferów technologicznych oraz ich wpływu na rozwój miejscowych zdolności technologicznych krajowej firmy, jak również w celu zbadania zarządzania wiedzą w firmie.

Niniejsza praca potwierdza korzyści płynące z międzynarodowych transferów wiedzy do firmy krajowej, w szczególności poprzez mechanizmy pomocy przy licencjach technicznych, importu dóbr kapitałowych, projektów realizowanych pod klucz, konsultacji technicznych, wstecznego-pionowego przepływu bezpośrednich inwestycji zagranicznych oraz obecności na rynkach zagranicznych. Jednakże powyższe wpływy na zdolności technologiczne krajowej firmy ogólnie pozostawały na średnim poziomie. Sugeruje to, iż firma ta powinna dokonać większych inwestycji we własną działalność B+R oraz poprawić swój system zarządzania wiedzą.

Słowa kluczowe: *transfery technologii, zdolności technologiczne, badanie i rozwój, zarządzanie wiedzą, gospodarki krajów rozwijających się.*

Total Participation Management: Toward Psychological Determinants of Subjective Well-Being at Work

Katarzyna Mika*, Ryszard Stocki,
Agnieszka Bożek*****

Abstract

Aiming to determine which management practice has the strongest influence on the subjective well-being (SWB) of employees, three workplaces were assessed with reference to different levels of total participation management (TPM), an innovative approach to human resource management. The study examined whether the level of TPM is positively related with SWB, defined according to Diener's (1984) affective and cognitive facets of work. The psychological explanation of the predicted dependence was the level of satisfaction of three basic needs (autonomy, competence and relatedness) distinguished by Deci and Ryan (2000a). The hypothesis about a positive relationship between SWB and TPM was confirmed. Results indicate that the least participative company has employees with the lowest subjective well-being and with the lowest satisfaction of basic psychological needs.

Keywords: *Total participation management, subjective well-being, basic psychological needs, self-determination theory.*

Introduction

Companies that have implemented the principles of total participation management (TPM) have shown substantial improvement in both human resource and financial indicators (Stocki, Prokopowicz and Żmuda, 2008). Harley-Davidson, the famous motorcycle manufacturer, was on the brink of bankruptcy in the early 1980s, but recovered to become a profitable market leader within the decade. A culture of empowerment enabled employees to become true partners in the business. The organization was transformed from

* Katarzyna Mika, M.A., Medical University of Warsaw, ul. Żwirki i Wigury 61, 02-091 Warsaw, Poland, katarzyna.mika@wum.edu.pl.

** Ryszard Stocki, Professor at SWPS, University of Social Science and Humanities, Department in Katowice, ul. Kossutha 9, 40-844 Katowice, Poland, ryszard.stocki@swps.edu.pl.

*** Agnieszka Bożek, M.A., Wojtyła-Institute - Science Foundation, ul. Smoleńsk 29, 31-112 Cracow, Poland, agnieszka.bozek@wojtyla.edu.pl.

a traditional, top-down model to an open model in which employees were provided with the training necessary to make significant business decisions (Catalyst, 2004). This was achieved through innovative marketing and implementation of just-in-time inventory systems, total quality management using statistical operator control, and employee involvement programs (Kotha & Dutton, 1996). Employee turnover was significantly reduced, as was the rejection rate of motorcycle parts produced (Fessler, 2012).

Southwest Airlines, widely recognized as the most successful United States-based passenger airline, has earned a profit every year of its existence other than its first year of operation and has the lowest employee turnover rate in the airline industry (Smith, 2004). Herb Kelleher, the founding president, and his management team emphasize a relaxed corporate style that provides employees with considerable operational independence. The corporate culture is the one of common goals, shared knowledge, and mutual respect. He answered a question about employee control this way: "A financial analyst once asked me if I was afraid of losing control of our organization. I told him I've never had control and I never wanted it. If you create an environment where the people truly participate, you don't need control. They know what needs to be done, and they do it. And the more that people will devote themselves to your cause on a voluntary basis, a willing basis, the fewer hierarchies and control mechanisms you need. (Kelleher, 1997)."

Semco, a hydraulic pump manufacturing company in Brazil, is an outstanding example of participatory management. Most of its employees, including factory workers, set their own working hours. All employees have access to the company's financial records and most of them vote on many of the important company decisions (Semler, 1989). CEO Ricardo Semler is probably the world's leading practitioner of Douglas McGregor's (1960) Theory Y, which maintains that people are naturally capable of self-direction and self-control, even in a corporate setting. In general, Semler's radical approach has been successful. An investment of \$100,000 in Semco in 1985 would be worth \$5,400,000 20 years later. Regardless of the poor political and economic situation in Brazil at that time, when many other large companies bankrupted, Semco has prospered (Fisher, 2005).

Many other companies have benefited from greater employee participation in management. Combs, et al. (2006) conducted a meta-analysis of studies on the effect of high-performance work practices on organizational performance and found a significant positive effect. Empowering employees to leverage their knowledge, skills, and abilities for organizational benefit leads to greater job satisfaction, lower employee turnover, higher productivity, and better decision making (Becker, et al., 1997). Stanley (2005) examined in great

detail 40 companies of “The 100 Best Companies to Work for in America” (Levering & Moskowitz, 2004) listed in Fortune magazine. These firms were judged to truly exhibit employee empowerment and a satisfied worker culture. Fourteen financial indicators of the 40 empowered companies were compared to those of the Standard & Poor’s 1500 companies and supported the hypothesis that empowered firms will have more favorable financial and investment results than companies lacking this focus.

Literature review

Total Participation Management (TPM) in theory and practice

When analyzing any facet of a company’s functioning, it is necessary to start with a determination of its effectiveness. Economic theories have usually defined effectiveness in terms of financial benefits. When talking about total participation management, a more complex approach to effectiveness is required, namely taking into consideration the perspectives of the organization, the community, and the individual. These three contexts of total effectiveness are intertwined, especially because of the main assumption that participation is the cooperative action of every employee perceived as a stakeholder (Żmuda, Prokopowicz and Stocki, unpublished manuscript, p. 5). Unquestionably, the companies mentioned above reached the highest score of that dimension.

In the present research, the individual context is understood to be the subjective, emotional, and cognitive assessment (called subjective well-being) of working in the studied organization. Effectiveness from this perspective is “a complex, multi-faceted positive influence on the organization (leading to its well-being, flourishing etc.) of every stakeholder in the field of its interaction” (Żmuda et al., unpublished manuscript, p. 20).

Total Participation Management (TPM) is a management practice best understood through the prism of Wojtyła’s anthropology (1985). The crucial content from the Wojtyła’s definition of participation applies to the subject of participation (“the person”); to a kind of action which is not just an ordinary behaviour (“transcendence in the action”); to conditions of performing (“together with others”); and to permanent hallmarks of the person (“own freedom of choice and direction, not conditioned”).

Prokopowicz, Stocki and Żmuda (2008, p. 5), reformulating Wojtyła’s definition of participation in psychological terms and following Harrison’s (1985) assumption that members of the organization are seen as entities involved in the construction of meaning, derived a definition of total participation as the processes of development of all members as individual persons and the communities and systems of which they are members in

the process of sense-making, in which the common and individual good is achieved through such processes of social interaction that each person is guaranteed freedom of expressing one's will.

On the basis of this definition, they created the definition of total participation management as the art of harmonizing and organizing processes of management in time and ambient circumstances so that they lead as quickly as possible to total participation (Prokopowicz et al., 2008, p. 5).

This style of management differs from more traditional forms in that employees are more engaged in decision making. They are allowed to set their own and other's salaries, to set the time they come to work, even to set up the furniture in offices. Furthermore, every employee becomes a businessperson (through management training) in order to understand the needs of the whole company. The financial systems, as well as all weaknesses of the corporation, are transparent to the employees. Core values are relevant in every day of the company's existence and they are the key to building trust among clients. Every employee is aware of those values and complies with them in creating the company's culture. Developing one's own competences is strongly supported, although it is optional. Employees do not need to advance up the corporate ladder to lift their financial status because they earn more in accordance with the company's success. As an expression of participation, shares of the company's stock are equally divided among employees (Stocki et al., 2008). Total participation is a proper approach to management, because in order to create favorable work circumstances (with a highly efficient and effective environment) a fully participative organization needs to be supported (Summers and Hyman, 2005)¹.

Three basic dimensions appear in the value system of total participation management: the employee's share in power, knowledge, and property. These dimensions will be used in the present research instruments to establish the organizational context -- the level of participative management in a particular company. They were also pointed out amongst a larger list of variables in the research of Deci, Conwell and Ryan (1989) who wrote about "Satisfaction with personal autonomy" and "Satisfaction with opportunity for inputs" taken from Work Climate Variables. Those seem to be suitable to "Shares in power" from TPM's dimensions because of the subjective nature of the employee's actions. "Pay and benefits" in Deci et al.'s (1989) research fits the third important TPM's dimension "Shares in property". There is no similar dimension corresponding to "Shares in knowledge" listed in their Work Climate Variables.

Current human resource management functions in contrast to the pro-human approach presented by Wojtyla (1985). Nowadays the most common way of managing people is by instrumental conditioning and extrinsic

stimulation. If the theory of Wojtyła were to be used in organizations, the practical principles would be: power to all employees, the right to self-determination, cooperation with trust, and treating employees as participants instead of human resources.

Subjective Well-Being (SWB)

According to Diener (1984), the area of subjective well-being has three characteristics:

- 1) It is subjective; as Campbell (1976) claims, it depends on the experience of the individual.
- 2) It includes positive measures; it doesn't mean only the absence of negative factors.
- 3) Its measures comprise an overall assessment of all aspects of human's life.

The subjective perspective assumes that a person evaluates the degree of his state by himself (Deci and Ryan, 2008).

Three constructs are used to operate a definition of subjective well-being: a high level of positive affect, a low level of negative affect, and a high degree of satisfaction with one's life (Deci and Ryan, 2008).

Diener (1984) presented measurements of well-being that could be most useful for the question: Does TPM make people more satisfied? Diener based his considerations on a philosophical perspective, pointing out and linking two components of happiness – affective and cognitive. The first – more popular – is derived from *hedonia*. This philosophical movement requires a majority of positive affects over negative affects. According to this approach, well-being deals with affective pleasure in someone's life (Watson, Clark and Tellegen, 1988). The second, less known, approach is derived from *eudaimonia*. From this perspective, the social psychologists define well-being as a result of general life satisfaction judgement (Diener, Emmons, Larsen and Griffin, 1985) and one's own personal life judgement (Shin and Johnson, 1978); so it is a cognitive evaluation. Aristotle, in his empirical approach (translated by Gromska, 1982, p. 25), wrote that eudaimonia is the happiness of living well with the added connotations of success and fulfilment. It was already Aristotle who believed that making the volitional choice of virtue in life is necessary if someone is to achieve eudaimonia, the lasting happiness.

The tradition of happiness studies gives some examples where these two components (eudaimonic--life satisfaction and hedonic--positive/negative affect) were researched together because of their comprehensiveness. Additionally, the two affective (positive and negative) elements were explored as inversely related; they cannot appear together at the same time in one person's experience (Diener and Emmons, 1984). In the current research,

psychological well-being is understood in the dual cognitive/affective paradigm.

Taking into account the above considerations and the full context of individual performance, we believe that TPM has an effect on the employee's well-being.

Hypothesis 2: People working in companies with a high TPM level display higher subjective well-being.

Basic psychological needs

Considering people's needs at the workplace, one should refer to the Self-Determination Theory (SDT) of Edward Deci and Richard Ryan (2000a). It focuses on the psychological mechanism that explains the content and the process of goal pursuits (Deci and Ryan, 2000b), but the core of this psychological mechanism is built on three innate, universal, basic, psychological human needs: autonomy, relatedness, and competence.

To fulfil the need of autonomy means "to self-organize and regulate one's own behaviour, which includes the tendency to work toward inner coherence and integration among regulatory demands and goals" (Deci and Ryan 2000b, p. 252). According to Deci, Connell, and Ryan's (1989) experiment in work environment, if the need of autonomy was satisfied by autonomous support, then psychological factors such as well-being, satisfaction, or intrinsic motivation increased. Ryan and Deci (2000b) additionally wrote that volitional autonomy means acting with cooperation, relying on others rather than experience arbitrary decision-making. This meaning seems to be very similar to TPM's term of acting together with a high level of autonomy and also with Wojtyla's sense of meaning and fulfilment in the Act.

To fulfil the need of competence is understood as "to engage optimal challenges and experience mastery or effectance in the physical and social worlds" (Deci and Ryan, 2000b, p. 252). There are some ways to fulfil the need of competence, for example by positive feedback. But there is one condition – the presence of satisfying autonomy (Fisher, 1978).

To fulfil the need of relatedness means "to seek attachments and experience feelings of security, belongingness, and intimacy with others" (Deci and Ryan 2000b, p. 252). Intrinsic motivation is enhanced in situations full of warm and secure relations. According to Ryan, Stiller and Lynch (1994), this postulate could be seen also in schools, while observing relations between a student and a teacher. Ainsworth and Bowlby (1991) concluded that small children need secure maternal relations to undertake an interesting activation and to explore the world.

The Self-Determination Theory postulates that humans are active and growth-oriented in a way to integrate themselves in social structures. Ryan

and Deci (2000b) indicate circumstances to which people support their actions with the full sense of choice and with the deep reflection. This definition is reminiscent of Wojtyła's concept of the Act in such terms as "action", "self-determination", "together with others", "freedom of choice and direction", "volitionally or self-conscious". It should be mentioned that if Wojtyła's theory is the basis for total participation management and at the same time Wojtyła's theory corresponds to Deci and Ryan's theory, there is a possibility that a Self-determination theory could help in the analysis of the effectiveness of TPM. From these relations we can derive the next hypothesis.

Hypothesis 3: People working in companies with high TPM display higher basic psychological need satisfaction.

Based on SDT literature, it appears that if three psychological needs (autonomy, competence and relatedness) were satisfied, then the person would exist in an optimal state of mind and health (Ryan and Deci, 2000a). This statement is fundamental for the next hypothesis:

Hypothesis 4: Basic need satisfaction is positively related to subjective well-being.

The Self-Determination Theory could explain whether or not TPM is effective in the pursuit of subjective well-being. Going further, it should be asked whether TPM's employees are satisfied with their need of autonomy, competence, and relatedness. If the answer is "yes", TPM workers should exist in an optimal state of mind and health. This study presumes that workers who are supported by TPM have the opportunity to engage in autonomous work, to feel responsible for the whole process of the company's growth, to utilise and develop their competences, and to work in a solid group with transparent values. Thus they are more active in satisfying their needs and, as a result, they are psychologically healthier and more satisfied with their job. The main hypothesis (H5) is based on three variables. First – whether the organization is managed in a totally participative way; second – whether the basic needs are satisfied; and third – whether employees display higher subjective well-being than in less participative organizations.

Hypothesis 5: People working in TPM companies display higher subjective well-being related to their work, and this dependence is based on the satisfaction with basic psychological needs in those employees.

Deci et al. (1989) claimed that the idea that managers support self-determination is conceptually and philosophically consistent with participative management and vertical extension of work. However, it differs from them, focusing on a manager's interpersonal orientation rather than on decision-making and work design.

However, to begin this analysis, we need to check the basic assumption of significant differences between the three companies studied.

Hypothesis 1: *The three investigated companies differ significantly from each other in total participation management.*

In conclusion, as the total participative style of management is assessed as an independent variable, it is expected that TPM results in highly satisfied basic needs, that the subjective well-being shows a high level of positive but low negative affect, and that there is high satisfaction with work.

Research methods

Participants

Data for this research was provided by 71 employees (7 questionnaires were not completed) in the sales service (stores and individual salespeople) of three major corporations from the cosmetics industry (Company 1: 28 employees; Company 2: 25 employees, Company 3: 18 employees). The managers and salespeople have direct contact with each other – in stores or at group meetings.

The companies were selected from the chosen industry by such criteria as history, popular consumers' opinions, and mission or values declared by the company. The information shown below was collected from official websites of those companies and is presented in the check-list (Table 2). Company 1 presented its quality system and its clear values, e.g. that working with passion, working together, sharing goals, creates greater results and makes the world a better place. This appears to be similar to participative assumptions. Company 2 instead presents itself as the fair company, which applies social responsibility and positive motivation. It seems that this corporation focused more on rules and strategic human resources than on participation. Company 3 supports community trade and long-term trade relationships; it underlines the importance of responsibility, of respect and it is brave enough to sincerely present its weaknesses. Core values are equally relevant in everyday work since the establishment of this company. The management system of this company seems to be the most participative.

These circumstances allowed for the posing of the prediction that those companies differ from each other according to their TPM level.

Hypothesis 1 says that three investigated companies differ significantly from each other in total participation management (TPM). However, there were several differences in activity in survey participation among the involved companies.

Company 1: Almost all employees who were asked agreed to participate in the survey; only three people who were abroad proposed to phone them back later. From 15 sent queries, 12 people filled in the whole questionnaire, the other 16 questionnaires were completed during an employee meeting.

It could be claimed that they were convinced mainly by the argument of the authority of one of the bosses who recommended the survey. Managers (11 persons) from this company tended to be interested in the research. They never refused to answer the questions because of company's regulations, but one of the managers stopped filling the questionnaire when he discovered that the questions are not relevant to his position at work. Subordinate employees (17 persons) were both eager and helpful. They had some questions and doubts, but the argument about anonymity was the key one.

Company 2: Approximately 50% of employees who were asked refused to participate in the survey. From 39 sent queries, 25 people filled in the whole questionnaire. Managers (4 persons agreed) were much more skeptical and tended not to be as interested in the research as were their subordinates. They refused to answer the questions because of company's regulations. It is forbidden for them to talk to anyone about any formal or informal conditions of work. In contrast, their subordinates (21 persons agreed) answered more eagerly, but while talking with the researcher, they looked around to see whether the manager or an assistant was watching. They did not want to spend much time talking with the researcher, because, as they declared, they had plenty of commitments.

Company 3: All of employees who were asked agreed to participate in the survey and what was surprising, 100% of all people who were sent the questionnaire filled it in. What is more, people who completed the questionnaire probably encouraged other people to join in the research, because 18 people filled in the whole questionnaire when only 12 emails were sent. As they said during the phone call, they were convinced mainly by the argument of anonymity. Managers (11 persons) from this company, similar to the subordinates (7 persons) were enthusiastic in helping and more interested in the research than were the managers in the other companies.

The percentage of respondents who stopped answering the questionnaire after a couple of questions came to 9% (7). These questionnaires were not taken into account. Also 8 questionnaires completed in OpenIndex had some empty items because responders treated them as not concerning their work. Those missing data was substituted by averages.

The basic demographic data is presented in Table 1.

Table 1. Demographic structure of the sample

Demographics	Category	Frequency
Gender	Female	63
	Male	7
Age	<25	25
	26-35	31
	36-45	9
	46-55	2
	>55	1
Education	Elementary	0
	Vocational	3
	Secondary	33
	Higher	30
Company	1	28
	2	25
	3	18
Seniority	0-2 years	31
	3-4 years	28
	5-10 years	8
	>10 years	3
Position	Director	5
	Manager	21
	Seller	16
	Cashier	9
	Administration	0
	Self-reliant	16

Measures

A check-list of total participation practices was used as the first instrument. Furthermore, four questionnaires (all with permissions of authors) were used in the main part of this research. All of them were consolidated in one email link with the technical help of online survey software (www.surveymonkey.com). Then they were sent to respondents as one compiled questionnaire in order to leave their responses anonymous, while still allowing their data to be compared. At the end of the whole questionnaire, there was a short section identifying data about gender, age, education, the company, job seniority, and the position in the company.

TPM

To confirm differences in total participation among the three investigated companies, two measures were used. The check list was designed basing on the practices of total participation management (see Stocki et al, 2008). The list

consists of 15 practices the author matched with the particular company. The examples of practices were as follow: “Transparency of weaknesses of the company.”; “Core values as the direction indicators and trust builders.”; “People in long-term relationships.”; “People working together with others.” The whole list is presented in Table 2. Information about each company was collected from their official websites, including enclosed reports of values. The companies were divided according to the amount of TPM practices they present on their websites.

Table 2. The check-list of total participation management practices for comparison of the investigated companies

The practice	1	2	3
People working together with others.	√		√
People in long-term relationships.			√
All employees engaged in decision-making, suitably to their competences.	√		
Development balanced with the interest of the company together with the person’s interest.			√
Motivational system based on the understanding of the sense of their own work.	√		√
Transparency of financial system.			
Transparency of weaknesses of the company.			√
Responsibility for oneself, for the team, and for the company.			√
Loyalty and trust among stakeholders.	√	√	√
The company with opened borders.	√	√	√
The culture of the company, not just a system of regulations.	√	√	√
Development of own competences is optional.			
Salary correlated with the company success.			
Core values as the direction indicators and trust builders.	√		√
Shares of the company divided among employees.			

Note: 1 = company number 1; 2 = company number 2; 3 = company number 3.

OpenIndex® was designed by Ryszard Stocki Associates–Transition Consulting as the diagnostic instrument, first for profit organizations (see Stocki et al, 2008), then also for non-profit ones. The current version, the OpenIndex® 2009, consists of 21 subscales which include three aspects of total effectiveness: individual, organizational, and social. We adapted two core subscales (Decisions and Transparency) from the original OpenIndex 2009 questionnaire and used them as one scale to measure the level of total participative management in profit organizations. 15 questions were selected. Responses were made on a 5-point Likert-type scale, ranging from

1 (Strongly Disagree) to 5 (Strongly Agree). There were three additional possibilities to answer apart from measuring (I don't know, I don't understand, It is irrelevant here). The reliability for the TPM scale is $\alpha = .83$.

Subjective Well-Being

Subjective well-being was measured with two methods. Positive affect and negative affect components were measured with Positive Affect Negative Affect Scale (PANAS) designed by Watson, Clark and Tellegen (1988). The Polish translation was based on the English version of PANAS. This 5-point Likert-type scale consists of 20 adjectives of words that describe different feelings and emotions at work. The respondents had to indicate which level of each emotion they experience at work using the answers as follow: Very slightly or not at all; A little; Moderately; Quite a bit; or Extremely. Results were measured in two contrary variables: Positive Affect with 10 items and Negative Affect with 10 items. The reliability for each subscale was as follows: Positive affect $\alpha = .81$; Negative affect $\alpha = .85$.

Work satisfaction was measured with the Work Satisfaction Survey (WSS), built on items designed by Wrzesniewski, McCauley, Rozin and Schwartz (1997). It consists of 5 statements chosen from 18 that most suitably apply to satisfaction with work. Answers express how strong the person agrees or disagrees with each statement. Responses are made on a 4-point Likert-type scale, ranging from 1 (strongly disagree) to 4 (strongly agree). This questionnaire consists of the following statements: "If I was financially secure, I would continue my current work even if I stopped getting paid."; "I enjoy talking about my work to others."; "My work makes the world a better place."; "I would choose my current work life again if I had the chance."; "I find my work rewarding." The reliability for the work satisfaction scale was $\alpha = .84$.

Basic Needs Satisfaction

The historical process of designing a Basic Need Satisfaction at Work Scale (BNS-W) contains many versions from job-context research (see Baard, Deci and Ryan, 2004; Deci, Ryan, Gagné et al, 2001; Ilardi, Leone, Kasser et al, 1993; Kasser, Davey and Ryan, 1992). Baard et al. (2004) used a 23-item scale called Intrinsic Need Satisfaction to analyze employees' satisfaction. Deci et al. (2001) used a shorter 21-item scale. BNS-W assessed the level to which people at work feel satisfaction with their three basic needs: their need for Autonomy (7 items), their need for Relatedness (8 items), and their need for Competence (6 items). These three needs are treated as one scale in this article and BNS-W is composed of 21 questions and a 7-point Likert scale. The answers range from 1 – Totally Untrue, through 4 – Partly True, to

7 – Totally True. In the present data set, overall reliability for BNS-W scale was $\alpha = .94$.

Procedure

At the beginning of the research, a check-list was made to verify differences among companies in the level of total participation management.

The data collection in these studies lasted about 4 weeks and took place via Internet. Participants were sent an email with the link to the Internet survey. Email addresses were collected during conversations while visiting different stores in southern Poland. The other method was to phone individual employees, ask them to fill in the questionnaire, and request an email address. People who answered the query did not have to resend the email because the questionnaire was saved at the end of the process of responding.

Variables

Three types of variables could be distinguished:

- 1) Group variable: Company number 1, number 2, or number 3.
- 2) Independent variable: the level of total participative management in the particular company.
- 3) Dependent variables: the level of subjective well-being among employees; the level of three measures of needs' satisfaction among employees.

All variables mentioned above are quantitative. The total participative management scale consists of two dimensions from the work environment – decisions and transparency – and constitutes one scale. Subjective well-being consists of three scales counted independently: the positive affect scale, negative affect scale, and work satisfaction scale. Needs' satisfaction consists of three basic needs - autonomy, competence, and relatedness, but in this research, basic need satisfaction is considered to be one scale.

Measuring process

The total participative practices on the check-list were matched with each company. Then they were summed up and the companies were ranked by the number of TPM practices.

Items from OpenIndex® 2009, WSS, and PANAS were worded in positive directions, whereas items from BNS-W questionnaire were worded in both positive and negative directions; however, all data was coded in such a way that higher scores were considered more positive.

The level of total participation management (TPM) in each company was computed by averaging the relevant 15 items from Open Index Core 1.0. Higher scores were always more positive. The three means (from each company) were taken under consideration and compared using the

Kruskal-Wallis one-way ANOVA. TPM had also a confirmation measured by summing the items on the check-list.

Subjective well-being (SWB) was intended to be aggregated as a global score by summing points from the positive affect scale with the work satisfaction survey, and then by subtracting negative affect points – following the recommendations of Sheldon and Niemiec (2006, p. 3), the procedures of Sheldon and Elliot (1999, p. 486), and Sheldon and Kasser (1998, 2001, p. 1324). Those researchers utilized the PANAS questionnaire and Satisfaction with Life Scale (SWLS). In the present research, instead of measuring life satisfaction, a work satisfaction survey was created consisting of the same number of items as SWLS. Unfortunately in the current research, the subjective well-being scale needed to be divided into three scales (positive affect, negative affect, and work satisfaction), because these three variables have been shown not to load on the same higher order factor (variance accounted only for = 33.64%, the three variables loading .58, .40, .40 or less). Those scales assessed both the emotional and cognitive aspects of subjective well-being in the specific environment of work. As the next step in the measuring process, the three companies were compared by averaging the relevant SWB's subscales using the Kruskal-Wallis one-way ANOVA. At the end, the Spearman correlations were tested between SWB's subscales and OpenIndex.

To establish the level of basic need satisfaction among workers of each company and to compare them using the Kruskal-Wallis one-way ANOVA, points from each item of BNS-W were computed once the necessary reversals had been done. Then the Spearman correlations were tested between BNS-W and OpenIndex.

Analysis

The analysis utilized descriptive statistic procedures, the Kruskal-Wallis one-way analysis of variance, and the Spearman's R correlation, because of skewed score distributions. The summed results of the check-list showed that company number 1 has 7/15 participative practices, company number 2 presents 3/15 practices, whereas company number 3 shows 10/15 practices. The detailed score is presented in Table 2 and 3.

Table 3. The sum and the percentage of total participative management practices counted from the check-list for comparison of the investigated companies

	Company 1		Company 2		Company 3	
Practices	7	47%	3	20%	10	67%

Note: There were 15 TPM practices in total (100%) on the check-list.

The results of the first hypothesis concerning differences in total participation management between three corporations are presented below. The means and standard deviations of OpenIndex in each company amounted as follows $M = 3.67$ ($SD = 0.58$) and $M = 2.97$ ($SD = 0.76$) and $M = 3.71$ ($SD = 0.85$). The Kruskal-Wallis one-way analysis of variance showed that these differences were statistically significant ($H(2, N=71) = 12.75802, p = .0017$), so further intercorrelations are meaningful. Detailed scores are presented in Table 4 and 5.

Table 4. The quantitative variables and descriptive statistics (means, minimum and maximum scores, standard deviations) for comparison of the investigated companies

Variable	Company 1					Company 2					Company 3				
	M	Min	Max	SD	N	M	Min	Max	SD	N	M	Min	Max	SD	N
OI	3.67	2.33	4.67	0.58		2.97	1.33	4.29	0.76		3.71	2.27	5.00	0.85	
PA	3.58	2.00	4.60	0.53		3.25	2.20	4.60	0.60		3.47	2.50	4.50	0.61	
NA	1.43	1.00	2.60	0.35	28	1.90	1.00	3.40	0.64	25	1.55	1.00	2.50	0.42	18
WSS	2.65	1.20	3.60	0.63		2.03	1.00	3.60	0.56		2.93	2.00	4.00	0.53	
BNS	5.48	4.05	6.48	0.68		3.76	2.33	5.57	0.90		5.15	3.86	6.43	0.85	

Note: OI = OpenIndex. PA = positive affect. NA = negative affect. WSS = work satisfaction survey. BNS-W = basic need satisfaction.

The statistical procedures of three subscales of subjective well-being are presented below. The means and standard deviations of positive affect in each company are $M = 3.58$ ($SD = 0.53$) and $M = 3.25$ ($SD = 0.60$) and $M = 3.47$ ($SD = 0.61$). The Kruskal-Wallis one-way analysis of variance showed that these differences were statistically nonsignificant ($H(2, N=71) = 4.64, p = .0981$), thus further intercorrelations with this variable are meaningless.

The means and standard deviations of negative affect in each company are $M = 1.43$ ($SD = 0.35$) and $M = 1.90$ ($SD = 0.64$) and $M = 1.55$ ($SD = 0.42$). The Kruskal-Wallis one-way analysis of variance showed that these differences were statistically significant ($H(2, N=71) = 8.98, p = .0112$). Detailed scores are presented in Table 4 and 5.

Table 5. Variables TPM, SWB, BNS-W and Kruskal-Wallis one-way analysis of variance for comparison of the investigated companies

Variable	H	p
OI	12.76	.0017
PA	4.64	.0981
NA	8.98	.0112
WSS	22.18	.0000
BNS	31.84	.0000

Note: OI = OpenIndex. PA = positive affect. NA = negative affect. WSS = work satisfaction survey. BNS-W= basic need satisfaction.

Correlation of negative affect and OpenIndex amounted to $R = -0.41$, and it was statistically significant ($p < .05$). Detailed scores are presented in Table 6.

The results of testing the hypothesis that concerns the relationship between total participation management and work satisfaction among employees are presented below. The means and standard deviations of work satisfaction in each company are as follows: $M = 2.65$ ($SD = 0.63$) and $M = 2.03$ ($SD = 0.56$) and $M = 2.93$ ($SD = 0.53$). The Kruskal-Wallis one-way analysis of variance showed that these differences were statistically significant ($H(2, N=71) = 22.18, p < .0001$). Detailed scores are presented in Table 4 and 5. Correlation of work satisfaction and OpenIndex amounted to $R = 0.53$ and it was statistically significant ($p < .05$). Detailed scores are presented in Table 6.

The subsequent results concerning the comparison between total participation management and basic need satisfaction are presented below. The means and standard deviations of basic need satisfaction in each company amounted as follows $M = 5.48$ ($SD = 0.68$) and $M = 3.76$ ($SD = 0.90$) and $M = 5.15$ ($SD = 0.85$). The Kruskal-Wallis one-way analysis of variance showed that these differences were statistically significant ($H(2, N=71) = 31.84363, p < .0001$). Detailed scores are presented in Table 4 and 5. Correlation of BNS-W and OpenIndex amounted to $R = 0.66$ and it was statistically significant $p < .05$. The detailed score is presented in Table 6.

Table 6. Spearman's correlations of all variables

Variable	1	2	3	4	5
1. OI	-				
2. PA	0.57	-			
3. NA	-0.41	-0.40	-		
4. WSS	0.53	0.58	-0.40	-	
5. BNS	0.66	0.58	-0.61	0.68	-

Note: All correlations were significant at the $p < .05$ level. OI = OpenIndex. PA = positive affect. NA = negative affect. WSS = work satisfaction survey. BNS-W= basic need satisfaction.

Correlations of basic need satisfaction and subscales of subjective well-being are presented as follows. The correlation between positive affect and basic need satisfaction amounted to $R = 0.58$ and it was statistically significant ($p < .05$). The subsequent correlation between negative affect and basic need satisfaction amounted to $R = -0.61$, and it was statistically significant ($p < .05$). The correlation between work satisfaction and basic need satisfaction amounted to $R = 0.68$ and it was statistically significant ($p < .05$). Detailed scores are presented in Table 6.

Finally, analysis was conducted regarding the last hypothesis, which assumed that total participation management is connected with high well-being, and that this connection is based on high satisfaction with basic psychological needs. Employees from Company 3 evaluated their company's management as the most participative; the mean of OpenIndex amounted to $M = 3.71$. Company 1 attained a little lower mean ($M = 3.68$). Furthermore, company no. 2 was visibly assessed as the least participative ($M = 2.97$).

The highest positive affect was in Company 1 ($M = 3.58$), the second highest in company no. 3 ($M = 3.47$), and the lowest was in company no. 2 ($M = 3.25$). The lowest negative affect was in Company 1 ($M = 1.43$), the second lowest in Company 3 ($M = 1.55$), and the highest was in Company 2 ($M = 1.90$). The highest work satisfaction was in company no. 3 ($M = 2.93$), the second highest in Company 1 ($M = 2.65$), and the lowest was in Company 2 ($M = 2.03$). Concerning basic need satisfaction, the highest score ($M = 5.48$) was displayed by employees from company no. 1, while Company 3 placed lower ($M = 5.15$). The lowest satisfaction was presented by employees from Company 2 ($M = 3.76$). Detailed scores are presented in Table 4.

Discussion

Total Participation Management

The analysis of differences among three cosmetic companies showed that hallmarks of total participative management varied significantly among them. Therefore, Hypothesis 1 was confirmed. Additionally, employees from Company 3 presented their company as the most participative in holistic leading. Next, Company 2 came in at the lowest TPM level according to its employees' estimation. Company 1 was ranked in the middle of participative classification, but it is noteworthy that the TPM mean of this corporation was also high. The same sequence appeared after summing the check-list of TPM practices.

Only after conversations with employees was it possible to draw a conclusion about the management approach to leading the company. Employees from Company 2, who were supported by the lowest participative management, displayed the least interest in participating in the research. The researcher was often referred to the head office by these people. Employees with a lower status were generally uneager to converse, because they claimed to have many commitments to fulfill. They either refused to answer or to give email addresses, or quickly went back to work. They looked around to check if they had been seen by any manager. This might have been caused by managers frightening employees in the past. Among workers from this company, only 25 of 39 people who were sent the questionnaire responded to it. In contrast, the reaction was different in Company 3; the one managed the closest to TPM. In this company, all people who were asked wished to participate in the survey. Similarly, in Company 1, with the second highest position of total participative scores, employees were also enthusiastic in helping with the survey. Here an incentive element was the authority of the high-status, well-known boss. Through the courtesy of this person, the researcher could contact many managers and some directors and subordinates.

Well-being

The assumption about the positive correlation between TPM and subjective well-being was confirmed in Company 2. The least happy employees work in the least participative company. Their general mood at work is the worst; they feel most nervous, irritable, or afraid. They also estimate their work as least satisfying. What was likewise confirmed, Company 3, with the most total participative management, had the employees who are most satisfied with work. However their mood at work is a little worse than that of Company 1, which had a medium, but still highly participative level.

As the consequence of such results, it can be claimed with high probability that employees in companies which do not apply TPM principles display lower subjective well-being. Furthermore, the statement that TPM companies make their employees happier should be written more carefully; retaining that affective state among those employees was not clearly evident. This ambiguity could be caused by insufficient differences among companies in the positive affect scale. As regards to practice, many people would like to participate in a TPM environment that allows them to work with highest work satisfaction.

Basic Need Satisfaction

The hypothesis connecting TPM with satisfaction with three basic psychological needs (autonomy, relatedness and competence) (Deci and Ryan, 2000a) was confirmed by the quite high correlation. Though this was not so clearly confirmed in the comparison of the three companies, there are some signs that it was very close. Company 1 pointed at 5.48 on a 7-point BNS-W scale (it was the highest score), and 3.67 on a 5-point OpenIndex scale (it was the second, but also high TPM score). Company 3 was the most participative (3.71 on a 5-point scale), but only a little more participative than Company 1, and it achieved a similar BNS-W score = 5.40. The next argument is that the least participative Company 2 has the least psychologically satisfied employees BNS-W= 3.76. From these it follows that three basic psychological needs are probably fulfilled when the person is working in conditions of acting together with others (Wojtyła, 1985), when they share power and knowledge. However further reliable investigations are required.

With the conclusion that total participation management leads to higher work satisfaction and might lead to some aspects of well-being, with quite a high correlation between basic need satisfaction and TPM, we could evoke Summers and Hyman (2005), who maintained that participation should be applied in all facets of company life to gain the highest effectiveness. Unfortunately the hypothesis of complex intercorrelation (mainly the correlation of BNS-W and TPM) was not directly confirmed, even though it was very close. Therefore it is impossible to establish a solid inference about total participation management. The reason could be that none of the investigated companies was officially managed in a totally participative manner.

Limitations and future research

Although the present study provides important data related to the management of employees, the results should be assessed against a number of limitations in the research design. First of all, the research relies on

a self-reporting, cross-sectional survey design. Secondly, the sample was rather small. The criterion of random selection was not achieved because participants were asked first if they wanted to participate, then those who agreed had another opportunity to refuse answering the received email. So in such situations, the really active and open employees participated. Sometimes more than 50% within a company refused to answer, sometimes all the people who were asked were eager to help in the research. It is possible that one incentive was the authority of the high-status, well-known boss who recommended responding to the survey. Furthermore, the subjective dimension of the whole questionnaire and the way of collecting data could be also treated as extraneous variables, because respondents might deliberately answer incorrectly, for example, in selecting the company's name or might let somebody else (outside the company) fill in the survey. The researcher had almost no control over the response process. Therefore it is necessary to be careful in generalizing the results to all companies. What also seems to be important is that the instruments of well-being were not reliable enough and not sensitive enough in diversifying the current sample.

It could be fruitful for deeper understanding of total participation management to investigate at least one company which officially claims the uniform application of Total Participation Management (e.g., the companies indicated in the introduction of this article). This solution was not possible in the current research because of specific financial and travel conditions connected with investigating corporations from abroad (ex. USA or Brazil). We tried to choose companies with management styles either similar or totally different from TPM. It would be most appropriate to compare real TPM companies with other, non-TPM companies. With such a sample of TPM-declared companies it would probably be unnecessary to measure the level of TPM, and it would allow for the main focus of attention to be paid to the employees' happiness dimension.

Practical implications

There are some practical applications to the current management environment, but those contributions require a long-term period of general change in thought and should be carefully worded. Subjective well-being is probably connected with the TPM principles (Stocki et al., 2008), especially with autonomous decision-making, which gives the feeling of possessing power and also is connected with transparency of values or organizational strategy. Those conditions of TPM can offer satisfaction from time spent at work, a sense of security due to the possession of some control and support from deep, true relationships. The assumption of Self-Determination Theory (Deci and Ryan, 2000a) was also confirmed in accordance to TPM conditions,

though there are some facets requiring further study. Thus TPM could be propagated in companies that wish to take the risk of changing all of management's habits in order to increase the happiness and commitment among employees, simultaneously creating a psychologically satisfied, strong, and reliable team with long-term relationships.

Conclusion

Undoubtedly, nowadays the topic of well-being is very attractive and commercial (Seligman, 2002) as well. It is important to utilize these favorable conditions to collect many scientific suggestions regarding how to lead a company and how to attain individual, organizational, and social effectiveness in one management style. It is a good historical moment for researchers to look for the management approach that satisfies these requirements. The present article tried to show that Total Participation Management with the theoretical base of Wojtyła (1985) is the proper one. Maybe there are some other worthwhile management styles, not yet explored. But this one is ready, has been applied by only a few, and is waiting to be implemented more widely.

References

- Ainsworth, M. S., Bowlby, J. (1991). An ethological approach to personality development. *American Psychologist*, 46 (4), 333-341.
- Arystoteles. (1982). *Etyka nikomachejska*. (D. Gromska, Trans.). Warszawa, PWN. (Eng. Nicomachean Ethics)
- Baard, P. P., Deci, E. L., Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology*, 34, 2045-2068.
- Becker, B. E., Huselid, M. A., Pickus, P. S., Spratt, M. F. (1997). HR as a source of shareholder value: Research and recommendations. *Human Resource Management*, 36, 39-47.
- Campbell, A. (1976). Subjective measures of well-being. *American Psychologist*, 31, 117-124.
- Catalyst (2004). Harley Davidson, Inc. - Optimizing Talent: A Culture of Empowerment. Retrieved from <http://www.catalyst.org/knowledge/harley-davidson-inc%E2%80%94optimizing-talent-culture-empowerment>.
- Combs, J., Liu, Y., Hall, A., Ketchen, DD. (2006). How much do high-performance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology*, 59, 501-528.
- Deci, E. L., Connell, J. P., Ryan, R. M. (1989). Self-determination in a work organization. *Journal of Applied Psychology*, 74, 580-590.

- Deci, E. L., Ryan, R. M. (2000a). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68-78.
- Deci, E.L., Ryan, R.M. (2000b). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227-268.
- Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former Eastern Bloc country. *Personality and Social Psychology Bulletin*, 27, 930-942.
- Deci, E.L., Ryan, R.M. (2008) Hedonia, eudaimonia, and well-being: an introduction. *Journal of Happiness Studies*, 9, 1-11.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95, 542-575.
- Diener, E., Emmons, R. A. (1984). The independence of positive and negative affect. *Journal of Personality and Social Psychology*, 47, 1105-1117.
- Diener, E., Emmons, R., Larsen, R., Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.
- Fessler, C. (2012). *Rebuilding the Brand: How Harley-Davidson Became King of the Road*. Bloomington IN: Triple Nickel Press.
- Fisher, C. D. (1978). The effects of personal control, competence and extrinsic reward systems on intrinsic motivation. *Organizational Behavior and Human Performance*, 21, 273-288.
- Fisher, L.M. (2005). Ricardo Semler - Won't take control. *Strategy + Business*, Winter 2005, 41.
- Harrison, T. M. (1985). Communication and participative decision making: An exploratory study. *Personnel Psychology*, 38, 93-116.
- Ilardi, B. C., Leone, D., Kasser, R., Ryan, R. M. (1993). Employee and supervisor ratings of motivation: Main effects and discrepancies associated with job satisfaction and adjustment in a factory setting. *Journal of Applied Social Psychology*, 23, 1789-1805.
- Kasser, T., Davey, J., Ryan, R. M. (1992). Motivation, dependability, and employee-supervisor discrepancies in psychiatric vocational rehabilitation settings. *Rehabilitation Psychology*, 37, 175-187.
- Kelleher, H. (Spring 1997). A culture of commitment. *Leader to Leader*. 4, 20-24.
- Kotha, S., Dutton, J. (1996). *Transformation at Harley-Davidson*. Case Study. New York: New York University, Stern School of Business.
- Levering R. Moskowitz M. (2004). The 100 Best Companies to Work For. *Fortune*, 12 January: 56-79.
- McGregor, D. (1960). *The Human Side of Enterprise*. New York: McGraw-Hill.
- Prokopowicz, P., Stocki, R., Żmuda, G. (2008) Cognitive theory of total participation management. In: *The International Association for Research in Economic Psychology / The Society for Advancement of Behavioral Economics World Meeting* at LUISS in Rome, Italy, 3-6 September 2008.

- Ryan, R.M., Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68-78.
- Ryan, R. M., Stiller, J., Lynch, J. H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *Journal of Early Adolescence*, 14, 226-249.
- Ryff, C.D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57, 1069-1081.
- Seligman, M. E. P. (2002). *Authentic Happiness*. New York: Free Press.
- Semler, R. (1989). Managing without Managers. *Harvard Business Review*, September-October 1989, Reprint #89509.
- Sheldon, K. M., Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, 76, 482-497.
- Sheldon, K. M., Elliot, A. J., Kim, Y., Kasser, T. (2001). What's satisfying about satisfying events? Comparing ten candidate psychological needs. *Journal of Personality and Social Psychology*, 80, 325-339.
- Sheldon, K. M., Kasser, T. (1998). Pursuing personal goals: Skills enable progress, but not all progress is beneficial. *Personality and Social Psychology Bulletin*, 24, 1319-1331.
- Sheldon, K. M., Kasser, T. (2001). Getting older, getting better? Personal strivings and personality development across the life-course. *Developmental Psychology*, 37, 491-501.
- Sheldon, K. M., Niemiec, C. P. (2006). It's Not Just the Amount That Counts: Balanced Need Satisfaction Also Affects Well-Being. *Journal of Personality and Social Psychology*, 91, 331-341.
- Shin, D.C., Johnson, D.M. (1978). Avowed happiness as an overall assessment of the quality of life. *Social Indicators Research*, 5, 475-492.
- Smith, G. (2004). An evaluation of the corporate culture of Southwest Airlines. *Measuring Business Excellence*, 8 (4), 26-33.
- Stanley, D. J. (2005). The impact of empowered employees on corporate value. *Graziadio Business Review*, 8 (1). Retrieved from <http://gbr.pepperdine.edu/2010/08/empowered-employees/>.
- Stocki, R., Prokopowicz, P., Żmuda, G. (2008). *Pełna partycypacja w zarządzaniu – tajemnica sukcesu największych eksperymentów menedżerskich świata*. (Eng: Total participation management: The secret of success of the world's greatest management experiments). Kraków: Oficyna – A Wolters Kluwer Business.
- Summers, J., Hyman, J. (2005). *Employee Participation and Company Performance: A Review of the Literature*. York: Joseph Rowntree Foundation.
- Waterman, A.S., Schwartz, S.J., Conti, R. (2008). The implications of two conceptions of happiness (hedonic enjoyment and eudaimonia) for the

- understanding of intrinsic motivation. *Journal of Happiness Studies*, 9, 41-79.
- Watson, D., Clark, L. A., Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.
- Wojtyła, K. (1985). *Osoba i czyn*. Polskie Towarzystwo Teologiczne. (Eng. The Acting Person)
- Wrzesniewski, A., McCauley, C., Rozin, P., Schwartz, B. (1997). Jobs, careers and calling: People's reactions to their work. *Journal of Research and Personality*, 31, 21-33.
- Żmuda, G., Prokopowicz, P., Stocki, R. (2008). *Towards the Model of Total Participation Management: In Search of Wellbeing in a Participative Workplace* (Unpublished manuscript). Retrieved from Jagiellonian University, Dept. of Psychology.

Abstrakt (in Polish)

Szukając odpowiedzi na pytanie, jaki styl zarządzania wpływa przede wszystkim na subiektywny dobrostan (SWB) pracowników, trzy organizacje o różnych poziomach pełnej partycypacji w zarządzaniu (TPM) - innowacyjnego podejście do pracowników będącego zaprzeczeniem podejścia zarządzania zasobami ludzkimi, zostały objęte badaniami. Zbadano, czy poziom TPM jest pozytywnie związany z SWB zdefiniowanym zgodnie z emocjonalnymi i poznawczymi aspektami pracy (Diener, 1984). Psychologicznym wyjaśnieniem przewidywanej zależności miał być poziom zadowolenia z zaspokojenia trzech podstawowych potrzeb (autonomii, kompetencji i powiązania) wyróżnionych przez Deci'ego i Ryan'a (2000a). Hipoteza o pozytywnej relacji SWB i TPM została potwierdzona. Wyniki wskazują, że najmniej partycypacyjna firma zatrudniła pracowników o najniższym subiektywnym dobrostanie oraz z najniższym zaspokojeniu podstawowych potrzeb psychologicznych.

Słowa kluczowe: Pełna partycypacja w zarządzaniu, subiektywny dobrostan, podstawowe potrzeby psychologiczne, teoria samostanowienia.

Differences in Perception of the Participants in the Management Process and Its Real Trajectory

Olaf Flak, Adrian Pyszka***

Abstract

The aim of the paper is to present results of the research that was focused on managers' behaviours. We tried to discover the main differences between the real trajectory and perception of managers in the field of two types of management processes. In the first part of the paper there is a theoretical foundation of process management and conclusions that led to a research model. In the second part we present the state of art in the field of human perception theories. Then, we describe assumptions of the research and methods of gathering data. What is important in the case of research method, an observation and a survey were used. The observation was done using the online management tools. During the research, managers were given a small project to lead. We recorded their actions and when their projects were completed, we asked them how they had acted. As a result of the research, there are three examples of description of managers' behaviours and their perception. In the introduction we formulated two hypotheses and on the grounds of the research result we prove both statements in conclusion of the paper.

Keywords: *process management, human perception, trajectory of processes, system of organizational terms.*

Introduction

It is said that “the legacy of the past is always shaping the emerging future” (Pettigrew, 1997, p. 339). The process-oriented holistic organization was found as a new form in which the business process may be perceived as the basic organizational construct. Although in quite old management schools the process existed as a term, process management implies a complex focus on business processes. They tend to be integrated with one another. The increasing organizational complexity of processes results in new demands on

* Olaf Flak, Ph.D., University of Silesia in Katowice, ul. Bankowa 12, 40-007 Katowice, Poland, ja@olafflak.com.

** Adrian Pyszka, Ph.D., University of Economics in Katowice, ul. 1 Maja 50, 40-287 Katowice, Poland, adrian.pyszka@ue.katowice.pl.

a firm's information management. This complexity also needs to be managed (Seltsikas, 1999, p. 181).

Facing the importance and vital role of process management in the development and organizational change of companies the question arises how different managers perform in their projects or linear activities (Rohloff, 2011, p. 384). It is frequently forgotten that everything starts from philosophy of an action that means a systematic way of thinking and doing. Actions permeate an organization. Everything the organization does and considers is affected by the philosophy that does not change very often. The next step is a business model, which is the framework for identifying how a business creates, delivers, and extracts value (Dowdle, Stevens, McCarty and Daly, 2005, p. 58). In the paper we focus on two items deriving from a business model: methods and tools of management (Dowdle et al., 2005, p. 58). These areas create the basis of research of process management in small projects.

In the paper there is a presentation of results of the research in the field of process management. Although there are exceptions, the general method of the research might be treated as a case study. The reason is there were only 8 managers who took part in the research. The main task for managers was to prepare an implementation manual for an innovative management tool. There were two ways of collecting data: an observation and a survey. On the one hand, in the paper there is a short draft of real facts gathered by the observation method. The observation was conducted using online management tools implemented in www.transistorshead.com (TH management tools). On the other hand, we surveyed the managers who used the tools just after finishing their projects.

Management tools that base on the system of organizational terms (Flak, 2008, pp. 13-21), allowed to do the research on processes and give answers to questions such as what happens in the organization, how it happens, what results are obtained from processes and what the rhythm of the processes is.

The main goal of the paper is to discover the main differences between the real trajectory and perception of managers in the field of two types of management processes. We formed the following hypotheses:

H1. Managers are not conscious of most of their activities in management process.

H2. The scale of a project, labelled by the number of processes, does not influence the level of managers' consciousness.

In the first part of the paper there is some theoretical foundation of process management. On grounds of theories some conclusions were drawn that led to an abstract model of the research. In the next part, we presented the state of art in the field of human perception. This part in combination with the process management background allowed us to verify hypotheses.

In the middle part of the paper there is a description of the observation and questionnaire profiles and there is also a description of comparisons between perception of managers and the real trajectory of processes.

Theoretical background of management processes

The scale of complexity can be drawn as symbolic processes mixed with one another. A large number of processes leads to process contributions and to obtain or to lose strategic goals of organizations. In some period of time strategic goals result in creating desirable future states that are called visions of entrepreneurs, managers and companies' owners. These correlations are shown in the Figure 1.

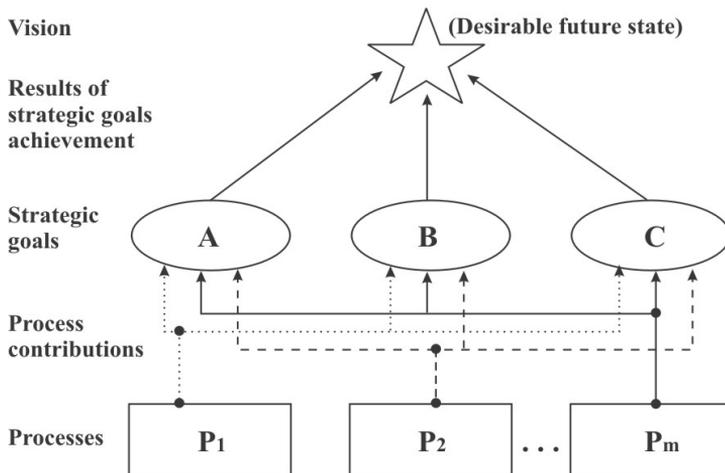


Figure 1. Correlations between processes and their effects

Source: Seltsikas (1999), p. 186.

Time is a central point in preoccupation of the process management. The dynamics of the process is only possible to reveal with temporality and a timeline. It allows discovering the relationships between the past, present and the future. What is more, there are also relationships, called interrelationships, between different levels of context of emerging processes. These relationships are also between effects of processes (Pettigrew, 1997, p. 345).

A well-known and largely used practice in the field of processes is Business Process Management (BPM). The management practice encompasses all

activities of identification, definition, analysis, design, execution, monitoring, measurement and continuous improvement of business processes (Rohloff, 2011, p. 383).

In order to close the gap and provide methodological support for a BPM assessment an analysis on obtainable methods for an assessment was undertaken based on academic work and industry practice (Rohloff, 2011, p. 392).

There are 5 stages of process management maturity level (Rohloff, 2011, p. 394):

- 1) Initial – processes are not defined; schedules, quality and costs are not predictable
- 2) Managed – there is a need for identification because of event approach to management
- 3) Defined – only strategically relevant processes are documented according to reference processes books
- 4) Quantitative Managed – there is continuous measurement and adjustment of processes performance; there is also a strong impact on implementation controlling
- 5) Optimizing – Best practices are being shared, there is also a benchmarking in order to optimize all processes

Another background of the research is an additional approach to process management that is called Knowledge Management System (KMS). Process maps are a key element of the KMS to facilitate some issues more effectively than other approaches (Keane, Barber and Munive-Hernandez, 2007, p. 134). In the next section of the paper there is a description of how this approach was used in building the TH management tools.

In papers that concern the topic of process management we can find many definitions of the process. It is possible to quote a part of the research into associations with processes. The interviewers enumerated words as followed (Pettigrew, 1997): “flow of events, chronology, mechanism, unfolding, two forces interacting, time, language, context, outcomes, linking things together, individuals and collectiveness, history, consistent story, change, long period.” (p. 338) Taking into consideration these associations there is still a strong need to define what the process really is.

Projecting the system of organizational terms, which was mentioned above as a basis of empiric research presented in this paper, we assumed that the process of management is a collection of sequential activities with causal correlations. These correlations mean that the results of previous activities are necessary for the existence of next activities. These results become an input for the next activities (Grajewski, 2007, p. 55). For the sake of the observation we formed a precise definition of the process. This definition was presented by Pettigrew. He claimed that a process is (Pettigrew, 1997) “a sequence of

individual and collective events, actions, and activities unfolding over time in context” (p. 338).

Another perspective, which was necessary to take into consideration, was team management. Because the processes in the company are partly collective, this approach let us understand how to project feature vectors of processes that we expected to achieve during the observation. From this point of view, we can treat every process as a set of activities that are serial or parallel. They are being caused by humans individually or collectively. Theoretically, these activities are in some order and they should proceed to the desired goal. (Skrzypek and Hofman, 2010, pp. 13-14). The “goal” term is understood by us more generally. It is an expected and necessary result of these activities.

In order to understand the effect of the observation, it is necessary to describe what the border states of processes are and how they influence a way of measurement. In the system of organizational terms there is an “event” term. It belongs to substantial assumptions of the system of organizational terms and the TH management tools. There is a strong need to quote an original definition used in the system of organizational terms. According to Zieleniewski (1961, after: Shackle, 1961, p. 4) “the event occurs when two states of the world, appointed in different moments of time, differ one from another and this difference did not occur because of the flow of time.” (p. 4)

When we take into consideration the observation and management tools used to record managers’ activities, this definition is important because a recording process took place within a timeline. In separate moments of time the management tools recorded conducting management process by managers. These data records created the featured vectors of processes. The changes in the parameters inside the feature vector were treated as proceedings.

A process perspective also involves process metrics. These are variables or measures within the feature vector. They are defined to monitor “each step” of processes. P. Seltsikas claims that metrics can identify where a process is not correct and this information can be used for process improvement. He gives examples of metrics of processes such as time and cost (Seltsikas, 1999, 191). However, these measures are very general. In the TH management tools every process has its own parameters that were shaped in the feature vector. The examples of two processes – setting goals and describing tasks – are presented in the next sections of the paper.

This way we could meet 3 demands that concern measuring processes. Firstly, a process is usually used as a kind of logic to explain causal relations between objects in management (in the system of organizational terms these objects are called “things”). Secondly, a process is a category of concepts that

refers to activities taken by individuals or teams. Thirdly, a process spreads on a sequence of events. These events, as it was mentioned above, describe how states of the world change over the time. However, we should not take into consideration the influence of time (Pettigrew, 1997, 169).

The assumptions of the system of organizational terms and the TH management tools were designed to provide an answer to questions raised by T. A. El-Diraby, C. Lima and B. Feis. They built a characteristic of the process consisted from 6 items which are as follows: (1) types of the processes, (2) main attributes of processes (other words: their features vectors), (3) doers of the processes, (4) who is involved in the processes, (5) the effects of processes, (6) conditions which make the processes happen (El-Diraby, Lima and Feis, 2005, 396).

Human perception

Perception could be seen as the representation (an idea or an image) of what is perceived, a basic component in the formation of a concept, a way of conceiving something, knowledge gained by perceiving, becoming aware of something via the senses. It is important to note that a perception process resides within the individuals and it derives from their own observations. According to Bem's (1972, after: Robak and Ward, 2006, pp. 337-338) self-perception theory, everyone comes to know oneself in the same way that we come to know others. It means that people observe their own behaviours in a variety of situations and make attributions about these behaviours as a parsimonious explanation of self-definition. By this process a human starts self-understanding derived from actively inducing changes and observing results (DeCharms, 1983, p. 268).

The most essential assumption is that individuals may have little direct introspective access to their own higher order cognitive processes (Nisbett and Wilson, 1977, after: Robak and Ward, 2006, p. 337), because people are unaware of the existence of the stimuli that influenced their responses. They are also unaware of their responses. Following Laird and Bresler's (1992) phenomenon of feelings and behaviours, people are simply left to rely on the observation of their own behaviours in order to make causal attributions about them. It is especially visible in the situation when people feel something and report it, even when they are not aware of how they act. For the behaviourists, since individuals learn by reinforcement, the problem of how we learn such things as what we feel and who we are is particularly tricky. The reason is that others do not know our feelings. We may learn to identify events that are outside of our-selves by being rewarded for a correct naming of something (Robak and Ward, 2006, p. 338).

We conclude that the reinforcement process of learning and recognizing feelings and correct behaviours is an introduction to understand behaviours in organizations, where a self-regulation is a process in such fields as setting goals, describing tasks, engaging in goal-driven behaviours and contemplating goal-related feedback. That is important to facilitate the attainment and maintenance of a desired end state of human beings (Lord, Diefendorff, Schmidt, and Hall, 2010; Vancouver and Day, 2000 after: Bolino, Jaron, Bachrach, 2012, p. 128). Individuals constantly plan and strive for their goals because the self-regulation process is continuous. Goals are being set and adjusted following to the receipt of continual feedback process. This indicates either a success or a failure of attainment a desired end.

According to the self-regulation model we can capture how a self-regulatory system is established and maintained, during four phases of regulations: (1) predecisional phase - individuals adopt a mindset, consider their desires, and set goals; (2) preactional phase – individuals switch to an implemental mindset and consider ways to accomplish their goals (people consider the desirability of their goal and potential ways to goal achievement); (3) actional phase – individuals adopt an actional mindset and try to obtain their goals (individuals encounter obstacles which may, depending on the importance of the goal, lead to an adjustment of effort); (4) postactional phase – associated with an evaluative mindset (individuals evaluate their goals, determine whether they have been achieved, and make decisions about their revision - people may decide to continue to strive for the original goal, change the goal, or disengage from it) (Gollwitzer, 1990, after: Bolino, Jaron, Bachrach, 2012, p. 128).

Dholakia, Bagozzi and Gopinath (2007) stated that in the process of perception it is important to identify and provide an understanding of two specific self-regulatory strategies: (1) formulating an implementation of a plan, and (2) remembering past actions. Using this explanation the self-regulation process is dependent on the individuals' freedom of choice. There are two opposite situations assigned to individuals' decision process: (1) goals that decision makers chose for themselves – the motivational effects lay in increasing levels of implementation-related variables; (2) goals which were assigned to participants – motivational effects additionally extended to significantly increasing distal goal-related variables.

According to the present state of art, there are others explanations of self-regulation strategies. One strategy is to formulate a detailed implementation plan. The second strategy is to remember actions performed successfully in the past to accomplish a similar goal (Armitage, 2004; Gollwitzer, 1999, after: Dholakia, Bagozzi and Gopinath, 2007, p. 361) claimed that retrieving self-performed actions from the past is relatively less effortful than information

processing involved in formulating an implementation plan. Remembering past actions is similar in process to recognition memory for retrospective tasks.

Information processing is supported by the attentional processes that work in conjunction with inference, judgment, and choice processes. As a consequence, acts of attention may be able to prime acts of process because attention is a content driven process. A combination of a content and an attention may be able to point typically considered higher-order cognitive processes (e.g., investigate, evaluate, compare, choose, consume) (Janiszewski, Kuo, Tavassoli, 2013, p.1271).

When we consider remembering as a process of constructing a relationship between the past and present, it implies choices and exclusions are made in mnemonic accounts, and suggests that other versions of the past may have been possible. Based on experience from neurology and psychoanalysis, the examination of remembering has been focused on the individual human subject and their acts, revealing the biological fragility and psychic constructedness of memory. Remembering is an active reconciliation of the past and present but it could be selective because of some experiences that are omitted from memory (traumatic or socially unacceptable experiences i.e. childhood sexual abuse) (Keightley, 2010, p. 57).

When we projected the research, we had to consider that memory is not located solely “in the mind”, as symbolic representations or mental models. As proposed by Arnold, Shepherd and Gibbs (2008), memory is distributed. It resides in things, in relations between things, and relations between things and humans. In this context this implies that relations between things and people consist of minds and things, and people and things constitute “actors in relation” rather than “actors in themselves” (Latour, 1999; Law & Hassard, 1999; Latour, 2005, after: Arnold, Shepherd, Gibbs, 2008, p. 48).

According to above Arnold and colleagues argue four significant for memory assumptions: (1) relations between things are crucial; (2) things provide us with markers of time, a place, a purpose, and an identity; (3) markers are historically obdurate; (4) things act, and semiotics does not exhaust their significance. Arnold (2008) concluded that memory will be perceived in relation to the things that surround us – more particularly – in relations between things, and between ourselves and things (memories of relations, and sociotechnical systems).

The theoretical foundation described above was a background in the research of managers’ perception of their activities. In the next section we present profiles of the observation and a survey that were research method used to verify hypotheses about managers perception and the real trajectory of management processes.

Observation and the survey profiles

There were two measured processes in the research: setting goals and describing tasks. As the results of them there were two recondite things with certain features: a goal and a task (Flak, 2013, pp. 187-197). In projects that were being conducted by managers these two processes and their results shaped quite similar relationships to the relationships shown in the Figure 1. Processes (setting and describing) lead to results (goals and tasks). There is one difficult point in understanding this division. It is important to notice that tasks are also processes that should be taken by users (managers or their subordinates) in the future. However, describing the results we focused more on the processes than their results.

As we mentioned in the Introduction, the research on management processes was conducted by two ways of gathering data. The first way was the observation based on TH management tools that had been projected to play a role of an instrument for doing actions in managing a small project and to be a measurer of things and process. They are key elements described in the system of organizational terms (Flak, 2013, pp. 187-197). The tools were embedded in online platform and they recorded all action taken by users (managers of projects) during two main activities: setting goals and describing tasks.

The TH management tools consisted of a 'goaler' and a 'tasker'. Both tools were connected to each other and their functions depended on each other. The main goal of users was to prepare an implementation handbook for an innovative management tool. The processes were being monitored during 2 months.

The second way of gathering data was a survey for TH users. They were asked how they initiated processes and how they saw themselves as managers. The survey questionnaires were filled by managers of projects just after finishing their projects.

This approach let us solve some research dilemmas that every researcher encounters. There are two ontological assumptions: (1) external reality of processes; (2) process parts may be examined separately. An additional assumption was made in the field of epistemology. We assumed that the researcher might be separated from objects being researched (Seltsikas, 1999, p. 185).

Because in the observation we had only a small group of TH users (8 managers) we were not able to make an assumption that what is true at one time and in one place may also be true at another time and in another place. Additionally, we were conscious that our tools influenced somehow on the users' behaviours. Thus we did not make an axiological assumption that results of research are free of bias (Seltsikas, 1999, p. 185).

As it was mentioned in the section above, our approach to processes based on Knowledge Management System. Except well-defined processes, an effective Knowledge Management System also needs an environment that encourages users to seek and acquire knowledge from internal and external sources. The process-based TH tools work as a driving mechanism to encourage a culture of knowledge management (Keane, Barber and Munive-Hernandez, 2007, p. 135).

From the point of view of reusable knowledge, we constructed a business process pattern library by collecting reusable business processes as business process patterns. These business process patterns represent the flow of business activities, and they do not depend on the TH management tools and their implementation. As an example of a way of projecting the TH management tools and using them to collect data we used a model presented by Terai, Sawai, Sugiura, Izumi and Yamaguchi (2002). This model is presented in the Figure 2.

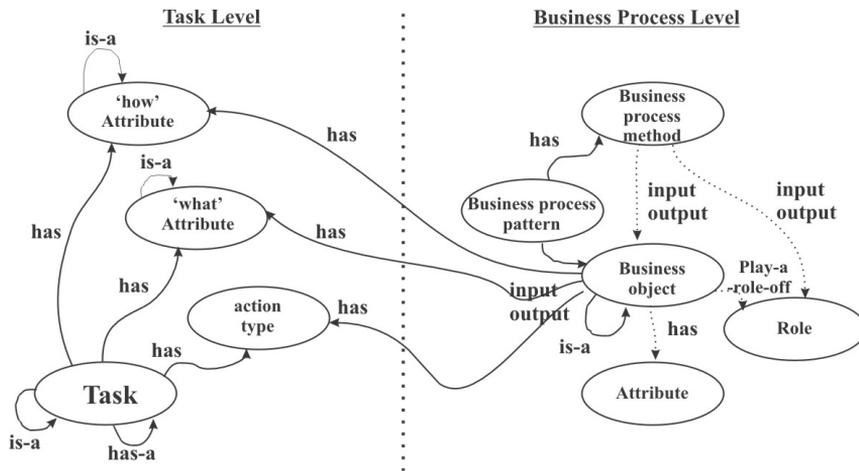


Figure 2. Meta model for business process level

Source: Terai, Sawai, Sugiura, Izumi and Yamaguchi (2002), p. 223.

In order to describe why this model was a basis of our research it is worth mentioning several assumptions. They are presented in the Table 1.

Table 1. Description of model elements

	Object of the model	Description
Task level	task	Researched processes with TH management tools: setting goals (the goaler tool) describing tasks (the tasker tool)
	“how” attribute	A goal: measures for goals A task: measures for tasks
	“what” attribute	A goal: a future state to obtain A task: a verb what to do
	action type	add new {goal; task}
		view {goal; task}
edit {goal; task}		
	delete {goal; task}	
Business Process Level	Business Process Pattern	Individual management pattern of any user
	Business Process Method	The methods used by managers in the project
	Business Object	The small project
	Role	Project managers played roles of users of the TH management tools
	Attribute	The project concerned preparing an implementation and instruction manual for an innovative management tool

Readers can find two prototypes of the TH management tools in the platform <http://www.transistorshead.com>. There are two managerial tools – a goaler and a tasker – that have two main functions. The first of them is to let a manager conduct managerial processes (setting goals and describing tasks). The second function is to record data about processes. Previous experiments in little groups of managers, which were carried in 2012, proved that this method of research and such tools give a big number of data about managerial activities. When this paper was being written, the graph theory was being applied to make analysis of managerial tools in the area of setting goals and describing tasks.

So that the reader could check how the method of the research and the TH management tools work, it is possible to log in to [transistorshead.com](http://www.transistorshead.com). The first account has been created so that a reader could see the results of an anonymous manager – John Smith. A login name: john.smith, a password: smith. The second account is open to changes and any reader can create examples of goals and tasks. It is also possible to modify goals and tasks created before. A login name: anonymous.manager, a password: manager.

Perception of management process and its real trajectory

The questions in the questionnaire covered 9 fields of similarities or differences between the real trajectory of processes and managers' perception. They were as follow:

- The way of setting goals and describing tasks,
- The way of sharing tasks among team members,
- Frequency of goals changes,
- Number of goals changes,
- Number of tasks described for goals,
- Frequency of using tools by team members,
- Level of differences between goals which were set as first and their next versions,
- Influence level of goals' changes on changes of tasks' features,
- Influence level of tasks' changes on changes of goals' features,

In the Tables 2, 3, 4 there are comparisons of 3 most expended patterns of management processes. The "reality" rows contain the results of the observation. The "perception" rows include answers given by managers who were users of the TH management tools.

For the first manager, whose actions and answers are shown in the Table 2, it is possible to point out several disparities between the real trajectory of processes and their perception. The manager claimed that the tasks were spread among members of his team (process: describing tasks). The real situation, recorded by the TH tools, was contrary. The manager answered that the goals were changed rarely (process: setting goals). However, we counted frequency and we reckoned the goals were often changed. What is really interesting, the manager remembered that the goal no. 1 was changed only once (process: setting goals). Actually, the goaler tool recorded two changes of the goal no. 1, both of them caused by the user. It means the user did not remember an important action such as changing a goal that was established before. Additionally, in real there were about 50% changes in goal measurements (process: setting goals). The user answered that he did only very little changes. He was also wrong about a scale of changes that was made in goals features by changing features of tasks (process: setting tasks). On the grounds of numeric data we assessed the changes as very little.

Other fields of the comparison were the same in the reality and the manager's perception. The comparison is shown in the Table 2.

Table 2. Results of the research for a manager no. 1

The way of setting goals and describing tasks					
Options	We set up goals as first and then we described tasks.	We described tasks as first and then we set up goals.	We acted basing on the organizational cycle.	Only one person set up goals and described tasks.	We acted basing on a "trial and error" rule.
Reality	x				
Perception	x				
The way of sharing tasks among team members					
Options	We did not share.	Nearly everyone had the same tasks to do.	Some of members had different tasks to do.	Nearly everyone had different tasks to do.	Everyone had different tasks to do.
Reality	x				
Perception					x
Frequency of goals changes					
Options	Never	Rarely	Sometimes	Often	Always
Reality				x	
Perception		x			
Number of goals changes					
Options	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5
Reality	2	Not exist	Not exist	Not exist	Not exist
Perception	1	No answer	No answer	No answer	No answer
Number of tasks described for goals					
Options	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5
Reality	3	Not exist	Not exist	Not exist	Not exist
Perception	3	No answer	No answer	No answer	No answer
Frequency of using tools by team members					
Options	Never	We viewed or changed the content very rarely.	We viewed or changed the content from time to time.	We viewed or changed the content very often.	We used tools all the time when we were working.
Reality		x			
Perception		x			
Level of differences between goals which were set as first and their next versions					
Options	They were unchanged.	Very little changes.	More less a half of goal features.	Very big changes.	They were completely changed.
Reality			x		
Perception		x			
Influence level of goals' changes on changes of tasks' features					
Options	Very low	Low	Middle	High	Very high
Reality	x				
Perception	x				
Influence level of tasks' changes on changes of goals' features					
Options	Very low	Low	Middle	High	Very high
Reality	x				
Perception		x			

Differences between perception and real activities of another manager are shown in the Table 3. The first difference occurred in the field of succession of setting goals and describing tasks. The manager did not remember an order

of succession and he thought that only one person did it (the manager was default). We recorded a precise order: goals were set as first. Contrary to the first manager, the second manager thought he reset the first goal twice and the recorded data contained only one change (process: setting goals). Next difference was a perception of frequency of using tools by team members. Monitored team activity was quite poor and we had data to assess that the team changed the content of tools very rarely (processes: setting goals and describing tasks). The manager estimated higher frequency of using tools. He did not notice how many features of goals were reset after the first established action as well. He underestimated the number of features that had been changed (process: setting goals). There were also differences in influence of goals changes on tasks changes and the other way round (processes: setting goals and describing tasks). In both cases the manager evaluated the influence as higher than it was in reality.

In other areas of the comparison the manager had very precise view what he had done with TH tools. It is possible to say he was very conscious of his activities done in the project. Details of similarities between answers in a questionnaire and recorded data there is in the Table 2.

Table 3. Results of the research for a manager no. 2

The way of setting goals and describing tasks					
Options	We set up goals as first and then we described tasks.	We described tasks as first and then we set up goals.	We acted basing on the organizational cycle.	Only one person set up goals and described tasks.	We acted basing on a "trial and error" rule.
Reality	x				
Perception				x	
The way of sharing tasks among team members					
Options	We did not share.	Nearly everyone had the same tasks to do.	Some of members had different tasks to do.	Nearly everyone had different tasks to do.	Everyone had different tasks to do.
Reality	x				
Perception	x				
Frequency of goals changes					
Options	Never	Rarely	Sometimes	Often	Always
Reality		x			
Perception		x			
Number of goals changes					
Options	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5
Reality	1	Not exist	Not exist	Not exist	Not exist
Perception	2	No answer	No answer	No answer	No answer
Number of tasks described for goals					
Options	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5
Reality	1	Not exist	Not exist	Not exist	Not exist
Perception	1	No answer	No answer	No answer	No answer

Frequency of using tools by team members					
Options	Never	We viewed or changed the content very rarely.	We viewed or changed the content from time to time.	We viewed or changed the content very often.	We used tools all the time when we were working.
Reality Perception		x	x		
Level of differences between goals which were set as first and their next versions					
Options	They were unchanged.	Very little changes.	More less a half of goal features.	Very big changes.	They were completely changed.
Reality Perception		x		x	
Influence level of goals' changes on changes of tasks' features					
Options	Very low	Low	Middle	High	Very high
Reality Perception	x				
Influence level of tasks' changes on changes of goals' features					
Options	Very low	Low	Middle	High	Very high
Reality Perception	x		x		

The perception and the real trajectory of the third manager differs to a large extent. For example, we recorded a very chaotic way of managing. Nevertheless, the manager did not realize that he and his team acted this way (processes: setting goals and describing tasks). Another difference concerned the way of sharing tasks among team members. The manager thought some of members had different tasks to do. On the grounds of recorded data we assessed that nearly everyone in his team had different tasks to do (process: describing tasks). Next difference occurs in the field of frequency of goals changes. Comparing to real facts the manager overestimated the number of the changes in goals' features (process: setting goals).

What is really amazing in this case, the manager had completely different knowledge about a number of goals he had set (process: setting goals). He pointed in the survey that he had set 5 different goals during the project. In fact there were only two goals. He did not remember the number of goals changes as well. For the goal no. 1 he was conscious of 2 changes. However, the tool did not record any change. Moreover, he manager did not remember how many tasks were established in the project (process: describing tasks).

The next field of the comparison also gives great discrepancy. We assessed that the manager viewed or changed the content very often. He noticed it was very rarely. He also overestimated the influence level of tasks' changes on changes of goals' features (processes: describing tasks), although he underestimated the influence level of goals' changes on changes of tasks' features (setting tasks).

Table 4. Results of the research for a manager no. 3

The way of setting goals and describing tasks					
Options	We set up goals as first and then we described tasks.	We described tasks as first and then we set up goals.	We acted basing on the organizational cycle.	Only one person set up goals and described tasks.	We acted basing on a "trial and error" rule.
Reality	x				x
Perception	x				
The way of sharing tasks among team members					
Options	We did not share.	Nearly everyone had the same tasks to do.	Some of members had different tasks to do.	Nearly everyone had different tasks to do.	Everyone had different tasks to do.
Reality				x	
Perception			x		
Frequency of goals changes					
Options	Never	Rarely	Sometimes	Often	Always
Reality		x			
Perception				x	
Number of goals changes					
Options	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5
Reality	0	1	Not exist	Not exist	Not exist
Perception	2	1	2	2	1
Number of tasks described for goals					
Options	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5
Reality	8	Deleted	Not exist	Not exist	Not exist
Perception	No answer	No answer	No answer	No answer	No answer
Frequency of using tools by team members					
Options	Never	We viewed or changed the content very rarely.	We viewed or changed the content from time to time.	We viewed or changed the content very often.	We used tools all the time when we were working.
Reality				x	
Perception		x			
Level of differences between goals which were set as first and their next versions					
Options	They were unchanged.	Very little changes.	More less a half of goal features.	Very big changes.	They were completely changed.
Reality		x			
Perception			x		
Influence level of goals' changes on changes of tasks' features					
Options	Very low	Low	Middle	High	Very high
Reality					x
Perception				x	
Influence level of tasks' changes on changes of goals' features					
Options	Very low	Low	Middle	High	Very high
Reality	x				
Perception				x	

Conclusion

An important element of decision-making, especially for managers is their perception of their own activities. We had a chance to do the research during which we compared real trajectories of actions (management processes) and managers' perception of them. Contributing to both the theoretical background in process management and theories of human perception in literatures, we found the effects really astonishing.

Firstly, we proved the hypothesis H1 to be true. Managers are not conscious of most of their activities in management process. Following the reasoning set forth by results of the observation and the survey, we claim that managers as humans have big problems acting reasonably. We agreed with Latour and his theory of memory that we presented above (Latour 1999). According to the content of Tables 2, 3, 4 managers did not have memory located solely "in the mind", but their perception of actions they did resides in things, in relations between things, and relations between things and humans. In this case the most important things were the TH management tools. It is a contrary reasoning to common positivist approach in management science. This approach let us believe that a manager is mostly rational and conscious of his activities.

Secondly, we also agreed with the hypothesis H2. Seemingly, it is obvious. However when we realize what consequences such a statement may cause in the organization, we could come to a conclusion that the higher level manager in the organization the higher level of his unconsciousness. Further research is needed to study these issues. We hope it will help to verify Austin & Vancouver four-steps of action described above.

As an example of similar conclusions there are results that were conducted by Researchers in the European Commission's Artificial Development Approach to Presence Technologies (ADAPT). In their project they used a model of the human sense of presence on the grounds of a combination of senses like sight, hearing and touch. They used the torso of a 2-year-old child to understand human perception to develop machines that can perceive and interact with their environments. To analyse the perception process they developed a model of consciousness using artificial objects as a part of a process of perception. The results were amazing. As most theories describe consciousness as: (a) perception, (b) cognition, (c) action, they achieved a reverse order: (a) action, (b) cognition, (c) perception (Computerworld, 2006, p. 36). Our findings are therefore close to such a conclusion about way of managing by managers who took part in our research.

Finally, it would be interesting to study differences in a bigger numbers of managers than in our research. Such research could also provide conclusions about the influence of tools on managers' actions and let attempt to automatize

management processes in order to replace a manager by a machine in the future.

References

- Armitage, C. J. (2004). Evidence that implementation intentions reduce dietary fat intake: A randomized trial. *Health Psychology, 23*(3), 319–323.
- Arnold, M., Shepherd, Ch., Gibbs, M. (2008). Remembering things. *The Information Society, 24*, 47–53.
- Babybot Helps Researchers explore human perception (2006). *Computerworld, 5/22, 40*(21), 36–36.
- Bem, D.J. (1972). Self-perception theory. In: L. Berkowitz (Ed.), *Advances in Experimental Social Psychology, 6*, 1–62. New York: Academic Press.
- Bolino, M.C., Jaron, H., Bachrach, D.G. (2012). A self-regulation approach to understanding citizenship behavior in organizations. *Organizational Behavior and Human Decision Processes, 119*, 126–139.
- DeCharms, R. (1983). *Personal Causation: The Internal Affective Determinants of Behavior*. Hillsdale, NJ: Lawrence Erlbaum.
- Dholakia, U.M., Bagozzi, R.P., Gopinath, M. (2007). How formulating implementation plans and remembering past actions facilitate the enactment of effortful decisions. *Journal of Behavioral Decision Making, 20*, 343–364.
- Dowdle, P., Stevens, J., McCarty, B., Daly, D. (2005). The process-based management loop. *The Journal of Corporate Accounting & Finance, January/February*, 55–61.
- El-Diraby, T. A., Lima, C., Feis, B. (2005). Domain taxonomy for construction concepts - toward a formal ontology for construction knowledge, *Journal of Computing in Civil Engineering, ASCE, October*, 394–406.
- Flak, O. (2008). Konceptualizacja układu wielkości organizacyjnych. In: A. Nalepka (Ed.), *Organizacje komercyjne i niekomercyjne wobec wzmożonej konkurencji oraz wzrastających wymagań konsumentów*. Nowy Sącz: Wyższa Szkoła Biznesu – National-Louis University.
- Flak, O. (2013). Concept of Managerial Tools Based on the System of Organizational Terms. In: R. Knosala (Ed.), *Innovations in Management and Production Engineering*. Opole: Oficyna Wydawnicza Polskiego Towarzystwa Zarządzania Produkcją.
- Gollwitzer, P. M. (1990). Action phases and mind-sets. In: E. T. Higgins, R. M. Sorrentino (Eds.), *The Handbook of Motivation and Cognition: Foundations of Social Behavior, 2*, 53–92. New York: Guilford Press.
- Gollwitzer, P. M. (1999). Strong effects of simple plans. *American Psychologist, 54*(7), 493–503.
- Grajewski, P. (2007). *Organizacja procesowa*. Warszawa: PWE.
- Janiszewski, Ch., Tavasolli, N.T. (2013). The influence of selective attention and inattention to products on subsequent choice. *Journal of Consumer Research, 39*, April, 1258–1274.

- Keane, J.P., Barber, K.D., Munive-Hernandez, J.E. (2007). Towards a learning organisation: The application of process-based knowledge maps to asset management (a case study). *Knowledge and Process Management*, 14(2), 131-143.
- Laird, J.D., Bresler, C. (1992). The process of emotional feeling: A self-perception theory. In: M. Clark (Ed.) *Emotion: Review of Personality and Social Psychology*, 13, 223-234. Newbury Park, CA: Sage.
- Lord, R. G., Diefendorff, J. M., Schmidt, A. M., Hall, R. J. (2010). Self-regulation at work. *Annual Review of Psychology*, 61, 543–568.
- Keightley, E. (2010). Remembering research: memory and methodology in the social sciences. *International Journal of Social Research Methodology*, 13(1), February, 55-70.
- Nisbett, R.B., Wilson, T.D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, 84, 231-259.
- Pettigrew, A.M. (1997). What is a processual analysis? *Scandinavian Journal of Management*, 13(4), 337-348.
- Robak, R.W., Ward, A. (2006). Development of a general measure of individuals' recognition of their self-perception processes. *North American Journal of Psychology*, 8(1), 337-344.
- Rohloff, M. (2011). Advances in business process management implementation based on a maturity assessment and best practice exchange. *Inf Syst E-Bus Manage*, 9, 383–403.
- Seltsikas, P. (1999). Information management in process-based organizations: a case study at Xerox Ltd. *Info Systems*, 9, 181-195.
- Skrzypek, E., Hofman, M. (2010). *Zarządzanie procesami w przedsiębiorstwie*. Warszawa: Wolters Kluwer Polska.
- Terai, K., Sawai, M., Sugiura, N., Izumi, N., Yamaguchi, T. (2002). Business process semi automation based on business model management, *International Journal of Intelligent Systems in Accounting, Finance & Management*, Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/isaf.237.
- Vancouver, J. B., Day, D. V. (2005). Industrial and organisation research on selfregulation: From constructs to applications. *Applied Psychology: An International Review*, 54, 155–185.
- Zieleniewski, J. (1961). *Organizacja zespołów ludzkich*. Warszawa: PWN.
- Shackle, G.K.S. (1961). *Decision Order and Time in Human Affairs*. Cambridge: Cambridge University Press.

Abstrakt (in Polish)

Celem artykułu jest zaprezentowanie wyników badań dotyczących zachowań menedżerów. Autorzy podjęli próbę odkrycia głównych różnic pomiędzy trajektorią procesów podejmowanych przez menedżerów i ich percepcją tych procesów po zakończeniu projektu. W pierwszej części artykułu zamieszczono podstawy teoretyczne zarządzania procesami, a wnioski wyciągnięte na podstawie literatury przedmiotu doprowadziły do zbudowania modelu badania. W drugiej części artykułu autorzy przedstawiają obecny stan wiedzy na temat percepcji człowieka i samoświadomości podejmowanych przez niego działań. Następnie opisano założenia przeprowadzonego badania oraz metody badawcze. W badaniu wykorzystano metodę obserwacji i metodę ankiety. Obserwacji dokonano za pomocą informatycznych narzędzi online, które w czasie badania rejestrowały aktywność menedżera w zakresie podejmowanych przez niego procesów zarządzania. W ostatniej części artykułu zaprezentowano również trzy przykłady różnic pomiędzy faktyczną trajektorią procesów zarządzania oraz ich percepcją przez menedżerów. We wstępie artykułu sformułowano dwie hipotezy badawcze, które zweryfikowano w ostatniej części artykułu na podstawie zaprezentowanych wyników badań.

Słowa kluczowe: zarządzanie procesami, percepcja człowieka, trajektorie procesów, układ wielkości organizacyjnych.

Determinants, Moderators and Consequences of Organizational Interaction Orientation

Christian Hoops, Michael Bücke***

Abstract

Interaction orientation reflects the ability of a company to interact with the individual customer and to gather information from successful interactions. Four dimensions of interaction orientation are identified in the literature: customer concept, interaction response capacity, customer empowerment and customer value management (Ramani and Kumar, 2008). This study shows that indeed a fifth dimension of interaction orientation exists and investigates the determinants, moderators and consequences of this construct. The first notable finding is that B2B companies exhibit a greater degree of interaction orientation than B2C firms. Ramani and Kumar hypothesized that in their study. We show that there are B2C industries such as financial services, whose companies also have a greater interaction orientation. This could be the reason why the authors could not prove their hypothesis. Furthermore, we examine the influence of strategic orientations on organizational performances and compare various orientations with each other.

Keywords: *adaptive selling, cook's distance, customer-oriented selling, entrepreneurial orientation, environment, financial services, interaction orientation, learning orientation, market orientation, organizational culture, organizational strategy, organizational structures.*

Introduction

In recent years, many studies have attempted to find new ways to positively influence various strategic orientations since the organizational culture plays an important role in achieving the company's goals (Baker and Sinkula, 1999b; Farrell, 2000; Hult, Hurley and Knight, 2004). Interaction orientation, for example, can help companies to extend their knowledge about the customer's needs and preferences (Ramani and Kumar, 2008). For companies with a higher level of organizational learning, it is easier to achieve these

* Dipl.-Stat. Christian Hoops, IPSOS Observer, christian.hoops@ipsos.com.

** Michael Bücke, Ph.D., Technical University of Dortmund, 44221 Dortmund, Germany, michael.buecker@tu-dortmund.de.

goals because of greater abilities and more effective ways (see Buckler, 2003, p. 121).

The majority of the existing literature identifies market, entrepreneurial and learning orientation as three major constructs which directly impact organizational performance. However, only a few studies have investigated the antecedents, moderators and consequences of an interaction orientation. This study attempts to fill this gap and to develop an empirical analysis based on current literature. Furthermore, we focus on finding differences between industries and draw conclusions about the importance of several groups of determinants. Finally, we will examine whether any synergetic effects exist between interaction and market orientation.

Interaction orientation

According to Ramani and Kumar (2008), interaction orientation reflects the ability of a company to interact with the individual customer and to gather information out from successful interactions in order to create a profitable relationship with the customer. Based on statements by 48 managers the authors conceptualize interaction orientation as a second-order construct consisting of four dimensions: customer concept, interaction response capacity, customer empowerment and customer value management.

The customer concept is conceptualized as the company's belief to an ideal customer treatment. This includes customized services and products as well as individual analyses of the needs and marketing actions. The customer image, which is beneficial to interaction orientation, sees the individual customer level as the examination unit and starting point of company's activities (cf. Kumar and Reinartz, 2006).

Interaction response capacity illustrates the degree of successful transactions or relationships that are due to the customer behavior in the past, both for one relevant demander and for the entire group of customers. Knowledge about as well as feedback from a certain customer is stored by companies with higher interaction orientation so that the company could draw on this knowledge in the future.

Thus, the interaction response capacity reflects the requirement of an organization to serve the heterogeneous customers individually (cf. Ramani and Kumar, 2008). Krohmer (1999, p. 176) finds out that the responsiveness to market information plays a significant role in the performance-related variables of efficiency, effectiveness and adaptability. So it can be assumed that the interaction response capacity impacts these variables and other performance indicators, too.

Though a company is not able to provoke an interaction directly, it can be imagined that the company takes the first step. Thus, the customer empowerment as a construct of interaction orientation reflects the extent to which the company enables its customers to contact the organization in order to influence the business and cooperation. This implies that the interaction is subject to an action-reaction-cycle, thus demonstrating the need for individual activity in the theory of multiple perspectives (see Pantaleo and Wicklund, 2000).

In contrast to the other sub-constructs, customer value management does not take the extent of interaction into account, but implies the quality of the interaction partners. Homans' theory assumes that interactions are not only of benefit to at least one of the participants but also create costs (cf. Homans, 1951). Effective customer value management can help an organization to evaluate certain interactions or whole relationships in order to take this information into account in relation with later marketing activities. Since it reflects a specific customer level, this construct becomes relevant for interaction orientation (cf. Ramani and Kumar, 2008, p. 29).

Danzinger focuses on the industrial goods market, and the reflective second-order construct by Ramani and Kumar serves as a basis. Second-order means that the latent variable interaction orientation is measured by different sub-constructs which are in contrast to formative models posited as the common cause of item behavior. However, exploratory depth interviews concluded that there is no evidence of the dimension of the belief in the customer concept for this market. Instead, the interviews identify a new sub-construct perceived as perspective taking and conceptualized as the understanding of the customer's problems. The other dimensions of interaction response capacity, customer empowerment and customer value management are confirmed by the interview data (Danzinger, 2010).

Ramani and Kumar identify different determinants of interaction orientation. Thus, they could not disprove the hypothesis that the lower the dependence on trademarks, the greater the firm's interaction orientation. This could be explained by the fact that the greater the dependence on patents and trademarks, the less the firm has to fulfill the customer's needs since the patents serve as a protection against any competitors. Furthermore, Ramani and Kumar (2008, p. 30) show that the normative institutional pressure, the employee reward system and the outsourcing expertise correlate positively with the organizational interaction orientation.

Instead of being satisfied with a subset of opportunities to make relevant offers to customers, it is better for a company to attract or retain customers through a variety of offers (Newell, 2003). Outsourcing increases the ability to provide the demander with a wide range of products and services (King, 2004).

One can also assume that a superior control of the back-end supply systems increases the interaction response capability (Ramani and Kumar, 2008).

In addition to that, the determinant of the reward system can be linked to the phenomenon of interaction orientation by the sub-construct of customer value management. If information about the individual employee performance exists (i.e. there is a reward system), it is obvious that the company is also able to identify each customer's proportion in the total amount of sales and achievements (meaning it has a corresponding customer value management).

The last examined determinant that correlates positively with the construct of interaction orientation is the normative institutional pressure. Kumar and Ramani acknowledge the positive relationship (to the level of $\alpha = 0.05$) and thus the assumption that the pressure exerted by competitors measured by the adoption of interactive technologies requires a greater interaction orientation of the company. At a significance level of 1%, this effect is not significantly different from zero.

Lastly, the authors attempt to identify significant differences in the orientation interaction between B2B (business-to-business) and B2C (business-to-consumer) companies. However, the hypothesis that B2B companies have a higher degree of interaction orientation than B2C companies had to be clearly rejected (see p-value of 0.46; Ramani and Kumar, 2008). In addition to the antecedents tested by Ramani and Kumar, Danzinger (2010) has identified learning orientation as a determinant of interaction orientation in his work as well.

Regarding the consequences of interaction orientation, Ramani and Kumar firstly distinguish between the aggregated "Customer-Based Relational Performance" (measured for example by customer satisfaction or incurred arising from word-of-mouth) and the aggregated total performance indicator "Customer-Based Profit Performance" (measured by customer loyalty or profitability of demanders). Thereby, interaction orientation has a significant positive effect on both aggregations. Danzinger, however, examines the relationship performance, the overall economic performance and the new product success as consequences of interaction orientation. With the exception of the latter feature, interaction orientation exercises a significant influence on both performance constructs (see Danzinger, 2010, p. 343).

On the one hand, Ramani and Kumar have also tested the competition intensity, which has no significant moderating effect in the relationship between interaction orientation and customer-based relational performance. On the other hand, they have revealed that the customer initiated contacts moderate the positive effect of a firm's interaction orientation on its customer-based relational performance. These contacts are measured by the percentage of

customers who have communicated with the company that year. According to the authors, if the organization has communicated with many customers, interaction orientation has a greater impact on the aggregated consequences (cf. Ramani and Kumar, 2008, p. 38). Acknowledging these results, Danzinger confirms the non-significant moderating effect of competition intensity. He also finds a positive effect of firm size, which moderates the relationship between relationship performance and interaction or learning orientation. The degree of solution orientation has a non-significant moderating effect between one strategic orientation and one performance indicator (see Danzinger, 2010, p. 344).

Learning orientation

In literature on organizational learning, the theoretical considerations are more prevalent than empirical results (cf. Schwaab and Scholz, 2000, p. 354). There are several definitions of learning orientation. For instance, Argyris and Schön (1999, p. 19) define a learning organization as a company that assimilates information (e. g. knowledge, techniques or experiences) in any form. Organizational learning is equated with the identification and correction of errors.

The authors distinguish between three types of learning: Single-loop-, double-loop- and deuterio-learning. Single-loop-learning occurs when errors are detected and corrected but the firm carries on with its present policies and goals. Double-loop-learning means that, in addition to single-loop, fundamental issues are questioned and reviewed. However, deuterio-learning occurs when organizations “learn to learn”. This is very important since the reflecting on the context and the identification of learning barriers and reliefs constitutes an important function (see Argyris and Schön, 1978, p. 26 et seq.).

Furthermore, a distinction must be made between individual and organizational learning. However, theories-in-use exist between the aggregated and individual learning orientation, which can act as a link between these. If the perception of the individual changes, organizational learning can take place. This is successful if the theories are adapted and applied by other persons of the organization. In order to achieve a high level of learning orientation, the creation and application of new theories must become normal since learning should not be seen as a closed process but as a continuous sequence of behavior (Argyris and Schön, 1978, p. 17 et seq.).

In literature there are different conceptualizations of organizational learning. Sinkula, Baker and Noordewier (1997) measure learning orientation as a second-order construct consisting of three dimensions: commitment

to learning, shared vision and open-mindedness. Calantone, Cavusgil and Zhao (2002) argue that the construct should be complemented by intra-organizational knowledge sharing. However, Perez Lopez, Montes Peon and Vazquez Ordas (2005) use a conceptualization which is heavily based on knowledge generation (see sub-constructs such as acquisition of knowledge, knowledge distribution, organizational memory or knowledge interpretation. Danzinger (2010) combines both approaches and develops the new sub-construct of human resource practices.

Empirical research has identified a great number of determinants of learning orientation, which can be categorized as internal and external antecedents. Company-internal determinants include the organizational structure (cf. Farrell, 1999; Slater and Narver, 1995), the organizational culture (Peng, 2008; Zheng and Cui, 2007; Lee and Tsai, 2005; Grinstein, 2008; Jimenez-Jimenez and Cegarra-Navaroo, 2007) and the organizational strategy (Perez Lopez et al., 2005; Farrell, 2000) while external antecedents consist of the environment where the company operates (Slater and Narver, 1995; Farrell, 1999).

Alternative strategic orientations

Besides interaction and learning orientation, there are a number of other orientations in literature. Most of them can be summarized under the generic term of “strategic orientation“. Neal, West and Patterson (2004) define strategic orientation as the structures, strategies and processes which a company adopts to be able to compete with other organizations in the market. However, all definitions see the strategic orientation as the basis for the firm’s strategy.

There are different strategic orientations, but most of the publications only deal with market orientation which specifies the orientation of the business activities on the market. It means the implementation of the marketing concept (see Kohli and Jaworski, 1990) and became the cornerstone of modern marketing ideas (Kirca, Jayachandran and Bearden, 2005). Companies with a high level of market orientation focus all of their activities on the customers’ needs and requirements (cf. Utzig, 1997). In literature, two perspectives of market orientation have become established. Firstly, the conceptualization by Narver and Slater (1990) from a corporate culture point of view. Secondly, the definition by Kohli and Jaworski (1990) based on a behavioral view. A large number of variables (for an extract relevant to our model see Table 1) are deemed to be determinants or control variables of interaction orientation, learning orientation or market orientation.

Table 1. Appearance of the investigated variables in literature

Construct	Appearance in the Literature of		
	Interaction Orientation	Learning Orientation	Market Orientation
Company Characteristics			
Distribution			X
Industry		X	X
Number of Employees		X	X
Sales Previous Year			X
Type of Operation	X		X
Employee Characteristics			
Age		X	X
Gender		X	X
Tenure		X	X
Employee Perceptions			
Affective Commitment		X	X
Continuance Commitment		X	X
Employee Satisfaction		X	X
Environment			
Competitive Intensity	X	X	X
Market Turbulence		X	X
Normative Institutional Pressure	X		
Technological Turbulence		X	X
Organizational Culture			
Dependence on Trademarks	X		
Learning Orientation	X		X
Willingness to Cannibalize			X
Organizational Strategy			
Adaptive Selling		X	X
Employee Reward System	X		
Outsourcing Expertise	X		
Organizational Structures			
Formalization		X	X
Interdepartmental Conflicts			X
Interdepartmental Connectedness			X

Sources: Chandy and Tellis (1998), Deng and Dart (1994), Dharmadasa (2009), Duff, Boyle, Dunleavy and Ferguson (2004), Farrell and Oczkowski (2002), Farrell (1999), Grinstein (2008), Homburg (2004), Jaworski and Kohli (1993), Kirca et al. (2005), Krohmer (1999), McGuinness and Morgan (2006), Mengüç (1996), Park and Holloway (2003), Ramani and Kumar (2008), Scholderer (2000), Selnes, Jaworski and Kohli (1996), Severiens and ten Dam (1998), Sigauw, Brown and Widing (1994), Sigauw and Honeycut (1995), Steiners (2005) and Verhoef and Leeflang (2009).

The term “entrepreneurial orientation” describes management attitudes and forms of behavior which are directed towards an innovative business orientation and the pursuit of new company activities. The idea goes back to studies by Miller and Friesen (1978), who have identified eleven dimensions. In addition, they conclude that innovativeness, risk-taking and proactiveness are the central dimensions (Miller, 1983). Each of these sub-constructs can individually exert a positive influence on the company’s goals such as adaptability or product innovations. In this study we focus on entrepreneurial proactiveness, which consists in the active pursuit of promising business options and the associated creation of competitive edges (cf. Lumpkin and Dess, 1996).

The customer orientation of salespeople is explained by, for instance, the “customer-oriented selling” (see Saxe and Weitz, 1982) or the “adaptive selling” (Speiro and Weitz, 1990) behavior of salespeople. Adaptive selling is the salesperson’s ability to recognize promising attributes of specific selling interactions and adapt their behavior to these (see. Weitz, Sujan and Sujan, 1986, p. 174). This adaptation can take place during the interaction with one customer as well as between the interactions with two different customers. In contrast, customer-oriented selling is defined as “the degree to which salespeople practice the marketing concept to try to help their customers make purchase decisions that will satisfy customer needs” (Saxe and Weitz, 1982, p. 344). Despite the conceptual differences the contents of both constructs are very similar. Table 2 compares these constructs as well as shows differences regarding the contents of these organizational strategies and structures.

Table 2. Overview of the various constructs including differentiation

Construct	Focus				Components			
	on cus- tomer	on organi- sation	Indivi- duality	Relation to the customer	compe- titive	mone- tary	product- related	social
Adaptive Selling	X		X	with the client		X		
Customer-oriented Selling	X		X	with the client		X	X	X
Entrepreneurial Orientation*		X		for the client	X	X	X	
Interaction Orientation (IO)	X		X	with the client		X	X	
Learning Orientation (LO)		X		for the client		X		
Market Orientation (MO)**	X	X	X	for the client	X		X	

* Dimension adopted by Covin and Slevin (1989).

** Definition and conceptualization specified in Kohli and Jaworski (1993).

It can be seen that interaction orientation is the only construct with an individuality focus on the customer which contains a relationship with the customer and monetary as well as product-related components.

Research propositions

Business-to-business firms organize themselves into account management teams and b2c providers have relations with many similar customers. Ramani and Kumar (2008) hypothesize that b2b firms exhibit a greater degree of interaction orientation than business-to-consumer firms due to a greater acceptance and diffusion of the belief in the customer concept. Organizations in the b2b sector rather believe that it is not possible to satisfy each customer with the same products or services and aim to acquire new customers individually rather than business-to-consumer firms. Thus:

H1: Business-to-business firms have a higher interaction orientation than business-to-consumer firms.

Normative pressure derives from the ability to learn from organizations which adopted an innovation through direct or indirect channels. If two firms communicate with each other frequently and directly, the probability of an adapting behavior increases.

Experts make a distinction between stakeholder pressures and competitive pressures. Stakeholder pressures on a firm are exerted by its customers, investors, media, partners or similar shape. Some theorists argue that an organization meets its customers' expectations and requirements because conformity gives it access to the resources it needs to be successful (Di Maggio and Powell, 1991).

Competitive pressures are forces on the firm to adopt a technology or to run the risk of losing competitive edges because of too little customer loyalty and high costs (Abrahamson and Rosenkopf, 1993). Researchers do not agree on whether firms adopt technologies because of institutional pressures from their environments.

Normative institutional pressure relates to the behavior of responding to numerous expectations (Karahanna, Straub and Chervany, 1999). The number of competitive firms that adopt new interactive technologies precipitate the firm's adoption of interactive tools (Wu, Mahajan and Balasubramanian, 2003). Hence,

H2: The greater the normative institutional pressure for a firm, the greater its interaction orientation is.

As, with growing competitive intensity, earnings opportunities of a business unit sink, a firm must encourage customers even more strongly to share opinions of its products with the firm than in a situation with

low competitive intensity. In addition, the organization will try harder to understand the customers' problems to continue to be successful. So the greater the competitive intensity a firm faces, the greater a firm's customer empowerment and understanding of customer problems would be. Therefore,

H3: The greater the competitive intensity, the greater a firm's interaction orientation would be.

Market turbulence will basically be determined by the fact that the customers' preferences change in the course of time. If they change rapidly, a firm is forced to analyze previous consumer transactions to anticipate future needs and potentials at an early stage, i.e. greater market turbulence results in superior interaction response capacity, the firm's ability to use dynamic database systems and processes. Thus:

H4: The greater the market turbulence, the greater a firm's interaction orientation would be.

There is empirical evidence that the willingness to cannibalize has a positive effect on the number and success of innovations (Chandy and Tellis, 1998). Companies which can easily adapt to requirements that new products involve motivate customers more to express own ideas for new and further developments. Accordingly:

H5: The greater the firm's willingness to cannibalize, the greater its interaction orientation is.

The value creation process firstly is about the acquisition of user knowledge. To achieve this purpose, the company exchanges information with the customer as the carrier of that information. This exchange is an interaction cycle between provider and customer. In addition to the acquisition of knowledge it also is about the adoption of user knowledge (Zahra and George, 2002). During this phase the company tries to anchor the information and make use of it. This change can be seen as an organizational learning process so that this phase can be described as learning orientation. Thus, one could assume that learning orientation requires interaction orientation. However, Arrow's information paradox claims that the value of information (in this case user knowledge) is not known until one already knows the information. But then the information does not have to be acquired anymore (Arrow, 1962).

Suggesting that there is a causal link between the two orientations, it would follow that interactions can only reach their longer-term effect if the companies had a strong organizational learning. So learning orientation would be understood as a precondition of interaction orientation. As far as the relationship between the two strategic orientations is empirically verifiable, its direction should, based on these considerations, be from learning orientation towards interaction orientation. Thus:

H6: The greater the learning orientation of an organization, the greater its interaction orientation is.

If the employees at the company are older, i.e. they have gained more experience in their profession, they probably have a higher competence. Consequently, they can offer the company advanced knowledge about the firm's idea of what each individual customer has contributed to its profits and provide better predictions (i.e. they will allow for a better customer relationship management). Accordingly:

H7: The older the employees are, the greater the firm's interaction orientation.

Companies such as huge banks forming part of the financial industry can match each transaction (e.g. money transfer or debit entry) with a single customer because of individual account management. Equally the employees must have the opportunity to get access to customer information at any time so that they can give individual advice to the customer independently.

Furthermore, there are a lot of opportunities for consumers to interact with the bank, e.g. by appropriate applications for payment transactions in smart- or i-phones. Though customers in the financial industry are individual rather than organizational customers (that means these companies are primarily B2C focused), the extent of higher interaction response capacity allows for the following thesis:

H8: Financial firms exhibit a greater degree of interaction orientation than companies in other industries.

Firms with a high level of interaction orientation encourage customers to participate in designing products and services (Ramani and Kumar, 2008). Ideas for innovations can be generated from this interaction process and it is known that innovations arise in interfaces between customers and organizations (Pirinen and Fränti, 2008). Hence,

H9: The greater the firm's interaction orientation, the more product innovations are generated by the firm.

The construct of entering new markets describes the start of a new business within an existing organization such as the establishment of a new business unit. If the firm encourages customers to participate interactively in designing new products, which means that the firm has a high level of interaction orientation, the company will be able to offer significantly more products or services to pursue new business. Thus:

H10: The greater the firm's interaction orientation, the more the firm is engaged in entering new markets.

The firm's adaptability refers to the ability of the company to adapt to any environmental changes (see Rueckert, Walker and Roering, 1985). For example, this ability implies the adaption of the products to the changing

needs of customers and quick reaction to new threats in the market (Irving, 1995). The implementation of these measures implies a high level of interaction orientation, e. g. by an understanding of the customers' problems or by customer empowerment to collaborate in new or further product developments. This argumentation leads us to the below hypothesis:

H11: The greater the interaction orientation of a firm, the greater the firm's adaptability is.

The firm's effectiveness can be operationalized by parameters such as achieving the degree of customer satisfaction, reaching the target market share or acquiring new customers (Irving, 1995; Rueckert et al., 1985). A higher degree of interaction response capacity and customer empowerment results in a higher level of customer satisfaction (Ramani and Kumar, 2008, p. 29). Through the customer empowerment, which lets the customer take part in the ongoing development of products, the company can respond to the customers' needs in a better way, which creates competitive edges (see Kohli and Jaworski, 1990). These considerations justify the following hypothesis:

H12: The greater the interaction orientation of a firm, the greater the firm's effectiveness is.

Customer-specific success refers to parameters like customer retention, achieving authenticity or minimizing customer complaints. We can say that the aim of interaction orientation is towards the understanding of the customer's problem. The arrangement of interaction is represented by the behavior of customer contact staff, where customer satisfaction and trusting customer relationships are primary goals. A high degree of interaction orientation includes a great understanding of customer problems, which leads to increased success (Danzinger, 2010). Accordingly:

H13: The greater the interaction orientation of a firm, the greater the firm's customer-specific success is.

It is known from literature that market orientation and entrepreneurial orientation have synergetic effects on the product innovation activities and performance (Atuahene-Gima and Ko, 2001). Furthermore, Baker and Sinkula (1999b) find a synergetic effect of market orientation and learning orientation, showing that they both combine positively to impact the change in relative market share. In addition, they identify a synergistic effect of market orientation and learning orientation on new product success. This is why we assume that there are positive or negative synergetic effects of market orientation and interaction orientation on suitable constructs, too.

Firms that combine high levels of interaction and market orientation should perform better in consequence in effectiveness or customer-specific success than other combinations of both orientations. Since firms with lower market orientation might have an inflexible structure of interaction

orientation, we also argue that the greater the organization's market orientation, the stronger the positive relationship between its interaction orientation and effectiveness or success is. Therefore:

H14: There are synergetic effects of interaction orientation and market orientation on effectiveness.

H15: There are synergetic effects of interaction orientation and market orientation on customer-specific success.

Data and measures

We have derived data from structured questionnaires drawn from a random sample of people who are occupied with selling and enter into direct contact with customers. The surveys are also checked for obvious instances of incompleteness and yes-saying. This process eliminates less than 2% of the sample. The final sample consists of 231 participants, who have answered a total of 165 questions.

Most of our measures have been used in past research and consist of items on a seven point Likert scale with the response items ranging from 1 (= "applies completely") to 7 (= "doesn't apply at all"). Number of employees (variable: *employees*; 1 = "> 100"), sales previous year (*sales*; 1 = "> EUR 10 million"), type of operation (*b2b*; 1 = "business-to-business", 0 = "business-to-consumer"), gender (*sex*; 1 = "man") and distribution (*sphere*; 1 = "(inter) national", 0 = "local") are binary just as the industry variables *energy* (1 = "company is a energy firm") and *finance* (1 = "company is a financial services firm"), which are based on the latest NACE Codes using the NACE Revision 2 Classification (Eurostat, 2008). *Tenure* and *age* are measured in years.

We have adapted the scales of interaction orientation from Ramani and Kumar (2008), consisting of four dimensions relating to the firm's belief in the customer concept, the interaction response capacity, the customer empowerment and the customer value management. Furthermore, we also developed another sub-construct as some explorative interviews have indicated that the understanding for the customer problem is a central aspect of interaction's success of the company (Danzinger, 2010, p. 145). In addition, we developed some new items to measure normative institutional pressure (*normative3*), outsourcing expertise (*outsourc3*) and dependence on trademarks (*trademarks3*).

Learning orientation is operationalized by the scales from Sinkula et al. (1997) and Jerez-Gomez (2005). The interviews have revealed clearly that learning orientation without human resources practices is not completely defined. Therefore we add that construct as another dimension of learning

orientation, so it consists of four sub-constructs: experimentation and openness, learning commitment, shared vision and human resources practices. The measure of market orientation is adopted from the original MKTOR scale (see Narver and Slater, 1990). For proactiveness (PRO), we use the items developed by Venkatraman (1989).

One part of the measures in Figure 1 is taken from Ramani and Kumar (2008), who include them as determinants of interaction orientation. This figure also shows that the other hypothetical antecedents have been tested to be determinants of organizational learning or market orientation. That is certainly the case for the consequences of interaction orientation, which are formerly verified consequences of market or learning orientation. With regard to the formulated hypotheses and presented determinants the following model is constructed:

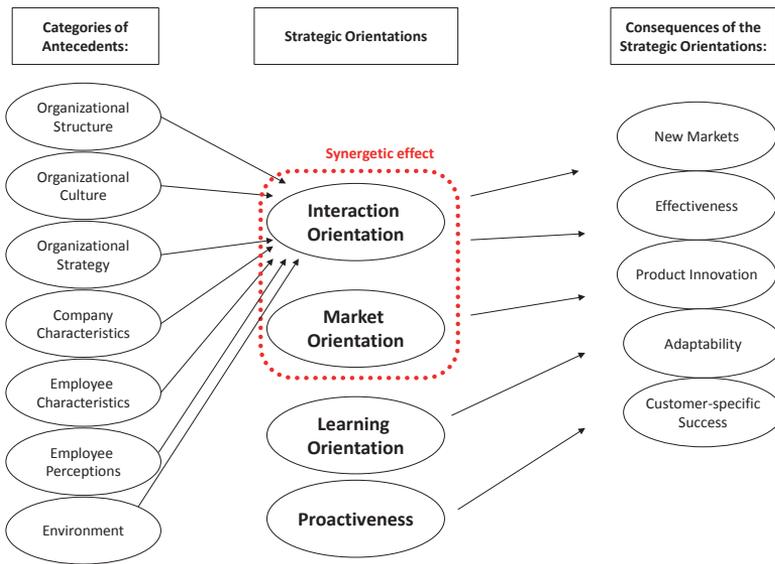


Figure 2. The hypothesized model

Method

We carry out a confirmatory factor analysis to extract the factors to confirm the validity of our new sub-construct *understanding customer problems (ucp)* as a part of the latent variable interaction orientation. Thus, we investigate our questionnaire to check if it correctly determines the proposed substructure. Initially the internal consistency of the grouped questions is studied by Cronbach’s alpha for our sample. Each construct has an alpha greater than

0.7, so the data has an acceptable degree of reliability. As extraction method for the subsequent factor analysis we use principal components and a varimax rotation of the loadings. For the discriminant validity of the factor analysis we claim the difference of the loadings of one item on different factors to be less than 0.2 (Nunnally and Bernstein, 1994). For convergent validity the relevant loadings should be greater than 0.4 (Anderson and Gerbing, 1988; Chen, Paulraj and Lado, 2008).

Linear relationship between interaction orientation and its determinants is assumed. We identify the crucial effects on interaction orientation by a linear regression model. Since we observe several outliers in our data set, we eliminate extreme observations. We exclude respondents exhibiting a Cook's distance that exceeds the conventional threshold $4/(n-k-1)$, where n denotes the sample size and k the number of covariates (Fox, 1997, p. 281). Another linear model is applied to determine the effect of interaction orientation, learning orientation, market orientation and proactiveness to the above mentioned consequences. In this case, we do not delete outliers for each model for the sake of comparability. In either regression we check for multicollinearity by the variance inflation factor. All analysis are carried out using SPSS 19 and R 2.7.

Descriptive statistics

Our data set comprises 231 cases whereof 133 questionnaires have been answered by male and 98 by female interviewees. The mean age of the respondents is 34 ($sd=11.39$), with a minimum of 20 and a maximum of 63 years, hence covering the range of relevant age. We distinguish between several industries. The boxplots in Figure 3 illustrate the impact of the sector on interaction orientation. We hypothesize that companies in the financial sector are affected to interaction orientation to a greater extent than any other line of business. This hypothesis is encouraged by Figure 2 showing that financial services features the smallest median of all industries and that 25% of all companies in this industry have a value between 1.94 and 2.38 for the aggregated interaction orientation item.

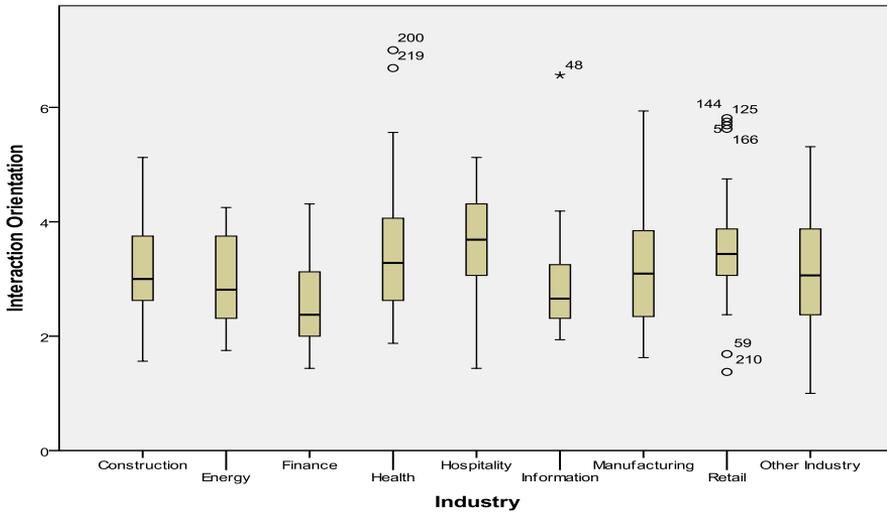


Figure 2. Box plots for interaction orientation separated by industrial sector

Also, the energy sector reveals an above average interaction orientation. This may be due to the fact that it is mainly business-to-business (cf. Table 3). Furthermore, we see that in our sample the financial business sector is mostly business-to-client. Also, firms that deal mainly with private customers dominate the sectors hospitality, retail and health while companies that primarily serve business clients are of the production segment. The remaining business areas are well-balanced.

Table 3. Contingency table for customer type, averaged strategic orientation and industry

	Construction	Energy	Finance	Health	Hospitality	Information	Manufacturing	Retail	Other
B2B	47%	69%	4%	13%	6%	53%	61%	23%	51%
IO	3.12	2.94	2.62	3.59	3.60	2.98	3.29	3.55	3.13
LO	3.32	2.92	2.77	3.17	3.95	3.11	3.27	3.32	3.18
MO	3.29	3.24	2.96	3.60	3.31	3.18	3.47	3.39	3.33
PRO	4.24	3.75	4.02	4.25	4.48	3.83	4.39	4.13	3.99

Factor analysis

We run the factor analysis involving relevant items for the latent construct of interaction orientation. The Kaiser-Meyer-Olkin criterion suggests good sampling adequacy (KMO=0.858). All observed communalities are greater

than the usual threshold of 0.3, lying between the minimum of 0.535 and the maximum of 0.818. The eigenvalue criterion recommends picking the factors with an eigenvalue greater than 1. In our case we therefore obtain five factors. The fraction of the variance conserved by these extracted components is 70%, which indicates a good explanatory power of the factors. All extracted and rotated factors explain more than 10 percent of the variance each, with a maximum of nearly 19% for factor 2. We can assign each factor to one of the intended sub-constructs of customer management value, customer empowerment, understanding customer problems, interaction response capacity and belief in the customer concept. For example we can interpret factor 1 as a customer management value since only items *crm1* to *crm3* exhibit a substantial loading on this factor (see Table 4). All relevant loadings are greater than 0.4. The item *ucp2* does not have acceptable discriminative power as it reveals a high loading both on the *ce* and *ucp* factors. By contrast, we can see that the new items *ucp3* and *ucp4* differentiate more clearly.

Our findings implicate that indeed a fifth dimension understanding customer problems of interaction orientation exists. For future studies we recommend to evolve a new item *ucp2*, since it lacks discriminative power. Note that the loading of the item *ucp3* is highly negative, because it is a reverse item.

Table 4. Extracted factors and rotated factor loadings

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
<i>cvm1</i>	0.798	0.094	0.166	0.234	0.115
<i>cvm2</i>	0.858	0.116	0.029	0.225	0.088
<i>cvm3</i>	0.867	0.099	0.048	0.113	0.146
<i>ce1</i>	0.140	0.748	0.166	0.242	-0.100
<i>ce2</i>	0.082	0.785	-0.012	0.188	0.065
<i>ce3</i>	0.115	0.878	0.109	0.052	0.113
<i>ce4</i>	0.015	0.850	0.114	0.035	0.172
<i>ucp1</i>	0.210	0.410	0.627	0.161	0.276
<i>ucp2</i>	0.234	0.438	0.563	0.051	0.148
<i>ucp3</i>	0.039	0.164	-0.822	-0.111	0.123
<i>ucp4</i>	0.078	0.263	0.607	0.074	0.292
<i>irc1</i>	0.123	0.229	0.055	0.782	0.052
<i>irc2</i>	0.166	0.143	0.132	0.865	0.061
<i>irc3</i>	0.335	0.310	0.066	0.604	0.344
<i>irc4</i>	0.174	-0.035	0.095	0.767	0.199
<i>cc1</i>	0.041	-0.024	-0.038	0.066	0.816
<i>cc2</i>	0.164	0.183	0.293	0.352	0.584
<i>cc3</i>	0.275	0.187	0.222	0.187	0.652

Reliability and validity

For the subsequent analysis we examine the reliability of our items by Cronbach’s alpha and Item-To-Total-correlations. For the former we impose a threshold of 0.7, and in case of a lower alpha-value we choose a subset of items for each group satisfying the restriction. The Fornell-Larcker-Criterion requires that the average variance extracted of the constructs should be greater than the square of the correlations among the constructs (Fornell and Larcker, 1981). This condition has been met and all items have high factor loadings, so discriminant and convergent validity are proved.

Determinants of interaction orientation

Now we perform a regression analysis to identify the determinants of interaction orientation. As predictors we introduce a lot of variables (see Measures). With a first regression we compute Cook’s distance for each observation. The histogram of all distances in Figure 3 suggests to eliminate observations that show a Cook’s D greater than 0.02, which is consistent with the threshold of $4/(n-k-1)=0.019$ which we use here. In doing so, 216 observations remain.

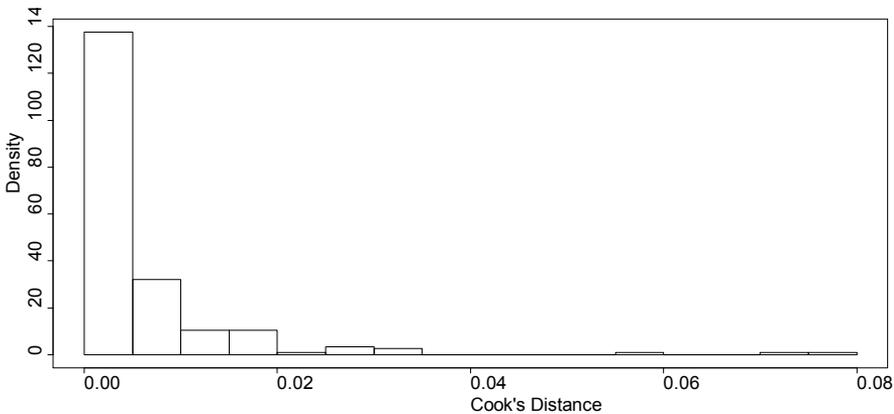


Figure 3. Histogram of Cook’s distances

The fit of the regression model is very promising ($R^2=0.694$, and $F=17.314$, $p=0.000$). The resulting parameter estimates, errors, standardized estimates and p-values are given in Table 5. Also, tolerance values and variance inflation factors are reported. None of the latter exceeds 10 so that obviously we do not face multicollinearity issues (see Belsley et al., 1980, p. 93).

Table 5. Results of the regression on interaction orientation

Variable	Coefficient	Sd	Std. Coeff.	p-Value	VIF
constant	0.238	0.591		0.688	
B2B	-0.384	0.103	-0.179	0.000	1.442
LO	0.418	0.057	0.465	0.000	2.508
reward	-0.011	0.032	-0.016	0.738	1.504
trademarks	-0.036	0.031	-0.060	0.243	1.633
outsource	0.018	0.031	0.027	0.550	1.253
normative	0.075	0.038	0.109	0.050	1.903
affective	0.019	0.051	0.023	0.707	2.426
continuance	-0.091	0.049	-0.084	0.063	1.271
satisfaction	0.040	0.069	0.038	0.561	2.632
conflicts	-0.049	0.037	-0.059	0.181	1.200
connectedness	-0.048	0.048	-0.047	0.319	1.405
adaptive	0.079	0.049	0.077	0.112	1.470
technoturbu	0.033	0.031	0.054	0.293	1.653
competitive	0.109	0.038	0.137	0.005	1.421
marketturbu	0.126	0.050	0.126	0.013	1.578
cannibalize	0.175	0.041	0.226	0.000	1.767
formalization	-0.047	0.033	-0.065	0.156	1.284
employees	0.015	0.130	0.007	0.909	2.559
sales	0.092	0.139	0.046	0.509	2.951
sphere	0.142	0.105	0.070	0.179	1.671
tenure	-0.001	0.008	-0.010	0.867	2.131
finance	-0.533	0.154	-0.157	0.001	1.280
energy	-0.093	0.183	-0.022	0.613	1.160
sex	0.042	0.089	0.020	0.640	1.196
age	0.011	0.005	0.118	0.044	2.113

Significant effects (at the level of 0.05) can be observed for the variables *B2B*, *LO*, *normative*, *continuance*, *competitive*, *marketturbu*, *cannibalize*, *finance* and *age*. The assumption of a high interaction orientation in financial services is supported by the results whereas the energy sector does not have a significant effect since it is mainly B2B. Learning orientation has obviously the highest absolute standardized estimate and thus a large impact on interaction orientation. This is most likely due to the fact that both are strategic orientations. Although we expected *continuance* to have a positive effect, it appears to be negative. In fact, *continuance* is correlated with *affective* since both are commitments, thus the exclusion of either of them could change the indication. The variable *trademarks* confirms the result of Ramani and Kumar (2008), although the effect is not significant. A variable selection could possibly lead to significant results.

Separate regressions for different groups of covariates reveal which group conserves most of the variance of interaction orientation by means of the model's R^2 . In this regard, the organizational culture strongly influences interaction orientation. Also the environment and employee perception are good indicators. Organizational structure and employee characteristics seem to be less important. The observations above show that age does have a significant influence, nevertheless we see here that experience does not sufficiently state interaction orientation.

Table 6. R^2 by group of determinants

Group	R^2	Adjusted R^2
Company Characteristics	0.170	0.146
Employee Characteristics	0.041	0.027
Employee Perception	0.202	0.190
Environment	0.280	0.266
Organizational Culture	0.608	0.602
Organizational Strategy	0.169	0.157
Organizational Structure	0.063	0.049

Consequences of interaction orientation

Now we investigate the consequences of interaction orientation, learning orientation, market orientation and proactiveness as a dimension of entrepreneurial orientation. Interaction orientation appears not to influence adaptiveness, entering new markets or product innovation (see Table 7). However, a significant effect on customer-specific success and effectiveness can be observed. All p-values are rather small so that an augmentation of the sample size could lead to significant results. Furthermore, we see that innovation requires a proactive attitude and also the opening of new markets is mainly influenced by proactiveness and market orientation. The results indicate that high adaptiveness arises from proactiveness, market and learning orientation whereas proactiveness is less important for customer-specific success and effectiveness. The latter is influenced significantly by market orientation and interaction orientation. Hence, learning orientation does not have an impact on effectiveness as it has on customer-specific success, just like market and interaction orientation. We conclude that market orientation still is an important factor. The estimation of the interaction effect between interaction orientation and market orientation does not yield significant results. For the other regressions we did not estimate the interaction effects since the main effects are not significant.

Verification of hypotheses

Now we examine the validity of our hypotheses. To begin with we examine H1, which claims that business-to-business firms have a higher interaction orientation than business-to-consumer firms. This hypothesis is clearly supported by the regression (refer to Table 4). The significant parameter estimate of -0.384 ($P < 0.001$) is negative, thus indicating the validity of hypothesis 1. Also, our regression affirms H2. The estimate related to normative institutional pressure is 0.075 ($P = 0.050$) so that an increase in this item causes a rise in interaction orientation. Therefore, our findings verify hypothesis 2. Competitive intensity also features a positive estimate in our regression model 2 (estimate 0.109, $P = 0.005$) and thus we can approve H3 since this indicates a positive influence of competitive intensity on interaction orientation. Hypothesis H4 states that the greater the market turbulence, the greater a firm's interaction orientation. The corresponding parameter estimate of 0.126 ($P = 0.013$) is consistent with this statement. The next hypothesis H5 argues that the firm's willingness to cannibalize supports its interaction orientation. Since our estimate for the cannibalization effect is significantly positive (estimate 0.175, $P < 0.001$) this conjecture proves to be true. The finding that the estimated effect of learning orientation is statistically significant and positive (0.418, $P < 0.001$) indicates, furthermore, that H6 is true. This determinant is more important than the others, because the standardized coefficient has the greatest impact on interaction orientation.

Table 7. Regression coefficients and p-values for the consequences

Variable	Product Innovation	Entering New Markets	Effectiveness	Customer-specific Success	Adaptiveness
constant	-0.614 (0.114)	-0.311 (0.424)	0.003 (0.995)	0.111 (0.828)	-0.582 (0.063)
IO	0.186 (0.086)	0.154 (0.157)	0.335 (0.031)	0.316 (0.042)	0.155 (0.186)
LO	-0.001 (0.989)	0.059 (0.551)	0.256 (0.090)	0.360 (0.017)	0.159 (0.045)
MO	0.182 (0.106)	0.244 (0.031)	0.282 (0.001)	0.352 (0.000)	0.326 (0.000)
PRO	0.863 (0.000)	0.653 (0.000)	0.045 (0.550)	-0.087 (0.251)	0.496 (0.000)
IO x MO			-0.027 (0.464)	-0.035 (0.346)	
R ² (Adj.)	0.411 (0.401)	0.355 (0.343)	0.363 (0.348)	0.392 (0.379)	0.461(0.452)

The estimated parameter for employees' age is also statistically significant and positive (0.011, $P = 0.044$) so that older employees offer a higher interaction orientation than their younger colleagues (H7). As we have seen before, financial firms exhibit a greater degree of interaction orientation than companies in other industries (H8). This result is supported by the boxplots in Figure 3 as well as by the parameter estimate in the regression model, which is -0.533 ($P = 0.001$)

Now we look at the hypotheses regarding the consequences of interaction orientation. Hypothesis H9 claims that the greater the firm's

interaction orientation, the more product innovations are generated. This can be affirmed by the positive estimate (0.186, $P=0.086$). Also we conclude that the firm's interaction orientation enhances the commitment to opening up new market (H10). This is supported by the estimated parameter value of 0.154 ($P=0.157$). In addition, the impact of interaction orientation on the adaptiveness (H11) is verified by the parameter estimate of our regression model (0.155, $P=0.186$). Also effectiveness (0.335, $P=0.031$) and customer specific success are achieved by interaction orientation (H12 and H13). However, the last two hypotheses H14 and H15 are not substantiated by our results since both interaction effects do not turn out to be statistically significant.

Discussion and conclusion

The results of our study reveal operative recommendations for companies. Interaction orientation is a crucial factor for the fulfillment of business objectives. The business culture turns out to be an essential determinant of interaction orientation. Furthermore, companies should be willing to cannibalize and provide a distinct learning orientation. Indeed, organizational learning is of particular importance, that is to say not only should the companies pursue single-loop or double-loop learning but rather Deutero learning, i.e. they should learn to learn. Market Orientation, interaction orientation and learning orientation can increase business success whereas learning is not of importance for business efficiency. Older and thus generally more experienced employees offer a superior interaction orientation and should therefore be recruited preferably. Nevertheless, the work experience is not a sufficient indicator for interaction orientation. This paper shows that business-to-business firms have a greater interaction orientation than business-to-consumer firms. Companies in the energy industry achieve the highest level of proactiveness, whereas financial services are strongly oriented to interaction, learning and market. The health and hospitality sectors have a very weak level of strategic orientation. In addition, the orientation is influenced by the environment. Thus, industries with a high level of competitive intensity and market turbulence tend to show distinct interaction and market orientation.

The greater the strategic orientation of a firm, the greater the firm's adaptability, effectiveness and customer-specific success. Furthermore, such companies are able to be more engaged in entering new markets. However, innovations first require a high degree of proactive attitude.

In contrast to adaptive selling, interaction orientation is more product-related. The term focuses on the individual customer and usually a mutual

relationship will develop during this interaction. This orientation has monetary elements, but neither competitive nor social components. We see that indeed a fifth dimension of interaction orientation exists.

A challenge for further research is the reconstruction of our sub-construct understanding customer problems. Differentiation between business-to-business and business-to-customer is not satisfactory and should be refined to an industry configuration. The business environment is worth being explored more deeply since three items of this group have a significant impact on interaction orientation. The results of our study question the existence of synergetic effects between market orientation and learning orientation.

Possibly a panel survey could elaborate the findings of our cross-sectional study. Also, it could be helpful to have multiple respondents of the same company to avoid single-informant bias. Increasing the sample size could lead to more significant results and an international survey could help to generalize our results. Furthermore, the influence of national cultures can be examined. It should be considered whether individualism or small power distance result in a higher degree of interaction orientation.

In our work we adopted the construct of market orientation by Narver and Slater (1990), another option is the design by Kohli and Jaworski (1990) which could be examined in another survey. In our study we did not perform any variable selection technique since we did not find any evidence for multicollinearity. Thereby, we were able to present an overview of all effects. Omitting the insignificant items could potentially lead to slightly different estimates and p-values, maybe even some of the insignificant effects turn out to be significant after all. Not only proactiveness but also the complete construct entrepreneurship orientation could serve as determinant of the business performance. Several variables like market and technological turbulences or absorptive capacity are known to have moderator effects on strategic orientations and could be the objective of further research. We also think of group wise regressions on interaction orientation for a better understanding of the effects and to avoid possible problems of correlated covariates.

From the implications of our research we conclude that interaction orientation is relevant in every market environment. Firms should focus on building an interaction orientation, regardless of whether they have a higher degree of learning or market orientation.

References

- Abrahamson, E., Rosenkopf, L. (1993). Institutional and competitive bandwagons: Using mathematical modeling as a tool to explore innovation diffusion. *Academy of Management Review*, 18(3), 487-517.
- Anderson, J. C., Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423.
- Argyris, C., Schön, D. (1999) *Organizational Learning II*, Addison-Wesley, Reading.
- Arrow, K. J. (1962). Economic Welfare and the Allocation of Resources for Invention. In: Nelson, R. R. (Ed.), *The Rate and Direction of Inventive Activity: Economic and Social Factors*. UMI: New York, 609-625.
- Atuahene-Gima, K., Ko, A. (2001). An empirical investigation of the effect of market orientation and entrepreneurship orientation alignment on product innovation. *Organization Science*, 12, 54-74.
- Baker, M. J., Sinkula, J. M. (1999a). Learning orientation, market orientation, and innovation: Integrating and extending models of organizational performance. *Journal of Market Focused Management*, 4, 295-308.
- Baker, M. J., Sinkula, J. M. (1999b). The synergistic effect of market orientation and learning orientation on organizational performance. *Journal of the Academy of Marketing Science*, 27(4), 411-427.
- Belsley, D. A., Kuh, E., Welsch, R. E. (1980) *Regression Diagnostics: Identifying influential data and sources of collinearity*. John Wiley: New York.
- Buckler, F. (2003). NEUSREL: Mit Neuronalen Netzen kausale Zusammenhänge aufdecken und verständlich darstellen'. In: Wiedmann, K.-P., Buckler, F. (Eds.), *Neuronale Netze im Marketing-Management*. Gabler: Wiesbaden.
- Calantone, R. J., Cavusgil, S. T., Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. *Industrial Marketing Management*, 31, 515-524.
- Chandy, R. K., Tellis, G. J. (1998). Organizing for radical product innovation: The overlooked role of willingness to cannibalize. *Journal of Marketing Research*, 35(4), 474-487.
- Chen, I. J., Paulraj, A., Lado, A. (2008). Strategic purchasing, supply management, and firm performance. *Journal of Operations Management*, 22(5), 505-523.
- Covin, J. G., Slevin, D. P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10(1), 75-87.
- Danzinger, F. (2010) *Kundeninteraktionskompetenz in Industriegütermärkten: Eine empirische Studie zur Interaktions- und Lernorientierung*. Gabler: Wiesbaden.
- Deng, S., Dart, J. (1994).. Measuring market orientation: A multi-factor, multi-item approach. *Journal of Marketing Management*, 10, 725-742.

- Dharmadasa, P. (2009) *Organisational Learning, Innovation and Performance in Family-Controlled Manufacturing Small and Medium-Sized Enterprises (SMEs) in Australia*. Dissertation: Bond University.
- Duff, A., Boyle, E., Dunleavy, K., Ferguson, J. (2004). The relationship between personality, approach to learning and academic performance. *Personality and Individual Differences*, 36, 1907-1920.
- Eurostat (2008). NACE Revision 2: Statistical Classification of Economic Activities'. Retrieved from: <http://epp.eurostat.ec.europa.eu> (Accessed 20th Dezember 2011).
- Farrell, M. A. (1999). Antecedents and consequences of a learning orientation. *Marketing Bulletin*, 10, 38-51.
- Farrell, M. A. (2000). Developing a market-oriented learning organisation. *Australian Journal of Management*, 25(2), 201-222.
- Farrell, M. A., Oczkowski, E. (2002). Are market orientation and learning orientation necessary for superior organizational performance? *Journal of Market-Focused Management*, 5, 197-217.
- Fornell, C., Larcker, D. F. (1981). Evaluating Structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Fox, J. (1997) *Applied regression analysis, linear models, and related methods*. Sage: Thousand Oaks.
- Grinstein, A. (2008). The relationships between market orientation and alternative strategic orientations: A meta-analysis. *European Journal of Marketing*, 42(1), 115-134.
- Homans, G. C. (1951). *The Human Group*, Harcourt: Brace & World, New York.
- Homburg, C. (2004) *Perspektiven der marktorientierten Unternehmensführung*. Gabler: Wiesbaden.
- Hult, G. T. M., Hurley, R. F., Knight, G. A. (2004). Innovativeness: Its antecedents and impact on Business Performance. *Industrial Marketing Management*, 33, 429-438.
- Irving, E. (1995) *Marketing Quality Practices*, Dissertation, University of North Carolina.
- Jaworski, B. J., Kohli, A. K. (1993). Market orientation: antecedents and consequences. *Journal of Marketing*, 57(3), 53-70.
- Jerez-Gomez, P. (2005). Organizational learning capability: a proposal of measurement. *Journal of Business Research*, 58(6), 715-725.
- Jimenez-Jimenez, D., Cegarra-Navarro, J. G. (2007). The performance effect of organizational learning and market orientation. *Industrial Marketing Management*, 36, 694-708.
- Karahanna, E., Straub, D.W., Chervany, N.L. (1999). Information technology adoption across time: A cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly*, 23(2), 183-213.

- King, W. R. (2004). Outsourcing and the future of it. *Information Systems Management*, 21(4), 83-84.
- Kirca, A. H., Jayachandran, S., Bearden, W. O. (2005). Market orientation: a meta-analytic review and assessment of its antecedents and impact on performance. *Journal of Marketing*, 69(2), 24-41.
- Kohli, A. K., Jaworski, B. J. (1990). Market orientation: The construct, research propositions, and managerial implications. *Journal of Marketing*, 54(2), 1-18
- Krohmer, H. (1999) *Marktorientierte Unternehmenskultur als Erfolgsfaktor der Strategie-implementierung*. Gabler: Wiesbaden.
- Kumar, V., Reinartz, W. (2006). *Customer Relationship Management: A Databased Approach*. John Wiley & Sons: New York.
- Lee, T-S., Tsai, H-J. (2005). The effects of business operation mode on market orientation, learning orientation and innovativeness. *Industrial Management & Data Systems*, 105(3), 325-348.
- Lumpkin, G. T., Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Journal of Academy of Management Review*, 21(1), 135-172.
- McGuinness, T., Morgan, R. E. (2005). The effect of market and learning orientation on strategy dynamics: The contributing effect of organisational change capability. *European Journal of Marketing*, 39(11), 1306-1326.
- Mengüç, B. (1996). The influence of the market orientation of the firm. *International Journal of Research in Marketing*, 13(3), 277-291
- Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science*, 29(7), 770-791.
- Miller, D., Friesen, P. H. (1978). Innovation in conservative and entrepreneurial firms: Two models of strategic management. *Strategic Management Journal*, 3, 1-25.
- Narver, J. C., Slater, S. F. (1990). The Effect of a market orientation on business profitability. *Journal of Marketing*, 54(4), 20-35.
- Neal, A., West, M. A., Patterson, M. G. (2004). *Do Organizational Climate and Strategic Orientation Moderate the Relationship between Human Resource Management Practices and Productivity*. Working Paper, London School of Economics and Political Science.
- Newell, F. (2003). *Why CRM Doesn't Work?* Bloomberg Press, Princeton.
- Nunnally, J. C., Bernstein, I. H. (1994). *Psychometric Theory*. McGraw-Hill: New York.
- Pantaleo, G., Wicklund, R. A. (2000). Multiples perspectives: Social Performance beyond the single criterion. *Zeitschrift für Sozialpsychologie*, 31(4), 231-242.
- Park, J-E., Holloway, B. B. (2003). Adaptive selling behavior revisited: An empirical examination of learning orientation, sales performance, and job satisfaction. *Journal of Personal Selling and Sales Management*, 23(3), 239-252.

- Peng, C.-H. (2008). The Relationships between the Antecedents of Innovativeness and Business Performance. *ISECS '08 Proceedings of the 2008 International Symposium on Electronic Commerce and Security*, 805-809.
- Perez Lopez, S., Montes Peon, J. M., Vazquez Ordas, C. J. (2005). Human resource practises, organizational learning and business. *Human Resource Development International*, 8(2), 147-164.
- Pirinen, R., Fränti, M. (2008). Framework and Culture of Proactive Competencies Learning Learning by Developing. *WSEAS International Conference on Education and Educational Technology*, 83-88.
- Ramani, G., Kumar, V. (2008). Interaction orientation and firm performance. *Journal of Marketing*, 72(1), 27-45.
- Rueckert, R. W., Walker, O. C., Roering, K. J. (1985). The organization of marketing activities: A contingency theory of structure and performance. *Journal of Marketing*, 49(1), 13-25.
- Saxe, R., Weitz, B. A. (1982). The SOCO scale: A Measure of the customer orientation of salespeople. *Journal of Marketing Research*, 19, 343-351.
- Scholderer, J. (2000). *Marktorientierung und Unternehmensperformance in der deutschen Biotechnologieindustrie*. Working Paper: Potsdam.
- Schwaab, C., Scholz, T. (2000). Was wird gelernt beim Organisationalen Lernen? Eine qualitative empirische Untersuchung. *Zeitschrift Führung und Organisation*, 6, 354-361.
- Selnes, F., Jaworski, B. J., Kohli, A. K. (1996). Market orientation in United States and Scandinavian companies: A cross-cultural study. *Scandinavian Journal of Management*, 12(2), 139-157.
- Severiens, S., ten Dam, G. (1998). A multilevel meta-analysis of gender differences in learning orientations. *British Journal of Educational Psychology*, 68, 595-608.
- Siguaw, J. A., Brown, G., Widing, R. E. (1994). The Influence of the market orientation of the firm. *Journal of Marketing Research*, 31, 106-116.
- Siguaw, J. A., Honeycut, E. D. (1995). An Examination of gender differences in selling behaviors and job attitudes. *Industrial Marketing Management*, 24(1), 45-52.
- Sinkula, J. M., Baker, W. E., Noordewier, T. (1997). A Framework for market-based organizational learning. *Journal of the Academy of Marketing Science*, 25(4), 305-318.
- Slater, S. F., Narver, J. C. (1995). Market orientation and the learning organization. *Journal of Marketing*, 59(3), 63-74.
- Spiro, R. L., Weitz, B. A. (1990). Adaptive selling: Conceptualization, measurement, and nomological validity. *Journal of Marketing Research*, 27(1), 61-69.
- Steiners, D. (2005). *Lernen mit Controllinginformationen*. Gabler: Wiesbaden.

- Utzig, B. P. (1997). *Kundenorientierung strategischer Geschäftseinheiten*. Gabler: Wiesbaden.
- Venkatraman, N. (1989). Strategic orientation of business enterprises: The construct, dimensionality, and measurement. *Management Science*, 35(8), 942-962.
- Verhoef, P. C., Leeflang, P. S. H. (2009). Understanding the Marketing Department's Influence Within the Firm. *Journal of Marketing*, 73(1), 14-37.
- Weitz, B., Sujan, H., Sujan, M. (1986). Knowledge, Motivation, and Adaptive Behavior: A Framework for Improving Selling Effectiveness. *Journal of Marketing*, 50(4), 174-191.
- Wu, F., Mahajan, V., Balasubramanian, S. (2003). An Analysis of e-business adoption and its impact on business performance. *Journal of the Academy of Marketing Science*, 31(4), 425-447.
- Zahra, S. A., George, G. (2002). Absorptive capacity. A Review, reconceptualization, and extension. *Academy of Management Review*, 27(2), 185-203.
- Zheng, X., Cui, Y. (2007). Entrepreneurial Orientation, Market Orientation and Firm Performance: the mediator role of Organizational Learning. *Proceedings of 2007 IEEE Xplore*, 4391-4394.

Abstrakt (in Polish)

Orientacja na interakcję odzwierciedla zdolność formy do interakcji z indywidualnymi klientami oraz do gromadzenia informacji uzyskanych w tych interakcjach. Literatura przedmiotu podaje cztery wymiary orientacji na interakcję: koncepcja klienta, zdolność do reakcji, uprawomocnienie klienta oraz zarządzanie wartością klienta (Ramani i Kumar, 2008). Niniejsza praca pokazuje piąty wymiar orientacji na interakcję oraz bada determinanty, moderatory i konsekwencje tej konstrukcji. Pierwszym odkryciem jest to, iż firmy działające w środowisku B2B wykazują większy stopień interakcji niż firmy ze środowiska B2C. Ramani i Kumar przewidywali to w swojej pracy. Pokazujemy, że istnieją sektory B2C, jak na przykład usługi finansowe, w których firmy również wykazują większy stopień orientacji na interakcję. Być może dlatego właśnie autorzy nie mogli udowodnić swojej hipotezy. Ponadto, badamy wpływ orientacji strategicznej na efektywność organizacji i porównujemy ze sobą różne orientacje.

Słowa kluczowe: adaptacyjna sprzedaż, dystans Cooka, sprzedaż nastawiona na klienta, orientacja przedsiębiorcza, środowisko, usługi finansowe, orientacja na interakcję, orientacja na uczenie się, orientacja rynkowa, kultura organizacyjna, strategia organizacyjna, struktury organizacyjne.

Innovations Under the Concept of ‘Turning Garbage into Gold’ in Fisheries Waste Management

*Muhammad Yusuf**

Abstract

This paper discusses the encouragement of creativity and innovation in creating opportunities for entrepreneurship turning useless materials into valuable resources. It is necessary to know the thought process and planning in the entrepreneurship idea to create a new business at this time. One of the brilliant philosophies about entrepreneurs is that they are those who can “turn garbage into gold”. This concept describes the important character of entrepreneurs who foresee business opportunities and have the intelligence to transform trash into cash. This means that they have the necessary ability to create innovation and value-added products for sale. The analyzed case study involves innovation in using fisheries waste specifically derived from crab industries in Indonesia. The study presents empirical perspectives including (1) potential business of crab shell waste (2) technology in innovative use of shell to added value product (3) business analysis and commercialization. Ultimately, we present the concept of a new business by linking theories of entrepreneurial innovation and technology transfer in order to gain environmental balance.

Keywords: *new entrepreneurship, innovation and creativity, Indonesia, fisheries waste, crab shell powder.*

Introduction

Innovation is a tool or instrument used by entrepreneurs to exploit change as an opportunity (Drucker, 1985). Innovation may influence capabilities towards the commercialization (Foss et al., 2011). All innovation begins with creative ideas (Okpara, 2007). Today, the idea of innovation and entrepreneurship is used to encourage the emergence of change and in viewing opportunities around us. There are many ways to practice these concepts in turning new ideas into a business. One is the idea of utilizing resources that have become waste, so as to become value-added products.

* Muhammad Yusuf, Norwegian College of Fishery Science, The Arctic University of Norway, Brevika 9037, Tromsø, Norway, muhammad.yusuf@uit.no.

From idea to business; the implementation of business ideas, starting with the planning materials considered useless with regard to the potential availability of other supporting resources, furthermore, determines the appropriate new innovations to be integrated in the business plan. An especially important aspect to consider is whether there are useful substances available in the waste. The main determining factor is the market: does the business idea have a potential to be developed?

The business world is now beginning to embrace new thinking in which entrepreneurial activity is referred to as one of the factors required to achieve sustainable business growth and to become highly competitive. Entrepreneurship is based on creativity, and continuous innovation is necessary to survive (Baldacchino, 2009; Barringer and Ireland, 2006; Nystrom, 1993; Okpara, 2007; Witt, 2004). There is a need to provide new insights into the concept saying that "entrepreneurs are those who can turn garbage into gold"¹. One of the places where there is still untapped resource potential is waste of fisheries resource, which could provide an opportunity for new entrepreneurs.

The study on waste innovation, technology and commercialization is an important foundation for entrepreneurs and government initiative to attract attention to environmental issues as well as social and economic benefits associated with waste management. The study focuses on the following:

- Identifying opportunities in waste utilization and emerging innovations.
- Identifying the market for the implementation of business.
- Identifying challenges, benefits, and implications in global perspective.

Theory of entrepreneurship and innovations

Drive entrepreneurs – create something out of nothing

Entrepreneurs are those who have the ability to see and evaluate business opportunities, collect the resources needed to take advantage of those opportunities and take the appropriate measures in order to ensure success (Meredith, Nelson and Neck, 1996). In another theory, entrepreneurship is the result of a process that applies creativity and innovation in a systematic and disciplined manner in order to meet the needs and capture opportunities in the market (Zimmerer and Scarborough, 1996). The role of the entrepreneur is to combine creative ideas with concerted action for business purposes. The characteristics of a successful entrepreneur include being able to complete

¹ "Seeing a business opportunity where others do not and acting on it". Gibson, in a lecture conversation on 19th March 2013. Entrepreneurial opportunity discovery and exploitation were two integral parts of the entrepreneurial process (Shane, 2003; Fuduric, 2008).

the process of creativity, then generate innovation, until the application can be deployed and break into the market with a profitable and sustainable business.

Creativity is a necessary feature of an entrepreneur (Henry, 2007). Creativity is the ability to make or bring into existence something new, such as new solutions and new methods. Wycoff (1991) defines creativity as something new which has a useful value. Creativity involves seeing things that everybody else has seen but that no one else has made. Creativity has a broad meaning, but in this case it is the concept of adding value to items that are not useful in order to sell them. In this context, entrepreneurial strategy involves focusing on new ideas and new views to create products with environmental benefits that are also profitable. In this modern era entrepreneurs compete to master the market by providing new added value to products that meet the needs of the market². On the other hand, entrepreneurs also create competition by seeing more and different ways to create new products or services that have never been there³.

A philosophy which is emphasized here involves the foresight to read business opportunities, and the courage and mentality, as well as the capacity to produce and sell high-value-added performance, described as “turning garbage into gold or money”. This is what is meant by the essence of entrepreneurship. It needs to be added to the concept that recognizing the importance of implementing a strong work ethic and leadership are the hallmarks of the modern businessman.

Every entrepreneur should have character and competence. The reason for the birth of every business is to solve a problem of market needs and create new added value for consumer satisfaction. Without the added value there is no customer satisfaction, and no customers; then a business will fail. The key idea is that an entrepreneur uses creativity and teamwork support.

Open innovation and giving added value

Humphreys, McAdam and Leckey (2005) assert that innovations require some supporting elements that are essential for their implementation and can improve the performance of the new venture. Some of these elements are: (1) leadership, (2) empowerment, (3) culture, (4) technology, (5) learning, (6) structure, and (7) management. The problem that arises is how to transfer the appropriate innovation to new businesses because they are often faced with the problems of the investment cost, technology support, lack of creativity and long procedure, therefore impact on their businesses declines. The next problem is how new businesses can improve their innovation capabilities,

² Concept: create something new from something that already exists.

³ Concept: create something from nothing.

because competition demands continuous consistency in innovating⁴. Moreover, starting a business by creating products from waste is risky. New businesses often run out of the power to be able to make innovations and are unable to compete.

Technological innovation opportunities can be found by doing research on the real possibilities of utilizing waste products. Using the appropriate technology in the waste processing business is not just the way the business team can benefit in terms of productivity, but also requires support technology that is able to adjust to the scope of work conditions. An awareness of the importance of innovation to new businesses requires the intervention of masterminds such as universities, research institutes, and companies. Technological innovation opportunities can still be created in order to get closer to the needs and culture of work. Technological innovation-oriented work culture can be an alternative solution to increasing business productivity. This can be done, for example, by making simple technological innovations in the operation of a device to make it simple in design and maintenance, as well as durable. However, not all innovation is technological as there should be consideration of the community role and households participation in waste recovery and reuse models.

Why innovate? Innovation is the successful exploitation of new ideas⁵. To be successful, entrepreneurs must know where and how their business will achieve its goal. This is why a clear concept of innovation is required for business needs to survive and thrive. Entrepreneurs need to adopt more effective operations and meet the realities of their intended market. Is there a high market demand for a product made from raw material waste? What innovations are needed? This can be answered with the appropriate methodological design innovation so they can understand the importance of innovation and how they do the innovation stages.

Why should we give added value to waste? The concept of value added can be interpreted as something that provides additional benefits, usefulness and also good quality during the process and in the final product (Fenoaltea, 1976). Waste generated by the industry can be processed into something more useful and is positive for the environment. In general, industry is less creative in managing waste. Waste minimization at source through the utilization of waste is achieved by looking at the benefits contained in the waste itself. Efforts in exploring this will reduce the volume of waste while also generating profits.

4 Innovation-orientation depends on the exploration of new possibilities through search and experimentation (Molina-Castillo and Munuera-Aleman, 2009).

5 Innovation defined as an idea, or object that is perceived as new by individual or other units of adoption like consumer and distributor groups (Rogers, 2003).

Entrepreneurship and transfer technology

The gap between producers and users of technology has prompted various efforts to accelerate the rate of technology transfer from the laboratory to the market level. Collaborative efforts between the technology providers and users become an important factor. One of them is in environmental technology, especially the technology of waste treatment. Selection of waste treatment technology is essentially determined by the characteristics of the waste, which may be a result of processing value-added products. Selection of the technology to be used depends on the needs of the industry and the target market.

The success of technology transfer requires knowledge from various disciplines (Reisman, 1989). Transfer of technology has fairly broad definitions which comprise efforts to divert the understanding and skills of technology or knowledge developed within an organization to the other⁶. Nevertheless, the adoption of a technology does not necessarily create or result in growth and revenue performance in a business. Based on the premise that innovation and new technology play a role in the growth of a business, the entrepreneur is trying to put together a plan that encourages innovation with the assumption that the technology will become an integral part of its business growth. Government should therefore accelerate the transfer of technology, where technology and economic growth is one component of development (Melkers, et al, 1993).

With the use of modern technology, a product will grow to the point where it becomes more competitive. In order to win the competition, when marketing products, manufacturers must consider not only the quality of the product alone, but also the business strategy of market orientation (Jaworski and Kohli 1993; Narver and Slater, 1990), innovation (Foss et al., 2011; Rogers, 2003)⁷, and entrepreneurial orientation (Lumpkin and Dess, 1996, 2001; Weerawardena, 2003)⁸. To encourage entrepreneurial success in applying technology it is necessary to attempt to address gaps through presentation and use of research products and technologies. Effective mediation can connect two-way collaboration between research institutions and the business community as a user.

Why is technology so important? Technological orientation is viewed as an instrument of strategy, policy-oriented product development can be used with technology for management of the competition, with the assumption

6 Knowledge and technology transfer as an interactive process with a great deal of back-and-forth exchange among individuals over an extended period of time (Gibson and Smilor, 1991).

7 Adoption innovation concepts and taking innovation to the market.

8 Entrepreneurial orientation refers to the specific organizational-level behavior to perform risk-taking, self-directed activities, engaged in innovation and react proactively and aggressively to outperform the competitors in the marketplace (Lumpkin and Dess, 1996).

that with the more advanced technology used, there will be increasingly innovative products produced and a greater chance of success. Advances in technology have been able to optimize achievement and support in entrepreneurship.

Entrepreneurs rely heavily on technology. The application of new technology is a decisive factor in the development of new products. Technological advantages in a product can attract consumers to buy it. Technology may accelerate new product development and create advantages (Li and Calantone, 1998).

Methodology

This study is to design a business framework for the identification of entrepreneurial opportunities through innovation. The goal is to analyze new entrepreneurship which creates innovation and is smart in addressing business environment. The primary data collecting for survey was conducted in Indonesia in crab industries, furthermore it was supported by secondary data for an overview of the potential marketing. The following steps of research including observations, experiments and descriptions were taken:

- Observation step is a series of surveys conducted to explore the potential of raw materials, process flow on crab industry and R&D industry activities. It involved direct interviews with the employees and managers of crab factories in Indonesia.
- Experiment step is a technical test in processing crab waste conducted on laboratory scale in order to find beneficial substances. The purpose of the laboratory test is to observe the structure of shell powder and analyze the final product.
- Description step is an overview of the supporting factors including business planning, team building and commercialization strategies. The results described provide a factual overview of the benefits of crab waste and are further explained in the business concept.

The marketing data for organic waste products was collected from reports, trends and forecasts that have already been published through books, journals, news and internet sources. The marketing overview provides wider information to help identify business prospects and assess market potential. Marketing analysis can give a business a picture of what kinds of new products and services may bring a profit (Pyle, 2010).

Study innovations in organic waste management for business

Fisheries waste management

Fisheries waste, is it a problem or does it have potential? Fishery development is progressing rapidly now, as well as manufacturing a product that can be used to meet food needs and create revenue sources, they also produce waste in the form of waste solids, liquids and gases. Until now these wastes have not generally been well managed and exploited, but have been thrown into the sea, rivers, lakes, beaches and other places. If it continues, this will disrupt sustainable development of the fishery sector in the future. This of course does not fit with the concept of environmentally sustainable development. In addition, such waste disposal practices can reduce the utility and value of fishery products, so it is very detrimental to the economy. The magnitude of the problem of waste management in the fisheries and aquaculture industry depends on the waste volume, its polluting charge, rate of discharge and the assimilatory capacity of the receiving medium (FAO, 2013).

Fisheries waste management has become a complex issue both technically and commercially. Of key importance in fisheries industries that produce organic waste is the focus on preventing the production of waste through waste minimization and reproduction of waste materials. In their business activities, fishery industries can be combined with the utilization of its waste materials byproduct. This course will give double the value added to society if they can manage it. Adding value to the management of waste in the fisheries industry could be a pattern that combines business processes as well as processing industry waste products in an economical way. These efforts can also be made by developing partnerships with new entrepreneurs by providing an incentive to treat waste. In these efforts, industry and new entrepreneurs should mutually benefit.

A business potential by utilization of crab waste

Creating innovation from crab waste into value added product aims to introduce ideas that can improve the environmental quality and open new business opportunities. There are several benefits from adding value to the crab waste, including: (1) the exploration of natural resources to product innovation (2) the use and transfer of technology (3) provision of economic value to the waste (4) open networking and marketing.

Potentials of Indonesian crab industries

The Blue Swimming Crab (*portunus pelagicus*) or locally known as 'rajungan' is one of the most popular crab species in Indonesia⁹. Crab products are important fishery export commodities in Indonesia and need careful management attention regarding sustainability of the production chain and natural resource harvesting. Crabs commodities are abundant in Indonesia: 28 processing factories are active in processing this commodity, including canned, frozen and fresh crab products. Crab is important in commercial fisheries and catches have risen substantially. Landings of *protunus pelagicus* during 2001-2012 reached an average of 27.223 tons per year¹⁰.

The export of blue swimming crabs began in the mid-1990s due to increased demand from overseas, especially from importers in the United States of America. Before this, this commodity was only consumed locally, and had a very low price. Today, an estimated 95,000 fishermen and 17,000 pickers are involved in the crab business with either small or middle entrepreneurs (Sustainablefish, 2013). They work in over 400 tiny plants or cooking stations throughout Indonesia. Some are directly employed in the crab fishery. In addition, several thousand other people are involved in the fisheries, including middlemen, operators of tiny plants where initial processing is carried out and the final processors who export these products.

Supply chains in the crab industry

Almost 90% of the crabs processed in Indonesia are directed to markets in the United States (Yulianto, 2008). Most of the crab factories use pasteurization technology in their production, while only a few factories use sterilization technology. In general, the majority of their products are put in cans, but some are cup or pouch products. Recently some companies have begun intensive innovation with value-added products such as crab cakes and crab balls. Below is the supply and production chain in the crab industry:

9 Blue Swimming Crabs (Sp. *Portunus Pelagicus*) resources still rely on catching, while the aquaculture was intensely researched, See <http://www.sustainablefish.org>

10 Blue Swimming Crabs come from the tropical waters around Indonesia. One-day-fishing became their system of work and affected quality of the product, as fishermen actually catch and return back to their docks the same day, See <http://www.fishsource.org>.

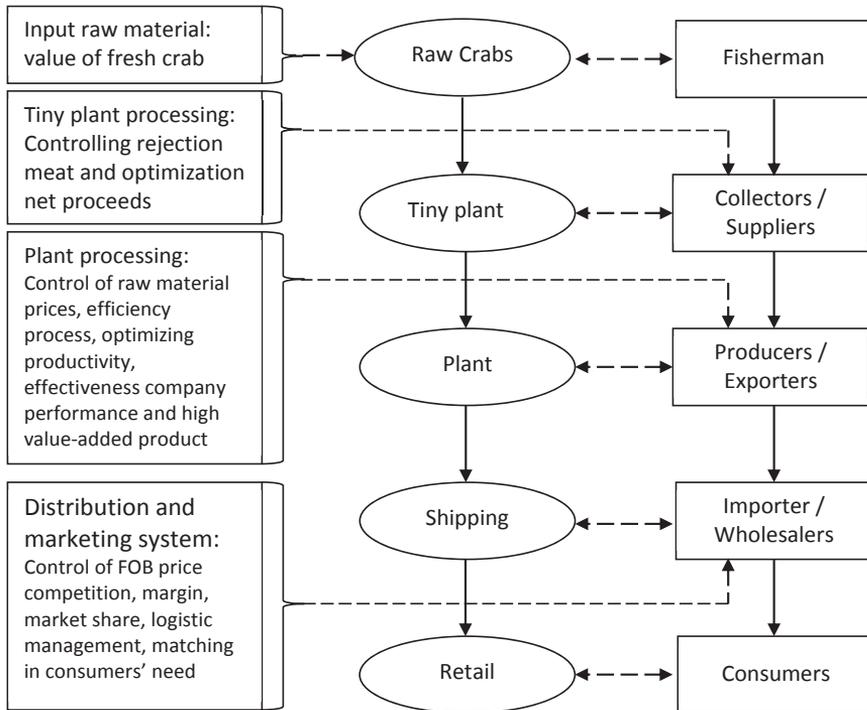


Figure 1. Supply chain of Indonesian Blue Swimming Crab

Development of by-product from crab waste

The blue swimming crab is one the main commodity exports of the Indonesian fisheries sector. There is a great deal of waste produced by the crab meat canning industry: shell waste makes up approximately 70 – 90 % of the total weight of the meat. The large amount of crab shell waste is a serious problem that needs a solution.

The potential for development product related to substance content of crab shells which could be beneficial for supplemental food and feed. Crab shell waste contains substances that can be reused, including some high-value products such as (1) natural supplements and cosmetic ingredients (2) animal feed additives (3) material spices. This waste could also be developed into a biological liquid extract as a feed additive for salmon that can produce colors which are brighter and fresher than those normally seen in aquaculture. There is thus potential for development in collaboration with the fish feed industry.

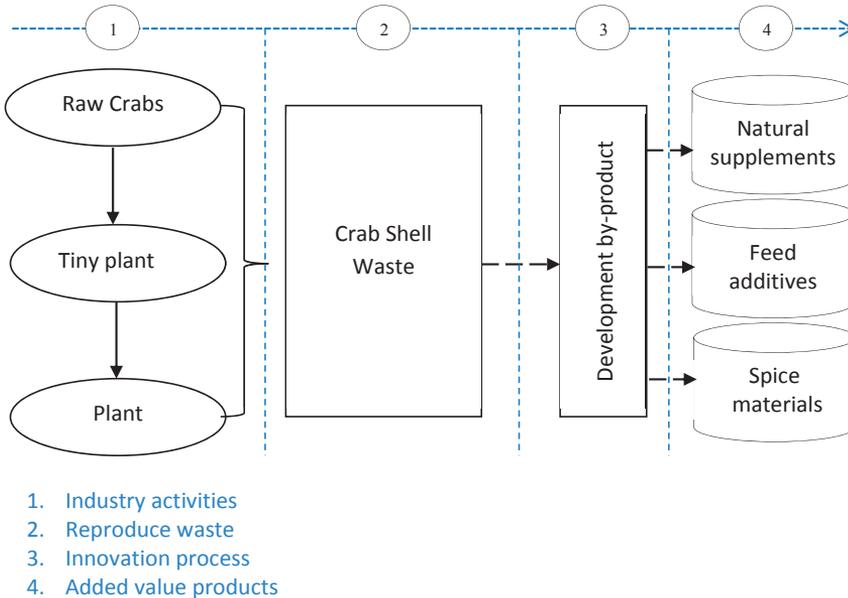


Figure 2. Product development of crab shell waste

One of popular by-products from crustacean commodity is chitosan product which forms a white to light-red solid powder. It is a deacetylated derivative from chitin, which is contained in abundance in crustacean shells i.e. crab, shrimp, lobsters and mushrooms. Commercial chitosan is commonly offered as powder or flakes. The chitosan capsule product is marketed as a dietary supplement for lose weight treatment. Crab shell extract is sold in stores in a pill form and is usually labeled as a fat attractor that expels fat from the body (Nutralegacy, 2009). Some pharmaceutical study results suggest that chitosan may help improve cholesterol levels when combined with a low-calorie diet (Ray, 2011; Sharecare, 2013).

From crab shell waste to powder – infrastructure technology

According to Nurhidajah and Yusuf (2009) the process of powdering crab shell waste requires several steps, including drying, milling and sieving. The first stage crab shell should be washed and blanched. Afterward, dried crab shell is then placed in a cabinet with a temperature of 70° C for 6 hours. The dried shells have to be downsized using a blender to obtain a smaller shell size, this process aims to further simplify the milling process using a steamroller, then the sifting is done using a sieve size of 60 mesh. It is then in the form of flour

ready to be developed into other value-added products for supplemental food and feed.

In a larger scale (commercialization) what is needed is the technology transfer which can be adopted from the industrial processing of waste materials into useful substances. Key success of commercialization of an innovation product cannot be separated from the role of technology (Reisman, 1989; Rogers, 2003). Technology applicability is needed to not only include a grinding machine as main infrastructure but also to include the separation and extraction technology to discover substances required. Technology needs also cover (1) process residues for valuable materials (2) process chemistry to test product development (3) process packaging for final product, and (4) laboratory equipment for daily checks.

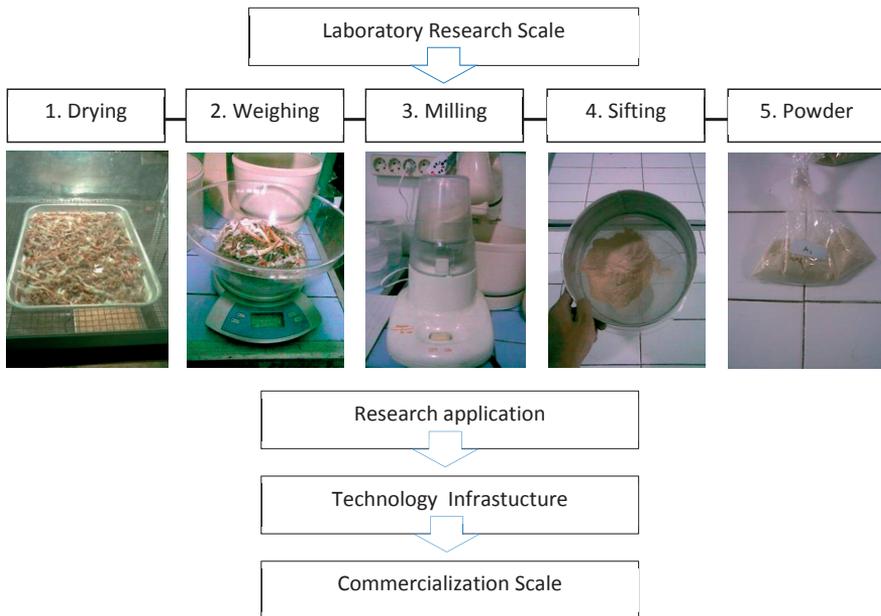


Figure 3. From laboratory-research to commercialization of crab shell waste

Framework – planning and model of business

In order to achieve the business success, there must be a good business plan and strategy as a guide to running and controlling the business¹¹. Therefore, we need business plans of crab waste to evaluate the business project. The establishment of a crab shell powder factory in Indonesia is appropriate due to the availability of raw materials. In order to develop further crab shell

¹¹ Business planning concept (Frinces, 2005; 2007)

powder it is necessary to cooperate with an industry which requires such raw materials as powder shell especially in feed exporter countries e.g. European countries which have good prospects. In addition to the analysis of consumer needs, a marketing strategy involves the following questions:

- What are the benefits of crab shell powder as raw material for the food industries, the feed industries and the health industries?
- Why would someone want crab shell powder, what are the benefits?
- What is the uniqueness and specificity of crab shell powder products?

The intended target market includes (1) the salmon aquaculture industry (2) fish farms (3) the animal feed industry (4) industry food seasonings and flavor enhancer industries, (5) the pharmaceutical industry that produces supplements, and (6) the cosmetics industry. In order to reach this market target, the advantages and benefits of the product should be presented and promoted. Furthermore, it is necessary to learn the framework of actors, barriers, challenges and facilitators (A/B/C/F) to this endeavor. Below is a detailed diagram to illustrate the position of the business:

Table 1. The A/B/C/F chart of the crab shell waste business

	Raw material	Making the powder	Exporting to Abroad	Making final product	Selling the product
Actors	Fishermen Middlemen Companies Workforce	Workforce Supplement Specialist	Shipping companies	Workforce Innovation institutions Laboratory	Distributors, shopping centre and other stores
Facilitators	Entrepreneur Network in the crab industries Local Government	Crab factory Fishery and organic companies	Agriculture marketing institution Trade Department	Network in exporter country Experts in the required technology	Local network exporter country Industries in pharmaceutical, spices, compost and feed
Challenges	Investment Acquiring the material Seasonal effects	Acquiring a small factory/plant	Storage Quality standard	Collaborative partnership agreement	Promotion and awareness
Barriers	Human resources Collective consciousness	Technology and infrastructure	Animal By- products Regulation Export procedures	Capital and cost production	Tax Substitute products and competitor

Business Analysis and Commercialization Strategy

Implementation of integrated business, starting with the planned location of crab shell powder industry can be established in Indonesia, considering the availability of sources of raw materials and other support resources. It is also necessary to determine whether specific product innovation can be

harnessed from the waste crab after it has been exported to the country of destination. Further processing of shell powder requires cooperation with institutions abroad as an integrated business. Other important aspects that need to be considered, particularly for business developments, include: (1) principal activities such as logistics, operations, and sales (2) support activities which include procurement, technology development, and human resource management and business facilities. Routine monthly cost components include (1) the cost of procurement of raw materials, (2) supporting materials, (3) transportation, (3) labor, (4) processing operations, (5) packaging and (6) marketing. In order to gain a competitive advantage it is necessary to prepare a new way to coordinate all activities, new procedures and technologies to empower new or different inputs.

Business description: This section describes the idea of a business plan relating to products based on crab shell waste raw materials. The main product is crab shell powder where a market share can be expected to be gained. This opportunity is indicated by a need for animal feed products, spice and material health supplements, which is still quite high. The market can be gained through open cooperation, creating publications which give adequate information and conducting an intensive publicity campaign. The reason for selecting this type of business is:

- In Indonesia, crab waste is a cheap raw material and has not yet been utilized optimally.
- There is a potential high price for the end products as supplements and flavor enhancers.
- Contributing to the environmental sustainability of fisheries.
- Potential innovation and technology is still open for product diversification.

Market analysis: The market analysis section describes the data and information needs of the market for by-products of organic waste, in particular the commercial products related to crab shells. Data and information that can be collected with respect to market size, the number of potential consumers for products as well as the rate of growth and the development related industries. Powders of crab shells are also being produced and sold in the EU and US as organic soil amendments or compost for gardeners¹². In general, the high-end marketing for natural organic products is growing, and the bio-pesticides attribute is definitely an asset (Stewart and Noyes-Hull, 2010). In Europe and Scandinavia in particular, the potential market is still wide open due to the growth of fish farmers, the increasing number of industry feed and pharmaceutical industries. We should remember that the

¹² Potential value of compost markets, see European Compost Network – ECN, and The US Composting Council – USSC.

Atlantic salmon aquaculture industry has boomed¹³. Specifically, to review the market potential according to the organic waste product innovations that can be developed (Chapter: Development by-product from crab waste), the marketing overview is presented as below:

- **Natural supplements:** Europe is the largest region for herbal supplements and remedies, accounting for the largest share of the world market (GIA, 2013a). Asia-Pacific and Japan make up the other important markets for herbal supplements on a global basis (Ibid). As reported by GIA (2012) forecasting that the global market for chitin derivatives will reach \$63 billion, while the global chitosan market will reach more than \$21 billion by the year 2015¹⁴. Chitosan advantage, some reports stated, is more useful for biomedical applications and dehydrations of aqueous solutions than chitin, since it possesses both hydroxyl and amino groups, which can be easily innovated and modified (Cosgrove, 2010).
- **Feed additives:** Rising awareness of the benefits of animal feed additives among veterinarians, feed-millers and integrators is expected to contribute to market expansion (Frost and Sullivan, 2006). The global animal feed additives market is growing at a Compounded Annual Growth Rate (CAGR) of 3.8% from 2011 to 2018 (TMR, 2012). As stated by the new market research report on Animal Feed Additives, in Asia Pacific region led by China is represents the largest as well as the fastest growing market worldwide (GIA, 2013b). Growth in the area is led by increasing production as well as demand for such commodity.
- **Spices materials:** Spices come under commodity markets which are high in value (i.e. price) but low in volume (i.e. weight). Spices add flavor and a unique taste to the food, the food industry is ever growing with the spices (M&M, 2013). Spice market key player countries in North America is US, in Asia are India, China, and Japan, and in Europe are UK, Germany, France, Spain, and Italy. India is the fastest growing market (Ibid). The key players for industry spice are e.g. Ajinomoto Co. in Japan, AVT McCormick Ingredients Ltd. in India, and B&G Foods Inc. in US.

Competition and barriers: The business world is associated with competition and therefore needs to have a revolutionary product concept and be adaptive to change. Entrepreneurs need to always be aware that all businesses must have an idea or a fresh idea to produce a unique product and take full advantage. Competition will be focused on products that already exist in the current market, for example from kelp supplements and animal feed from

¹³ The report for salmon farming industry (Marineharvest, 2013). See also, recent development of aquaculture in Norway (NSC, 2013).

¹⁴ Global Strategic Business Report by Global Industry Analysts, Inc.

fish with low economic value. In addition, substitution products of shrimp and lobster shells powder will put pressure on this business.

In marketing side, there is a hard international market competition between producers of spices, feed additives and natural supplements. Countries such as India, Vietnam, Thailand and China are the main producers of spices and exporters to America, which is the largest consumer of spices by volume and value. The US accounts for 33 % of the market, where western markets have a huge demand for spices products (M&M, 2013). In production side, intense competition also occurs among suppliers of crab powder, due to the fact that well-established industries already have raw material suppliers that offer good quality.

In accordance to the US and EU ban on the use of antibiotics as growth promoters, organic products, i.e. organic feed additives, organic compost, herbal supplements are expected to emerge as suitable alternatives, offering significant growth potential, mainly in countries (e.g. China, Indonesia and India) with large volumes of feed and food exports to the US and EU countries. However, the organic waste industry was subject to additional regulatory burden and potential for impact upon the market restriction through Animal By-products Regulation or Good Industry Practice requirements.

Business strategy: The right strategy will attract consumers to buy products and encourage them to open cooperation. Managers need to promote their businesses through a number of marketing methods to explain the quality of the product. It is important that health benefits are included in disseminated information, and this can improve the marketing concept. The results of research into the content of calcium and protein in crab shells can also help promote this product.

There are a number of unique market-based circumstances that affect the organics industry, including regulations, geography, climate, structure of organics market and the progression of resource recovery initiatives (Meinhardt, 1999). In order to develop an international market development strategy for the organic waste industry, it is necessary to examine the nature market in each of target countries. The business strategy for crab shell powder may use Tyler's concept (1996), the main priority is that by-products that are considered to be high value markets tend to be developed first, the second priority is that by-products with lower value high volume markets can be developed thereafter.

Building team and networks

A team is a group organized to work together to accomplish a set of objectives that cannot be achieved effectively by individuals (Parcon, 2007). Building a team involves a process of selecting, developing, and training a working

group in order to successfully achieve common goals. It includes motivating members to be responsible for carrying out group tasks. Team building should meet the demands of the task, quality work and timely results. Through cooperation and sharing knowledge and skills, a team is often able to complete tasks more effectively than an individual.

The team built for this business involves the element of managers, specialists and technicians. Managers have a responsibility to sustainability and business operations ranging from procurement of raw shell material, marketing and evaluation performance effectiveness. Expertise for the development of this team is required from various disciplines. Employees needed in the early stages include technicians to take care of crab waste material collection, its processing into powder and packing. A chemical engineering expert and a healthcare product quality expert will be required as well. Chemical technicians will be needed to run waste treatment techniques, and a quality expert will be required to guarantee the quality the final product when it is ready to be sold and consumed.

Challenges and business implication in global perspective

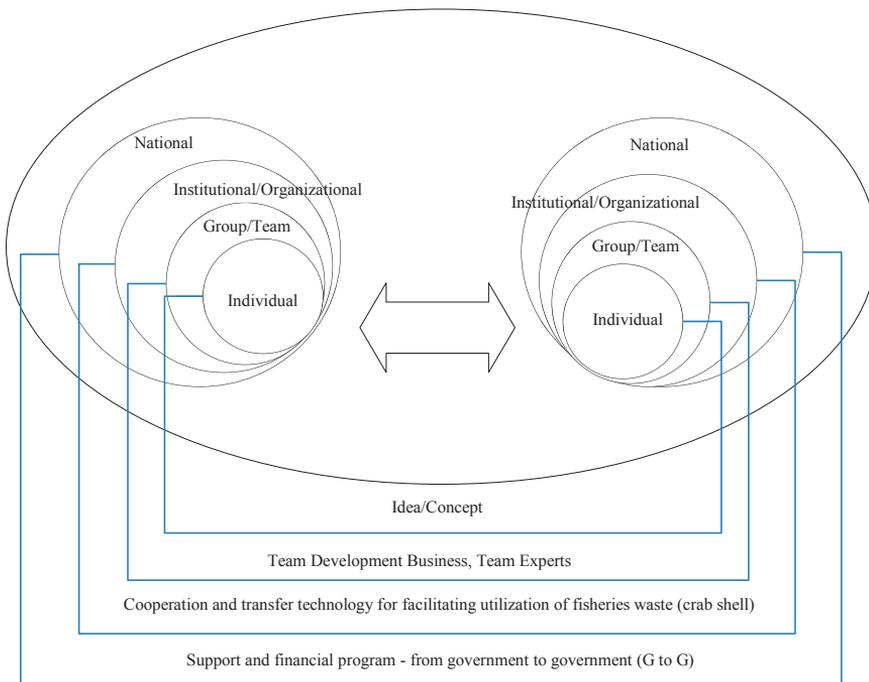


Figure 4. Development link of fisheries waste business

Source: Adapted from Gibson (2008).

The global perspective of the blue economy concept¹⁵ in fisheries sector becomes a driving force for business from waste materials. Solving problems often depends on how to look at the issues. This also applies to the problem of waste¹⁶. There are many perspectives on waste, whether it is the perspective of industry, environmentalists, community, and government. In turn, the perspective of the waste will cause a reaction to look as a potential. Management of zero waste in industry is a philosophy rather than a process or technology but it certainly can be considered an innovation for business (Capel, 2013). Implementing zero waste concepts in fisheries industry will eliminate all discharges to land, water or air that constitute a threat to many aspects primarily for human health.

The advantages of turning crab shell waste into beneficial products include; availability, low cost and high biocompatibility (Dorris, 2000). Business activities that take advantage of the waste associated with fishery conservation efforts include the interests of society and the primary industrial fishery sector. In order to provide support for this effort, therefore, it continues to be part of a system in the long-term problem solving for the stakeholders to be evaluated and analyzed. These businesses have a positive impact on globalization, especially for; (1) product development innovation opportunities (2) open cooperation among countries and among institutions who are interested (3) in supporting environmental conservation programs and fisheries development programs.

Conclusion

This research produces two important contributions including; (1) a theoretical review of creativity in encouraging new entrepreneurship, and (2) a business proposal for solving environmental problems through new ways of seeing the potential material to be a product worth selling. Business development based on the potential of organic waste in Indonesia provides new challenges for businessmen where the abundance of raw materials becomes an opportunity, in other hand lack of mutual awareness on environmental recovery becomes a weakness. Technology transfer and commercialization process of scientific research needs to be done in accordance with the motivation “from science to business”. In this process, the active role of government to facilitate it and institutions of scientific and research to transfer their research results is needed.

For business perspective; The results of this research can be summarized as follows: (1) crab shell waste business development opportunities with

15 Paradigm to streamline fisheries resources without waste, See <http://blueeconomyindonesia.com/>.

16 Perspective “waste as a problem” or “waste as a potential”.

value added has a promising market (2) there are constraints and the lack of technological supporting, it should be addressed through cooperation with related industries and the governments (3) the strategy of increasing market access can be carried out by mapping market potential, increased networking, partnership development, and strengthening inter-business links.

For theory perspective; New patterns of competition between the entrepreneurs in the world contribute to providing the enriched and philosophical meaning of entrepreneurship today. The concept of turning garbage into gold is a simple thought, but it may mean that literally; waste can be taken for free while gold is highly precious. It is a new way of thinking entrepreneurs where opportunities can be done by acting creatively to change from no value to high price.

Acknowledgment

The author is grateful to Lene Foss, David V. Gibson and Colette Henry for constructive comments and valuable suggestions. The author also wishes to thank the Indonesian crab producers and their management member who spent time and shared information related this research.

References

- Baldacchino, L. (2009). *Entrepreneurial creativity and innovation*. First International Conference on Strategic Innovation and Future Creation, Floriana – Malta. Retrieved from http://www.strategicfutures.eu/__data/assets/pdf_file/0011/87599/leonie_baldacchino_paper_entrepreneurial_creativity_innovation.pdf. Accessed 27 May 2013.
- Barringer, B.R., Ireland, R.D. (2006). *Entrepreneurship: Successfully launching new ventures*. New Jersey: Pearson Prentice Hall.
- Capel, C. (2013) *Innovations in waste*. Waste Management World, Retrieved from: <http://www.waste-management-world.com/articles/print/volume-11/issue-2/features/innovations-in-waste.html> Accessed 2 October 2013
- Caldecott, J., Indrawan, M., Rinne P., Halonen, M. (2011). *Indonesia-Norway REDD+ Partnership: First evaluation of deliverables*. Gaia Consulting Ltd. Final Report 3 May 2011.
- Cosgrove, J. (2010). *The Global Chitosan Market: Increasing application prospects are contributing to a continued positive outlook*. Nutraceuticals World, Edition 2 December 2010.
- Dorris, K. (2000). *Removal of Heavy Metals from Wastewater Using Crab shells*, Lamar University. Beaumont: Texas.
- Drucker, P.F. (1985). *The practice of entrepreneurship, innovation and entrepreneurship practice and principles*. New York: Harper & Row.

- FAO (2013). *Waste management of fish and fish products*. Fisheries and Aquaculture Department. Food and Agriculture Organization.
- Fenoaltea, S. (1976). Real value added and the measurement of industrial production. *Annals of Economic and Social Measurement*, 5(1), 111-137.
- Frinces, Z.H. (2005). *Entrepreneurship and Business Innovation*. Yogyakarta: Darussalam.
- Frinces, Z.H. (2007). *Business Planning Concept and Implementation*. Yogyakarta: Mida Library.
- Frost J., Sullivan P. (2006). *Southeast Asian Animal Feed Additives Markets*. Taylors Lane, Dublin: Research and Markets.
- Foss, L., Iakovleva, T., Kickul, J., Oftedal, E.M., Solheim, A. (2011). Taking innovations to market: The role of strategic choice and the evolution of dynamic capabilities. *International Journal of Entrepreneurship and Innovation*, 12(2), 105–116.
- Fuduric, N. (2008). *The Sources of Entrepreneurial Opportunities: Individuals and the Environment*. PhD Dissertation. Aalborg University, Denmark.
- GIA (2012). *Chitin and Chitosan - Global Strategic Business Report*. San Jose, CA: Global Industry Analysts, Inc.
- GIA (2013a). *Herbal Supplements and Remedies - Global Strategic Business Report*. San Jose, CA: Global Industry Analysts, Inc.
- GIA (2013b). *Animal Feed Additives - Global Strategic Business Report*. San Jose, CA: Global Industry Analysts, Inc.
- Gibson, D. (2008). *Commercial feasibility and the importance of markets*. The University of Texas at Austin.
- Gibson, D., Smilor, R. (1991). Key variables in technology transfer: A field-study based empirical analysis. *Journal of Engineering and Technology Management*, 8(3-4), 287-312.
- Henry, C. (Ed.). (2007). *Entrepreneurship in the creative industries: An international perspective*. Cheltenham: Edward Elgar.
- Humphreys, P., Mcadam, R., Leckey, J. (2005). Longitudinal evaluation of innovation implementation in SMEs. *European Journal of Innovation Management*, 8(3), 283–304.
- Jaworski, B.J., Kohli A.K. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing*, 57(3), 53–70.
- Li, T., Calantone, R.J. (1998). The impact of market knowledge competence on new product advantage: conceptualization and empirical examination. *Journal of Marketing*, 62(4), 13–29.
- Lumpkin, G.T., Dess, G.G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135-172.
- Lumpkin, G.T., Dess, G.G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of Business Venturing*, 16(5), 429-445.

- Marineharvest (2013). *Salmon Farming Industry Handbook 2013*. Marine Harvest. Bergen, Norway.
- Meinhardt (1999). *Organics Market Development Strategy*. Canberra: Environment Australia.
- Melkers, J.E., Bugler, D., Bozeman, B. (1993). *Technology transfer and economic development*. In: Bingham R., and Meir, R. ed. *Theories of Local Economic Development*. New York: Sage Publications.
- Meredith, G., Nelson, R., Neck, P. (1996). *The Practice of Entrepreneurship*. Lagos: University of Lagos Press.
- M&M (2013). *Global Spices Market by Type, Applications and Geography: Trends and Forecasts (2011-2016)*. Pune: Markets & Markets.
- Molina-Castillo, F-J., Munuera-Aleman J-L. (2009). The joint impact of quality and innovativeness on short-term new product performance. *Industrial Marketing Management*, 38(8), 984–993.
- Narver, J.C., Slater, S.F. (1990). The effect of a market orientation on business profitability. *Journal of Marketing*, 54(4), 20-35.
- Nikijuluw, V. (2012). *Mapping of market opportunities in Indonesia for Norwegian suppliers of sustainable marine solutions: Technologies and services for fisheries and aquaculture*. A report prepared for Innovation Norway, November 2012.
- NSC (2013). *Aquaculture in Norway*. The Norwegian Seafood Council. Tromsø, Norway.
- Nurhidajah, Yusuf, M. (2009). *Analysis of protein, calcium and acceptance of flour from crab waste*. National Seminar Proceedings, University of Muhammadiyah Semarang.
- Nutralegacy (2009). *Important Health Benefits of Crab Shell Extract*. Nutra Legacy, Edition 10 November 2009.
- Nystrom, H. (1993). Creativity and Entrepreneurship. *Creativity and Innovation Management*, 2(4), 237 -242.
- Okpara, F.O. (2007). The value of creativity and innovation in entrepreneurship. *Journal of Asia Entrepreneurship and Sustainability*, 3(2), 1-14.
- Parcon, P. (2007). *Develop Your Team Building Skills*. New Delhi: Lotus Press.
- Pyle L.S. (2010). *How to Do Market Research – The Basics*. Entrepreneur, Edition 23 September 2010.
- Reisman, A. (1989). Technology transfer: A taxonomic view. *Journal of Technology Transfer*, 14(3-4), 31–36.
- Rogers, E.T. (2003). *Diffusion of Innovations*. Fifth edition. New York: Free Press.
- Ray, S.D. (2011). Potential aspects of chitosan as pharmaceutical excipient. *Acta Poloniae Pharmaceutica-Drug Research*, 68(5), 619-622.
- Shane, S. (2003). *A General Theory of Entrepreneurship*. Cheltenham: Edward Elgar.

- Sharecare (2013). *Herbal supplements - What are chitosan supplements?* Retrieved from: <http://www.sharecare.com/health/herbal-supplements/what-is-chitosan> accessed 13 October 2013.
- Stewart, G., Noyes-Hull, G. (2010). *Feasibility of Producing Value added Products from Snow Crab Processing Waste in Cape Breton, Nova Scotia*. The Gulf Aquarium and Marine Station Cooperative, Nova Scotia.
- Sustainablefish (2013). *Indonesian blue swimming crab fishery improvement project*. Retrieved from: <http://www.sustainablefish.org/fisheries-improvement/crabs/indonesian-blue-swimming-crab>. Accessed 25 May 2013.
- Tyler, R.W. (1996). *Winning the Organics Game: The Compost Marketer's Handbook*. Alexandria, Virginia: ASHS Press.
- TMR (2012). *Animal Feed and Feed Additives Market - Global Industry Size, Market Share, Trends, Analysis, and Forecast 2011 – 2018*. Albany NY: Transparency Market Research.
- Weerawardena, J. (2003). Exploring the role of market learning capability in competitive strategy. *European Journal of Marketing*, 37(3-4), 407–429.
- Witt, P. (2004). Entrepreneurs' networks and the success of start-ups. *Entrepreneurship and Regional Development*, 16(5), 391 – 412.
- Wycoff, J. (1991). *Mindmapping: Your Personal Guide to Exploring Creativity and Problem Solving*. New York: The Berkley Publishing Group.
- Yulianto, T. (2008). *Ketika si capit biru terjepit krisis*. Inspirasi Agribisnis Indonesia - AGRINA, Edition 10 November 2008. Retrieved from http://www.agrina-online.com/show_article.php?rid=10&aid=1569 Accessed 25 May 2013
- Zimmerer, T.W., Scarborough, N.M. (1996). *Entrepreneurship and New Venture Formation*. Upper Saddle River, New Jersey: Prentice Hall International.

Abstrakt (in Polish)

Niniejszy artykuł omawia wpływ kreatywności i innowacji na tworzenie możliwości dla przedsiębiorców zajmujących się przetwarzaniem odpadków na wartościowe zasoby. W dzisiejszych czasach, aby stworzyć nowy biznes konieczna jest znajomość procesu myślowego i planowania w przedsiębiorczości. Jedno z błyskotliwych powiedzeń o przedsiębiorcach mówi, że są to osoby, które potrafią „zamienić śmieci na złoto”. Koncepcja ta opisuje ważną cechę przedsiębiorców, którzy dostrzegają i przewidują możliwości biznesowe, a także dysponują inteligencją pozwalającą im na zamianę śmieci na gotówkę. Oznacza to, że posiadają oni odpowiednie zdolności do tworzenia innowacji oraz produktów o wartości dodanej, które można następnie sprzedawać. Analizowany przypadek dotyczy innowacyjnego wykorzystania odpadów przemysłu rybołówstwa ze szczególnym uwzględnieniem połowów kraba w Indonezji. Niniejszy artykuł przedstawia empiryczne perspektywy obejmujące (1) potencjalny biznes oparty na odpadach z pancerzy krabów, (2) technologie innowacyjnego wykorzystania pancerzy w celu stworzenia produktów o wartości dodanej oraz (3) analizę i komercjalizację. Wreszcie, przedstawiamy koncepcję nowego biznesu łącząc teorie przedsiębiorczej innowacji oraz transferu technologii w celu uzyskania równowagi ze środowiskiem naturalnym.

Słowa kluczowe: nowa przedsiębiorczość, innowacja i kreatywność, Indonezja, odpady z produkcji rybołówstwa, proszek z pancerzy krabów.

List of Reviewers cooperating with us in 2013:

Tarik Atan, Okan University, Turkey
Małgorzata Baran, University of Rzeszow, Poland
Ziemowit Bednarek, California Polytechnic State University, USA
Katarzyna Boratyńska, Warsaw University of Life Sciences, Poland
Marina Candi, Reykjavik University, Iceland
Jerzy Cieślik, Kozminski University, Poland
Jorge Duran Encalada, Universidad de las Americas Puebla, Mexico
Andreas Falkenberg, University of Agder, Norway
Paweł Głodek, University of Lodz, Poland
Olaf Flak, University of Silesia, Poland
Monika Ivanowa, University of Presov, Slovakia
Michał Jasiński, Nowy Sacz School of Business – National-Louis University, Poland
Jerzy Jaworski, University of Heilbronn, Germany
Krzysztof Klincewicz, University of Warsaw, Poland
Janusz Kornecki, University of Lodz, Poland
Patrick Lambe, Bangkok University and Hong Kong Polytechnic University, Bangkok and Hong Kong
Haim V. Levy, Ben Gurion University, Israel
Jacek Lipiec, Warsaw School of Economics, Poland
Renata Lisowska, University of Lodz, Poland
Irena Łączka, West Pomeranian University of Technology, Poland
Grażyna Leśniak-Łebkowska, Warsaw School of Economics, Poland
Zbigniew Makieła, Andrzej Frycz Modrzewski Cracow University, Poland
Csaba Makó, Hungarian Academy of Sciences, Budapest
Eleonora Marisova, Slovak University of Agriculture in Nitra, Slovakia
Teresa Mitura, University of Rzeszow, Poland
Matti Muhos, University of Oulu, Finland
Anna Rogut, University of Lodz, Poland
Justyna Stecko, Rzeszow University of Technology, Poland
Kazimierz Śliwa, University of Rzeszow, Poland
Piotr Staliński, Nowy Sacz School of Business – National-Louis University, Poland
Jarosław Świda, Cracow University of Economics, Poland
Juraj Tej, Presov University, Slovakia
Anna Tylikowska, Nowy Sacz School of Business – National Louis University, Poland
Anna Ujwary-Gil, Nowy Sacz School of Business – National Louis University, Poland

Krzysztof Wach, Cracow University of Economics, Poland

Krzysztof Waśniewski, Andrzej Frycz Modrzewski Cracow University, Poland

Frederic Widlak, Nowy Sacz School of Business – National-Louis University,
Poland

Skaidre Žičkienė, Siauliai University, Lithuania
