APSTRACT

Applied Studies In Agribusiness And Commerce

http://www.apstract.net

Vol. 3. Numbers 3-4. 2009

Aberdeen, Belgrade, Berlin, Budapest, Cork, Debrecen, Fayetteville, Hohenheim, Kiev, Prague, Warsaw, Wageningen, Zagreb

Agroinform Publishing House

www.agroinform.com

Applied Studies in Agribusiness and Commerce

APSTRACT

Official Periodical of the International MBA Network
in Agribusiness and Commerce AGRIMBA

Vol. 3. Numbers 3–4. 2009

AGROINFORM
PUBLISHING HOUSE

This number is published with the financial support of
University of Debrecen, Faculty of Applied Economics and Rural Development and
TEMPUS AMES No.: CDJEP-40067-2005 projects.

English Editor:
Troy B. Wiwczaroski UD, Debrecen, Hungary

APPLIED STUDIES IN AGRIBUSINESS AND COMMERCE
Official Periodical of the International MBA Network in Agribusiness and Commerce:

APSTRACT®

Editor-in-chief: Prof. Dr. Wim Heijman Wageningen University
Editorial office: Debrecen University, H-4015 P.O. Box 36.
Phone, fax: (36-52) 508-304

Executive publisher: Agroinform Publishing House Hungary- www.agroinform.hu

Typography: Opal System Graphics www.opalsystem.com

HU-ISSN 1789-221X – Electronic Version: ISSN 1789-7874

Home Page: http://www.apstract.net

E-mail: editor-apstract@agr.unideb.hu

Contents

Editors' welcome

These numbers of Apstract are the result of the AVA4 International Congress, held in Debrecen March 26-27, 2009. An impressive number of papers of high quality were presented during the well organized sessions. From each of the 17 sessions the two best papers were chosen to be published in numbers 3 and 4 of volume 3.

During the opening session of the congress Professor Nagy, the president of the Centre for Agricultural Sciences and Engineering of the University of Debrecen as well as Professor Molnár, Hungarian Minister of Science, Research and Innovation emphasized the crucial role of knowledge in European economic development. The AVA4 Congress contributes to that and therefore is important.

I also would like to take the opportunity to draw your attention to the web site "ageconsearch": http://ageconsearch.umn.edu/ of the University of Minnesota (US) where you can find a wealth of articles and papers (including the Apstract articles) in our field. This really is a rich resource for research.

As Professor Nábrádi, the organizer of the conference, and Deputy Editor of Apstract indicated the bi-annual AVA congress has become a bi-annual Agrimba activity. The Agrimba Network, the AVA Congress, and our journal Apstract together form the three institutional pillars of the Agrimba activities. I am confident that this triple A is a success formula for the years to come.

Next time in 2011 the congress will be organized in Wageningen, the Netherlands. Everybody who is interested in research in the areas of applied economics, agribusiness, informatics or tourism is invited to take part in it. I am looking forward to meet you all in Wageningen.

Wageningen, August 2009.

Wim Heijman
Editor in chief

Performance imbalances in the chain: EU traditional food sector

Adrienn Molnár & Xavier Gellynck

Ghent University, Department of Agricultural Economics, Division Agro-Food Marketing, Belgium; Adrienn.Molnar@Ugent.be

Abstract: Organizations nowadays no longer compete as independent entities, but as chains (Christopher, 1998; Cox, 1999; Lambert and Cooper, 2000). Hence, being part of a well-performing chain is crucial for the future of the individual food firm, especially in the context of the globalizing economy. As a result, the objective of this study is to identify performance imbalances of traditional food chains. Therefore, quantitative data were collected via individual interviews with 271 chain members (91 suppliers, 91 focal companies and 89 customers) of 91 traditional food chains from three European countries (Belgium, Italy and Hungary), representing six different traditional food product categories (cheese, beer, ham, sausage, white pepper and bakery). The results differentiate six different kinds of chain imbalances, namely: dyadic upper and lower, up- and downstream, internal and external indicate both dyadic and chain-wise imbalance. Most chain imbalances are noticed in relation to lowering logistic costs and to reducing lead time. Future research should extend the list of performance indicators with parameters other than economical ones such as ecological and social ones.

Key words: Chain performance, imbalances, traditional food products

1 Introduction

Organizations no longer compete as independent entities, but as chains (*Christopher,* 1998; *Cox,* 1999; *Lambert and Cooper,* 2000), and these organizations more and more realize the performance potential of chains (*Gellynck* et al., 2006; *Pearson and Samali,* 2005). Being part of a well-performing chain generates important performance benefits for the individual organization. As a result, there is increasing interest in the performance of chains as a research subject (*Beamon,* 1998a).

Adequate chain performance measurement identifies how well the chain is performing, draws attention to where improvements are possible, facilitates detecting problems and helps identifying where to focus on (*Cohen and Roussel,* 2005). Consequently, it affects decision making through the assessment of past actions and through benchmarking (*Aramyan,* 2007). Further, it can assist the distribution of resources, measure and communicate improvement towards strategic goals and assess managerial practices (*Ittner and Larcker,* 2003). In addition, it helps managers to recognize good performance, to make tradeoffs between profit and investments, it provides ways to set strategic targets and enables managers to get involved if performance is distracting (*Neely* et al., 1995).

Contrary to the raising awareness of the performance potential of chains, a vast group of authors (*Beamon,* 1998b; *Beamon,* 1999; *Christopher,* 1998; *Gunasekaran* et al., 2004; *Gunasekaran* et al., 2001; *Lambert and Pohlen,* 2001; *Li and O'Brien,* 1999; *Neely* et al., 1995; *Neely* et al., 1994; *Van der Vorst,* 2000; *Van Der Vorst,* 2006) endorse to the need of key issues to be addressed related to chain performance measurement. First, performance imbalances along the chain should be identified. Second, with regard to measuring performance of chains active in the agri-business sector in general and in the traditional foodsector in particular, literature points a number of problems (*Aramyan,* 2007). Many agri-food firms, including traditional food firms do not screen their performance in a regular way (*Collins* et al., 2001). Besides, chains belonging to different sectors may have different characteristics (e.g. chain length, the closeness of chain relationships, types of process links) (*Lambert and Cooper,* 2000), which may influence their performance. Consequently chain performance measurement being carried out in other sectors might reveal differences as compared to performance measurement of traditional food chains. Concluding, research on measuring performance of traditional food[1] chains[2] deserves more attention. This is the rationale of our study being designed to fill these gaps by measuring traditional food chain performance and by identifying performance imbalances along the chain. This paper is structured as follows: In the following part the materials and methods used are presented. Next, the research results are discussed and finally discussion points are made as well as further research topics formulated.

1 The definition of traditional food products involves four dimensions: (1) local production; (2) authenticity of the product; (3) 50 years commercial availability; (4) association with gastronomic heritage (*Truefood,* 2006).

2 Within the context of the current paper the chain definition developed by *Mentzer* et al. (2001) is followed, namely a chain consists of a focal company, a supplier, and a customer involved in the upstream and/or downstream flows of products, services, finances, and/or information;

2 Material and Methods

Research method and research sample

Quantitative data were collected via individual interviews with 271 companies belonging to traditional food chains across three European countries (Belgium, Italy and Hungary). In these countries traditional food subsectors were selected based on their socio-economic importance (Belgium: cheese and beer, Italy: cheese and ham, Hungary: white pepper, sausage and bakery). Next, traditional food producers were identified in each subsector and selected for interviews (details about the composition of the sample are provided in Appendix 1). During the interviews, each of the focal company was asked to identify suppliers and customers. In the next phase, one supplier and one customer were selected and interviewed. In this way, a total of 91 traditional food chains (including 91 suppliers, 91 focal companies and 89 customers) were contacted. The interviews have been carried out between December 13, 2007 and June 20, 2008.

Measurement and scaling

To measure traditional food chain performance, respondents (suppliers, focal companies, customers) are asked the extent to which they agree or disagree with 11 statements about five main areas of chain performance using a seven-point response scale ranging from completely disagree (1) to completely agree (7). The 11 statements and the five main areas of traditional food chain performance have been selected at the previous stage of the research by Gellynck et al. (2008). The five main areas of traditional food chain performance are: 1) Traditionalism, 2) Efficiency, 3) Responsiveness, 4) Quality and 5) Chain balance. Given the multi-dimensional character of the five main areas, all include several performance indicators (several statements) (*Gellynck* et al., 2008). Each focal company answered the statements related to their individual suppliers and customers. The same statements are used in the questionnaire of the suppliers and the customers but in relation to the focal companies. Details about the statements measuring chain performance are provided in Appendix 2. A higher agreement of the focal company on the statements related to the individual suppliers/customers corresponds with a higher performance and vice versa. The total chain performance includes four dimensions and is computed as the mean of all scores *(Table 1)*.

Table 1: Dimensions of total chain performance score

Total chain performance
DIMENSIONS:
1) Perceived supplier's contribution to focal company's performance
2) Perceived customer's contribution to focal company's performance
3) Perceived focal company's contribution to supplier's performance
4) Perceived focal company's contribution to customer's performance

Analysis

First, significant differences between the suppliers', focal companies' and customers' perceptions about performance have been investigated. Comparisons of the different chain members with respect to performance are obtained through Kruskal-Wallis test followed by post-hoc Mann-Whitney U tests whenever the Kruskal-Wallis test yields a statistically significant result.

3 Results

The first question to be answered before proceeding any further in chain level analysis of the data is whether the different chain members (suppliers, focal companies, customers) score significantly different on each of the performance statements. This question can be answered by comparing the mean scores for the different chain members. The mean scores for the focal companies are separately computed according to their perception of their individual suppliers and customers. If significant differences are found between the different chain members, then the chains are performing in an imbalanced way. In the context of our paper, six types of chain imbalances are distinguished:

- Dyadic upper: focal company's perception score related to the supplier (FC_S) differs from supplier's perception score related to the focal company (S);
- Dyadic lower: focal company's perception score related to the customer (FC_C) differs from customer's perception score related to the focal company (C);
- Upstream: focal company's perception score related to the customer (FC_C) differs from the supplier's perception score related to the focal company (S);
- Downstream: focal company's perception score related to the supplier (FC_S) differs from the customer's perception score related to the focal company (C);
- Internal: focal company's perception score related to the supplier (FC_S) differs from focal company's perception score related to the customer (FC_C);
- External: supplier's perception score related to the focal company (S) differs from customer's perception score related to the focal company (C);

There is no significant difference in the total performance of the different chain members, although significant differences are found on the following performance statements: logistic cost (p=0.02), lead time (p=0,023), safety (p=0,000), attractiveness (p=0,00) and chain understanding (p=0,043) by conducting Kruskal-Wallis test (Table 2). In addition, a post-hoc Mann-Whitney U test identifies differences between chain members and consequently highlights the type of imbalance in the chain.

Focal companies contribute significantly less to lower logistic costs of both their suppliers (mean=4,28) and customers (mean=4,31) than the other way around (mean respectively 5,13 and 4,97). This illustrates the presence of

both upper (p=0.02) and lower (p=0.015) dyadic imbalance in the chain. The former could be explained by the fact that suppliers often bring the raw materials to the site of the focal company or is often located in the neighbourhood (e.g. dairy farmers being closely located to the traditional cheese processing plant). The latter is linked to the fact that traditional food producers often have poor distribution systems resulting in situations where customers pick up themselves the products rather than the other way around.

Further, both down- and upstream imbalances are noticed related to logistic costs. The former refers to customers evaluating focal companies' contribution to lowering their logistic costs (mean=4,31) as less important (p=0.02) than focal companies do in relation to their suppliers (mean=5,13). The latter relates to customers being perceived by focal companies to contribute less (p=0,027) to lower their logistics costs (mean=4,97) than suppliers do in relation to the focal companies (mean=4,28). Both down- and upstream imbalance confirm the previous reasoning where on the one hand traditional food producers are characterised by having a poor distribution system and relying often on customers for logistics. On the other hand, suppliers provide additional service by being responsible for transport of raw materials or are located in the neighbourhood, which might explain their higher score obtained from focal companies.

Suppliers perform significantly better in reducing lead time of their focal companies (mean=5,67) than focal companies perform in reducing lead time of their customers (mean=5,02; p=0,03). This again refers to downstream imbalance and illustrates the focal company being the weakest link in the chain when it comes to reducing lead time.

Further, upper dyadic imbalance exists related to safety where focal companies judge their suppliers as being more important (p=0,00) than vice versa. It again illustrates the less dominant role of the traditional food producer, now in relation to food safety and is further shown by the presence of downstream imbalance. Here, customers judge the role of focal companies of minor importance as compared to the role of suppliers for focal companies (p=0,00). In addition, safety is characterised by internal imbalance where the role of the supplier is estimated by the focal company to be much more important than the customer's one (p=0,00).

In terms of attractiveness, both down- and upstream imbalance are noticed. While focal companies are considered by their customers to be highly important in providing attractive products (mean=5,62), suppliers are estimated by focal companies to be less important (mean=4,67; p=0,00), which clearly illustrates downstream imbalance. It highlights the focal company being perceived as having the major role in providing attractive products. Further, upstream imbalance indicates that focal companies consider customers as being important factors in encouraging them to produce more attractive products (mean=5,34), while suppliers attach significantly less importance to focal companies in encouraging them to deliver more attractive products (mean=4,48; p=0,01). In line with these findings, internal imbalance indicates that focal companies consider the input from customers to the production of attractive products to be more important (mean=5,34) than the one from suppliers (mean=4,67; p=0,000).

Related to chain understanding, traditional food chains are characterised by lower dyadic imbalance. Focal companies estimate that customers contribute more to their understanding of other chain members' interest (mean=5,47) than vice versa (mean=4,86) (p=0,005). This dyadic imbalance can be explained by the customers being

Table 2: Performance scores for the different chain members, mean scores and standard deviations (SD).

Performance	FC_S n=85 Mean (SD)	FC_C n=83 Mean (SD)	S n=76 Mean (SD)	C n=79 Mean (SD)	Sample n=323 Mean (SD)
Traditionalism					
Authenticity	5,75 (1,69)	5,24 (1,69)	5,44 (1,64)	5,62 (1,52)	5,51 (1,64)
Gastronomic heritage	5,29 (1,78)	5,20 (1,63)	5,53 (1,66)	5,54 (1,51)	5,39 (1,65)
Efficiency					
Logistic cost	5,13 (1,56)b	4,97 (1,52)b	4,28 (1,90)a	4,31 (1,85)a	4,67 (1,75)
Profit	5,29 (1,25)	5,17 (1,32)	5,00 (1,41)	4,98 (1,55)	5,11 (1,39)
Responsiveness					
Lead time	5,67 (1,50)b	5,48 (1,27)a,b	5,31 (1,59)a,b	5,02 (1,62)a	5,37 (1,52)
Customer complaints	5,74 (1,20)	5,50 (1,21)	5,31 (1,59)	5,40 (1,46)	5,49 (1,38)
Quality					
Safety	6,16 (1,20)b	5,14 (1,37)a	5,08 (1,78)a	5,37 (1,53)a	5,44 (1,54)
Attractiveness	4,67 (1,79)a	5,34 (1,52)b	4,48 (1,81)a	5,62 (1,27)b	5,04 (1,66)
Environmental friendliness	5,18 (1,81)	4,74 (1,60)	4,66 (1,81)	4,65 (1,57)	4,81 (1,71)
Chain balance					
Distribution of risks and benefits	5,29 (1,48)	5,17 (1,45)	5,06 (1,53)	4,86 (1,58)	5,09 (1,51)
Chain understanding	5,20 (1,23)a,b	5,47 (1,35)b	5,30 (1,20)a,b	4,86 (1,55)a	5,21 (1,35)
Total	5,39 (0,84)	5,23 (0,82)	5,06 (1,01)	5,14 (1,00)	5,20 (0,93)

Seven-point Likert scale: 1 = completely disagree; 2 = moderately disagree; 3 = slightly unimportant; 4 = neither agree nor disagree; 5 = slightly agree; 6 = moderately agree; 7= completely agree; different letters (a-b-c) indicate significantly different average scores using Mann-Whitney U test, FC_S = Focal companies' perception about their suppliers, FC_C = Focal companies' perception about their customers, S= Suppliers' perception about their focal companies, C=Customers' perception about their focal companies

perceived as having more bargaining power and easier access to market information than the other chain members.

4 Discussions

In the frame of our paper, we measured traditional food chain performance and identified performance imbalances along the chain. It is realised with the help of quantitative data collected via individual interviews with 271 chain members representing 91 traditional food chains from three European countries representing six different traditional food product categories.

Chain imbalances lead to lower performance. Chains are performing in an imbalanced way when differences exist between chain members' performance. Hereby, six different types of chain imbalances are distinguished: dyadic upper and lower, up- and downstream, internal and external. Most chain imbalances are noticed in relation to lowering logistic costs and to reducing lead time. Also in relation to the performance area quality important imbalances are noticed for safety and attractiveness. These findings allow chain members and policy makers to make specific and tailor made efforts for the traditional food sector to enhance specific performance areas at specific location of the chains.

These results are valid across member states, across product categories and across different sized chains.

Future research should investigate whether the well-performing chains generate a sustainable competitive advantage over time. In addition, performance indicators can be enlarged with parameters other than economical ones such as ecological and social ones.

Appendix 1: Sample description

Country/product/ chain/respondents	Chain member	Size
ITALY: HAM	15 S	Micro: 3, Small: 5, Medium: 16, Large: 1
15 CHAINS	15 FC	Micro: 6, Small: 7, Medium: 1, Large: 1
43 RESPONDENTS	13 C	Micro: 2, Small: 6, Medium: 5, Large: 0
ITALY: CHEESE	16 S	Micro: 10, Small: 6, Medium: 0, Large: 0
16 CHAINS	16 FC	Micro: 13, Small: 2, Medium: 1, Large: 0
48 RESPONDENTS	16 C	Micro: 11, Small: 5, Medium: 5, Large: 0
HUNGARY:		
DRY SAUSAGE	11 S	Micro: 2, Small: 2, Medium: 7, Large: 0
11 CHAINS	11 FC	Micro: 2, Small: 3, Medium: 16, Large: 0
33 RESPONDENTS	11 C	Micro: 1, Small: 3, Medium: 7, Large: 0
HUNGARY:		
WHITE PEPPER	5 S	Micro: 3, Small: 1, Medium: 1, Large: 0
5 CHAINS	5 FC	Micro: 1, Small: 2, Medium: 2, Large: 0
15 RESPONDENTS	5 C	Micro: 4, Small: 1, Medium: 0, Large: 0
HUNGARY:		
BAKERY	14 S	Micro: 2, Small: 7, Medium: 5, Large: 0
14 CHAINS	14 FC	Micro: 0, Small: 7, Medium: 7, Large: 0
42 RESPONDENTS	14 C	Micro: 8, Small: 3, Medium: 3, Large: 0
BELGIUM: BEER	15 S	Micro: 4, Small: 7, Medium: 1, Large: 3
15 CHAINS	15 FC	Micro: 8, Small: 5, Medium: 2, Large: 0
45 RESPONDENTS	15 C	Micro: 9, Small: 5, Medium: 0, Large: 1
BELGIUM:		
CHEESE	15 S	Micro: 7, Small: 4, Medium: 2, Large: 2
15 CHAINS	15 FC	Micro: 11, Small: 2, Medium: 2, Large: 2
45 RESPONDENTS	15 C	Micro: 4, Small: 5, Medium: 2, Large: 0
TOTAL	91 S	Micro: 31, Small: 32, Medium: 22, Large: 6
	91 FC	Micro: 41, Small: 28, Medium: 21, Large: 1
	89 C	Micro: 39, Small: 28, Medium: 17, Large: 5

Micro: Micro sized enterprise: < 10 employees, Small: Small sized enterprise: < 50 employees,
Medium: Medium sized enterprise: < 250 employees, Large: Large sized enterprise: > 250 employees;
S=Supplier, FC=Focal company, C=Customer

Acknowledgement

The paper is prepared in the frame of the TRUEFOOD – "Traditional United Europe Food" – project. TRUEFOOD is an Integrated Project financed by the European Commission under the 6th Framework Programme for RTD (Contract n. FOOD-CT-2006-016264). The information in this document reflects only the author's views and the Community is not liable for any use that may be made of the information contained therein. The authors are grateful for all the partners of WP5 for their contribution.

Appendix 2: Traditional food chain performance

Traditionalism

Authenticity: Doing business with our supplier/customer is crucial in maintaining the authenticity of our products
Gastronomic heritage: Doing business with our supplier/ customer helps my company to be part of the gastronomic heritage

Efficiency

Logistic cost: Doing business with our supplier/ customer helps my company to lower logistic costs significantly
Profit: Doing business with our supplier/ customer helps my company to maintain acceptable profitability

Responsiveness

Lead time: Doing business with our supplier/ customer helps my company to reduce lead time (time from sending/getting the request till reply)
Customer complaints: Doing business with our supplier/ customer contributes to avoid (customer/consumer) complaints

Quality

Safety: Doing business with our supplier/ customer helps my company to manage product safety
Attractiveness: Doing business with our supplier/ customer helps my company to produce more attractive products
Environmental friendliness: Doing business with our supplier/ customer helps my company to manage environmental friendliness

Chain balance

Distribution of risks and benefits: Doing business with our supplier/ customer contributes to a more balanced distribution of risks and benefits along the chain
Chain understanding: Doing business with our supplier/ customer helps my company to better understand other chain members' interests.

References

Aramyan, L. H. (2007): "Measuring supply chain performance in the agri-food sector". Wageningen, Wageningen University.

Beamon, B. M. (1998a): "Supply chain design and analysis: Models and methods", *International Journal of Production Economics,* Vol. 55, No. 3, pp. 281–294.

Beamon, B. M. (1998b): "Supply chain design and analysis:: Models and methods", *International Journal of Production Economics,* Vol. 55, No. 3, pp. 281–294.

Beamon, B. M. (1999): "Measuring supply chain performance", *International Journal of Operations & Production Management,* Vol. 19, No. 3, pp. 275–292.

Christopher, M. (1998): *Logistics and supply chain management : strategies for reducing cost and improving service,* Financial times, London.

Claro, D. P., Hagelaar, G. and Omta, O. (2003): "The determinants of relational governance and performance: How to manage business relationships?" *Industrial Marketing Management,* Vol. 32, No. 8, pp. 703–716.

Cohen, S. and Roussel, J. (2005): *Strategic Supply Chain Management. The five discipline for top performance,* McGraw-Hill.

Collins, A., Henchion, M. and Reilly, P. (2001): "Logistics customer service: performance of Irish food exporters", *International Journal of Retail & Distribution Management,* Vol. 29, pp. 6–15.

Cox, A. (1999): "Power, value and supply chain management", *Supply Chain Management: An International Journal* Vol. 4, No. 4, pp. 167–175.

Davies, W. (2000): *Partner Risk: Managing the Downside of Strategic Alliances,* Purdue University Press.

Gardner, J. T., Cooper, M. C. and Noordewier, T. (1994): "Understanding shipper-carrier and shipper-warehouser relationships: Partnerships revisited", *Journal of Business Logistics,* Vol. 15, No. 2, pp. 121–143.

Gellynck, X. and Molnár, A. (2008): "Chain governance structures: The case of the traditional food sector in the EU", Innsbruck-Igls, Austria.

Gellynck, X., Molnár, A. and Aramyan, L. (2008): "Supply chain performance measurement: the case of the traditional food sector in the EU", *Journal on Chain and Network science,* Vol. 8, No. 1, pp. 47–58.

Gellynck, X., Vermeire, B. and Viaene, J. (2006): "Innovation and networks in the food sector: Impact of regional factors", University of Bonn, Germany, pp 143–154.

Gunasekaran, A., Patel, C. and McGaughey, R. E. (2004): "A framework for supply chain performance measurement", *International Journal of Production Economics,* Vol. 87, No. 3, pp. 333–347.

Gunasekaran, A., Patel, C. and Tirtiroglu, E. (2001): "Performance measures and metrics in a supply chain environment ", *International Journal of Operations & Production Management* Vol. 21, No. 1/2, pp. 71–87.

Humphreys, P., Shiu, W. K. and Lo, V. H. Y. (2003): "Buyer-supplier relationship: perspectives between Hong Kong and the United Kingdom", *Journal of Materials Processing Technology,* Vol. 138, No. 1-3, pp. 236–242.

Ittner, C. D. and Larcker, D. F. (2003): "Coming Up Short on Nonfinancial Performance Measurement", *Harvard Business Review,* Vol. 81, No. 11, pp. 88–95.

Jagdev, H. S. and Thoben, K. D. (2001): "Anatomy of enterprise collaborations", *Production Planning & Control,* Vol. 12, No. 5, pp. 437–451.

Lambert, D. M. and Cooper, M. C. (2000): "Issues in Supply Chain Management", *Industrial Marketing Management,* Vol. 29, No. 1, pp. 65–83.

Lambert, D. M. and Pohlen, T. L. (2001): "Supply Chain Metrics ", *International Journal of Logistics Management,* Vol. 12, No. 1, pp. 1–19.

Li, D. and O'Brien, C. (1999): "Integrated decision modelling of supply chain efficiency", *International Journal of Production Economics,* Vol. 59, No. 1–3, pp. 147–157.

Lu, H., Trienekens, J. H. and Omta, S. W. F. (2006): "Does Guanxi Matter for Vegetable Supply Chains in China? A Case Study Approach", paper presented at 7th International Conference on Management in AgriFood Chains and Networks, 31 May – 2 June 2006, Ede, The Netherlands.

Mair, A. (2000): "New Types of Partnership for Automotive Buyer-Supplier Relations", working, School of Management and Organisational Psychology, Birkbeck, University of London, London.

Neely, A., Gregory, M. and Platts, K. (1995): "Performance measurement system design: A literature review and research agenda", *International Journal of Operations & Production Management,* Vol. 15, No. 4, pp. 80–116.

Neely, A., Mills, J., Platts, K., Gregory, M. and Richards, H. (1994): "Realizing Strategy through Measurement", *International Journal of Operations & Production Management,* Vol. 14, No. 3, pp. 140–152.

Pearson, M. and Samali, A. (2005): "Offsite Solution Delivery Centers Increasingly Important to High-performance Supply Chains", *Outlook Point of View,* Vol. January

Peterson, H. C., Wysocki, A. and B., H. S. (2001): "Strategic choice along the vertical coordination continuum", *International Food and Agribusiness Management Review,* Vol. 4, pp. 149–166.

Raynaud, E., Sauvee, L. and Valceschini, E. (2002): "Quality Enforcement Mechanisms and the Governance of Supply Chains in the European Agro-food Sector", paper presented at 6th Annual Conference, International Society for New Institutional Economics, "Institutional Performance", MIT, Cambridge, Massachusetts.

Steele, P. T. and Beasor, T. (1999): *Business Negotiation. A practical workbook,* Gower Publishing Company

Szabó, G. G. and Bárdos, K. (2006): "Contracts in agribusiness: a survey in the Hungarian dairy sector", paper presented at 7th International Conference on Management in AgriFood Chains and Networks, 31 May – 2 June 2006, Ede, The Netherlands.

Trent, R. J. (2005): "Why RELATIONSHIPS Matter." *Supply Chain Management Review,* Vol. 9, No. 8, pp. 53–60.

Van der Vorst, J. (2000): "Effective food supply chains: generating, modeling and evaluating supply chain scenarios". Wageningen, Wageningen University.

Van Der Vorst, J. G. A. J. (2006): "Performance Measurement in Agri-Food Supply-Chain Networks", working, *Logistics and Operations Research Group, Wageningen University*.

Van der Vorst, J. G. A. J., Beulens, A. J. M., Wit, W. and Beek, P. (1998): "Supply Chain Management in Food Chains: Improving Performance by Reducing Uncertainty".

Webster, J. F. E. (1992):"The changing role of marketing in the corporation", *Journal of Marketing,* Vol. 56, No. 4, pp. 1.

The impact of boundary organizations on decision-making under uncertainty: a multi-agent simulation

Denis Boissin, PhD student in Economics

CERAM Business School & GREDEG UMR 6227 CNRS[1]

Abstract: Modern environmental issues imply that decision-makers have the capacity to take into account possibly conflicting information from distinct domains, such as science and economics. As the development of technology increases the temporal and spatial scopes of risks, decision-makers can no longer consider economic and scientific information separately but should encourage experts to work together. Boundary organizations, institutions that cross the gap between two different domains, are able to act beyond the boundaries while remaining accountable to each side (*Guston,* 2001). By encouraging a flow of information across the boundaries, they permit an exchange to take place, while maintaining the authority of each domain (*Cash* et al., 2003; *Clark* et al., 2002).

The goal is to simulate boundary organizations to assess their impact on the diffusion of experts' opinions. The hypothesis tested is whether the existence of a boundary organization eases the decision-making process by reducing the number of opinions expressed. The methodology relies on a multi-agent system based on a model of continuous opinion dynamics (*Deffuant* et al., 2001) extended over two dimensions. The world is defined by two parameters: the uncertainty, that reflects the possible zone of discussion between experts, and the exchange, which represents the openness of discussions. Agents are described by credibility and conviction: the credibility represents how much other agents may be influenced by an agent, and the conviction represents the resistance of an agent to changing its position. Two kinds of agents are left free to interact, modifying their position in their domain (dimension) through one-to-one exchanges. Agents called borgs are introduced: open to trans-disciplinary discussion, they are able to exchange on both dimensions. The results show that the range of expressed opinions is significantly reduced, even at low levels of experts involved in the boundary organization..

Key words: Decision-making, opinion, agent-based simulation, multi-agent, boundary organization

1. Introduction

Decision-making under uncertainty requires an evaluation of all the information available. Modern environmental issues imply that decision-makers have the capacity to take into account possibly conflicting information from distinct domains, such as science and economics. The current development of technology increases the temporal and spatial scopes of risks, therefore enhancing the importance of experts' opinions: decision-makers should encourage experts from different areas to work together all along the decision-making process rather than considering economic and scientific information separately. Boundary organizations are particularly well adapted to these situations of uncertainty and dissent, typical of environmental issues (*Scott,* 2000).

1.1. Boundary organizations

Boundaries are built by experts in order to protect their domain from outside intrusions and to affirm their authority over the inside, while allowing for members to affirm their belonging to an area of expertise. When different domains are involved in an issue, their boundaries come closer to each other and may overlap. In that case, the natural reaction is for each side to reinforce its boundaries, in order to avoid any confusion and to clearly distinguish the domains involved, clarifying the authority of each. Yet, a blurring of the boundaries, rather than the intentional separation, could increase their respective efficiencies (*Jasanoff,* 1990).

Boundary organizations are institutions that cross the gap between two different domains: they are able to act beyond the boundaries while remaining accountable to each side (*Guston,* 2001). By encouraging the production and exchange of information across the boundaries (through the use of boundary objects or standardized packages), without interfering with the way of functioning of each domain, they permit a dialogue and a confrontation of opinions to take place, while maintaining the authority of each side (*Cash* et al., 2003; *Clark* et al., 2002). They do not directly take part in the debates and remain neutral throughout the process: their legitimacy relies on the fact that they allow for all opinions to be expressed, including extreme positions. Their goal is not to reach the final decision, but to encourage the interactions

1 Denis BOISSIN c/o CERAM Bachelors, Rue Albert Einstein, B.P. 085, 06902 SOPHIA ANTIPOLIS Cedex, France

between experts in order to ease the decision-making process. By internalizing the boundary, they are able to act on its permeability throughout the debate: they encourage a cooperation around common interests instead of a fight for control that leads to a division. Their dependence on two distinct domains reinforces their strength of action rather than weakening them. Unlike traditional organizations, their survival through time is not their prime objective: in fact, their disappearance can be a sign of a successful activity, since their presence is no longer justified once the objective is reached.

1.2. Impact on opinion diffusion

The hypothesis that supports the existence of boundary organizations is that the eased and increased transfer of useful information between different domains increases their respective efficiencies. Though never formally proved, this hypothesis is widely accepted based on the observation of boundary organizations such as the Health Effects Institute, the Sea Grant program, the International Research Institute for Climate Prediction or the Subsidiary Body for Scientific and Technological Advice (*Guston* et al., 2000). The goal is to assess the impact of a boundary organization on the experts' opinion diffusion. The hypothesis tested is not whether a boundary organization may change the final decision, but whether its existence eases the decision-making process by reducing the range of opinions expressed among experts.

2. Method

The methodology is based on the observation of simulations of opinion diffusion among experts of different domains: experts positioned on a continuous model of opinion, interact and modify their position through series of one-to-one discussions. As a boundary organization of increasing importance is simulated, the range of expressed opinions is computed to identify an eventual positive relationship.

2.1. Multi-agent simulation (MAS)

The model relies on a Multi-Agent System (MAS), a virtual computer simulation where autonomous heterogeneous agents interact with their environment and with each other. MAS are artificial worlds whose characteristics can be controlled. They allow for replicated series of experimentations over ranges of parameters. MAS have been successfully applied in decision-making, such as traffic, military fight and epidemiological issues, as well as in economics and social sciences, with applications such as learning processes, diffusion of technology, evolution of behavioral norms, formation of networks... They are especially well-suited for simulating behaviors adapting to or anticipating the state of an ever changing surrounding world and they allow us to observe an emerging recurrent macroscopic behavior resulting from microscopic interactions that could not be deduced by simply aggregating the properties of the agents (Axelrod & Tesfatsion, 2006).

In a MAS, each entity, or agent, is able to picture its surrounding environment, and to communicate and interact with other agents, adapting its behavior to its (partial) perception of the world with respect to its characteristics and desires (*Amblard & Phan,* 2006). Our model uses no desire, no motivational component for agents, but a belief that evolves through time with respect to an interaction function between the entity and other agents. Agents A_i have a state vector X_i representing their opinion over the two axes of the graph and a state transition function f_i at each time unit. The reactive agents have a perception-action relation and no representational function of their environment: they show a reflex behavior with respect to one-to-one encounters with other agents.

2.2. The BORG model

The model used is based on previous work done on a single dimensional model of continuous opinion dynamics (*Deffuant* et al., 2001). As opinions can be more or less positive or negative, they are better modeled using a continuum going from an absolute negative to an absolute positive than through a binary approach. The idea has been to extend this model over two dimensions of opinion, representing two independent domains such as science and economics.

The world is defined by two parameters: uncertainty and exchange. The uncertainty reflects the possible zone of discussion between agents, the maximum distance that can separate two agents engaging into discussion. The exchange reflects the openness of discussions: it is used to determine to what extent agents are ready to modify their position after discussion as a percentage of half the distance separating an agent from its interlocutor. Agents are differentiated by credibility and conviction. The credibility of an agent represents how much other agents may be influenced by this agent, with respect to their own credibility. Agents of higher credibility attract interlocutors closer to their position, and the lower the credibility of the interlocutor, the more important this attraction. The conviction represents the resistance of an agent to changing its position after discussion: it is a negative reflection of its uncertainty.

Agents are positioned over a two-dimensional graph whose axes have a range of [-100;100]. At each time unit, each agent (x) chooses an interlocutor (x') so that $|x-x'|$ is less than or equal to the uncertainty of the world ([0;100]), and modifies its position as follows :

$$x_{t+1} = x_t + ((x'_t - x_t)/2) \text{ exchange } (1-\text{conviction}_{(x)}) \ ((\text{credibility}_{(x')} - \text{credibility}_{(x)})/2 + 0.5)$$

where x_{t+1} is the position of the agent after the discussion ([-1;1])

x_t is the position of the agent before the discussion ([-1;1])

x'_t is the position of the agent's interlocutor before the discussion ([-1;1])

exchange, conviction and credibility are expressed as percentages ([0;1])

The position of the interlocutor is modified by the reciprocal transition function.

First, two kinds of agents (scientists and economists) are left free to interact, time units representing series of one-to-one interactions where each agent chooses an interlocutor to engage into discussion in its domain (dimension) and modifies its position as a result of this interaction. The simulations show that the two-dimensional projection leads to results in accordance with the single-dimensional continuous opinion model used as a basis. Then the concept of boundary organization is introduced in the simulation through agents called borgs. Boundary organizations could not be modeled as a spatial zone since it would reduce the diversity of opinions that could be expressed within the organization when boundary organizations must allow for any opinion to be expressed to maintain a high level of legitimacy. As the goal of boundary organizations is to connect experts from different areas, the borgs are open to trans-disciplinary discussion, and able to cross the boundary between the two domains, opening possibilities of exchange on both dimensions between agents, while other agents remain limited to interactions within their domain of expertise.

3. Results and discussion

The simulation is repeated for a ratio of agents involved in the boundary organization going from 1 to 50% with ten simulations realized at each percentage unit and with world parameter values of exchange of 100% and of uncertainty of 100. The results obtained are analyzed in terms of the range of opinions expressed, defined as the distance between the two most extreme opinions, once the positions of the experts are stabilized. The range of final opinions with respect to the percentage of agents in the boundary organization, including the upper and lower limits of the standard deviation, is as follows :

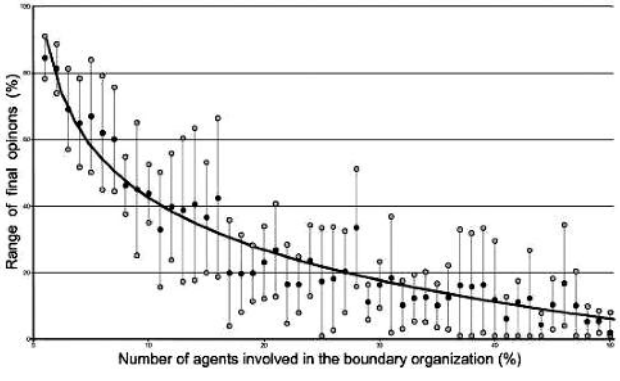


Figure 1: Range of final opinions with respect to the percentage of borgs

The logarithmic regression in *Figure 1* leads to a correlation factor R^2 of 93%. Not only is the positive relation between the number of agents involved in the boundary organization and the reduction of the diversity of final opinions expressed confirmed by this simulation, but the results also show that few agents need to be involved in the organization to impact significantly the global positioning of experts.

Borgs seem to be able to increase the scale of confrontation between groups of opinion: they do not emerge as opinion leaders, but encourage the exchanges between individuals by increasing the interactions and reducing the time necessary for individuals to meet. The diffusion of opinions among individuals observed in the simulation, is similar to the formation of packs among animals: the individuals gather around leaders, without a necessary direct contact with the leader but simply by interacting with nearby individuals, like birds in flocks. The opinion leaders are not active media users trying to convince others, but rather passive naturally emerging centers of opinion whose credibility and conviction encourage others to follow them.

4. Conclusion

This extension of a continuous opinion dynamics model over two dimensions to simulate boundary organizations through a multi-agent system has confirmed their role in easing the decision-making process as they lead to a reduction of the diversity of opinions expressed by experts of different domains by encouraging an exchange to take place across the boundaries. In addition, simulations have shown that the ratio of agents involved in the organization does not need to be important to have a significant impact.

Modifications have been brought to refine the model since these first results, the main one being an agent-related uncertainty, that changes through time with respect to the interactions, in replacement of the conviction characteristic that remained fixed. Results are not only analyzed with respect to the range of final opinions expressed, but also to the number of opinions present, the ratio of experts agreeing to each of these opinions, and the number of exchanges necessary to reach a situation of relative stability of opinions. These quantitative and temporal aspects of the impact of boundary organizations could reinforce the admitted yet not proved hypothesis that boundary organizations are useful in decision-making.

Opportunities to extend this model are anticipated. The most interesting one is to see how alliances between agents sharing means and/or values could influence the resulting opinions with and without a boundary organization, through the introduction of networks and an organizational structure in the simulated world. This could bring up a useful, yet undocumented, additional property of boundary organizations.

REFERENCES

Amblard, F. – D. Phan (2006): *Modélisation et simulation multi-agents, applications pour les Sciences de l'Homme et de la Société.* Hermes-Sciences & Lavoisier, 2006, London. ISBN 978-2746213104.

Axelrod, R. – L. Tesfatsion (2006): "A guide for newcomers to agent-based modeling in the social sciences". in *Handbook of Computational Economics, Volume 2: Agent-Based Computational Economics.* L. Tesfatsion & K. Judd eds., 2006, Amsterdam. ISBN 978-0-444-51253-6.

Cash, D. – W. Clark – F. Alcock – N. Dickson – N. Eckley – D. Guston – J. Jäger – R. Mitchell (2003): "Knowledge systems for sustainable development". *Science and Technology for Sustainable Development Special Feature Ecology, 2003, Vol. 100 No. 14.* Proceedings of the National Academy of Sciences of the United States of America, 2003, Washington DC.

Clark, W. – R. Mitchell – D. Cash – F. Alcock (2002): "Information as influence: how institutions mediate the impact of scientific assessments on global environmental affairs". *Faculty Research Working Papers Series, November 2002, RWP02-044.* John F. Kennedy School of Government, Harvard University, 2002, Cambridge.

Deffuant, G. – D. Neau – F. Amblard – G. Weisbuch (2001): "Mixing beliefs among interacting agents". *Advances in Complex Systems, Vol. 3, N°1.* World Scientific Publishing, 2001.

Guston, D. – W. Clark – T. Keating – D. Cash – S. Moser – C. Miller – C. Powers (2000): *Report of the workshop on boundary organizations in environmental policy and science, 9–10 December 1999.* Rutgers University, 2000, New Brunswick.

Guston, D. (2001): "Boundary organizations in environmental policy and science: an introduction". *Science, Technology, & Human Values, 2001, Vol. 26 No. 4.* 399–408, SAGE Publications, 2001.

Jasanoff, S. (1990): *The fifth branch: science advisers as policy makers.* Harvard University Press, 1990, Cambridge. ISBN 978-0674300620

Scott, A. (2000): "The dissemination of the results of environmental research: a scoping report for the European Environment Agency", *Environmental Issues Series, No. 15.* European Environmental Agency, 2000, Luxembourg.

Romanian insurance business trends and the International crisis effects on it

Cosmin Joldes and Alexandra Horobet

Academy of Economic Studies Bucharest, 6 Piata Romana, Bucharest-1, Romania

Abstract: Is it interesting a 2 billion euro insurance market for the "old" Europe? "Not very much" one may say considering this figure represents no more than 16% of the insurance turn-over in the case of the most recent entry in the Romanian market, Groupama. The answer is still not as simple as that because "interesting" in business terms is not only about today, but very much about tomorrow. By the end of 2007 it was obvious that the Romanian insurance market is far from calming down. Not only that for the time being change is still the main real constant in use, but figures show that the market environment becomes more challenging than ever these days. The market situation showed that this allegation it was by that time more likely to be true than ever.

Key words: insurance, trends, crisis, change, strategies

1. Introduction

Within the first half of 2008 there were some trends emerge or consolidate on the Romanian insurance market. Here are only some of them: the motor hull insurance business line remains the undisputed market leader, although the claims ratios and volumes in motor insurance are still mounting and piling up. Still, there is a visible trend among insurers to migrate towards business segments with lower claims ratios -good examples being the fall in volumes on the credit and warranties segment and the efforts to increase penetration on the property lines.

How all these trends were affected by the international crisis? How will be the short and long terms of the effects on the Romanian market? This paper will have all these, as a principal focus.

2. Recent evolutions of the Romanian insurance market

The Romanian insurance market overcame a total amount of revenues of 1.8 billion euro during the first 9 months of 2008. Compared to the value recorded within the similar period of 2007, the nominal growth in euro amounted 13.54% almost twice lower than the value of the same indicator recorded at the end of September 2007. Even if there are not official data yet, keeping the growing trend, the value of the Romanian insurance market, expressed in gross written premiums, reached by the end of 2008 a total of 2.38 billion euro (8.78 billion Romanian leu). This is a nominal growth in the European currency, with almost 11% compared to 2007. The increase in nominal national currency underwritings was of 22.4% compared to the prior year, comparable with the growth of 25.25% in 2007. Meanwhile, the claims dynamics was 34% in national currency, gross allowances paid by insurers in 2008 amounting RON 4.4 billion, meaning EUR 1.2 billion.

In the first 9 months of 2008, the absolute value of the insurance market grows with 220 million euro. The absolute growing amounted 55 million euro on the life insurance field, while the non-life insurance classes cumulated a consolidate growing which exceeded 164 million euro. The increasing in the Motor Hull segment overcame 172 million euro, the Motor Third Part Liability insurance grew with about 11 million euro, while the Property insurance grew with 36 million euro. In the same period, The Credit and Warranties insurance recorded a decrease by 50 million euro.

Table 1. TOP 10: All Insurance Lines in Romania (2008)

Nr.	Company	Gross Written Premiums (mil euro)	Market Share (%)
1	Allianz – Tiriac	375.9	15.8
2	Omniasig	327.7	13.7
3	Asirom	203.1	8.5
4	Astra	177.8	7.5
5	Asiban	164.8	6.9
6	ING Asigurari deViata	164.1	6.9
7	BCR Asigurari	147.6	6.2
8	Unita	135.1	5.7
9	Generali	113.2	4.7
10	Ardaf	95.8	4.0
	Total TOP 10	1,905.1	79.9
	Total Market	**2,385.0**	**100.0**

Source: The Insurance Supervisory Commission

In the first 9 months of 2008, the nominal growth recorded on the Motor Third Part Liability segment was about 3%, with about 10 percentage point less than the

market average, even if the mention insurance class grew by 11 million euro. This development conducted to the decrease of this insurance class in the total amount of gross written premium. It held 23.26 % from the insurance industry after the first 9 months of 2007. In 2008, by the end of this period, the Motor Third Part Liability insurance class represents 21% from the total amount of premiums, with 2 percentage point less than during the first three quarters of the preceding year. One consequence for this evolution is the decreasing recorded on the credit and warranties sector. The Motor Hull insurance recorded a growing of more than 30 percentage point, more than double comparing with the market average. The increased share of the Motor Hull insurance is with 5 percentage points in the market, up to 40.17% of it. Other changes in the market, on the consolidate portfolio on insurance classes, except the one already mentioned, took place also on the life insurance field +0.7 percentage points up to a share of 11.92 % from the market amount.

According to provisional data announced by the Insurance Supervisory Commission (CSA) for 2008, the total underwritings from the general insurance reached to 79.5% of the total gross written premiums, meaning less than RON 7 billion (EUR 1.9 billion). The 21.96% underwritings dynamics on this segment was exceeded significantly by the claims paid, which rose to 35.5%. Thus, gross allowances paid on general insurance business class, worth RON 4.2 billion, represented 95.4% of the total claims.

Due to their growth with 34.72%, the underwritten insurance premiums on Motor Hull insurance have increased by almost 5 percentage points in share of total underwritings in general insurance up to 50.5% in 2008, compared to 45.7% in 2007. The Motor Third Part Liability insurance rose in 2008 to 20.58%, which made their share in the non-life segment to decline from 26.2% in 2007 to 25.9%.

The claims paid for Motor Hull insurance represent 59.6% of the total (5% more than in 2007) and the ones related to the Motor Third Part Liability insurance class represent 29.5% (2.4% more than in 2007). Allowances paid to each of these two classes have registered comparable nominal growth in 2008, meaning 47.30% in Motor Third Part Liability insurance, and 47.71% in Motor Hull insurance, according to the provisional data communicated by the CSA for 2008.

Table 2. TOP 10: Non-life Insurance in Romania (2008)

Nr.	Company	Gross Written Premiums (mil euro)	Market Share (%)
1	Allianz – Tiriac	347.2	18.3
2	Omniasig	327.7	17.3
3	Asirom	178.3	9.4
4	Astra	175.8	9.3
5	BCR Asigurari	146.6	7.8
6	Asiban	135.4	7.1
7	Unita	135.1	7.1
8	Ardaf	95.5	5.0
9	Generali	90.0	4.7
10	BT Asigurari	82.3	4.3
	Total TOP 10	1,715.0	90.4
	Total Market	**1,896.6**	**100.0**

Source: The Insurance Supervisory Comission

On the credit insurance class underwritings have continued to decline in 2008, with 51.87% compared to 2007, a trend that declined their share in the total gross written premiums in general insurance to 2.7% in 2008, compared to 6.9% in 2007 and, respectively, 8.6% in 2006. Claims paid on this segment were also reduced with 54.56% compared to the previous year.

Life insurance generated in 2008 gross written premiums of almost RON 1.8 billion (488.3 million euro), representing 20.5% of the total underwritings in the market. The growth on this segment was, as in 2007, superior to the dynamics of the general insurance, amounting to 24.11%. The claims paid in life insurance totaled 204 million Romanian leu, up 8.64% compared to 2007.

Table 3. TOP 10: Life Insurance in Romania (2008)

Nr.	Company	Gross Written Premiums (mil euro)	Market Share (%)
1	ING Asigurari deViata	164.1	33.6
2	AIG Life	77.7	15.9
3	BCR Life	43.5	8.9
4	Asiban	29.4	6.0
5	Aviva	29.3	6.0
6	Allianz-Tiriac	28.7	5.9
7	Asirom	24.8	5.1
8	Grawe	23.4	4.8
9	Generali	23.2	4.8
10	Omniasig Life	13.8	2.8
	Total TOP 10	457.8	93.8
	Total Market	**488.4**	**100.0**

Source: The Insurance Supervisory Commission

By the end of the third quarter of 2008, the insurance companies paid in Romania, more than 800 billion euro claims, rising with about 14.17 % as compared with the value of the same indicator recorded during the corresponding period of 2007. It is obvious that the claims dynamic overcame by little the rising recorded on the gross written premiums segment. In the meanwhile, the claims paid for Motor Hull insurance grew, in an absolute value, with more than 140 million euro more than the value of the mentioned indicator recorded during the first three quarters of 2007. During the analyzed period the insurance companies owned gross technical reserves for non-life insurance amounting about 1.6 billion euro. These reserves were covered by assets amounting 1.9 billion euro, thus in a share of 118.4%. In the case of the life insurance activity, the gross technical reserves amounted about 900 million euro, covered by assets that totaled about 1 billion euro meaning a covering of 115.14%.

3. Romanian Market Leaders

By the end of the third quarter of 2008, the first ten companies in the Romanian insurance market, ranked by market share totaled, gross premium that exceeded 1.45

billion euro, meaning about 79.3% from life insurance. Thus, the concentration degree of the market decreased by 1 percentage point as compared to the value of the similar indicator recorded during the first 9 months of 2007. The absolute value of the premiums written by the first 10 companies in the market grew by 157 million euro.

For the first time as market evolution, 7 companies from Top10 insurers recorded growing rates below the market average, thus losing market share. In absolute value, the evolution recorded among the top 10 companies differs from -28.71 million euros up to +65.22 million euro. The first 3 companies in the hierarchy kept its position while 4 among the top 10 companies change their places. BT Asigurari left the top 10 and switched places with Ardaf company which came back in top 10.

Allianz-Tiriac is still the Romanian market leader. This company recorded a nominal increase in euro, by 2.03%, with about 11 percentage points below market's average. Allianz-Tiriac wrote gross premiums amounting more than 283 million euro, with 5.64 million euro more than the value recorded by the company during the corresponding period of 2007. The company's growing rate evolution lead to a market share loss of about 1.74 percentage points. The claims paid by the company overcame 149 million euro and the market share reached 15.44%.

4. Insurance Density in Romania

For a more qualitative insurance market analysis, we may take into consideration the market density which varies a lot among the Romanian counties. Only inhabitants from Bucharest and Cluj (Transylvania) spend over 100 euro/year for insurance products.

Table 4. Insurance Density Evolution in Romania (2007/2006)

Nr.	County	Insurance density (euro)		Evolution (euro)
		2007	**2006**	
1	Bucharest	513.30	394.19	119.11
2	Cluj	105.02	72.17	32.85
3	Sibiu	88.94	131.14	-42.20
4	Arges	84.19	50.35	33.84
5	Buzau	80.09	59.70	20.39
6	Timis	77.22	59.15	18.07
7	Brasov	74.49	51.18	23.31
8	Arad	70.91	52.93	17.98
9	Constanta	65.42	48.96	16.46
10	Hunedoara	59.85	39.75	20.10

Source: 2007 Romanian Statistical Yearbook, National Institute of Statistics

If an inhabitant of the Romanian capital Bucharest spent an average of 513.3 euro, in 2007, for insurance products, a resident of Cluj-Napoca spent 105.02 euro. On the opposite side there are the counties of Botosani, Teleorman and Vaslui, where inhabitants spent an average of about 25 euro for insurance products, in 2007. Compared with 2006, the increasing of the largest absolute value insurance density was recorded in Bucharest (119 euro), in the counties of Arges (33.84 euro) and Cluj (32.85 euro), while the only decreasing was recorded in the county of Sibiu (-42.20 euro).

5. Is 2009 the year of challenges?

The year 2009 is considered already one of the most challenging years for Romanian insurance market. This is on one hand because of the present financial crisis worldwide and on the other hand, as a consequence of many legislative changes that may apply this year (as the mandatory Law of Property Insurance, etc.)

The financial crisis, at the first sight, and its result -the international economic crisis that the global economy is facing has shaken many international auto manufacturers, in respect of the considerable reduction in the sales volume, compared to the same period a year earlier. Romania, as many other countries, experienced already the significant decline of the demand for motor vehicles, if we relate to sales recorded in the previous year, especially against the backdrop of restricting lending. In the same time, the local profile of the insurance market is dominated by motor insurance, with more than 60 percent of all underwritings made in 2008. Moreover, the motor sector has been and is being viewed also for 2009 as a real "growth engine for the Romanian insurance market", according to the market specialists. Therefore, this reduction in sales, recorded in Europe, could have an indirect strong influence on sales of Motor Third Part Liability and Motor Hull policies in Romania.

Moreover, beside motor insurance class, other insurance segments, such as life insurance (especially the unit-linked products) could be affected by the economic crisis in Romania.

The expected Romanian legislative changes concerning insurances represent a second major challenge for 2009. Most of these changes are laws whose adoption has led various contradictory debates. First of all, from the 1st of January 2009, the holders of Motor Hull policies involved in a traffic incident that damaged only their own vehicle, or if the damage occurred in circumstances other than in a traffic accident, will not be forced to go to the police to draw input document in a car repair, but can directly go at the insurance companies' headquarters. Another change is that from the beginning of 2009, the Motor Third Part Liability policies will be issued in electronic format. The amicable report will enter into force from the 1st of July 2009, which notes that the road accidents with no victims, can be solved without police issued documents, provided that the form is filled and signed by both drivers involved in that accident.

From the mid of 2009, the house insurance policies will become mandatory for all immobile owners in Romania.

These changes involve a lot of internal infrastructure's investments in the case of insurance companies. They may develop information systems and additional training for agents, part of their sales force, may be needed.

Another controversial law, issued by CSA, refers to the limitation of the insurance broker commission to 15% in the case of Motor Third Part Liability policies. This initiative generated negative reactions from the intermediaries, in terms of a free market of services.

These are only some to the reasons that may require a particular attention from the insurance companies in 2009, this year being considered to be the "Year of challenges".

6. Conclusions

For more than 10 years, the insurance market in Romania has witnessed a positive trend, the industry growing annually by about 30 percent, more than any country in Europe. This double digit market dynamic suffered already a reduction in 2008, the market managing to grow in the first nine months of 2008, "only" with 13.54%, until a volume of underwritings of 1.8 billion euro, compared to the same period of 2007.

In this context, the full year 2008 means a less than 10 percent increase, compared to 2.2 billion euro, value recorded in 2007. The Romanian insurance specialists are skeptical considering the market development for 2009. This is contrary to one of the latest survey conducted by one of the most important insurance portal: "What is the anticipated evolution for the insurance market in Romania, in 2009?". The survey released that 55% of the 280 respondents expect a growing industry this year, between 0 and 20 percent, while 20% believe that the industry will register a decline. The rest of respondents trust that the market has a chance to increase by more than 20 percentage points.

If different stakeholders have different opinion about the market evolution in 2009, all of them consider by far that 2009 is the year when all insurers will be forced to operate as efficiently as possible, in order to maintain their growth and profitability within acceptable levels.

References:

Insurance Supervisory Commission (CSA) – Annual Reports, 2007 and 2008

National Association of Insurance and Reinsurance Companies (UNSAR) – Annual Reports, 2007 and 2008

Prim – Insurances & Pensions, no.68, December 2008

Top Insurance Companies, Finmedia, December 2008

www.zf.ro

www.1asig.ro

Cultural and social accomplishments of agricultural companies as contributions to the development of rural areas

Petra Maier*, Jaroslav Homolka**,**
Éva Darabos*, Ildikó Tikász*, Károly Pető*, Adrián Nagy*

****University Rostock, Germany*
***Czech University of Life Sciences Prague, Czech Republic*
**Debrecen University Centre for Agricultural Sciences, Hungary*

Abstract: Agricultural companies play a key role in enriching the cultural and social life of the rural areas in which they function. Therefore, these companies serve towards preserving a quality of life necessary for rural communities to survive and to develop rural areas. However, the financial, human resource and material expenditures necessary to sustain rural communities are difficult to quantify. These studies, on the basis of internationally focused case studies, attempt to measure, systemize and evaluate the charitable engagement of farmers.

Key words: Cultural and social accomplishments, agricultural companies, development of rural areas, quality of life, agricultural resources

1. Introduction

The main task of agricultural companies lies in the production of qualitatively high value nourishment and raw materials for industry, as well as the maintenance of the cultural landscape. They create workplaces and contribute to the added value of rural areas.

The development of agriculture, as that of other sectors of the economy, is influenced by the fluidity of structural changes, and reflects social changes. These structural changes influence the sociocultural development of villages and rural communities. Agriculture is the source of positive impulses which serve to improve the quality of life in rural areas and thereby constitute the foundation upon which an attachment to one's home is built. (*Rückert-John,* 2001).

Especially following the social upheaval which has been seen since 1990, the agricultural structures in the former East Germany and Eastern European countries have undergone fundamental change. This means that the role of agricultural companies in the economic/employment and cultural life of the village has retreated. This becomes especially apparent in those villages in which agricultural production provided the sole basis of income.

More important still is to have a comprehension of and appreciation for engagement of agricultural companies in sponsoring cultural and sporting events in the villages they supported. Additionally, there is the impact of the individual initiatives of farmers in choosing to become receptive to the importance of environmental education and social services, in addition to their roles as agricultural producers. This engagement has a long tradition, varies greatly region by region in its impact and is dependant upon a wide variety of influencing factors. Yet, the perception and appreciation of these, in some cases, rather considerate social accomplishments may remain limited in some regions, or even completely out of the public consciousness in others.

Seen historically, this tradition goes back, on the one hand, to the time of the manorial systems and, on the other, the cultural and social engagement of agricultural companies for rural populations were of great significance especially in East Germany, and brought about through the establishment of agricultural cooperatives and products belonging 'to the people'. In some cases, for this reason, some responsibilities which should have been those of the state, e.g. the construction and running of facilities for children, were transferred to agricultural companies.

Sociocultural activities have either completely disappeared or seen dramatic cutbacks in the face of increasing privatization and commercialization in the agricultural sector, the winding up or e.g. the transformation of companies. The focus of our joint study is to discover the actual status quo of the cultural and social initiatives of agricultural companies and what fundamental changes have occurred in this area.

This topic was adopted for study within the framework of a university consortium consisting of the Faculty of Agronomy and Rural Development (University of Debrecen), the Faculty of Agricultural and Environmental Sciences (University of Rostock), as well as the Faculty of Economics and Management of the University of Agricultural Sciences in Prague/Suchdol.

Using case studies, the following key areas are to be investigated:

- the motivation of farmers to promote social activities
- the nature and scope of such activities
- the nature and scope of the utilization of agricultural resources
- the effect on, as well as the appreciation of such activities by, the rural population

Our goal is to utilize the results of this study to represent the multifunctionality of agriculture form a different point of view, in order to clarify the contribution made by agricultural companies to securing a high quality of life in villages and to thereby improve the image of agriculture in the public consciousness.

The contribution we now present contains an explanation of the objectives of our study, of the investigatory methods used, an initial systematization of the manifold initiatives, as well as an appraisal of the initial results of the preliminary investigations. Our study is initially focused on the cultural and sporting services, as well as on environmental education and honorary positions. Social engagement, which includes the role of agriculture as a job market for socially disadvantaged people, remains for the time being outside the scope of our initial focus, as a proper investigation of this element would require more manpower than is presently at our disposal, and also because such investigation would require us to consider a range of country-specific determining factors

2. Investigatory methodology

The study contains to some extent a quantitative, but primarily a qualitative appraisal of selected agricultural companies in each of the three mentioned countries. By using partially standardized interview compendium, from 5 up to a maximum 10 agricultural companies are selected and interviewed in a predetermined region for each country. The selection of case studies is made on the bases of three criteria:

Farmed area, the manpower demand, as well as the animal demand, for which at least 2 of these criteria should be above the national average for each country. Furthermore, a fundamental condition is that the agricultural company had to have already existed prior to 1990.

The interview compendium is divided into 3 sets of questions. In the first set, the current condition and resource inventory of the company is recorded using a few figures. The second set contains the motivating factors behind the company's engagement. The third set contains questions primarily concerning the nature and scope of these activities.

3. Initial results form the primary investigations

The variety of engagement and initiatives, as well as their productive activity, is manifold and derives from *overview 1.* We differentiated between their types on the basis of whether the activities were sporadic, i.e. performed on the basis of an external request and therefore are one-off in nature, or whether they are offered continuously. Furthermore, one must consider whether a financial subsidy is being provided in the form of a sponsorship of the cultural or sporting organization located in the villages or whether preservation, or rather maintenance work is being done in the communities, or even agricultural machinery and equipment are placed at the communities' disposal.

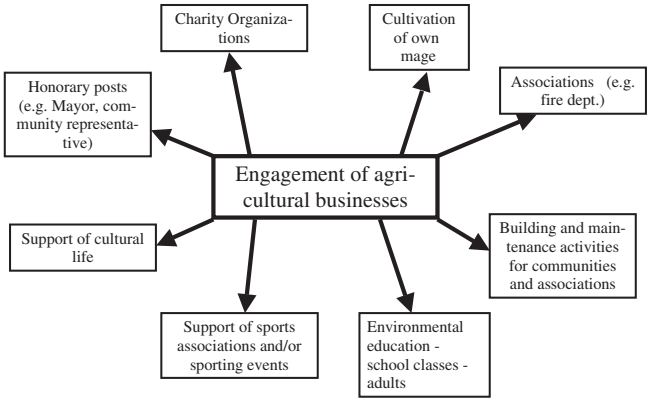
Of great significance is the role played by a company in serving in one or several honorary positions through its agricultural managers. The motivation to open their businesses to concerns for environmental education is generally pronounced and of sustainable importance, as the results from our preliminary studies prove.

The main reasons for social engagement and the many different types of initiatives were named:

- Continuation of traditions in rural areas
- Cultivation of one's image
- Participation in social processes and preservation of quality of life in the villages

Overviews 2 and 3 provide a brief look at the engagement of 2 agricultural company managers form the area around Rostock.

Overview 1: Variety of business engagement of agricultural businesses



Overview 2: Case Study – An Agricultural Joint Stock Company

Company background:

Founded in 1991(previously an agricultural production cooperative); 3 agricultural earnings public limited companies, 1 dairy farm, 1 technical services and 1 trade plc.; a total of 3,745 ha farmland; 44 employees and 4 trainees; 1.2 employees/100ha; 320 dairy cows with offspring; territorial location: 2 cities; 7 villages; operational spread 13 km in length, 17 km in width

Engagement:

1. *Financial services (300 to 500€):* On individual donation per year, as necessary, to a single village (e.g. a local chapter of the German Red Cross for the care of elder residents, in support of a goodwill

clothing shop) or to a horseback riding club – to support activities with children and youths
2. *Non-cash benefits (material):* Appropriations of bales of hay; maintenance of sports fields (drilling, weeding); appropriations of water trucks for sports fields; care of bodies of water, renaturation of areas; participation in pathway and road construction within the framework of land division cases;
3. *Cultivation of one's image:* Care of tenantries, "Field Trips"
4. *Honorary posts:* Honorary mayors of 3 villages; member of the community association and community board, respectively; member of various professional associations

Overview 3: Case Study Landbau Non-trading partnership

Company background:

Re-formed in 1991(previously an agricultural production cooperative); 2000 ha farmland, mixed company with grain propagation: 430 dairy cows with offspring; 21 employees (0,5 employee/100ha) 1 incorporated community with 6 villages

Engagement:

1. *Cultural services (financial, sponsoring):* Advancement of community life; Organization of harvest festival for all residents of the village; Benefits for the cultural society and for the volunteer fire department;
2. *Material services:* Support of activities in the community through in-house technology; construction works, tanks for residents of the village in the yards of businesses;
3. *Environmental education (personnel):* "Field trip" for school children; "Field trip" and short botany lesson for kindergarten kids with a quiz
4. *Cultivation of one's image(personnel):* "Field trip" for all interested residents of the community
5. *Honorary posts (personnel):* Community representative board, Vice-mayor; member of the board of directors of the sugar beet association; supervisory board member of HAGE in the city of Kiel(agricultural cooperative)

4. Conclusion

Agricultural employers make an important contribution to the enrichment of the cultural and social life of villages and therefore assist in ensuring a high quality of life.

The financial, manpower and material expenditures for this contribution are not able to be exactly quantified.

By using case studies from different countries, this study hopes to collect, systemize and evaluate data on the charitable engagement of farmers.

5. Refernce

Rückert – John, Jana (2001): Dörfliche Lebensverhältnisse im Wandel. In: Landbewohner im Blick der Sozialforschung, Sozialforschung, Arbeit und Sozialpolitik; Bd. 7 Lit Verlag Münster, Hamburg London; S. 86–95.

The importance of Equestrian Tourism Enterprises in Tourism Destination Management in Hungary

Erika Könyves – Éva Suta

University of Debrecen Faculty of Agricultural Economics and Rural Development
Department of Agroeconomy and Rural Development

Abstract: Hungary is the pioneer of the European Equestrian Tourism. Several thousands foreign tourists visited specific equestrian programmes already in the 1960's and 1970's. At the same times some hundred thousands of holiday tourists visited equestrian shows and programs organised in different areas of our country.

From the beginning of the 1990's equestrian enterprises (pensions, stables, specialized equestrian services) have been established.

The equestrian tourism enterprises are well represented all over the country. They are well organised, the Hungarian Equestrian Tourism Association integrates 80% of equestrian tourism enterprises. Uniquely in Europe, the voluntary professional qualification, called "the horseshoe qualification system" started in 1998. The most common quality categories are for entrepreneurs are 3 or 2 or 1 horseshoe.

The system of Tourism Destination Management organizations could provide the background for the development of equestrian tourism enterprises as well. At local level these needs would be product development, the quality control and quality management, at regional level the most important aims could be the development of regional equestrian image and increasing the attractiveness of this image, finally hardening the positions of equestrian tourism destination.

Key words: Development, Equestrian, Enterprises, Tourism, Tourism Destination Management

1. Introduction

Hungary has been interlocked with horse and traditions of equestrians for some centuries, our equestrian traditions based on historical century's background. We are proud of our Hungarian horse breeding, we have created well-known horse-species all around in Europe which have been successful in sport and tourism area as well.

Equestrian tourism was born by enthusiasm of horses; strong traditions are in connection with horses, cultural background and historical events.

The equestrian tourism is one of the parts of active tourism, it is mostly leisure time tourism in which nearness of nature, culture and traditional features of countryside, folk culture, handicraft, local gastronomy have already appeared (Győrffi-Villám 2001). On the one hand our wranglers are amusing with unique astonishing shows our visitors in equestrian shows; their knowledge and ability are special. On the other hand equestrian sports aren't included only traditional features; next to equestrian competition nowadays therapeutic horse riding has improved giving chance for recruiting health condition or assuring living lifestyle.

According to agricultural registrations the number of horses in Hungary presently are 58000 heads, unfortunately, this number is much lower than that in the earlier decades. Our horse stock reached 712000 heads in 1950's, since then it has been decreasing continuously.

2. Equestrian activities in leisure time

The riding on a horseback is less preferable as leisure time activity between Hungarian populations, excepting hiking such leisure time activities like golf, fishing, hunting, air sports aren't so popular. According to research details nearly 60% of interviewed from 1300 person has never ridden a horse, those numbers who can ride on a horseback occasionally are under 10%).

However among Hungarian population the judgement of equestrian attitude are significantly positive, the facilities of Hungary are suitable as well. In contrast the personally attitudes are decreasingly favourable, the average positive judgement has not appeared in travelling motivations.

According to survey of M.Á.S.T. the equestrian tourism is the most preferable between populations who are active in economically, young, has got high school graduation, lived in community. The equestrian tourism is the most popular between people of Middle-Transdanubia, the Northern Great Plain and the Southern Great Plain (Table 1).

3. The features of equestrian services

The special feature of tourism goods is that has to be cooperated several independent enterprises and actor to be able to create complex tourism offerings. The consumers are incapable of understanding the role and responsibility of different suppliers (Horkai, 2003).

The commonest tourism products are in equestrian tourism: trail riding and touring, knightly equestrian tournaments, coach driving, nightly equestrian tours. The

Table 1.: Index of compliance statements in connection with equestrian activities

Index of compliance statements in connection with equestrian activities (average value in five classifieds scale 1-the worst, 5- the best)	
Statement	*Index of compliance*
Hungary is famous for its equestrian sports	4,28
Riding a horse is healthy	4,12
Riding a horse needs too much financial background	4,12
There are a lot of opportunities for riding a horse in Hungary	4,09
The Hungarian riding opportunities are affordable only for foreign tourists	3,17
Index of compliance statements in connection with equestrian activities in personnel judgement (average value in five classifieds scale 1-the worst, 5- the best)	
Statement	*Index of compliance*
Riding a horse is a good entertainment	3,67
I would like to visit an equestrian show	3,58
I would like to take part in a coach driving tour	3,19
I am interested in horse riding	2,45
I would like to learn riding on a horseback	2,36
I would like to take part in a trail riding and touring	2,33
I would travel certainly because of riding a horse	1,6

Source: Magyar Turizmus Zrt. / M. Á. S. T. (*Halassy* 2007)

equestrian accommodation has got several services. The most frequent are riding on a horse back, trail riding and touring, teaching or training riders or visitors, and coach driving. On the one hand in lower levels visiting stud is one of the commonest events, in higher levels people are able to acquire some kind of equestrian sports. The organizations and achieving of equestrian events (sport or others) are important parts of equestrian tourism too. These events are strong connection with locations and timing; they included such programmes which are based on historical background, traditions, anniversaries or other traditions. These could be individual events or a significant part of a major programme at the same time. These events take up only a half or one day, but they could keep on several days. Among internationally evolved prices and profitability, next to interest of macroeconomic the ideal structure of costs would be 40–50% of equestrian services and 50–60% of other services (accommodation, offering meal opportunities). Unfortunately in Hungary this relation is 10–90% in point of basic services and other services.

In Hungary from the beginning of the 1990's equestrian enterprises (pensions, stables, specialized equestrian services) have been established. By now Hungary has got more than 400 equestrian enterprises, accounting total capital value of 20 billion HUF.

There are regional marginally in spite of colourful and varied equestrian programmes and events.

We can find the most services in the Region of Budapest and The Hungarian Great Plain, but there are less in Region of Transdanubia, but the lasts are the Region of Lake Balaton and Eger in a point of services and there are fewer equestrian accommodations there too *(Table 2)*.

Table 2.: The regional location of equestrian entrepreneurs in Hungary (items)

	Budapest and its neighbour-hoods	The mountain area of Eger and Tokaj	The Hungarian Great Plain and Lake Tisza	Trans-Danubia	Lake Balaton
Riding on a horseback	29	15	53	43	15
Coach riding	17	9	45	29	12
Equestrian shows	14	0	20	9	7
Trail riding and touring	22	12	44	37	15
Hunting riding	5	3	10	12	7
Dressage	12	4	11	6	4
Show-jumping	16	4	25	22	3
Military	2	1	6	5	0
Vaulting	2	1	10	5	1
Long-distance riding	3	2	7	6	1
Coach driving	7	6	25	7	6
Equestrian competitions	12	5	28	23	4
Teaching, training	26	13	44	40	12
Therapeutic riding	5	2	3	2	0
Camp for children	18	12	31	29	10
Stud visit	3	5	23	9	3
Accommodations	20	13	42	38	13
Opportunities for meals, board	21	8	42	31	10

Source: Based on: On a horseback in Hungary and own researching

The equestrian tourism enterprises are well represented all over the country. They are well organised, the Hungarian Equestrian Tourism Association integrates 80% of equestrian tourism enterprises. Uniquely in Europe, the voluntary professional qualification, called "the horseshoe qualification system" started in 1998.

The major qualification guidelines are: environmental factors, horse keeping, aptitude factors, equestrian service factors, human factors, other programmes and opportunities.

The most common quality categories are for entrepreneurs are 3 or 2 or 1 horseshoe in national level. These three categories contain the 75% of total numbers of the equestrian entrepreneurs. Unfortunately the numbers of higher categories establishments ("4 and 5 horseshoe") are lower.

The spatial distributions of measured equestrian establishments are unequal. According to results of classification system 61,14% of equestrian establishments reach acceptable level.

4. The state of equestrian tourism

The equestrian establishment and services are found all in Hungary. Unfortunately we have to speak about some obstructive effects: there is lack of suitable professional and special knowledge for leading the equestrian enterprises, there aren't enough riding trainers and teachers for suitable services, furthermore lack of foreign languages knowledge,

there aren't suitable horse stock, and assigned riding routes. The organisation of affected entrepreneurs in equestrian tourism is voluntary; there are nearly 400 members of this organisation of lobbyists and partner service club, which hasn't been covered all this sector (The Hungarian Tourism Development Strategy 2005).

5. The developing principles

The equestrian sports are based on the extant capatibilities and institution system of the region. The main direction of developing is improving of efficiency of this institution system and developing of the following areas: material (infrastructural investments in integrated approximation), organizational (developing of organizational system and human resources), services conditions in tourism, recreation, sport side at the same time (events, camps).

The development of equestrian tourism has to be realized – in part of rural development – like as individually Hungarian Equestrian Sectorial Developing Programme, which is based on preserving traditions and utilizing in tourism aspects. The aim of developing equestrian tourism is to be in accordance with living ideas in foreign visitors that Hungary is an equestrian nation. To summarize there is an existing image, so the main target is to convert it for a suitable form (The Hungarian Tourism Development Strategy 2005).

6. The Tourism Destination Management

The professional tasks of the Tourism Destination Management: brand establishment at destination level, marketing and quality establishment at destination level, providing tourism information, providing professional tourism services (The TDM functional reference book 2008).

Between international competition of destination those organizations and tourism target areas are successful, which use in complex way developing of innovative tourism products and suitable positioning and differentiating strategy (*Horkai,* 2003).

Expectedly equestrian entrepreneurs will became the members of the local Tourism Destination Organization and there will be national and regional Equestrian Associations which became members by their professional representations and local agencies.

The system of Tourism Destination Management organizations could provide the background for the development of equestrian tourism enterprises as well. At local level these needs would be product development, the quality control and quality management, at regional level the most important aims could be the development of regional equestrian image and increasing the attractiveness of this image, finally hardening the positions of equestrian tourism destination.

Accordingly our study and equestrian experiences we have worked out the following proposal for systematic functions sectioning in Tourism Destination Management *(Table 3).*

Table 3.: The cooperation mix of equestrian sector in TDM system

Equestrian entrepreneurs	*National/Regional Equestrian Associations*
Product and brand policy	
Specialization of offerings (based on unique attractions)	Researching for demanding guidelines and trends
Development of attraction	Generation of projects
Development of services	Brand management
Providing of consumer's orientation	Developing and supporting of special demanding profile
Communication of unique offering elements	Fortification of "Hungary is an equestrian nation" image
Developing of innovation potential	transfer of innovation and supporting of adaptation
Founding and developing the features of equestrian entrepreneurs and	
Quality management	
Determining of the aims of benchmarking at equestrian entrepreneurs	Marketing researching of specifically features of quality in equestrian services
Providing personal and technical conditions for reaching suitable level of quality	Determining of philosophy in the equestrian quality
Motivation of the assistants, suppliers, partners in accordance with the targets of quality level	Utilizing of professional advisory system
Adequacy for requiring of "horseshoe" qualification system	Controlling of "horseshoe" qualification system
Suitable in and out communication about quality results	Communication for inside (equestrian enterprises) and for outside (government and decision makers)
Measuring and utilizing of visitor's satisfaction for tourism product development	

Source: Based on own research

References

Győrffy-Villám, A. (2001): The reference book of equestrian tourism. Mezőgazda Kiadó. Budapest

Halassy, E. (2007): The Hungarian population's attitudes in connection with national parks, hiking and equestrian tourism and their travelling plans in 2006. In: Turizmus Bulletin XI. Issue No. 1-2. page of 33–43.

Horkay, N. (2003): Tourism brand and brand policy in Tourism Destination Management. In Turizmus Bulletin, VII. Issue, No: 1. page of 47–53.

The Hungarian Equestrian Tourism Association: On a horseback in Hungary

The Hungarian Equestrian Tourism Association. www.equinfo.hu

The Hungarian Tourism Development Strategy (2005)

The TDM functional reference book (2008): Ministry of Local Government and Regional Development. Heller Farkas College of Economics and Tourism, Budapest

Regional benchmarking process in cognac project (Coordination of RDI policies and their coherence with other policies in the Newly Acceded Countries)

Ágnes Berde and Márta Völgyiné Nadabán

INNOVA Észak-alföld Regional Development and Innovation Agency Nonprofit Ltd.

Abstract: In order to achieve the Lisbon objectives and create a knowledge based society, Europe needs to increase and improve investment in R&D. This requires improving the effectiveness and coherence of research policies at European, national and regional levels. The first cycle of application of the open method of co-ordination (OMC) to the 3% objective provided an overview of the Member States policies in a number of areas, facilitated mutual learning and led to a number of policy recommendations adopted by CREST in October 2004.

The current regional benchmarking practice is made within a 6th Framework Programme project called Cognac, which is the acronym for **Coordination of R&D&I policies and their coherence with other policies in Newly Acceded Countries.** The project is focusing on two priority subjects: public research spending and policy mixes and SMEs and research. The project was supported within the first cycle of the RTD-OMC NET call.

The benchmarking exercise tries to show the differences in the performance of participating regions. It supposed to choose the best regions at NUTS II level by the two priority topic of the project: "Public research spending and policy mixes" and "SMEs and research". Geographically the analysis covers the area of the eight partnering regions.

Key words: Benchmarking, regional benchmarking, economic and research performance

1. Introduction

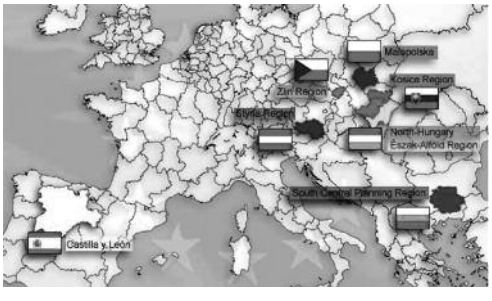
The strategic objectives of the project was to increase the effectiveness and coherence of research policies at European, national and regional level by the coordination and exploitation of the synergies and results of the parallel programming activities on the basis of mutual learning between the participating regions. The project aimed to achieve this objective through analyzing, comparing and benchmarking of the regional processes on the field of R&D&I policies in the partner regions.

The current benchmarking exercise had been conducted as one of the workpackages of the project: Workpackage 3: Benchmarking of R&D&I policies and activities. This analysis and benchmarking phase served as basis (input) for other activities of the project, like preparing joint policy action plan for the partner regions related to the specific field of the project; providing recommendations on different level (regional, national or EU) with the aim of strengthening the national/regional level R&D&I systems and also making a more effective system of R&D&I financing.

The final result of the work accomplished is a state of the art study that comprises from two main parts: first of all a benchmarking exercise of some chosen performance indicators, second a comparison study of the regional/national innovation background of the participating regions.

Regions analyzed in the project:

- Castilla y Leon (Spain)
- Kosice Region (Slovakia):
- East Slovak Region
- Észak-Alföld (Hungary)
- North Hungary (Hungary)
- Malopolska (Poland)
- South Central Planning Region (Bulgaria)
- Styria (Austria)
- Zlín Region (Czech Republic): Stredni Morava



In the project, two types of regional stakeholders participate from these given regions: one regional authority responsible for the regional innovation strategy planning and implementation and one regional stakeholder (research institute or tertiary education centre).

2. Material studied, area descriptions, methods, techniques

Benchmarking is a technique in which a company measures its performance against the best in class companies, determines how those companies achieved their

performance levels and uses the information to improve its own performance. It is an improvement process in which an organisation compares its performance to the "best in class", search the reason how it reaches that performance and try to learn from it. (www.12manage.com)

This tool can be used not only in the cases of enterprises, but between any actors, entity who want to measure performance. The word benchmarking comes from craftsmen who chiselled a mark on the surface of their worktable to make the length measurement easier comparing their object to this scale and using the worktable as the origin for the measurement. The benchmarking – as an analysing process – derives from the reconstruction of Japan industry after the Second World War. Japan experts visited thousands of American and Western European companies to see the products, processes and new technologies, than they adopted and developed them.

Regional benchmarking means that a specific region conducts a benchmarking process in order to improve its regional performance. Regional benchmarking is a powerful strategic policy tool which contributes to the different aspects, specific topics of development of regional economy. Typical steps in a benchmarking process: 1) identification of challenge, 2) preparation of the benchmarking exercise (defining budgets, tasks, and responsibilities), 3) information gathering, 4) analysing the data, 5) develop conclusions and 6) defining a plan for the implementation (Iurcovich, 2006).

In the context of national research policies, benchmarking can be an instrument for mutual learning and increasing R&D&I performances. Learning from the best can provide new ideas, solutions for the members in the benchmarked group. It can stimulate the application of new methods and practices (e.g. new call for proposals or programmes). As Key Figures, 2001 mentioned: "Benchmarking does not involve transfer of practices directly from one context to another, but rather draws on experience elsewhere to stimulate new thinking about policy implementation. In this way benchmarking can improve national policies, instruments and practices, or open totally new possibilities that induce higher future performances."

In the COGNAC benchmarking the starting point is a general comparison of the regions by some selected performance indicators. Following, for the aim of a deeper analysis, there are two priority topics in the project: "SMEs and research", and "public research spending and policy mixes".

During the benchmarking process the project team faced different type of problems. First of all, statistical spatial problems: in the project consortium eight regions were involved. The analyzing work covers these eight regions, the best-in-classes were defined from this restricted area thus, the group of the benchmarked regions is limited, as well as the validity of benchmarking results.

Another methodological question was how to benchmark policies. The project team met always the same problem: how can we benchmark policies, projects, qualitative descriptions and indicators and how can we avoid subjectivity. To solve this problem the consortium decided for the case of COGNAC regions i) to use only quantitative indicators which can be assigned to the two topics (public research spending and policy mixes and SMEs and research), and based on the timetable of COGNAC and also taking into account the main objective of the project ii) these indicators are considered as performance indicators assigned to the adequate topic iii) the benchmarking study focuses on two main needs: the benchmarking of the performance of the regions, and the benchmarking of the effectiveness of R&D&I policies.

Second, Castilla y Leon, North Great Plain, North Hungary, Malopolska, South Central Planning Region and Styria are regions on NUTS-2 level, but Zlin Region and Kosice Region are from different territorial statistical level: NUTS-3. In the COGNAC project every region is analysed on its own level, but the benchmarking process is an exception. During the elaboration process of the study the works were on NUTS-2 level, and in case of the two regions from lower statistical levels the analysis focuses on the referring NUTS-2 regions that contain them. It is due to the fact that there are no statistical data on some indicators on NUTS-3 level, and regions from different statistical levels have highly different performance, therefore the comparison of them does not produce realistic results. So, in the benchmarking exercise, Kosice and Zlin Region is represented by their relating NUTS-2 regions: East Slovak Region and Stredni Morava.

The calculated results don't reflect on the general performances of the participating regions. The benchmarking results are valid only in the environment of this project according to the 2 specific topics of the project, because they are based on a small number of indicators selected.

In the COGNAC project by each performance indicator the ranks of the regions had been determined and the "best in class" was selected by the aggregation of the rankings of the region. In this way, it could be avoided that different basis of the indicators are compared. As a result only the regional performance results are taken into consideration.

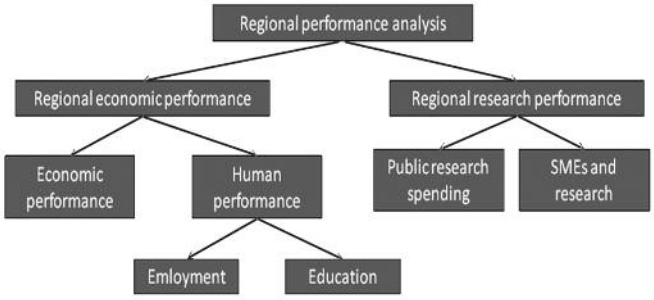
For the analysis primary and secondary research had been conducted. For the secondary research work Eurostat databases had been used and primer research served as a basis for the comparison study. The benchmarking exercise is focusing on performance indicators chosen by the consortium and divided on 2 main parts: regional economic performance and regional research performance.

The comparison study covered the following areas: R&D&I policies, legal background, initiatives, activities, projects, Regional Innovation Strategy priorities, information systems and regional/national SWOT and technology foresight and top technology areas and branches. As well as the comparison is made on the different regional/national innovation systems, trying to find the strength and the weaknesses of the diverse systems.

3. Results and discussion

As defining the pretext to the performance of the single regions in R&D, first we took a look on their general economic situation. The partner regions have quite different

economical, geographical and historical background. These eight regions accessed to the European Community in four steps and in 21 years (Spain accessed in January 1986, Austria in January 1995, Poland, Czech Republic, Slovakia and Hungary in May 2004 and Bulgaria in January 2007). The analysis of the Regional Economic Performance covers economic growth data of the 8 partner regions and includes various other economic and demographic statistics to provide a better picture of regional performance and trends. Regional economic performance is divided on two subtopics: economic performance and human performance. The indicators of these two groups will give the final results of the regional economic performance. Regional human performance contains two subtopics as well: one on labour market and on education and training.



The following indicators describe the group of regional economic performance:

1) GDP at current market prices, Year: 2005, Form: purchasing power parities per inhabitant
2) Average real growth rate of regional GDP at market prices at NUTS level 2 – percentage change on previous year Year: 2000–2005 Form:%
3) R&D intensity. Gross domestic expenditure on research and development (GERD) in the ratio of GDP. Year: 2003. Form:%.
4) Average patent applications per million inhabitants. Patent applications to the EPO per million inhabitants, Year: 1999–2003. Form: pieces.

Three indicators belong to the chapter of Labour Market:

1) Changes in population density. Changes between 2000–2005 in the ratio of the first year. Year: 2000–2005. Form:%.
2) Average unemployment rate. Average unemployment rate for age 15 years, Year: between 2000 and 2005. Form:%.
3) Employment in knowledge-intensive services. Employees in this field in the ratio of total employees. Year: 2005. Form:%.

Three indicators describe the topic of Education:

1) Population with tertiary education. In ratio of 25-64 age class. Year: 2005. Form:%.
2) Population with secondary education. In ratio of 25–64 age class.Year: 2005. Form:%.
3) Population with lifelong learning. In ratio of 25–64 age class. Year: 2005. Form:%.

Table1: Summary of the regional economic performance

Indicator name	Castilla y Leon	East Slovak Region	North Great Plain	North Hungary	Malo-polska	South Central Region	Styria	Stredni Morava
GDP at current market prices	2	5	7	6	4	**8**	**1**	3
Average real growth of GDP 2000–2005	6	4	2	3	7	**1**	**8**	5
R&D intensity	2	6	5	7	3	**8**	**1**	4
Average patent applications per mill. inhabitants	2	5	3	4	6	n.a	**1**	**7**
Population with tertiary education	**1**	7	6	4	3	**8**	2	5
Population with secondary education	**8**	2	6	5	4	7	3	**1**
Population with lifelong learning	2	**7**	6	5	4	**7**	**1**	3
Unemployment between 2000–2005	6	**8**	2	4	5	7	**1**	3
Changes in population density	3	2	6	4	3	**7**	**1**	5
Employment in k. i. services	5	4	2	3	6	**8**	**1**	7
SUMMARY	**37**	**50**	**45**	**45**	**45**	**61**	**20**	**43**
Position	**II**	**V**	**IV**	**IV**	**IV**	**VI**	**I**	**III**

(Designed by the author)

Table 2: Summary of research performance

Indicator name (year, form)	Castillay Leon	East Slovak Region	North Great Plain	North Hungary	Malo-polska	South Central Region	Styria	Stredni Morava
Public research spending and policy mixes								
HERD and GOVERD in the ratio of GDP (2003)	4	7	3	5	2	**8**	**1**	6
HERD and GOVERD in the ratio of GERD (2003)	3	4	5	7	6	**8**	2	**1**
Researchers by governmental and higher education sector (2004)	3	7	6	4	5	**8**	**1**	2
R&D personnel by governmental and higher education sector (2004)	4	5	7	3	**8**	6	2	**1**
Summary	14	23	21	19	21	30	6	10
Position (public research)	III	VI	V	IV	V	VII	I	II
SME and research								
R&D expenditure by firms (2003)	3	6	5	7	4	**8**	**1**	2
BERD in the ratio of GERD (2003)	3	4	5	7	6	**8**	2	**1**
Researchers by sector of performance (2004)	2	6	5	5	4	**7**	**1**	3
R&D personnel by sector of performance (2004)	3	6	7	5	4	**8**	**1**	2
Summary	11	22	22	24	18	31	5	8
Position (SME and research)	III	V	V	VI	IV	VII	I	II
Final ranking	**III**	**VI**	**V**	**V**	**IV**	**VII**	**I**	**II**

(Designed by the author)

The second part of the benchmarking exercise on regional research performance is divided into two parts. Four indicators describe public research spending and policy mixes:

1) HERD and GOVERD (public research) in the ratio of GDP: Government and higher education sector R&D expenditure in the ratio of GDP. Year: 2003. Form:%.
2) HERD and GOVERD in the ratio of GERD. Government and higher education sector R&D

expenditure in the ratio of total R&D expenditure; Year: 2003. Form:%.

3) Researchers in the public sector. Researchers in the public sector in the percentage of total number of researchers. Year: 2004. Form:%.
4) R&D personnel in the public sector. R&D personnel in the public sector in the percentage of total number of researchers. Year: 2004. Form:%.

Following indicators had been assigned to the SMEs and research subgroup:

1) R&D expenditure by business enterprise sector: Business enterprise sector R&D expenditure in the ratio of GDP. Year: 2003. Form:%.
2) BERD in the ratio of GERD. Business enterprise sector R&D expenditure in the ratio of total R&D expenditure; Year: 2003. Form:%.
3) Researchers in the business sector. Researchers in the business sector in the percentage of total number of researchers. Year: 2004. Form:%.
4) R&D personnel in the business sector. R&D personnel in the business sector in the percentage of total number of researchers. Year: 2004. Form:%.

4. Conclusion

Although by the analysis of the selected indicators Styria region turned out to be the „best-in-class" region, the COGNAC consortium decided not to benchmark only against the best-in-class region, but to benchmark against all „good practices". The aim of the regional benchmarking exercise is to improve a region's performance. This exercise is usually followed by the selection of some good practice initiative on the selected fields and the transfer of these good practices. As Styria's current initiatives and measures related to RDI have a stronger financial scale thanks to its stronger economic performance, the consortium decided that from the project point of view, it is more interesting to select good practices from each region. As a result, good practices had been collected from all participating regions. The focus of the good practices had been the two priority topics and was determined as well by the results of the benchmarking and the comparison study.

References

Borsi B. et al., (2007): "The Proact Benchmarking Frame: A Method Proposed to Explore Good Practices in Innovation and Research Policy"

European Commission (2001): "Towards a European Research Area: Key Figures 2001: Indicators for benchmarking of national research policies", European Communities, Brussels.

European Commission (2006b): "The PAXIS Manual for Innovation Policy Makers and Practitioners", European Communities, Brussels.

European Commission (2008): "European Innovation Scoreboard 2007 – Comparative analysis of innovation performance", European Communities, Brussels.

Havas A., Nyiri L. (2007): "National System of Innovation in Hungary – Backgroud report for the OECD country review 2007/2008", Budapest.

Iurcovich, L. et. al. (2006): "Regional Benchmarking Report – Blueprint for regional innovation benchmarking", Mutual Learning Platform (MLP).

http://www.12manage.com/methods_benchmarking.html
http://cordis.europa.eu/en/home.html
http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1090,30070682,1090_33076576&_dad=portal&_schema=PORTAL
http://lisbon.cor.europa.eu/
http://cordis.europa.eu/erawatch/index.cfm
http://www.innovating-regions.org/
http://www.trendchart.org/scoreboards/scoreboard2005/scoreboard_papers.cfm

Some aspects of accounting and management accounting during economic downturns

Tamás Dékán

University of Debrecen, Centre for Agricultural Sciences and Engineering, Faculty of Agricultural Economics and Rural Development, Department of Accounting and Finance
H-4032 Debrecen Böszörményi 138.

Abstract: Economic slowdown and downturn creates new situation for every organisation, no one can avoid facing to new situation created by the global financial-, and economic crisis. All of the organisational function should reconsider its own role within the company due to the new circumstances, Accounting and Mangement Accounting can not be exception, but they have more complex and emphasized role in these difficult times. In the following paper I can not avoid to mention some general statement about importance of accounting and accounting principles, while there are a number of critical accounting and financial reporting issues that accountants and auditors should consider. In the framework of the paper I can not face with all relevant issues of the topic, but after some general statement I would like to highlight some special area regarding to management accounting, which can be more important during these challenging time for decision makers and accountants. Regarding to balance sheet analysis its important to mention current debate about fair value comparing with historical cost from accounting point of view, on the other hand from the view of management reporting system I would like to highlight the importance of working-capital indicators. More practical topic is the crucial role of budgeting and forecasting during economic downturns, and at the end I would like to show why it is more important monitoring price variance and indirect cost allocation in these uncertain business circumstances.

Key words: Economic downturn, management accounting, working capital, forecasting, tools

Introduction

Economic slowdown and downturn creates new situation for every organisation, no one can avoid facing to new situation created by the global financial-, and economic crisis. All of the organisational function should reconsider its own role among the new circumstances, Accounting and Management Accounting can not be exception within the whole organisation, but these functions have more complex and emphatic role in these difficult times. As the following paper deals with global economic crisis, I can not avoid to mention some general statements about the importance of accounting and accounting principles, but in the main part of the paper I would like to focus on generally known Management Accounting tools which can have bigger importance nowadays, and which can help business management in proper decision making.

Results and discussion

Audit and Accounting consideration

In today's economic environment, which affects all types of businesses and industries, it is crucial to remain cautious to current events and to evaluate how they affect the audits the companies perform. There are several critical accounting and financial reporting issues that auditors should consider, such as: fair value, including fair value measurements in illiquid markets, impairment, liquidity restrictions, etc. Consequences of Enron's accounting failure are well known, we should not emphasize the importance of proper accounting, when credibility and transparency mean more and more value for investors.

Hungary is experiencing great economic instability; it is officially declared that the country and the region are entered into a recession. These ever-changing economic times make accounting for transactions and auditing entities more challenging. Few, if any, industries are immune to the affects of the crisis so it is more critical than ever for accountants and for auditors to understand the rapidly changing business and economic environment in which Hungarian companies are operating.

The recent economic conditions and circumstances may cause additional risk factors that had not existed or did not have a material effect on audit clients in prior years. Some risks may include: constraints on the availability of capital and credit, going concern and liquidity issues, marginally achieving explicitly stated strategic objectives, use of off-balance-sheet financings, special-purpose entities, and other complex financing arrangements, and volatile real estate markets and the credit crisis, which result in significant measurement uncertainty, including accounting estimates and fair value measurements. While many of these risks are not new to business, consideration of the many ways a client is affected by external forces is part of obtaining an understanding of the entity and its environment and will allow the auditor to plan and perform the audit to address

those risks. Additionally, given the constant changing status of economic conditions which could affect companies, accountants and auditors should consider modifying procedures to ensure risks are still addressed adequately.

Balance sheet analysis – fair value

One of the most crucial accounting tasks in the uncertain period is to present and to understand what the company holds on its balance sheet. From investor point of view credibility means the transparency of assets and liabilities, and the proper evaluation of them, which should based on fair-value evaluation.

Fair value recognises changes in market prices of assets and liabilities immediately. Accounting standard-setters have defined fair value in different ways. All of them are essentially variations on current market value or an estimate, where a market value is unavailable or regarded as unreliable, of what the market value would be if there was a market. Fair value is also referred to as mark-to-market.

There are various alternatives to fair value as a basis of measurement in accounts. The principal one, and in the context of the current debate the only one seriously considered as an alternative, is 'historical cost'. There are two major differences between fair value accounting and historical cost accounting:

- Fair value recognises unrealised gains, whereas historical cost only recognises realised gains – i.e., gains that arise when assets are sold. That is to say, fair value accounting recognises gains where assets rise in value above their historical cost.
- When assets fall in value, this is recognised under both fair value and historical cost accounting. But whereas fair value means the assets are written down to their new fair value, historical cost means that an impairment provision is made against those assets.

After understanding the principles of fair value analysis I would mention two more general aspects of fair value analysis. It is also important for every accountant to gather updated market information to fair value analysis, which is not obvious during the ever changing period. Not strict related to the accounting itself, but it is also important to prepare the management and the investors to the Profit and loss statement (P&L) impact of any financial evaluation.

Management reporting system – Focus on working capital

Working capital management means managerial accounting strategy focusing on maintaining efficient levels of both components of working capital, current assets and current liabilities, in respect to each other. Working capital management ensures that a company has sufficient cash flow in order to meet its short-term debt obligations and operating expenses. The well-known „Cash is a king" slogan was never so relevant than nowadays, when all businesses have to operate in freezing financial circumstances, and no one can expect significant improvement from increasing revenues.

As I wrote earlier, in the frame of this paper I just highlight some aspects of accounting in economic downturns, so I can give only some general statements about an effective management reporting system regarding to working capital management.

An effective management system means reporting and maintaining close contact with the company could alert directors to potential danger about working capital issues, which can reflect in providing and analysing the following indicators:

- Declining turnover
- Working capital deficiencies
- Fixed term borrowings approaching maturity without realistic prospects of renewal or repayment
- Excessive reliance on short term borrowings to finance long-term assets
- Denial of usual credit terms by suppliers and other creditors
- Negative cash flows from operating activities, either historical or projected
- Adverse financial ratios
- Significant deterioration in the value of assets used to generate cash flows

If the management reporting system can provide these indicators in time, it also important to use the gathered information. It means not only to monitor accounts receivable, watch for new patterns of slow payments and follow up immediately, or just review largest and riskiest accounts to determine the potential impact of credit constraints and economic slowdown on their ability to pay you. In case of manufacturing companies it also includes to review inventory management practices and identify opportunities to reduce your on-hand inventory. Re-evaluate the potential risk related to reliance on critical supply chain partners.

Planning and forecasting – difficulties of precise prediction and timing

Importance of planning and forecasting is an everyday activity for management accounting, and not just in case of bigger companies, but due to relatively cheaper information technology tools is a general practice in case of SMEs (small and medium enterprises).

Forecasting Methodologies can be divided into two categories: Qualitative forecasting techniques and Quantitative forecasting techniques.

Table 1. Forecasting techniques

Qualitative Techniques	Quantitative Techniques
Expert Opinions	Naive Methods (Linear Growth)
Consumer Surveys	Moving Averages (Simple, Exponential)
Sales Force Polling	Time Series Decomposition
Economic Indicators	Box-Jenkins Approach Regression (Simple, Multiple)

http://bizjournal.smbzen.com/small-business/an-overview-of-business-forecasting.html

Both techniques depends on reliable and available information, to gather data is more and more difficult in the hectic business environment, no one may safely neglect any available source of information. In the business world success depends on comprehending the situation than other does, and acting in accordingly. What is recognised „as fact" must first be evaluated correctly to make it useful and undertaking.

Other relevant aspect of forecasting is the timing and the question of what can we expect on short-term and long-term. Nowadays we can easily forget what we had in the operating plan or in any forecast which was put together few weeks ago, while key assumption are changing day to day. In spite of annual planning and forecasting quarterly estimates are much more useful and relevant, there is not any reason to plan on a longer term in an ever-changing world.

The previous concerns do not mean that the companies should forget forecasting model, even more these tools are much more important than earlier, but the reliability and quality of key assumption and basic information, and the time range for what we forecast should be considered very carefully during uncertain economic circumstances.

Other practical subject of management accounting

Finally, I am just listing some more practical subjects, which should be in the focus of management accounting during economic crisis because of various reasons.

Budgeting – I should not emphasize how important is to control as much as the company can in difficult situation and reduce spending in any discretionary areas to lessen existing cash-flow needs. While every cents or filler counts, cost management includes not just big cuts, like layoffs or facility closing, but it is also important to pay attention on relatively smaller budget, like travelling restriction.

Proper management and allocation of indirect cost – Cost management is important in general, but it is extremely crucial how the companies handle indirect cost during falling production, while typically these kind of costs can not be reduced with the ratio of volume drop, and proper allocation of them in the unit-cost calculation can result proper decision making according to product portfolio-management.

Price difference, price variance – Continuous monitoring of price differences and variances are also very important, while the fluctuating market prices has significant impact on these numbers. In the pricing process if the company should not analyse actual variances versus the previously set up standards, it can easily result smaller or bigger issues in profitability in a very short period.

Conclusions

I have highlighted some special area regarding to management accounting, which can be more important during these challenging time for decision makers and accountants. Fair value analysis, working capital management and forecasting are crucial tasks for every accountants. Credibility and transparecny never were so important, and accountant have crucial role to ensure them.

References

Ludwig von Mises – Percy L Greaves (2006): The Causes of the Economic Crisis: And Other Essays Before and After the Great Depression, Ludwig von Mises Institute, ISBN 1933550031, 9781933550039

Jorge Asef-Sargent: Economic Crisis: A Road Map for Modernizing the Reporting Model http://economy.aicpa.org/2009/02/economic-crisis-a-road-map-for-modernizing-the-reporting-model.html#

Cost-Cutting: Most Effective Strategy to Survive a Recession. http://economy.aicpa.org/2009/03/costcutting-most-effective-strategy-to-survive-a-recession.html#more

Harvard Business School, On the global economic crisis. http://www.hbs.edu/economic-crisis/

Ajit Kambil: Recession, How Will you play to Win? www.cfo.com

Work organization and economic examination of breadwinning of rurality

Árpád, Ferencz – Rita, Kalmár

Department of Economics Rural Development, College of Kecskemét
Kecskemét, H-6000, Erdei F. tér 1–3. HUNGARY email: ferencz.arpad@kefo.hu

Abstract: Agriculture has been and probably will be a significant branch in the south part of the Great Plain in the future as well. Besides the mass products and in many cases instead of them when forming the agricultural structure, this region has to pay more attention to the branches that were important in the past. Hungarian experts who are famous in foreign countries as well deal with these branches and they provide excellent products. The rules referring to these products are more liberal in the market places of the European Union and their development is not controlled by strict quota systems.

In the south part of the Great Hungarian Plain a lot of unique products of excellent quality are produced. Here in this essay we would like to find the answer to the question how the two significant products of the southern part of the Great Hungarian Plain can provide the families with the income that they can live on. We aim at the economical examination of the cucumber grown in Méhkerék and asparagus of Homok. To do this we will apply the so called Standard Gross Margin.

The agriculture of the states of the European Union is measured with the help of this method. It can also help us in the future to decide whether the different farms belonging to families are economically viable in Hungary.

Key words: unique products, SGM of cucumber and asparagus

1. Introduction

We would like to find the answer to the question how some significant products of Hungary can provide the families with the income that they can live on. I aim at the economical examination of the asparagus, the cucumber. To do this I will apply the so called Standard Gross Margin. The agriculture of the states of the European Union is measured with the help of this method. It can also help us in the future to decide whether the different farms belonging to families are economically viable in Hungary. I make suggestions regarding the sizes of the area, which would be required to provide a livelihood for a Hungarian family.

Agriculture has been and probably will be a significant branch in the south part of the Great Plain in the future as well. Besides the mass products and in many cases instead of them when forming the agricultural structure, this region has to pay more attention to the branches that were important in the past (*Berde,* 2000). Hungarian experts who are famous in foreign countries as well deal with these branches and they provide excellent products (*Juhász* et al., 2006). The rules referring to these products are more liberal in the market places of the European Union and their development is not controlled by strict quota systems. In the south part of the Great Hungarian Plain a lot of unique products of excellent quality are produced

2. Material and method

2.1. The Standard Gross Margin (SGM)

Our calculations were carried out with the help of a method worked out and applied in the European Union. In the European Union the agricultural enterprises have been regularly assessed (since 1966) and comparative data have been given to the decision-making organisations of the Union (*Hajduné* et al., 2007*)*. Because of the number and the variations of the enterprises more than one form of measuring was applied such as the territory of the factory, the number of the employees, the number of the animals bred and the price of the products sold. As it was experienced the achievement of the agriculture in a state could not have been defined by these forms of measuring and by the combination of them. Similar to this they were not sufficient to determine the economic size of an enterprise and to compare the different factories from economic aspect (*Kovács,* 2001).

The unified classification system (the economy typology) was accepted in 1978 that pays attention to two aspects, the type of farming (the structure of production) and the size of the economy. In order to define the economic size the Standard Gross Margin (SGM) was worked out (*Kovács* et.al.,1999). The natural data referring to the structure of the factory cannot say anything about the achievement of the agriculture of a country and they are not good for economic comparing. The size of the factory is defined the best of all by the potential profitable capacity which equals with the

total standard gross margin (SGM) of the particular factory - which is the same as the added value (Agriculture in the European Union 2001, European Commission).

2.2. The calculation of the Standard Gross Margin

According to the regulations of the European Union, in cultivation of plants the costs of the seeds, the propagation, the artificial fertilizers, the insecticides, the heating, the irrigation, the processing, the classification, the packing, the insurance and other variable costs that are connected with the particular production activity have to be taken into consideration among the direct variable expenses. The indirect variable costs are also defined. The variable expenses in connection with the machines belonging to the factory (such as fuel, lubricants, repairing costs) are listed here. These two groups together mean the variable costs of the economy (Hajduné et.al.,2008). It does not include the costs of amortization and the rent of the agricultural land. This method takes into consideration every wages and their complementary costs as constant expenses without paying attention to whether they were paid to the owner of the farm or to a family member or to an employee. The amortization costs of the tangible assets, the rent of the agricultural land and the general costs are referred to as constant expenses.

The SGM1 and SGM2 index numbers can be calculated on the basis of the relations mentioned above.

SGM1 = sales – direct variable cost (direct material costs)

SGM2 = sales – direct variable cost – indirect variable cost (the direct material costs and the direct costs of machine work are deducted from the sales). The SGM2 index number is in fact the gross income (*Ferencz,* 2006).

2.3. The Necessity of Live Labour

The basis of the economy producing unique Hungarian products is to deal with growing plants that assure the costs of living for a long time; can be easily produced in the south of the Great Hungarian Plain, can be easily sold in the market and can be produced by own live labour (*Ferencz,* 2006).

The necessity of live labour has to be determined especially in the harvesting and the selling period. It can be calculated on the basis of detailed producing technology. In this essay we determine the area that a family can cultivate on its own – without employing workers seasonally. If we take a family with four members we calculate with three manpower units. In our earlier research the working days and working hours in cultivation of plants were defined. These data are essential to calculate the necessity of live labour especially when we plan the working peak. In the harvest phase we calculate with 7–10 working hours per manpower units a day. The family can perform 200–250 hours every ten days.

3.Results and discussion

3.1. European Size Units

The economic size of farms is expressed in terms of European Size Units (ESU). The value of one ESU is defined as a fixed number of EUR/ECU of Farm Gross Margin. Over time the number of EUR/ECU per ESU has changed to reflect inflation.

There are five steps in the determining of farm size in ESU.

1. Identify the enterprises present on the farm
2. Determine the scale of each enterprise (hectares or number of animals)
3. Multiply the scale of each enterprise by the appropriate SGM to give the enterprise standard gross margin
4. Sum up the different enterprise standard gross margins for the farm. This gives the farm standard gross margin (i.e. the total of the enterprise standard gross margins for the farm)
5. Define the economic size of the farm by dividing the farm total gross margin by the value of the ESU

As stated above, those farms which exceed a certain economic size in ESU are defined as commercial, and thus fall into the field of observation. However, because of the different farm structures in the European Union, it is necessary to specify separate thresholds for each Member State.

3.1. The Economic Assessment of the Cucumber Grown

The training system for growing cucumber assures bigger quantities and better quality comparing to the plough-land cultivation. The cost of it is 3600–4400 euro per hectare that does not include the farmer's labour. This system can be planned for ten years and can be applied when growing tomatoes as well. A particularity of growing cucumbers intensively is that the size of the desired product is in inverse relation to its yield and average price. The yield is lower if we pick cucumbers every day which are 1 cm–3 cm, 2 cm–5 cm and 3 cm–6 cm big and their price is higher. In the model we plan to pick 3 cm–6 cm and 6 cm–9 cm big cucumbers every two days.

From among the direct variable expenses the costs of artificial and organic fertilizers, pesticides, plants, irrigation and other variable costs were calculated in our project. The direct variable cost of the cucumbers grown on family farms with the help of training system and irrigation is 600 euro per hectare. In our technology 800 euro per hectare varible cost was calculated taking into consideration the running and the repairing costs of the machines of own property. The total variable cost in a year (1.400 euro) was compared to the probable income. The yield can reach 80 tons per hectare in the south of the Great Hungarian Plain if irrigation is applied. The 0,24 euro/kg average price could assure the farm a 19.200 euro income. We must not forget about the fact that

such an intensive planting culture requires 800 euro costs per hectare at the beginning taking only an average data. This cost cannot be taken into consideration among the expenses (according to the terminology of the European Nations). Similarly to this the salary cannot be deducted although the application of live labour is the highest in case of growing plants in the fields.

SGM1 = 19.200 euro income – 600 euro direct variable cost = 18.600 euro/year/hectare

SGM2 = 19.200 euro income – 600 euro direct variable cost – 800 euro indirect variable cost = 17.800 euro / year / hectare.

The need for live labour is the greatest first when planting starts. If own labour is used, the work can be finished in time. The next peak of work appears during harvest when 540 working hours of live labour per hectares are needed. Taking into consideration the number of the working hours, one family can manage 0.51-hectare-post system area without employing working seasonally. The area that can be cultivated by the family on average assures only 9.076 euro SGM.

3.2.The economic Assessment of the Asparagus

The basis of the production is the asparagus plantation, which has a good effect on the farming. After planting there are three or four years without harvest but the field must be cultivated although there is no income and no other plants can be grown meanwhile to utilize the area. The cost of plantation and cultivation is 8.0000 euro in the proportion of 85+5+5+5 every year. Besides this 1600 working hours are needed. The factor cost of one hectare is 10.400–12.000 euro. The length of the period when there is harvest is 6–8 years. The accountable depreciation is 15% a year. During this period the quantity of the yield is not the same: in the first two or three years it is growing, then it is stagnating for two or three years and after that it is decreasing. In this model we calculate with the yield of a stagnating year.

The variable cost of the enterprise is encumbered with almost 220 euro per hectare. This includes the costs of the materials, the artificial and organic fertilizers, the pesticides, the packing and the processing. The indirect variable cost of the farm – according to our survey – is 170 which gives a result of a total 400 euro variable cost. In the south of the Great Hungarian Plain – taking into consideration the areas not abounding in nutrients – we can calculate with a five-tonne average yield per hectare.

The distribution must be calculated with care with a 16 euro/kg – average price. The income is 8.000 euro per hectare. The biggest peak of work appears during the harvest. Taking into consideration the number of working hours 0,97 hectare of asparagus plantation ripening at the same time can be accomplished without employing workers for this season.

SGM1 = 8.000 euro income – 220 euro direct variable cost = 7.780 euro / year / hectare

SGM2 = 8.000 euro income – 220 euro direct variable cost – 170 euro indirect variable cost = 7.610 euro / hectare/ year.

The SGM2 for a 0,97 hectare is 7.390 euro.

4. Conclusions and suggestions

4.1. The Bread Winning Capacity of the Cucumber in Hungary

In order to get the income expected the cucumber should be grown with the help of post system on a 0,72 hectare big area. On such a big area other workers have to be employed during the harvest period for 540 working hours. The cost of it is 780 euro.

This kind of cucumber growing makes it possible for the family to make ends meet. On the basis of the significant export, the market for the cucumber can be said to be steady. The income depends on the Hungarian sale ring and the processing. The cost of introducing the post system is high but the income of the first year can cover this cost on a successful farm.

4.2. The Bread Winning Capacity of the Asparagus Grown in Hungary

In order to get the income expected the pale asparagus should be grown on a 1,66 hectare big area. On such a big area other workers have to be employed during the harvest period for 469 working hours. The cost of it is 680 euro. The kinds of the asparagus make it possible for the family to make ends meet. On the basis of the significant export, the market for the asparagus can be said to be steady. The income depends on the Hungarian sale ring. Because of the frost in late spring it is not recommended to base the whole income of the farm on the asparagus. Other recommended products can be the ones the harvesting time of which is not the beginning of April or the middle of June.

References

Agriculture in the European Union 2001, European Commission.

Ferencz, Á. (2006): Work organization and economic analysis of the postharvest of an unique Hungarian product. International Journal of Horticultural Science. Vol.12. No.IV. 11–15.p.

Berde, Cs. (2000): Changes of Approaches to Management Functions in Agriculture. Zbornik, Vedekych Prac, Nitra, pp. 217–222.

Juhász, Cs. – Cs. Berde (2006): Synchronisational problems in organisational motivation in agriculture. Studies in Agricultural Economics. No. 104. 129–142.p.

Hajdu I-né – M. Nótári (2007): How the costumers judge the food safety of traditional horticultural products? Hungarian agricultural research. Jornal of the Ministry of Agriculture and Rural DevelopmentVol. 16. No 3. 21–23.p.

Hajdu I-né – Nótári M. (2008): Fogyasztói attitűdök vizsgálata a hungarikum jellegű kertészeti- és élelmiszeripari termékek piacán. Acta Oeconomica Kaposvariensis 2008.1.sz. 25–32. p.

Hajdu I-né – Nótári M. (2008): A „hungarikum" termékeket fogyasztók életstílus vizsgálata. Élelmezési ipar. LXII. (2008) 4. sz. 101–105.p.

Kovács G. – Keszthelyi Sz. (1999): A tesztüzemek 1998.évi gazdálkodásának eredményei, AKII Füzetek,1.

Kovács G. (2001): Mérethatárok és lefedettség, Magyar Mezőgazdaság XII. 12.

Health factor in soft drink consumption, German example

Krisztián Lőrinczi

Faculty of Agricultural Economics and Rural Development, University of Debrecen

Abstract: Consumer lifestyle and health are relevant factors to understanding consumption preferences. The number of lifestyle diseases has dramatically increased worldwide. The main cause for these diseases is the change in lifestyle; including a lack of attention to physical activity and good nutrition. Health and lifestyle are important factors by purchase decision process. In accordance with these, I examine the consumer behaviour toward soft drinks with special regards to healthy lifestyle and the state of health. My examinations can be considered mainly as a qualitative research among German students, which can serve as a basis for further analyses and research, however, the conclusions and experience gained from it are worthy of consideration. I differentiated five categories: ice tea, carbonated soft drinks, fruit juices, mineral waters, sport and energy drinks and studied the consumer behaviour toward them. The study focuses on the consumption of these and the factors influencing their purchase with special regards to lifestyle.

Key words: soft drink, health, marketing

1. Introduction

The lifestyle diseases, like coronary disorders, heart diseases, high blood pressure, diabetes or obesity cause the predominant part of all the mortality worldwide. These are such diseases which occur resulting from the way people live their lives. In developed countries and societies, these diseases become more frequent as economic growth starts. (*Bhikha,* 2007)

These diseases are spread especially in the more developed Central and Eastern European countries. Based on previous researches and examining the Hungarian data apply to the association between health indicators and prevalence of food consumption we can ascertain similar results because in this country the lifestyle diseases are responsible for the mortality in a considerable proportion as well. Researches demonstrate that obesity is responsible in many cases for these diseases. In the case of cardiovascular diseases the influence of improper unhealthy eating habit is estimated higher than 30%. (*Szakaly,* 2006)

Obesity and the increase in the number of overweight people represent significant health problems. There are over one billion overweight people in the world and 300 million of them are critically obese. Obesity develops due to the imbalance of energy, caused by too high calorie intake in the long run and/or too low energy use; this is where the question of lack of physical activities should be mentioned as well. With respect to the relationship between lifestyle diseases and overweight, this is a burning problem. (*Nayga,* 2008) The United States is the first in the list, two third of the people are obese or overweight due to the sedentary works not requiring intensive physical activities, people's lifestyles and dietary habits. (*O'Keefe – Cordain,* 2004) According to scientific estimations, the number of obese or overweight people in the USA will be 80%. According to estimations, about 10% of the health system costs in the USA are directly related to obesity and the lack of physical activities. (*Community Health Needs Assessment,* 2001)

These problems became a major topic also in Europe recently, especially in the United Kingdom, where the number of obese people tripled in the last twenty years. (*Mazzocchi – Traill,* 2008) In addition to its social effect, this problem has a serious economic impact, as it results notable costs due to the relationship between lifestyle diseases and obesity. The economic aspects of diseases are the examination of the patients, costs of medication and hospital care, care for people at home and the missed working time. (*Biro – Biro,* 2000)

The costs of the health system can be considerably reduced via reducing the frequency of diseases by popularizing healthy lifestyle and healthy diet.

The increasing wealth of people in the developed countries, the aging of population and the increasing ratio of sick people contribute to the increase of demand for functional foods having beneficial effects on health. (*Jong* et al., 2003)

Food marketing should pay special attention to emphasising healthy nutrition and lifestyle as a result of the lifestyle trends and bad dietary habits. (*Deliza – Rosenthal – Silva,* 2003) Regarding the close relationship between consumer behaviour and lifestyle, the influence of healthy nutrition on purchase decisions should be an important factor in the consumer purchase decision analysis.

Soft drinks have a major role in the intake of liquids and energy necessary for life. A certain level of soft drink

consumption can be part of a proper diet. The potential problems arise from excessive consumption endangering especially children and young people. In addition to the contents of soft drinks, the problem can be the displacing in consumption of other useful foods having an important role in nutrient intake mentioned above.

One of the health-related effects is weight gain due to the high calorie and sugar intake, which can result in overweight and obesity. The actuality and importance were already discussed in the previous chapter. Nowadays, the ratio of overweight citizens is over 80% in the United States and it is 50% in Hungary. (European Commission, 2007) Significant research is performed on the relationships between the soft drink consumption and obesity, most of it is focused on children and the youth who are more endangered and for whom the formation and fixation of improper dietary habits may cause problems later. (*Nestle,* 2000)

2. Material and Methods

I carried out a survey between German students of Hohenheim (Stuttgart). In harmony with the objectives and nature of the research, I did not aim representative results. However, the consumption habits of young people are of determining importance in the formation of opinion about consumer behaviour toward soft drinks and in further studies. I performed a questionnaire survey, the students filled in the questionnaires themselves, which took 15 minutes in average. The final version of the questionnaire was created after several testing on smaller samples and focus group interviews, the results of which called for simpler, more understandable questions and a reduction of the time necessary for filling it in. Of course, the questionnaires were in German to avoid misunderstandings. In the final sample, 210 German students were involved.

In the analyses, relationships were sought between the answers with different statistical methods. In addition to descriptive statistics, I use the cross-tabs method to gain useful information on consumption, consumption influencing factors and demographic data. In addition, other statistical methods are used for several questions. With principal component analysis, I create variables which differentiate the studied sample based on the expectations toward soft drinks and ideas toward soft drink consumption. In relation to this, I differentiate consumer groups, clusters by cluster analysis, this leads to similar conclusions as the principal component analysis.

3. Results

Consumers differ in their expectations toward the ingredients and content of soft drinks. In the next examination, I aim to determine whether consumer groups can be differentiated based on their requirements. I studied the effect of the presence or lack of different characteristics of soft drinks. These characteristics included vitamins, minerals, the amount of calories, sugar content, organic nature of the product and different additional materials which the consumers can expect from the product (e.g. caffeine). For studying this, cluster analysis and principal component analysis are used, where well differentiated groups are sought based on product features.

In principal component analysis, the correlation matrix of the studied variables provides satisfactory results, as the values are high, which means that there is a relationship between the variables, if there were independent variables, the analysis should be narrowed. The corresponding significance values are also acceptable at 5% level and the determinant of the matrix is also appropriate (0.6). By applying the Kaiser recommended Eigenvalue threshold, which keeps only the values higher than one, we kept three components in the model.

The Kaiser-Meyer-Olkin measure of sampling adequacy for the model is 0.75, which is higher than the recommended threshold of 0.5, based on these the principal component analysis can be classified good for studying the problem. The Bartlett hypothesis that the original correlation matrix is an identity matrix is refused at 5% significance level, which is also a satisfactory result.

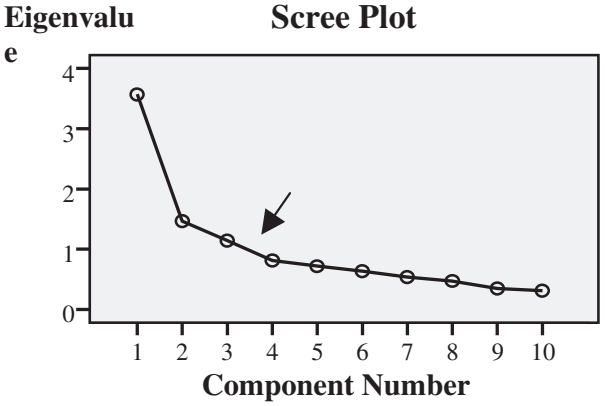


Figure 1: Scree Plot of the component

On the in Scree Plot it can be seen that three independent components are included in the model based on the Eigenvalue threshold. Meaning of the components can be defined as follows: one is a low-energy feature, where the sugar-free nature of the product and the reduced calorie content are of primary importance. According to the second component, naturalness is important, organic products rich in vitamins, minerals, not containing artificial sweeteners or other additives. In the third group, the stimulating materials are of great importance such as guarana, caffeine and taurine contents. These three components explain 61.74% of the total variance of the observed variables, with all Eigenvalues above 1, which can be qualified a good result. Rotation helps to equalize the relative weight of the different components in the model as it can be seen in the table.

Table 1.: Total variance explained by components

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%
1	3.570	35.697	35.697	3.570	35.697	35.697	2.706	27.057	27.057
2	1.465	14.654	50.351	1.465	14.654	50.351	1.750	17.499	44.556
3	1.139	11.390	61.740	1.139	11.390	61.740	1.718	17.184	61.740
4	0.813	8.129	69.870						
5	0.716	7.161	77.031						
6	0.633	6.331	83.362						
7	0.534	5.340	88.702						
8	0.471	4.709	93.411						
9	0.348	3.480	96.891						
10	0.311	3.109	100.000						

Extraction Method: Principal Component Analysis.
Source: Own development

For better understand the achieved factors and the above mentioned three defined main meaning of the components I would present them in rotated component matrix.

Table 2.: Rotated Component Matrix, component explanation

How are you influenced by the following attributes?	Components		
	1	2	3
More vitamin	0.455	0.664	0
More calcium than usual	0.599	0.493	0
Contains fat burner	0.646	0	0.284
Zero sugar only artificial sweetener	0.831	-0.154	0
100% sugar no artificial sweetener	-0.137	0.618	0.470
Low sugar with few artificial sweetener	0.617	0.220	0.222
Low calorie	0.736	0.136	0.154
Organic (BIO) made from natural sources	0	0.752	0.101
contains guarana or taurin	0.181	0	0.847
With caffeine	0.236	0.141	0.785

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Source: Own development

For justifying the results, cluster analysis is made for the variables in which similar conclusions can be drawn via forming three well-defined clusters.

For the analysis, I select the hierarchical method and within this I form the clusters based on the smallest distance between the groups, for measuring the distance I use the squared Euclidean distance. When forming three clusters from the variables, similar clusters are formed as in the above results. One of them can be characterised as low-energy claim, the second shows the natural, organic product features, while the third can be characterized by the importance of the different stimulating materials. The similar conclusions drawn from the two examination methods are meant to increase the reliability of the results.

Healthy lifestyle and its relationship with nutrition and emphasis on these play an ever-increasing role among consumers nowadays. Health as a factor also has an increasing role in analyses of consumer behaviour and accordingly in marketing. For the evaluation of the results, the qualitative and non-representative nature of the examination should be mentioned, accordingly, no far-reaching conclusions can be drawn, however, the results are worthy of consideration and they serve as a good basis for quantitative research. It is not surprising that the consumer decisions are still greatly determined by the price and flavour of the product, but health aspects also have an important role. The consumers involved in the study could be well differentiated based on their soft drink consumption habits and their expectations toward the health factor of the product.

4. Conclusion

Health and way of life play an important role in purchase decision process. In the research we could differentiate three important factor of consumption. According to the meaning of the components can be defined three different expectations: one is a low-energy feature, where the sugar-free nature of the product and the reduced calorie content are of primary importance, second shows the natural, organic product features, while the third can be characterized by the importance of the different stimulating materials.

References

Bhikha R. (2007): The role of Unani in lifestyle diseases. International Conference on "Holistic approach of Unani medicine in lifestyle diseases", Aligarh Muslim University, India, 2007

Biro G. – Biro Gy. (2000): Food-security, Nutrition-hygiene. Agroinform, Budapest, 2000

Community Health Needs Assessment (2001): Poor nutrition & sedentary lifestyle: "The 21st Century Plague", 2001

Deliza R. – Rosenthal A. – Silva A. L. S. (2003): Consumer attitude towards information on non conventional technology. Trends in Food Science & Technology, 2003, vol. 14 pp 43–49

European Commission (2007): Europe in figures: Eurostat yearbook 2006–07. Office for Official Publications of the European Communities, Luxembourg, 2007

Jong N. – Ocké M.C. – Branderhorst H. A. C. – Friele R. (2003): Demographic and lifestyle characteristics of functional food consumers and dietary supplement users. British Journal of Nutrition, 2003, vol.89, pp 273–281

Mazzocchi, M. – Traill, W. B. (2008): A structural model of wealth, obesity and health in the UK. 12th Congress of the European Association of Agricultural Economists, Ghent, 2008

Nayga R. M. Jr. (2008): Nutrition, obesity and health: policies and economic research challenges. European Review of Agricultural Economics, 2008, vol.35, pp 281–302

Nestle M. (2000): Soft drink "pouring rights". Public Health Reports, 2000, vol.115, pp 308–319

O'Keefe J. H. Jr. – Cordain L. (2004): Cardiovascular disease resulting from a diet and lifestyle at odds with our Paleolithic genome: How to become a 21st-century hunter-gatherer. Mayo Foundation for Medical Education and Research, Mayo Clin Proc, 2004, vol.79, pp 101–108.

Szakaly Z. (2006): New directions of nutrimarketing. The Hungarian Journal of Food, Nutrition and Marketing, 2006, vol. 1, pp 3–12

ICT and agritourism in Czech Republic

Zdeněk Havlíček, Václav Lohr, Petr Benda[1]

[1]Department of Information Technology, FEM, Czech University of Life Sciences, Kamýcká 129, 165 21 Praha 6 – Suchdol, {havlicek,lohr, bendap}@pef.czu.cz

Annotation: Tourism is regarded as the world's future. Agritourism is a unique symbiosis of agriculture and tourism. Based on extensive analysis of the state agritourism in the Czech Republic, it was found that information on agritourism facilities is very diverse and disorderly, lacking a specialized portal for agro-tourism. Agritourism facilities in the Czech Republic is several thousand, but most of them have non-quality web sites, or none at all. It should be ensured that entrepreneurs in the agritourism (farmers) had knowledge easily and with minimum cost to present their own small farm on the web, such as using Web content management system (WCMS). It is proposed the new portal solution, which according to the principles of Web 2.0 will provide greater information sharing among the partners in the field of agri-tourism.

Key words: ICT, web 2.0, WCM, Agritourism, Regional development

1 Introduction

Tourism is regarded as the world's future. The tourism in the European Union is one of the largest economic activities with great potential for further growth. In our country is also becoming an increasingly important factor in the development of the economy.

Agritourism is a unique symbiosis of agriculture and tourism. At the same time, the farm provides additional, often non-negligible income. Agritourism allows agricultural businesses to implement part of its own plant or livestock without unnecessary intermediate directly on the farm, such as the sale of food and food raw materials, guest farms [8].

Agritourism is a specific form of local tourism. It allows candidates stay in the agricultural farms and get comfortable with the practical life in the countryside. Visitors can participate in various agricultural activities and learn the traditional rural activities. They can use some of the frequently offered additional services (horse riding, fishing, cycling, etc.).

At present, the supply of rural tourism in the Czech Republic, deals with more than a thousand businesses with a total capacity of several tens of thousands of beds. Agritourism and rural tourism with us deals with several organizations such as ECEAT (European Center for Eco-Agro Tourism). The Union of rural tourism, which is a voluntary, non-professional association of entrepreneurs in rural tourism and other supporters, mandates the Government of the certified farms in the so-called "National system of certification of environmentally friendly tourism services." He is currently in the Czech Republic 120 certified objects.

In the next few years can be expected to further develop agri-tourism. Many people already agritourism gives precedence over traditional holiday by the sea. Using new information and communication technologies (ICT) can extend the awareness of agri-tourism opportunities and to create web environment for the involvement of the small farms in the supply of tourism opportunities.

2 Objective of work and methodology

The aim is to analyze the current state of use of ICT in the field of agritourism in the Czech Republic. The selected micro-regions were examined what information is on web (portals region, sub-catalogs) and what farms use to promote their activity in practice (other media: regional press, Zlaté page print ad, a tourist center).

Within the selected regions was collected information on individual objects, which are involved in agro-tourism (farms, ranches, houses, riding school, open-air museums, etc.). Were recorded following specific information:

- Coordinates (width, height), address, phone, photo, link to the web,
- Characteristics of the services offered: for how many people, the period of operation, availability of transport, meals,
- Follow-up services and options in the vicinity: cycling, attractions of the surroundings, etc.

Based on the results of the analysis is designed to create a new interactive mapping portal, which will use web 2.0 technology to support the development of agri-tourism.

3 Results

In 2008, the state of agri-tourism has been identified in the Czech Republic. In the first phase (March – December 2008) to ensure the 118 sub-analysis of several tens of micro-

regions and the Czech Republic and was obtained a database of characteristic data about 459 agri-tourism facilities. In the second phase (October – December 2008) it was 112 the sub-analysis and was obtained data on other 365 objects.

The results can be presented by distinguishing four levels: national, regional, micro-regions and agri-tourism objects, ie. farm.

3.1 National level

Portal aimed at tourism in the Czech Republic is a large number, but a specialized portal for agro-tourism in the Czech Republic is not yet. The government agency CzechTourism www.czechtourism.com Portal provides information in several languages on tourism opportunities in the Czech Republic. When entering the words "agritourism" appears only 10 references to the farm, which are involved in agro-tourism. Better results may be obtained from the portal www.kudyznudy.cz that frame of Czech Tourism. You can search by type of activity (eg, stay on the farm) and by region.

The Association operates a rural tourism portal www.prazdninynavenkove.cz/. According to the operator sites are selected accommodation facilities to cope with a sense of "Holiday in the countryside". Can be found rural estates, cozy cottage with secluded garden and forest camps. Most rural accommodation facilities offered meets the standards of rural tourism Association, approved by the Ministry for Regional Development.

Further information can be found in specialized travel agencies, such as http://www.nafarmu.cz, http://www.eceat.travel/fx/cz/, http://www.atic.cz. Some deal with agro-tourism not only in the Czech Republic, but their scope extends to the countries of the European Union.

The agricultural specialist portals like www.agris.cz, you can find various articles related to agri-tourism.

International agro specialized portals such as French www.bienvenue-a-la-ferme.com, brings far more comprehensive look at the possibilities of agri-tourism in the country.

3.2 Regional level

The Czech Republic is divided into 13 regions and the capital city of Prague. Many interesting information on the activities in these regions has http://www.risy.cz/ portal - Regional Information Service (RIS), administered by the Center for Regional Development Czech Republic.

Fig. 1 Administrative division of the Czech Republic and detailed micro-analysis

Each region has its official site, but no does not directly agro-tourism. Eg. Portal Central Bohemia Central Bohemia, the www.kr-stredocesky.cz, find a single mention or reference devoted agroturistice. The only thing the visitor can learn here, is the further development of tourism in Central Bohemia.

The regional information centre for agriculture and rural development are not agro-tourism. Only www.kis-stredocesky.cz provides several references to various objects and Agro providing accommodation facilities, but most information is more historical nature.

3.3 Micro-regions level

Micro-regions purpose is communities. The level of agri-tourism in the micro-regions is different, and its support is very different. There are a number of web site, which are narrowly focused on issues of the region, such as at http://www.posazavi.com find links to many interesting tourist options in Posáza ví. The situation is best documented in the micro authentic communication of five respondents from different regions of the Czech Republic *[see Figure 1]*.

1. Vltavotynsko (Southern Bohemia): "From the analysis of information sources that the microregion Vltavotýnsko in terms of agri-tourism is mainly dedicated to horse riding. Availability of information in particular on the local information sources easily obstructed and it is necessary to further explore these web pages. Drawback is also found inconsistencies in the information within one information source, and graphical and / or information."[5].
2. Kdynsko (Pilsen Region): Region with a rich history and strategic location in the Czech-Bavarian border is interesting for tourists with many natural and cultural monuments, and has an attractive potential for the development of agri-tourism. Advantages of this region, but have not yet been sufficiently exploited, and for his full recovery, there are significant reserves. Fast-growing industry is currently hippoturistika. After viewing the web promotion of the region and other promotional material must state that there are in this large reserve, and both offer, as well as promotion is in many buildings and systematic enough. "[1]
3. Teplicko (Ústí nad Labem): "The region is rather industrial region, but elements of agriculture can be found here. The dominance of industry in the region, however, does not preclude the possibilities of agri-tourism. There are several in the district of Teplice. Unfortunately, it is not easy to determine, through the Internet for details. Potential candidates from the ranks of ordinary computer users, unless they have enough patience to search in the Internet, find almost nothing. There is a page where a summary would be agritourism opportunities in the district of Teplice, and unfortunately often do not work or links to the various agro tourist interesting places. Disappointing, the traditional Gold page. "[9]

4. Zdarsko (Highland): "Search for information about agritourism Žďárské is to look like a needle in a haystack. Only aggregate information in a brochure on the horse stations. If the agroturistice information in this region appears, is fragmented and the majority are part of another kind of offer (accommodation, tourism, recreation, etc.). It should be a total of complicated search through links to various tourist sites and information. Even less information is at the urban sites, which focus primarily on the links mentioned in the tourist and accommodation portal, offering the best private accommodation. "[4]
5. Slovacko (Southern Moravia): "Web sites provide enough general information on agritourism, only a few objects is your site to regional sites are listed only the address and telephone connections. They also provide general information tourist information centres. From my own experience I know that in many objects is very difficult to obtain contact information without personal visits. For more agritourism development would be appropriate comprehensive database targets the basic characteristics of agri-tourism and better information in other media (eg television, radio, magazines, etc.). "[7]

3.4 Objects agrotourism

Agri-tourism facilities in the Czech Republic are several thousand. Most of them are not involved in the Association of rural tourism (www.svazvt.cz), which brings together the 130 entrepreneurs, which is about 5% of the total number of entrepreneurs in rural tourism. From the investigation indicates that approximately 1 / 3 of objects has developed web pages very well. Eg. MoraviaNorth Region increased from 44 evaluated web settlements received good evaluation of 15 objects [3]. Roughly 1 / 3 of objects involved in the agro-tourism has its own web presentation (eg Rakovník it was found that only 9 objects from 14 has its own web site, in the region of Prachatice only five out of 11 objects has its own web site).

3.5 The proposed solution in terms of ICT

Based on the analysis of the team focuses on two distinctive levels: at their own facilities and agri-tourism at national level.

The draft resolution for objects agritourism

It should be ensured that entrepreneurs in the agri-tourism (farmers) had knowledge that can be easily and cost to present their own small farm on the web. Examples of solutions can be use WCM (Web Content Management) system of WordPress, which allows relatively easy to create a website. More detail [2].

As is clear from the analysis, it is very difficult to find using search engines website farms. We recommend to use technology optimizing existing web pages for search engines so-called SEO (Search Engine Optimization) and adjusted according to the site.

Fig. 2 Presentation of the farm in WCM WordPress

The draft resolution on the national level

The current ICT allows the establishment of non-agro-tourism portal for the communication platform for both users and operators of agri-tourism, which will be centrally concentrated all available information in the field and links to other useful sites.

Authors are preparing the implementation of non-commerce mapping portal for the promotion of agritourism in the Czech Republic (agroturistika.czu.cz). Custom programming solutions using web 2.0 technologies such as Google Maps. Samples of the prepared solution is in *Figure 3 and 4.*

Fig. No. 3 Map portal - objects agrotourism

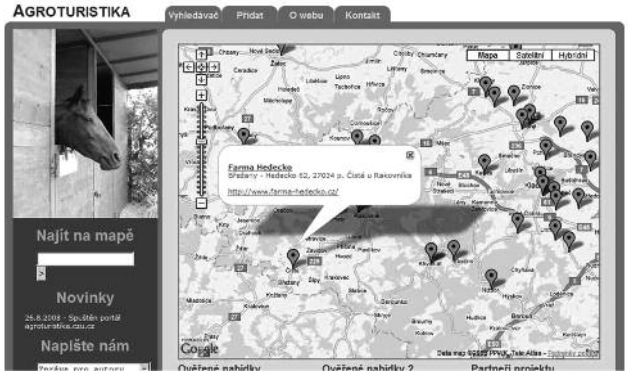


Fig. No. 4 Map portal - link to search the farm

We expect that it will be possible to use the so-called long tail effect [6]. This will promote its own tourism, both easier map navigation object Interest in the region, as well as better information about individual objects. Each candidate will have the opportunity on the basis of multi-user system to add data of its own object in a database. After verifying the accuracy of the building included in the mapping portal.

4 Discussion

In the field of tourism in the Czech Republic there are too many players and summarized the results obtained in 1200 from the page background is very difficult. Search agritourism objects is quite complicated, such as the transition from one region to another. The potential client must itself seek information and contacts for operators who are engaged in agro-tourism, or must go to a travel agency, but there is not even sure that will find exactly what you seek.

For information on agritourism in a region can get, but sometimes quite complex search different accommodation pages. Farm, farms, guest houses and ranches in rural areas also offer varying degrees in the agro-tourism, agro-tourism in some consider only accommodation on the farm (farm), where appropriate, opportunities for children to play with pets, some have a horse, elsewhere, it is possible to participate and work on the farm and live on good food grown or produced (eg, goat cheese).

Unlike Western Europe, where tourism has been largely popular with people of all ages, in the Czech Republic is the area of tourism is a marginal issue. Can we believe what is the cause. One of the options, why Czechs didn't prefer this sector is that the Czech man is very close to the countryside, also owned recreational property in the country is a matter of routine.

Agrotourism is optimal for smaller farms, allowing them to obtain additional funds in the place of business. At present, offers the following services business around thousand beds with a capacity of about ten thousand. The Czech Republic has some regions as ideal for agritourism. Sumava with vast forests and clean air, South Bohemia with the large network of ponds and many natural monuments, South Moravia with a warmer climate, a typical Moravian folklore and tourist facilities and the Highlands with clean air and the amount of forests.

Information on the number of tourists who are for this type of tourism in the Czech Republic decide to statistically tracking. According to the Association of rural tourism (www.svazvt.cz) are registered each year about 100 thousand. overnight stays and 32 500 visitors. The whole sector of rural tourism tipu numbers of 10–20x higher. This number is only about 1% of the total number of foreign tourists, who in 2008 visited the Czech Republic. A major problem is that the farm owners themselves, and objects to seek their places much more visible and present it at www.

It should be emphasized and the importance of civic activities, such as the Local Action Group Rakovnicko (MAS), which is the appellant, the first horse trails in the region and seeks to promote the involvement of farmers in agri-tourism.

The development of more farms to rural tourism lacks enough money and experience. In the future, however, expected that the development of agri-tourism will be supported by financial resources, mainly from EU funds. The aim will be to steer economic development in this area closer to sustainable development.

5 Conclusions

Agritourism, as one of the options business in the country, is gaining increasing worldwide popularity. This trend is gradually promoted in the Czech Republic. Agritourism and village tourism, helping to tackle some of the problems of rural areas, such as unemployment, the maintenance of cultural landscape features, reduce the migration of rural population, etc.

Promotion of agritourism, information on objects is very diverse and disorderly. It prepared a new portal solution, which will promote greater information sharing among the partners in the field of agritourism. The use of so-called long tail effect for small farmers. This site should allow the easy option for the client in the search for suitable premises and operators (farmers) should be able to easily input data on accommodation, etc.

According to the information obtained can be assumed that the number agritourism farms will grow in the Czech Republic that will still achieve a better standard and that its guests will be in addition to local visitors and foreign visitors not only from Europe but also around the world. This intention should be to promote quality use of ICT.

This paper was elaborated within the framework of solution VZ MSM 6046070906 "Economics sources of Czech agriculture and their efficient use in the context of multifunctional agri-food systems".

Reference

Dirriglová, J. Analýza agroturistiky – mikroregion Kdyňsko. PEF ÈZU v Praze 2008. (nepublikováno)

Havlíček, Z., Benda, P., Tesar, S.: Prezentace farem na www. In Firma a konkurenční prostředí 2009. PEF MZLU Brno.

Havlíček, Z.; Lohr, V.; Benda, P.; Tesař, Š. ICT a agroturistika, 2008, ISBN 978-80-213-1813-7, Praha, In:Agrární perspektivy XVII, PEF ČZU v Praze, s.617–620.

Kazdová H.: Analýza agroturistiky (ekoturistika, ekoagroturistika) regionu Žd'ár nad Sázavou. PEF ČZU v Praze 2008. (nepublikováno)

Macháčková P.: Agroturistika ve vybraném mikroregionu – České Buděovice (Vltavotýnsko). PEF ČZU v Praze 2008. (nepublikováno)

Pavlíček, A. *Nová media a web 2.0.* VŠE v Praze, nakladatelství Oeconomica, Praha 2007. ISBN 978-80-245-1272-3.

Pavlíčková, G.: Mikroregiony Pálava a Slovácko. PEF ČZU v Praze 2008. (nepublikováno)

Pourová, M. Agroturistika. PEF ČZU v Praze 2002. ISBN 80-213-0965-2.

Šimková J.: Informace o agroturistice na Teplicku. PEF ČZU v Praze 2008. (nepublikováno)

Examining some fields within human resources management

Erzsébet Dienesné Kovács, Éva Gergely

University of Debrecen Faculty of Agricultural Economics and Rural Development
Department of Management and Labour Sciences

Abstract: Human resources management is one of the management functions, dealing with people as the essential resource of the organization. This function aims at the most efficient usage of employees in order to realize both organizational and individual goals. Nowadays high significance is attributed to human resources management, since the human factor is the resource that determines the success of an organization. The results of a company are in proportion with the knowledge and talent of the people on its payroll. Human talent and knowledge can be utilized to the greatest extent in case management is able to motivate employees to meet not only the necessary requirements but also to achieve the highest possible results.

Human resources management consists of several fields of activities, among which the following are the most important: analysis, planning and assessment of the scope of activities, human resources planning, workforce supply, performance assessment, motivation, developing human resources, labour relations, labour safety, HEM information system.

Our studies cover a few fields within human resources management. Our research has been carried out at organizations in Hajdú-Bihar County. The study is based on questionnaires, which have been processed by computers and evaluated using statistical methods.

Key words: human resources management, corporate resource, individual goals, corporate success, fields of activities in human resources managementent

Introduction

We introduce the motivation, training and development and selection from the area of human resource management that we examined in organizations situated in Hajdú-Bihar County. The reason of our choice of subject is that the human resource management got into the centre of interest also in Hungary lately.

Selection is essentially both a prediction exercise and a decision-making exercise. In the prediction exercise, the manager is predicting which applicant will be successful on the job is hired. The manager is also undertaking a decision-making exercise-choosing among choices. It is important to always keep in mind that the manager is selecting the person who can best meet the needs of the organization.

Training and development is important to ensure that people continue to learn skills, etc. to help the company be successful. Employee training is a learning experience that seeks a relatively permanent change in employees such that their ability to perform at their current job improves. This may mean changing what employees know, how they work, or their attitudes toward their jobs, co-workers, managers, and the organization. Management is responsible for deciding when employees are in need of training and development and what form it should take (*Robbins* et al., 2005).

The work of managers is to ensure that staff work efficiently in an organisation. To achieve this, it is clear that managers must know what motivates people. By understanding the factors influencing motivation, they can create the conditions in which employees will perform to their maximum potential (*Cotton,* 1999).

Literature

Human resources management is one of the management functions, dealing with people as the essential resource of the organization. This function aims at the most efficient usage of employees in order to realize both organizational and individual goals (*Gyökér,* 1999). Its most important components are demonstrated in *figure 1.*

Figure 1: The most important components of human resource management
Source: Robbins et al., 2005

Our studies focus on three main fields: recruitment, selection, motivation and developing human resources.

Recruitment and selection is a process comprising more steps, and its complexity, time scope and costs are determined by the number of applicants, the importance and the features of the position. The final phase of the recruitment process is the identification of the most suitable candidates. It is not only the existing knowledge and skill that determine who will be selected for the given position, but also the candidate's development potential, their aptitude to adjust to the corporate culture and already evolved behaviour patterns. One of the most significant and time consuming management tasks is the selection of the appropriate workforce, since this decision can determine the organization's ability to develop, flexible adaptability and efficiency (*Berde* et al., 2003).

Identifying the above mentioned criteria is such a process during which the information in the description of the scope of duties is used as a tool to determine what features are necessary for the candidate to be able to complete the tasks required by the position in a successful way. Working out the hiring criteria is a critical step prior to the recruitment process, since it is necessary to identify what type of person is ideal for the position. The list of requirements is such an indicator that provides those desirable features and skills that are inevitable for the organization (*McKenna-Beech,* 1998).The vacancy is filled either by internal relocation or by external advertising. Internal advertisement is often a human political principle, since it enables internal mobility and career building for the employees of the organization (*Gyökér,* 1999).

In the literature of management theory motivation means a management tool via which a leader can force others to immense in such activities that bring about results expected at the organization level. In this sense it can be stated that the leader motivates his/her subordinates (*Bittner,* 2002). *Figure 2* illustrates the basic model for motivation.

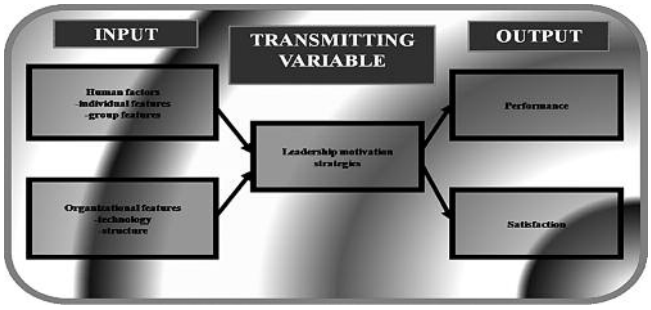


Figure 2: The basic model of motivation
Source: Tosi et al., 1986

Among input factors individual needs and skills are to be emphasized, which determine the interests of the individual. The interest is a conscious need that by adequate strategy can be transformed into such an interest that fits the organization's goals, therefore it guarantees the harmonization of individual and corporate needs (*Tóthné S. G.,* 2000). The subject of motivation is the employee, while the motivator is the person who can exert motivation on others, provide them with support in achieving their goals, help them be successful by offering incentives and creates a pleasant corporate atmosphere encouraging efficient working. Such a corporate atmosphere is to be created in which the employees are in harmony with themselves, with their superiors and with each other and believe that in addition to the interest of the team their own interests can be fulfilled as well. Good motivators are described by supportive, helpful behaviour and well based, but not excessive enthusiasm (*Karoliny M.-né* et al., 2004).

Nowadays we experience such global changes that exert forcing influence on corporations making changes inevitable. Such global changes are the harsher and harsher competition, the acceleration in technological developments, changes in workforce (within its composition and qualifications), changes in ownership rights and transformations in organizational structures. These factors exert a major influence on the necessity to develop human resources. In implementation positions it is the development of technical and technological skills that are required, while in managerial ones leadership skills are to be perfected. More significance is attributed to the improvement of communication, to the perfection of analytical and decision making skills at all levels of the organization, especially in managerial positions. In order that companies can meet these requirements, consciously constructed development programs are necessary (*Gyökér,* 1999).

Materials and Methods

The surveys were performed by means of questionnaires and interviews in organizations situated in Hajdú-Bihar County. We applied questionnaire survey to collect data, or rather made deep interviews; we talked personally with more employees as well. We processed the gathered data by computer and visualized graphically. We also did examinations by using statistic methods (SPSS), by which we were able to get to know the certain organizations deeper and thus it was possible for us to reveal more connections.

Surveys, Results

One of the most significant and time consuming management tasks is the selection of the appropriate workforce, since this decision can determine the organization's ability to develop, flexible adaptability and efficiency. By processing these parts of the questionnaires insight can be gained into what recruitment methods are applied by the examined organizations, what tools are used in the selection process and what requirements employers have concerning the candidates.

In *figure 3* those recruitment methods are illustrated that are applied by the examined organizations.

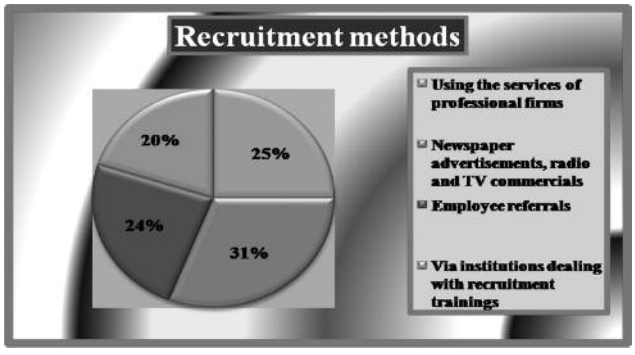


Figure 3: Recruitment methods
Source: Individual compilation of data

In case of 31% of the examined organizations advertisements are used to hire new workforce, while in case of 24%, the recommendations of colleagues are taken into consideration. This is called employee referral, which can prove to be a very practical method, since an employee who is already working for the company is likely to recommend such a person whose workload and performance he is aware of and is certain about the fact that the person he/she has recommended would fulfill the expectations. In similar proportions (25%) the services of professional firms are used. Job centres, counselling agencies, headhunter firms and workforce hiring agencies belong to this category. Institutions dealing with recruitment trainings are used in case of 20% of the examined organizations. The major advantage of this method is the fact that the leaders of such organizations meet more and more potential employees at job fairs and open days.

In *figure 4* those preferred requirements can be seen that are considered important by organizations. The most important requirements concerning would-be employees are ranked on a scale ranging from 1 to 5.

Figure 4: Requirements
Source: Individual compilation of data

All requirements have been considered important, since high scores have been assigned to all of them. The least points have been allocated to adaptability (2.76), the other skills have been given higher scores. The highest scores have been allocated to qualifications and suitability.

During our studies on motivation special attention has been devoted to the motivating effects of subsidizing further education and training opportunities. The fact that an employee considers and starts such a program may have different reasons. *Figure 5* illustrates the percentages related to the incentives for further education programs.

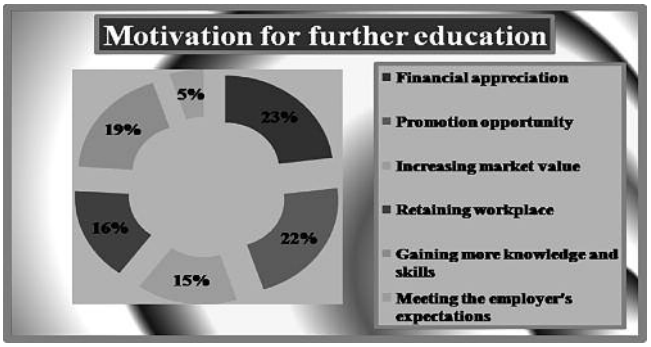


Figure 5: Motivation factors in further education programs
Source: Individual compilation of data

All reasons have been considered as motivating factors. It is conspicuous that financial contribution is the strongest motivation factor, nevertheless, it is obvious based on the illustration that there is no major heterogeneity between the different factors. Except for meeting the demands of employers, similar results have been gathered among employees as well. In this case it can be concluded that if organizations are to develop their employees, it is certain that such initiatives will be successful, since employees react in a positive way and are ready to develop, supposing the adequate means of motivation have been applied.

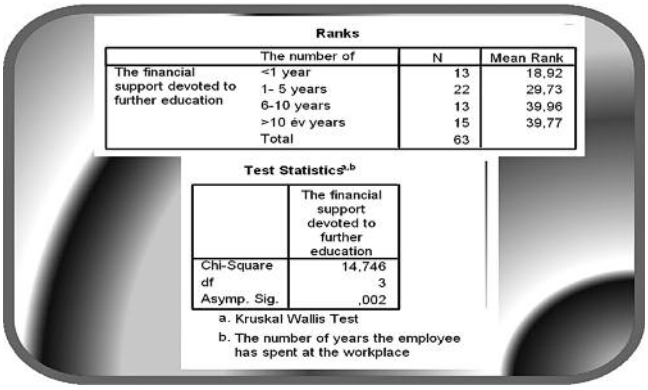
Figure 6 illustrates how employers support the further education of their employees.

Figure 6: The amount of employer's financial support in subsidizing further education
Source: Individual compilation of data

41% of employees are not only allowed to be absent for the time of the training, but they receive financial support as well. The question arises, what influences managers to support an employee in completing his/her further education program. It is worth examining if the number of years spent at the particular workplace has any influence on the decision. The Kruskal-Wallis test has been applied among the descriptive statistical methods. Therefore the zero hypothesis

is the following: there is no difference between the number of years spent at the workplace and the amount of financial support devoted to further education. In other words, when offering financial support to the employee who is about to study, the leader does not consider the amount of time the employee has spent at the organization.

Table 1: Correlation between the financial support devoted to further education and the number of years the employee has spent at the workplace



Ranks

	The number of	N	Mean Rank
The financial support devoted to further education	<1 year	13	18,92
	1- 5 years	22	29,73
	6-10 years	13	39,96
	>10 év years	15	39,77
	Total	63	

Test Statistics[a,b]

	The financial support devoted to further education
Chi-Square	14,746
df	3
Asymp. Sig.	,002

a. Kruskal Wallis Test

b. The number of years the employee has spent at the workplace

Source: Individual compilation of data

The significance rate is 0.002, consequently the zero hypothesis can be ignored and it can be stated the number of years spent at the workplace does determine whose further education program will be subsidized by the leaders. The rank correlation indicates that especially those employees receive financial support in their studies who have been working for the organization at least for 6 years. This can be attributed to the fact managers tend to trust these employees better, and consider such support a long term investment, which should be allocated to such employees who have already proved their loyalty.

Conclusion

Our examinations have been conducted via applying questionnaires. Our research has focused on the fields of recruitment, selection and developing human resources. The organizations participating in the survey have applied different hiring processes and have formulated a wide range of requirements concerning the applicants. Nowadays an applicant needs to meet a number of criteria in order to be able to be successful. All requirements demonstrated in our research play a major role. Nevertheless, those factors that have been given the highest scores should be highlighted, namely qualifications, suitability for the tasks, ability to work under pressure and independence.

Regarding motivation further education programs have been described as possible incentives at the examined organizations. Most employees are encouraged to complete further education programs because this way they are likely to gain higher financial compensation or be promoted. The fact that 41% of managers working at the organizations participating in this survey do not only allow employees to attend education programs but also support them financially is remarkably positive outcome. Applying the SPSS statistical program it has been proven that leaders prefer to subsidize the education programs of those employees who have been employed by the company for a longer period of time (at least 6 years). Consequently, our hypothesis has been proven.

Successful companies are aware of the fact that their efficiency is proportionate to the knowledge and know-how of their employees. Good quality human resource management serves the realization of corporate goals, namely reaching the desired level of corporate performance.

Bibliography

Berde Cs. – Dajnoki K. – Dienesné K.E. – Gályász J. – Juhász Cs. – Szabados Gy.: 2003. Vezetési gyakorlatok és esettanulmányok. Debrecen, Debreceni Egyetem Agrártudományi Centrum Agrárgazdasági és Vidékfejlesztési Kar Vezetéstudományi Tanszék

Bittner P.: 2002. Humán menedzsment. Veszprémi Egyetem Szervezési és Vezetési Tanszék

Cotton, D.: 1999. Keys to management. Addison Wesley Longman Ltd, Edinburgh, 90. p.

Károliny M.-né – Farkas F. – Poór J. – László Gy. : 2004. Emberi erőforrás menedzsment kézikönyv. Budapest, KJK-KERSZÖV Jogi és Üzleti Kiadó Kft.

McKenna, E. – Beech, N.: 1998. Emberi erőforrás menedzsment. Budapest, Panem Kft.

Gyökér I.: 1999. Humán erőforrás menedzsment. Budapest, Műszaki Könyvkiadó

Robbins – DeCenzo – Stuart-Kotze – Stewart: 2005. Fundamentals of management, Fourth Canadian Edition, Pearson Education Canada

Tosi, H. L. – Rizzo, J. R. – Carrol, S. J.:1986. Managing organizational Behavior. Cambridge. Ballinger Publiching Co.

Tóthné S. G.: 2000. Humán erőforrások gazdaságtana. Miskolc, Bíbor Kiadó

The institutional determinants of bilateral Agricultural and food trade

Štefan Bojnec[*] and Imre Fertő[**]

[*]*University of Primorska, Faculty of Management Koper*
[**]*Institute of Economics, Hungarian Academy of Sciences*

Abstract: The paper investigates the effects of the institutional determinants on trade in agricultural and food products among the OECD countries using a gravity model approach. We focus on the impact of the quality of governance and the similarity of institutions in explaining variation in bilateral agricultural and food trade patterns. Results confirmed the separate effects for the institutional similarity and the institutional quality on trade patterns. The institutional similarity has positive and significant impact on trade in a similar institutional framework for agricultural, but less for food products. The institutional quality has significant positive impact on trade in both agricultural and food products for importing countries.

Key words: Institutions; international trade; gravity model.

1. Introduction

Recent research emphasises the impacts of institutions on transaction costs in bilateral international trade (e.g. *Anderson and Marcouiller,* 2002; *Dollar and Kray,* 2002; *de Groot* et al., 2004; *Francois and Manchin,* 2006; *Depken and Sonora,* 2005; *Levchenko,* 2004). Expect by *Olper and Raimondi* (2007), the research on the effects of institutions on bilateral agricultural and food trade is neglected. This paper aims to contribute to literature in three ways. First, we employ extended gravity model to investigate the effect of the quality of institutions on agricultural and food trade, respectively, which so far has been neglected in literature. Second, we investigate the effect of the institutional similarity of governance on agricultural and food trade and the bilateral influence of institutional distance on patterns of agricultural and food trade, respectively. Third, we employ the estimations using two-step *Heckman* (1979) model and the estimations for the general quality of institutions applying a composite index for agricultural and food trade.

2. Methodology and data

The estimating the gravity model and assessing trade patterns on the basis of the empirical results has been a subject to several econometric challenges. We concentrate on two problems. First, several research papers have argued that standard cross-sectional methods yield biased results because they do not control for heterogeneous trading relationships. Because of this, these papers introduced fixed effects into the gravity equation. Although the arguments underlying the use of fixed effects as a solution to unobserved heterogeneity are roughly the same in the literature, there is little agreement about how to actually specify the fixed effects. For our purposes, we cannot use both fixed importer and exporter effects in our panel regressions. This is because we want to conduct analysis with time-varying country-specific variables related to institutions, which preclude the use of time-varying country dummies. Instead, we include time specific and partner (exporter) country specific dummies. This forces us to include variables that are likely to be important determinants of the reduced-form exporter effects dummies in standard gravity equation. From the gravity literature, we expect trade flows to be a function of importer and exporter income size, as well as of determinants of bilateral trade costs like distance, common border, and common language. We also include variables of specific interests. These are measures of institutional aspects of importers and exporters that we expect to impact on trading costs.

Second issue is how to deal with zero-valued bilateral trade flows. Recent papers use Heckman sample selection model to deal with zero values (*Francois and Manchin,* 2006; *Linders and de Groot* 2006) arguing that the sample selection model is preferred both theoretically and econometrically. This approach is also applied in this paper.

Traditional gravity trade theory points that bilateral trade to be positively associated with their national incomes and negatively associated of their geographical distance. We apply standard gravity model variables including market size (real gross domestic product (GDP) of host and destination countries from the WDI database), geographical factors like the distance between capital cities and common border (from the CEPII database), cultural linkage (common language), and dummy for Regional Free Trade Agreement (RFTA)

membership as explanatory variables. Particularly, we are interested in at the role of institutions in agricultural and food trade, respectively. We specify the following empirical gravity model:

$$\ln X_{ij,t}=\alpha_0+\alpha_t+\alpha_i+\alpha_1 \ln GDP_{i,t}+\alpha_2 \ln GDP_{j,t}+\alpha_3 \ln GDPCAP_{i,t}+\alpha_4 \ln GDPCAP_{j,t}+\alpha_5 \ln DIST_{ij}+\alpha_6 CONTIG_{ij}+\alpha_7 Language_{ij}+\alpha_8 RFTA_{ij}+\alpha_9 Governance_{it}+\alpha_{10} Governance_{jt}+u_1 \quad (1)$$

and for the selection estimation we assume that $X_{ij,t}$ is observed when we have:

$$\ln X_{ij,t}=\beta_0+\beta_t+\beta_i+\beta_1 \ln GDP_{i,t}+\beta_2 \ln GDP_{j,t}+\beta_3 \ln GDPCAP_{i,t}+\beta_4 \ln GDPCAP_{j,t}+\beta_5 \ln DIST_{ij}+\beta_6 CONTIG_{ij}+\beta_7 Language_{ij}+\beta_8 RFTA_{ij}+\beta_9 Governance_{it}+\beta_{10} Governance_{jt}+u_2>0 \quad (2)$$

In equations (1) and (2), u_1 and u_2 have correlation ñ. Equation (1) assesses the determinants of the bilateral trade and shows the main factors influencing the amount of trade that occurred between the two trading partners. Equation (2) sets out the selection criteria and provides information on the factors that determine whether or not we observe trade between country pairs. $X_{ij,t}$ is country i exports to country j at time t.. The trade data are supplied by the OECD Bilateral Trade Database at the two-digit level of the ISIC in US dollars. We use data for the agricultural goods and food products separately. The sample contains 29 OECD countries[1] between 1995 and 2003 resulting 7,308 observations.

GDP is a proxy for the market size, and GDPCAP is the per capita GDP, which is a general proxy for economic development for both exporter and importer countries. The distance between i and j ($DIST_{ij}$) dummies reflect whether i and j share: a land border ($CONTIG_{ij}$), their primary language (Language), and membership in a RFTA. The variables of particular interest are the level of subjective institutional quality (Governance).

Our data set includes indices produced by the Fraser Institute for institutions. The institution indices are from the 'Economic Freedom of the World' (EFW) database. The EFW indices are themselves based on several sub-indices designed to measure the degree of 'economic freedom' in five areas: (1) size of government: expenditures, taxes, and enterprises; (2) legal structure and protection of property rights; (3) access to sound money: inflation rate, and possibility to own foreign currency bank accounts; (4) freedom to trade internationally: taxes on international trade, regulatory trade barriers, capital market controls, difference between official exchange rate and black market rate and similar; and (5) regulation of credit, labour, and business. The each index ranges from 0 to 10 reflecting the distribution of the underlying data. Notionally, a low value is bad, and a higher value is good. We employ indices for 1995, 2000, 2001, 2002 and 2003, with interpolated values for years without values. All aspects of governance are interrelated, thus the indicators are highly positively correlated. For that reason, we treat them separately in the empirical analysis, including one dimension of governance in the equation at a time. Using too many indicators simultaneously results in serious problems of multi-collinearity. In addition, we use a composite indicator of institutional quality (*institute*), which captures the overall quality of governance in a country. The simple arithmetic average of the scores on the each separate indicator serves as a composite indicator that reflects overall quality of governance.

3. Empirical results: the role of institutions

Following de *Groot* et al. (2004), we present our results in two steps focusing on the explanatory role of institutional quality and institutional homogeneity for the intensity of bilateral agricultural and food trade, respectively. First, we focus on the explanatory role of *institutional quality*. We expect that better quality of the institutional framework reduces uncertainty about contract enforcement and general economic governance. This leads to reduction of transaction costs both directly via the increase in the security of property and indirectly through the increase the level of trust in economic transactions. Second, we investigate the role of homogeneity of institutions in international trade. We may argue that the bilateral familiarity and thus institutional homogeneity of trading partners with similar norms of behaviours and institutions both formal and informal in doing international trade business increase compatibility and trust, reduces adjustment costs and insecurity in international trade. In other words institutional homogeneity is an additional factor affecting relative transaction costs as an explanatory factor in bilateral trade.

The effects of *institutional quality* on bilateral agricultural and food trade, respectively, are presented in Tables 1 and 2. The each model specification includes an indicator for the perceived quality of a country's institutional framework. The variable relevant for the each specification is given in the column headings. The significant inverse Mills' ratios confirm the existence of selection bias for all specifications, thus we focus on the probit model results. *Table 1* confirms that the impact of the institutional quality varies according to the direction of theoretical association and statistical significance for primary agricultural products. In the case of exporting countries, the impact pertained to the institutional quality is found to be positive and statistically significant only for the model specifications with variables for the sound money and to a lesser extent for the composite indicator of the overall institutional quality of governance. On the other hand, coefficients of the institutional quality are positive and significant in the case of importing countries, except for the sound money. Moreover, the estimated gravity models indicate that the size of GDP has negative impact for importing

[1] List of countries included in the data sample: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, South Korea, Mexico, the Netherlands, the New Zealand, Norway, Poland, Portugal, Spain, Slovakia, Sweden, Switzerland, Turkey, the United Kingdom and the United States of America.

Table 1 Heckman selection model estimations for agricultural products

	government size		legal system sound money				tariff		regulation		institute	
	OLS	probit	OLS	probit	OLS	probit	OLS	probit	OLS	probit	OLS	probit
Log gdp importer	-2.087**	-3.409	-2.165**	-3.070	-2.165**	-1.566	-2.243***	-1.842	-1.695*	-3.979	-2.120**	-2.204
Log gdp exporter	0.925***	0.675***	0.932***	0.716***	0.952***	0.676***	0.939***	0.657***	0.936***	0.786***	0.943***	0.733***
Log gdp/capita importer	2.377***	3.649	2.435***	3.290	2.482***	1.623	2.540***	1.882	1.960**	4.245	2.405***	2.323
Log gdp/capita exporter	0.634***	1.242***	0.857***	0.527***	0.268***	0.951***	0.705***	1.035***	0.732***	0.701***	0.613***	0.185
Log distance between capita	-1.262***	-1.014***	-1.231***	-0.889***	-1.250***	-0.861***	-1.257***	-0.836***	-1.210***	-1.015***	-1.223***	-1.105***
contiguity dummy	0.863***	5.872	0.874***	5.115	0.856***	5.457	0.829***	5.303	0.869***	5.586	0.877***	5.810
language dummy	0.212***	2.307***	0.286***	2.165***	0.269***	2.320***	0.327***	2.205***	0.319***	2.110***	0.273***	2.018***
RFTA dummy	0.717***	0.229	0.697***	0.317*	0.653***	0.298*	0.761***	0.302*	0.685***	0.355*	0.699***	0.204
governance exporter	0.013	0.014	-0.033	-0.007	-0.015	0.235***	-0.031	0.252	0.104	0.030	0.006	0.345*
governance importer	0.072***	0.176***	-0.085***	0.190***	0.116***	0.047	-0.201***	0.123**	-0.101***	0.384**	-0.014	0.680***
Inverse Mills' ratio		-1.229***		-0.923***		-0.940***		-1.006***		-1.003***	-1.083***	
N	7308											
censored observations	467											

Table 2 Heckman selection model estimations for food products

	government size		legal system sound money				tariff		regulation		institute	
	OLS	probit	OLS	probit	OLS	probit	OLS	probit	OLS	probit	OLS	probit
Log gdp importer	-1.199	-9.835**	-1.599	-7.524*	-1.650	-2.598	-1.518	-25.901***	-0.970	-13.895**	-1.130	-5.943
Log gdp exporter	0.835***	0.661***	0.855***	0.699***	0.848***	0.714***	0.847***	0.831***	0.858***	0.790***	0.852***	0.695***
Log gdp/capita importer	1.029	8.125*	1.441	5.440	1.449	-0.447	1.341	26.076***	0.799	14.658**	0.903	3.742
Log gdp/capita exporter	0.916***	1.851***	0.698***	1.297***	0.676***	2.152***	1.006***	2.035***	0.675***	1.281***	0.601***	0.921***
Log distance between capita	-0.712***	-0.952***	-0.666***	-0.718***	-0.675***	-0.695***	-0.703***	-0.711***	-0.693***	-0.871***	-0.696***	-0.881***
contiguity dummy	1.028***	2.867	1.049***	3.305	1.042***	3.602	0.997***	3.142	1.060***	2.822	1.045***	3.188
language dummy	0.581***	3.519	0.627***	4.088	0.639***	3.955	0.705***	4.632	0.565***	3.479	0.572***	3.568
RFTA dummy	0.820***	5.002	0.802***	5.087	0.775***	5.682	0.871***	5.435	0.818***	4.972	0.790***	4.928
Governance exporter	0.101	-0.060	-0.033	0.309*	0.029	0.670***	0.081	-1.667***	0.156	-0.518	0.191	0.354
Governance importer	0.075***	0.281***	0.056	0.106	0.068	-0.123	-0.233***	-0.499***	0.146***	0.374***	0.187**	0.473***
Inverse Mills' ratio		-2.832***	-2.693***		-2.734***		-2.350***		-2.839***		-2.788***	
N	7308											
censored observations	109											

countries and positive impact for exporting countries of agricultural products. The level of development measured by GDP per capita has positive and mostly statistically significant impact on bilateral agricultural trade. As expected, the distance has negative and statistically significant impact on bilateral agricultural trade. The other characteristics (contiguity, language and RFTA) have positive and mostly statistically significant impact on bilateral agricultural trade.

Table 2 presents the results for a gravity model supplemented with institutional quality variables for food products. The variables for the institutional quality for the food exporting countries mostly turned out to be statistically insignificant with mixed theoretical signs. The impact of the institutional quality variables is found mostly statistically significant and theoretically consistent for food importing countries. The government size, the regulation and the composite indicator of institutional quality of governance, respectively, positively and statistically significantly increased bilateral food trade for importing countries, and vice versa tariffs, which negatively and statistically significantly reduced bilateral food trade for importing countries.

Second, we focus on the explanatory role of *institutional homogeneity*. We constructed the dummy variable to reflect the effect of institutional similarity. If the absolute difference in institutional effectiveness between the exporting and importing country does not exceed a specified fraction of the sample standard deviation in the relevant index of

Table 3 Extended Heckman selection model estimations for institutional homogeneity

	Agricultural products						Food products					
	<1 standard deviation		<2 standard deviation		<3 standard deviation		<1 standard deviation		<2 standard deviation		standard deviation	
	OLS	probit	OLS	probit	OLS	probit	OLS	probit	OLS	probit	OLS	probit
Log gdp importer	-2.171**	-1.975	-2.148**	-1.522	-2.122**	-2.188	-1.132	-6.295	-1.146	-5.703	-1.126	-6.198
Log gdp exporter	0.948***	0.737***	0.948***	0.736***	0.943***	0.733***	0.854***	0.706***	0.850***	0.693***	0.851***	0.697***
Log gdp/capita importer	2.412***	2.081	2.370***	1.574	2.405***	2.299	0.887	4.242	0.950	3.546	0.919	4.096
Log gdp/capita exporter	0.568***	0.144	0.569***	0.088	0.610***	0.183	0.579***	0.958***	0.637***	0.908***	0.618***	0.949***
Log distance between capita	-1.230***	-1.112***	-1.229***	-1.127***	-1.223***	-1.105***	-0.702***	-0.873***	-0.693***	-0.881***	-0.697***	-0.888***
contiguity dummy	0.855***	5.700	0.870***	5.680	0.877***	5.805	1.031***	3.352	1.050***	3.182	1.045***	3.190
language dummy	0.239***	1.845***	0.249***	1.782***	0.272***	2.013***	0.551***	3.730	0.594***	3.361	0.580***	3.628
RFTA dummy	0.673***	0.145	0.683***	0.121	0.699***	0.203	0.771***	5.106	0.806***	4.877	0.793***	4.948
institute similarity	0.126***	0.192**	0.112**	0.316***	0.017	0.016	0.076	-0.233	-0.098	0.081	-0.091	-0.141
institute exporter	-0.023	0.351*	-0.018	0.341*	0.004	0.344*	0.180	0.313	0.208	0.352	0.205	0.354
institute importer	-0.002	0.702***	-0.001	0.734***	-0.013	0.681***	0.193**	0.452***	0.179**	0.482***	0.184**	0.456***
Inverse Mills' ratio		-1.071***	-1.042***	-1.081***	-2.758***	-2.805***	-2.771***					
N	7308	7308										
censored N	467	10										

governance, the quality of governance is regarded as similar in terms of institutional effectiveness in both countries. The effects of *institutional homogeneity* on agricultural and food trade are presented in *Table 3*. Again, the existence of selection bias for all specifications is confirmed, thus we focus on the probit model results. In Table 3, the specifications for different similarity definitions in the gravity model are estimated when controlling for the level of institutional quality in both countries. The first three main columns present the estimated models in which the specified fraction is varied. In the first main column, each difference below the one standard deviation is associated with institutional homogeneity. The other two columns use 2 and 3 standard deviations as the criterion, respectively, to imply the effects of similarity in institutional effectiveness on bilateral agricultural and food trade. Similar to the finding by *de Groot* et al. (2004) for merchandise trade, we have also found for agricultural and food trade, respectively, that institutional similarity and institutional quality have separate effects. The institutional similarity has positive and significant impact for bilateral agricultural trade in the case of one and two standard deviations, respectively, but not significant are parameters for bilateral trade in food products and for bilateral trade in agricultural products when three standard deviations criterion is used. When the institutional quality variable for exporting countries is used, the results are found to be mixed. As interesting, positive and statistically significant associations are found between the institutional quality variable and trade in food products and agricultural products (for probit model) for the importing countries. The impact of GDP for importing countries remains negative for agricultural products, but the parameters are statistically not significant. The impact of GDP for exporting countries remains largely unchanged with its positive and significant impact for both agricultural and food products. The GDP per capita has positive impact on agricultural and food trade, respectively, for both importing and exporting countries, but significance has worsened for agricultural products. As before, significant and negative associations are found for the parameters pertained to the distance variable. The other explanatory variables for contiguity, language and RFTA remain with positive impacts on bilateral agricultural and food trade, respectively, but the parameters are not significant.

4. Conclusions

Results confirmed that the institutional determinants have a significant impact on bilateral trade in agricultural and to a lesser extent in food products. Institutional homogeneity in international trade increases trade as lowers transaction costs. The gravity models also confirmed importance of the economy size, level of development, trade distance, contiguity, language and regional free trade agreements. The impact of the level of development on the patterns of bilateral trade is biased by the institutional determinants. The positive relation between the quality of institutions and the level of economic development implies importance of good governance for international trade as a factor of economic growth and development, including in agriculture and the food sector.

Acknowledgements

The authors are grateful for financial support from the bilateral project between the Hungarian and Slovenian Academies of Sciences entitled 'Agro-food trade between Central-European Countries and the European Union.' Imre Fertő gratefully acknowledges financial support from the Hungarian Scientific Research Fund No. 37868 'The International Agricultural Trade: Theory and Practice'.

References

Anderson, J.E. and Marcouiller, D. (2002): Insecurity and the Pattern of Trade: An Empirical Investigation, *Review of Economics and Statistics*, 84: 342–352.

Depken II, C.A. and R.J. Sonora (2005): Asymmetric Effects of Economic Freedom on International Trade Flows. International Journal of Business and Economics 4(2): 141–155.

Dollar, D. and Kraay, A. (2002): Institutions, Trade, and Growth. *Journal of Monetary Economics*. 50: 133–162.

Francois, J. and Manchin, M. (2007): Institutions, Infrastructure, and Trade. Centro Studi Luca D'Agliano Development Studies Working Papers No. 224. Universita degli Studi di Milano.

Frankel, J. and Rose, A. (2002): An Estimate of the Effect of Common Currencies on Trade and Income. *Quarterly Journal of Economics*, 2002: 437–466.

de Groot, H.L.F., Linders, G-J. M, Rietveld, P. and Subramanian, U. (2004): The institutional determinants of bilateral trade patterns. *Kyklos*, 57(1): 103–124.

Francois, J. and Manchin, M. (2007): Institutions, Infrastructure, and Trade. Development Studies Working Papers No. 224. Milano: Centro Studi Luca D'Agliano.

Gwartney, J. and R. Lawson (2005): Economic Freedom of the World: 2005 Annual Report. The Fraser Institute: Vancouver. Data retrieved from www.freetheworld.com.

Heckman, J. (1979): Sample Selection Bias as a Specification Error. Econometrica 47: 153–161.

Levchenko, A. (2004): Institutional Quality and International Trade. IMFWorking Paper 04/231.

Linders, G-J. M and de Groot, H.L.F. (2006): Estimation of the gravity equation in the presence of zero flows. Tinbergen Institute Discussion Paper, TI 2006–072/3.

Olper, A. and Raimondi, V. (2007): Patterns and Determinants of International Trade Costs in the Food Industry. LICOS Discussion Paper 188/2007. Leuven: Katholieke Universiteit Leuven.

Rauch, J.E. (2001): Business and Social Networks in International Trade. *Journal of Economic Literature*, 39: 1177–1203.

Changes in costs of precision nutrition depending on crop rotation

Enikő Lencsés[1] – Katalin Takács György[2]

Szent István University, Faculty of Economics and Social-sciences, Institute of Business and Organization

Abstract: By applying precision nutrition the yield heterogeneity owing to the different features of soil spots can be taken into consideration. The planned and sprayed fertilizer adjusted to the expected yield rendered to soil spots can reduce the negative effects of artificial chemicals on soil and environment.

The aim of this paper is to examine how the quantity and the cost of fertilizer (material and operational) will change on spot level on a certain plot during a five-year period, considering crop rotation, too. The following crops are in the rotation: winter wheat, corn and sunflower. Precision nutrition can be used in all the cultures mentioned above.

Our earlier (static) model calculations have revealed that the threshold price of precision production was lower by 31% than in conventional technology. So it is necessary to explore for a longer period how the profitability of precision nutrition reacts to the changes in input and yield prices in different crops. The risk receptivity of precision nutrition can be characterized with the help of price sensitive analyses. Effects on profitability of other technological elements are not analysed in this paper.

Key words: cost of fertilizer, long-term model calculation, price-sensitivity

1. Introduction

Numerous definitions of precision farming technology are known. The common element of these definitions is that they target the locally specified treatment of factors that are different in space, heterogeneous in distribution and influence production (soil, weeds, pathogens and pests). [*Batte,* 1999; *Pecze,* 2004; *Swinton,* 2005] *Jolánkai and Németh* (2007) supplement this definition with the essential element of the precision farming technology that is to adapt the plant production technology to the conditions of the arable land as much as possible. As applying machinery in precision farming, it must be taken into consideration the capital effectiveness of technical aspects surplus. This depends on farm size as well. In Hungary the farm structure is very polarized from this aspect. [*Takács,* 2003; *Takács-György,* 2008] Above this it is very important to examine the efficiency of input and output, with regard to the nutrient supply (the optimal level of fertilizer) which take the biggest part of the cost of plant production. The methods of this examination is the price-sensitivity of the income. [*Nábrádi* et al., 2009] Some authors examine the effects of precision plant production on the quality of the products. *Neményi and Milics* (2007) defined under Hungarian conditions that nutrient supply can be optimized during the practical implementation of precision crop production, thus improving the nutrient content parameters of winter wheat. There is a positive correlation with the gluten and the protein contents, which enables to realize higher yield-price. In our opinion, precision farming technology which makes precise spreading of agent possible by plot-treatment, results rational chemical using with or instead of chemical reduction.

Wolf and Buttel (1996) states that the importance of precision farming technology is twofold: in the one hand it is a tool to change the attitude of agricultural production, might reduce the quantity of chemicals in the environment, and on the other hand the basis of efficient agriculture is to keep the industrial production structure, investments and some organization structure and operational mechanism. It should be added that precision farming technology is a real implement to reduce environmental damage, but on farm level it is a tool to reduce risks. In plant production it is possible to reduce the yield-risk and increase the stabilized income of farmers by appropriate application and combination of technology elements required by environmental conditions. [*Weiss,* 1996; *Auernhammer,* 2001; *Gandonou* et al., 2004; *Takácsné György,* 2006; *Heijman – Lazányi,* 2007; *Csiba* et al., 2009]

Precision technology in itself does not result unanimous reduction in fertilizer using. If the aim on the plot is not the heterogenic yield but the harnessing of the potential productivity of each parcel, the doze of fertilization may be higher on the total plot. The competitiveness is in the higher yield per field and in the improvement of specific income with rational fertilization (not spreading surplus nutrient). When the income of precision plant production is estimated the elements affecting the income should be determined according to the principle of (marginal) economics and the rules of detailed budget. Some researchers have revealed that there is a relation between locally specified target yield and

the cost-rate income of the fertilizer spread on the basis of nutrient content of the soil. It is necessary, however, that the cost of sampling is not listed among the variable costs per year, but divided equally in, for example, five years (like amortization). Positive extra income can be expected if the yield-increase is more than 10%, due to the planning based on yield-mapping. [*Swinton – Lowenberg-DeBoer,* 1998]

There are only some references which deal with the effects of the sowing-structure on the income of precision plant production. We examined the applicability of precision weed management in maize, based on data from 2007. We stated that higher income can be achieved with whole surface precision weed control than with precision in-row spraying in maize. In the latter case the herbicide savings are between 30–50%, but compare to this there is the cost of row-cultivation which is necessary for in-row spraying. [*Takácsné,* et al., 2008]

2. Material and Methods

We made model calculations in order to examine production value with effects of costs of precision fertilization on different price-levels. The research dealt with winter wheat, maize and sunflower.

The basic data came from the soil samples and examination of Józsefmajor Experimental and Study Farm of Szent István University. On the basis of soil analysis the plots of the study farm are well supplied with nutrients. Grounds of results of soil examination tables are good provided with nutrients. Phosphorus and potassium should not be spread, therefore we calculated only with the nitrogen-agent. The soil sampling unit was 5 hectares, so yields and amounts of supply were defined also in 5-hectare units. Model calculations were made for a 30-hectare, 6-parcel plot.

In the winter wheat production one ton of principal product needs 25 kg nitrogen-agent, in the maize production it is 22 kg, and in the sunflower production it is 50 kg. [*Debreczeni,* 1979] If we know the nutrient need of plant and the nutrient content of the soil we can determine the useable amount of nitrogen-agent or fertilizer required per parcel. The agent content in the fertilizer is 34%, the price per ton is 143 EUR.

The aim of this study is to define that use of traditional (based on averaged value) or precision (based on parcel or micro-plot need) fertilization is justified from economic aspects in case of different plants (winter wheat, maize and sunflower).

Three different cases were used to determine the amount of supply to be spread.

Case 1: No fertilizer use, because the soil is well provided with nutrients.

Case 2: The quantity of required agent or fertilizer is determined not on the basis of plot-level soil analysis, but on the basis of average nitrogen content. Amount of the yield means plot-level average value.

Case 3: Different yields were planned on different parcels (the average yield of the field is the same like in case 2)

We examined savings of nitrogen-agent (kg/parcel) and differences in incomes per parcel with the precision fertilization (Case 3) compared to the traditional technology (Case 2).

With the help of model calculation the variations in incomes were examined in case of different prices, the step of the price change was 18 EUR. Variable costs of production without costs of fertilization were based on the test farm data of Agricultural Economics Research Institute (AERI) *(Table 1.)*

Table 1. Material and operational costs of traditional plant production technology without nutrient supply *

	Material cost (EUR)	Operational cost (EUR)	Total variable cost (EUR)
Winter wheat	2 357	1 964	6 058
Maize	5 893	3 054	11 048
Sunflower	4 071	3 036	8 528

Source: AERI, 2007 * on 30 hectares

On the basis of our former research with model calculations, the operational cost of precision farming technology was higher by 20% than the cost of traditional technology, therefore in the material cost we can calculate with 40% reduction. [*Takácsné György – Lencsés,* 2008]

The total variable cost of plant production was calculated in the model, so the conclusions concern not only the fertilization but the complex traditional and precision farming technology.

3. Results

By evaluating our results it cannot be forgotten that these results are valid only under the given condition system.

3.1. Results of no fertilizer use (case 1)

In case of no use of nutrient supply on the examined 30-hectare plot, the total planned yield in winter wheat is 90 tons, in maize production it is 120 tons, and in the sunflower it is 45 tons. If the yield price increases by 18 EUR the

Table 2. Incomes of plant production technology without nutrient supply at different price-levels*

		Winter wheat	Maize	Sunflower
Planned yield (tons)		**90**	**120**	**45**
Yield price (EUR/ton)	**71**	-404	-3 416	
	89	1 203	-1 273	
	107	2 810	870	
	125	4 417	3 013	
	143	6 025	5 156	
	161			-2 071
	179			8 036
	196			8 839
	214			9 643
	232			10 446

Source: own calculation * on 30 hectares

income per hectare increases by 54 EUR in the winter wheat production, 71 EUR in maize production and 27 EUR if the cost of production does not change. *(Table 2.)*

3.2. Results of applying traditional fertilization like average need (case 2)

When traditional fertilization technology is applied, the yield of winter wheat is 166 tons, which needs 3 750 kg nitrogen-agent supply, the yield of maize is 288 tons, which needs 4 620 kg nitrogen-agent supply and the yield of sunflower is 68 tons, which needs 3 000 kg nitrogen agent on 30 hectares. *(Table 3.)*

Table 3. Material and operational costs of traditional plant production technology *

	Material cost (EUR)	Operational cost (EUR)	Total variable cost (EUR)
Winter wheat	1 576		1 736
Maize	1 941	161	2 102
Sunflower	1 261		1 421

Source: AERI 2007, own calculation * on 30 hectares

If fertilizer doze per hectare is the same on the whole plot, the income is positive even on the smallest examined yield price. If the yield price increases by 18 EUR the income per hectare increases by 99 EUR in winter wheat production, 138 EUR in maize production and 41 EUR if the cost of production does not change. *(Table 4.)* The incomes increase by 59% if the yield-price grows by 25% in winter wheat production, the income increase is 94% in maize production. In case of sunflower the income change is more than 74% with the same yield-price change.

3.3. Results of applying precision fertilization on parcel level (case 3)

In case of precision fertilization on the 30-hectare model plot (30 hectares) the total amount of the yield is the same like in Case 2, differences are only on parcel level. *(Table 5.)*

Table 4: Incomes of the traditional plant production technology at different price-level*

		Winter wheat	Maize	Sunflower
Planned yield (tons)		**166**	**228**	**68**
Yield price (EUR/ton)	**71**	5 042	4 331	0
	89	8 010	8 411	0
	107	10 979	12 490	0
	125	13 947	16 570	0
	143	16 916	20 649	0
	161	0	0	1 645
	179	0	0	2 861
	196	0	0	4 078
	214	0	0	5 294
	232	0	0	6 510

Source: own calculation * on 30 hectares

Table 5. Quantity of planned yield and necessary nitrogen-agent per parcel in case of precision nutrient supply

Number of parcel*	Winter wheat		Maize		Sunflower	
	Planned yield (tons/ parcel)	Nitrogen-agent (kg/ parcel)	Planned yield (tons/ parcel)	Nitrogen-agent (kg/ parcel)	Planned yield (tons/ parcel)	Nitrogen-agent (kg/ parcel)
1/1	28,19	637,08	38,63	782,08	11,60	512,08
1/2	27,32	615,33	37,64	760,33	11,16	490,33
1/3	27,15	610,98	37,44	755,98	11,07	485,98
1/4	27,49	619,68	37,83	764,68	11,25	494,68
1/5	27,84	628,38	38,23	773,38	11,42	503,38
1/6	28,25	638,53	38,69	783,53	11,62	513,53
Total**	**166,24**	**3750,00**	**228,45**	**4620,00**	**68,12**	**3000,00**

Source: own calculation * 1 parcel = 5 hectares,
** at total field (30 hectares)

The material and the operational cost of complex precision farming technology is 3418 EUR in the winter wheat production (more than half of it is the cost of fertilization). The total variable costs in maize production amount to 6036 EUR, in which the fertilization cost is 35%. On 30 hectares the total variable cost of sunflower production is 4260 EUR (34% is the cost of fertilization). *(Table 6.)*

Table 6. Costs of precision farming technology on the examined 30 hectares

	Nutrient supply			Total cost of production*		Total variable cost (EUR)
	Material cost (EUR)	Operational cost (EUR)	Total (EUR)	Material cost (EUR)	Operational cost (EUR)	
Winter wheat	1 576	193	1 768	1 414	236	3 418
Maize	1 941		2 134	3 536	366	6 036
Sunflower	1 261		1 453	2 443	364	4 261

Source: AERI, own calculation * without nutrient supply

Considering variable costs of precision fertilization and other elements of precision farming technology *(Table 6.)* positive income is realized even in case of the lowest examined sales price. If the yield price increases by 18 EUR the income per hectare increases by 99 EUR in winter wheat production, 138 EUR in maize production and 41 EUR if the cost of production does not change. *(Table 7.)* The income of winter wheat production increases by 39% if the yield-price grows by 25%. In case of maize the income change is 44% in the same yield-price change and in the sunflower production it is 21%.

Deviation in the extra incomes is the same on different yield-price compared precision farming technology to traditional technology. This is the reason why Table 8 does not contain the extra incomes on different price. In the model calculation on the half of the plot we can calculate material cost decrease with the precision fertilization compared to the traditional fertilization in all the three crops. Because of the basic conditions the fertilizer savings on the total 30 hectares is 0 EUR. The extra income of precision farming technology

compared to the traditional technology is 2639 in case of EUR winter wheat production, 5012 EUR in case of maize production and 4268 EUR in case of sunflower production. (*Table 8.)*

Table 7. Incomes of precision farming technology at different price-levels*

		Winter wheat	Maize	Sunflower
Planned yield (tons)		**166**	**228**	**68**
Yield price (EUR/ton)	71	7 681	9 343	
	89	10 650	13 423	
	107	13 618	17 502	
	125	16 587	21 582	
	143	19 555	25 662	
	161			5 913
	179			7 129
	196			8 345
	214			9 562
	232			10 778

Source: own calculation * on 30 hectares

Table 8. Fertilizer cost savings and extra income by precision farming technology *

Number of parcel	Winter wheat		Maize		Sunflower	
	Fertilizer cost saving (EUR/ parcel)	Extra income**	Fertilizer cost saving (EUR/ parcel)	Extra income**	Fertilizer cost saving (EUR/ parcel)	Extra income**
1/1	-5 077		-5 077		-5 077	
½	4 062		4 062		4 062	
1/3	5 889		5 889		5 889	
¼	2 234		2 234		2 234	
1/5	-1 422		-1 422		-1 422	
1/6	-5 686		-5 686		-5 686	
Total	**0**	**2 639**	**0**	**5 012**	**0**	**4 268**

Source: own calculation * on 30 hectares
** with the total production technology

4. Conclusions

It can be stated that some form of fertilization cannot be left out from production process even in case of soils of relatively good nutrient supply, because positive income can be achieved by applying nutrient supplying technologies even in case of lower price levels.

We have not found any difference in the total amount of applied fertilization between traditional and precision farming technology, but on half of the parcels we can calculate material savings in all the three crops (winter wheat, maize, sunflower). This is true only for the basic terms, namely when we do not calculate yield-potential on different parcels. In the same time, when applying precision fertilization we should calculate higher operational cost so in economic terms, it is not expedient without other precision production elements. If we combine precision fertilization with other elements (for example precision weed management) the extra income is notable. The price-sensitivity of precision farming technology is smaller than that of the traditional technology, so there is smaller fluctuation in the income change and the process is more calculable. Besides economic considerations, the ecological aspect should also be highlighted: the soil damage effects of the plant production can be reduced by applying precision fertilization.

In the future it is worth examining how the profitability changes if yield-potential on parcel level is also considered.

The aim of future research can be to define the optimal sowing structure from the aspect of profitability of precision farming technology calculating with price-sensitivity (both the input and the output price changes).

References

Auernhammer, H. (2001): Precision farming – the environmental challange. Computer and Electronics in agriculture. 30. 31–43. pp.

Batte M. T. (1999): Precision Farming – Factors Influencing Profitability; Presented at the Northern Ohio Crops Day meeting, Ohio

Béládi K. – Kertész R. (2007): A tesztüzemek főbb ágazatainak költség és jövedelemhelyzete 2006-ban, Agárgazdasági Kutató Intézet, Agárgazdasági Információk 2007. 7. szám 67–86pp.

Csiba M. – Milics G. – Smuk N. – Neményi M. (2009): A fenntartható fejlődés kihívásai és az erre adható válasz a Magyar mezőgazdaságban; Mezőgazdaság és a vidék jövőképe Konferencia kiadvány 264–271 pp.

Debreczeni Béla (1979): Kis agrokémiai útmutató, Mezőgazdasági Kiadó, 124.p (11. táblázat)

Gandonou, J. M. – Dillon, C. – Harman, W. – Williams, J. (2004): Precision farming as a tool in reducing environmental damages in developing countries: a case study of cotton production in Benin. American Agricultural Economics Association. Annual Meeting. http://ageconsearch.umn.edu/bitstream/20086/1/sp04ga02.pdf Download: 2008. 11.15. 1-22 pp.

Heijman W. – Lazányi J. (2007): Economics of precision agriculture in Hungary; http://avacongress.net/ava2007/presentations/n3/7.pdf

Jolánkai, M. – Németh, T. (2007): Agronómiai és környezetvédelmi elvárások. In: A precíziós mezőgazdaság módszertana (Szerk.: Németh, T. – Neményi, M. – Harnos Zs.) Jate Press. 63–75 pp.

Nábrádi A. – Pető K. – Balog V. – Szabó E. – Bartha A. – Kovács K. (2009): Efficiency indicators in different dimension; Applied Studies in Agribusiness and Commerce – APSTRACT, Vol. 3. No. 1-2., 7–22 pp.

Neményi, M. – Milics, G. (2007): Precision agriculture technology and diversity. Cereal Research Communacations. 35. (2) 829–832 pp.

Pecze Zs. (2004): A precíziós tápanyag-gazdálkodás gyakorlati rendszere az IKR-nél; Gyakorlati Agrofórum 15. évf. 8. sz. 44–46 pp.

Swinton, S. M. – Lowenberg-DeBoer, J. (1998): Profitability of site-specific farming. In: Site-specific management guidlines. SSMG-3 http://www.inpofos.org; Download: 2008. február 25.

Swinton, S. M. (2005): Economics of site specific weed management. Weed Science 53 (2) 259–263 pp.

Takács I. (2003): A few aspects of capital-effectiveness of agricultural assets. In Studies in Agricultural economics. No. 99. 85–98 pp.

Takácsné György, K. (2006): A növényvédő szer használat csökkentés gazdasági hatásainak vizsgálata – milyen irányok lehetségesek? In: Növényvédő szer használat csökkentés gazdasági hatásai. (szerk.: Takácsné György K.). Szent István Egyetemi Kiadó. 2006. 7–29 pp.

Takácsné György, K. – Lencsés, E. (2008): A precíziós növénytermesztés megítélése gazdaságossági szempontból, XXXII. Óvári Tudományos Napok, Konferencia CD

Takácsné György, K. – Széll, E. – Lencsés, E. (2008): Kukorica gyomirtási technológiák gazdasági értékelése. In: Gazdaságilag optimális környezetkímélő herbicid alkalmazást célzó folyamatszervezési, -irányítási és alkalmazási programok kifejlesztése. (szerk.: Takácsné György K.). Szent István Egyetemi Kiadó. 71–88 pp.

Takács-György K. – Reisinger P. – Takács E. – Takács I.: Economic analysis of precision plant protection by stochastic simulation based on finite elements method. Journal of Plant Diseases and Protection, Special Issue XXI. 181–186 pp.

Weiss M. D. (1996): Precision Farming and Spatial Economic Analysis: Research Challenges and Opportunities; American Journal of Agricultural Economics, Vol. 78, No 5., Proceedings Issue, 1275–1280 pp.

Wolf S. A. – Buttel, F. H. (1996): The political economy of precision farming. American Journal of Agricultural Economics. 78. (5) 1269–1274 pp.

The role of emotions and perceived control in the recovery strategy of service companies

Krisztina Kolos, Zsófia Kenesei

Corvinus University Budapest, Marketing Department

Abstract: The purpose of this study is to investigate the effectiveness of service recovery tactics. The reseach included a qualitative study based on 30 interviews with customers and employees of a telecommunication company. This was followed by a quantitative study using between subject experimental designs based on scenarios. Our research results suggest that employees' positive emotions and perceived control during the recovery process make consumers more satisfied.[1]

Key words: service recovery, justice theory, service failure, customer satisfaction

1. Introduction

Even the best services can fail some time due to the relative intangibility, the simultaneous production and consumption, the labour intensiveness and the variability of the service offering. All these factors make service recovery a critical part of services management. It is crucial therefore to understand the consequences of failure and the ways of effective recovery processes. Many researchers in services marketing have suggested that the way of handling customer complaints influence satisfaction of consumers. As suggested by Grönroos (1988) service recovery refers to the actions an organization takes in response to a service failure. Because of the inherent nature of services inseparability, it could not mean the replacement or the repair of service but mainly all the actions undertaken in order to compensate the customer's loss. Service recovery strategy involves all the actions that can be either apology, redress, attentiveness, explanation, etc.

In recent years the most widely used concept in service recovery literature is justice theory (*Tax* et al., 1998; *Smith* et al., 1999; *Maxham-Netemeyer* (2002); *McCollough* et al., 2000). Justice theory is adapted from social exchange and equity theories. This theory implies that people can judge a transaction on the basis of their investments and gains compared the other party's investment and gains. The parties try to balance the ratio in the transactions. There are three dimensions of justice: distributive, procedural and interactional justice. In the process of service recovery all three dimensions are important, meaning that not only the outcome of the recovery is important but the "how" is as well: the politeness and effort of employees (interactional justice), the speed and flexibility of the process (procedural justice) can be crucial, too. Distributive justice refers to all actions the service provider takes to handle the complaint meaning the problem recognition, rectification, the refund, the apology (although some researchers take apology as part of interactional justice: *Smith* et al.1999). Most researches examining distributive justice came to the conclusion that these actions have strong effect on satisfaction and loyalty (*Davidow,* 2003). On the other hand, the "forced" compensation with huge efforts from the part of the customer is not as satisfactory as a smooth, fast one. This refers to the procedural justice, meaning that all service providers should have a service recovery process, that makes complaining easy, the process of recovery is fast, smooth, gives some control to the customer (*Tax* et al., 1998). *Hui and Bateson* (1991) have proved that perceived control in the process is very important in the final satisfaction. For most services, complaint handling requires the interaction of different parties. Research results show that complaints are made mainly to the front line and not to the customer service employees. This means that front line employees should be prepared to follow the appropriate recovery actions (*Goodman,* 2000). Interactional justice means not only politeness and empathy, but customers should feel real emotions from the part of the employee e.g. sincerity (*Tax* et al., 1998). Although all three element of the recovery strategy are important, *Maxham and Netemeyer* (2002) have found that customers feel process and interaction more important than the outcome i.e. the distributive justice. One reason for that can be the difficulty of judging outcome compared to the way employees handle the failure situation, which comes from the nature of services. Another research stream is the examination of emotions (*Mattila,* 2002; *Pugh,* 2001; *Shoefer-Ennew,* 2005; *Smith-Bolton,* 2002) where the common result is that the emotional state of either the service employee and the customer is critical in the recovery process.

Several variables can mediate the relationship between recovery actions and satisfaction. One of the most frequently

1 This research was sponsored by OTKA research fund (No. 49267).

researched variable is the relationship between service provider and customer (*DeWitt-Brady,* 2005; *Hess* et al., 2003; *Mattila,* 2001; *Ok* el al. 2005)

The type, magnitude, severity and criticality of failure can mediate the result, as well (*Smith* et al., 1999; *Mattila,* 1999, *Craighead* et al., 2004), just as cultural norms (*Patterson* et al., 2006), or the fact whether the failure was outside the control of the salesperson (*Widmier and Jackson,* 2002) or locus and stability (*Swanson and Kelley,* 2001). Naturally, personality and behavioural factors affect complaining, as well (*Gursoy,* et al., 2007).

2. Exploratory Research

As part of the research project first we made in-depth interviews where we asked 30 customers and 30 (15 branch, 15 call centre) service front line employees of a telecommunication firm to evaluate the recovery efforts of the firm. The interviews were based on the concept of critical incidents (Bitner et al., 1990).

The interview focused on the following topics (both consumer and employee interviews):

- Recall of a critical incident
- Evaluation of the role of the consumer and the employee
- Ways to prevent similar incidents
- Characteristics of an ideal front line employee (consumer interviews)
- Characteristics of a "difficult" consumer (employee interviews)
- Reasons to complain, and not to complain

The analysis of the in-depth interviews revealed four main dimensions: the emotional dimension, perceived control, role perceptions and customer categories. A quotation for each dimension is presented in *Table 1.*

Table 1: Dimensions of customer and employee interaction

Dimension	Example
Emotions	*I had problems with setting the MMS, and after several phone calls the lady I talked to became quite nervous and talked to me in a despising way. So I raised my voice… (consumer)*
Role *perception*	*… It depends on both of us, my competence of course, but also on the cooperation of the customer. If the customer doesn't cooperate, it is very difficult to help him. It happened to me several times, that I couldn't help the customer simply because he wasn't willing to understand what I was trying to explain.. (employee)*
Perceived *Control*	*.. I try to talk to them quietly. Sometimes the client tells me in advance that he is going to yell. He is not angry with me. It's good to see them calming down, how their face change. It took me a long time to learn how to demonstrate quietness. (employee)*
Customer *categories*	*My experience is that people with a higher position (dr X, managing director, etc.) talk to me in a very unpleasant style compared to average people…(employee)*

The results of these interviews indicated that the way of complaint handling, the emotions, the perceived control and the explanation of the failure are critical in the satisfaction of customers. Both consumers and employees have specific expectations and perceptions regarding their own roles and those of the front-line employees.

3. Research Questions and Hypotheses

The main finding of our interviews was the role of emotions and perceived control. Both party, either consumers or service contact people have emphasised the ways the other party communicates to them. If the counterpart is emotionally negative, the recovery process is much more difficult. This fact supports that interactive justice is as important as distributive justice. The role of politeness, empathy, attentiveness and positive emotions seem to be crucial in the process. The role of emotions in recovery literature is investigated from the customer part (*Smith-Bolton,* 2002; *Shoefer-Ennew,* 2005). They found that the emotional state of consumers has an effect on the recovery process and the final satisfaction. The employees' displayed emotions are researched in a rather general services marketing perspective, but have the common result of positive effect on satisfaction (*Mattila-Enz,* 2002; *Pugh,* 2001), although we can find evidence on the criticality of empathy and courtesy in the recovery process, as well (*Hocutt* et al., 2006). In accordance with these results in our opinion the emotional support (i.e. attentiveness and positive feelings) of apology or compensation from the service personnel can increase satisfaction, as well. It is even possible that positive emotions toward the problem can replace compensation.

H1: Positive emotions from the part of the service provider during recovery process have positive effect on satisfaction and this effect is more emphasised in the absence of compensation.

Perceived control is a very important, yet rarely researched field of services (*Hui-Bateson,* 1991; *Yagil,* 2002) and even less frequently researched in the service recovery process. We found in the qualitative phase that explanation and the possibility of consumer choice give a kind of control, and results in a higher satisfaction. As in the recovery literature explanation is part of the interactional justice concept and explanation is part of the procedural justice concept (*Tax* et al., 1998) we examined the two tactics separately, although we have the feeling that these two processes have the same underlying concept of perceived control.

In this research we would like to check how explanation or consumer choice influences satisfaction as a main effect and in interaction with compensation. Explanation in our research is justificational (*Sparks, Fredline,* 2007), meaning the service provider gives reason of the failure situation.

H2: The possibility of consumer choice has a positive effect on satisfaction and this effect is more emphasised in the absence of compensation.

H3: The explanation of the failure situation has a positive effect on satisfaction and this effect is more emphasised in the absence of compensation.

We were also interested in three-way interactions with no prior expectations. The following hypothesis is proposed.

H4: The interaction effects of emotions, consumer choice, and explanation will not be the same at the different levels of compensation.

4. Research Methods and Results

In order the test our hypotheses the method of experimentation was used. A 2x2x2x2 between-subject experimental design was used with emotion consumer choice, compensation and explanation as independent variables. Each independent variable has tow levels. The dependent variable is satisfaction with service recovery (a three-item construct, each item measured on a 1-5 scale, in the analysis the summed score will be used). In total 16 scenarios were created in the context of restaurants. Credibility and distinctiveness of the scenarios were analyzed along 7 dimensions, all with significant results. The sample includes 640 consumers living in a capital. Each scenario was evaluated by 40 subjects.

The dependent variable is satisfaction with service recovery (a two-item construct, each item measured on a 1–5 scale, in the analysis the summed score will be used). Statistical analysis was performed with factorial ANOVA (*Field,* 2003). Subjects are students, sample size is 317. Each scenario was evaluated by approximately 40 students.

Research results are displayed in the appendix and *Figure 1 and Figure 2*. The main effects of all four independent variables are significant meaning that by offering compensation, providing choice for the consumer, giving an explanation for the failure and displaying emotions satisfaction is higher. With regard to two-way interactions the interaction of compensation and display of emotions is significant as proposed in H1. Figure 1 shows the impacts of emotions and compensation as main effects. We can see that by displaying emotions, and also by offering some compensation, higher degree of satisfaction can be reached. With regard to the interaction of emotions and compensation, our results suggest that in the case when no compensation is offered, displaying emotions lead to higher satisfaction compared to the situation when there is some compensation.

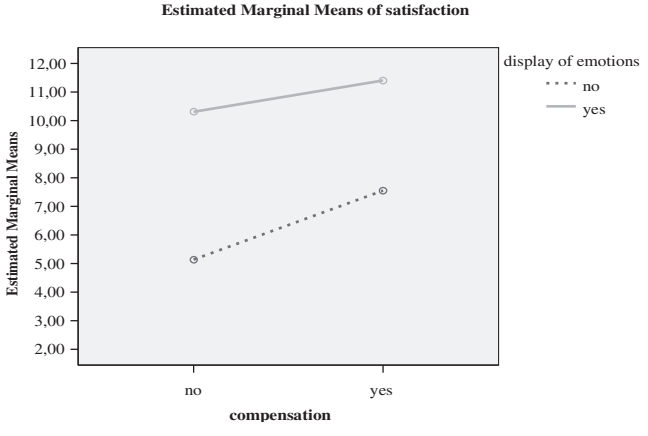


Figure 1: The effect of compensation and display of emotions on satisfaction

H2 and H3 are partially confirmed, since the main effects are significant, but the interaction effects are not significant.

Figure 2 displays a significant three-way interaction (H4). We can see that in case of no compensation, if the employee displays emotions, consumer choice does not increase satisfaction considerably. However if there is no display of emotions, consumer choice can improve satisfaction. If compensation is offered, the lack of display of emotions is not balanced by the choice of consumer.

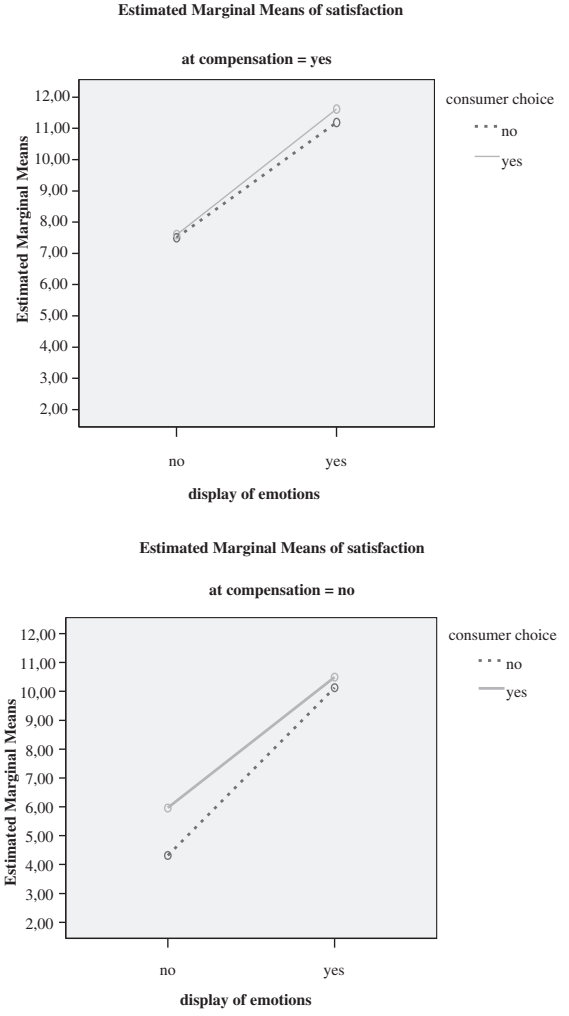


Figure 2: The effect of compensation, display of emotions and consumer choice on satisfaction

5. Conclusion

In our research we investigated the impacts of compensation, display of emotions, explanation and consumer choice on satisfaction during service recovery. We found that all independent variables have a favorable impact on satisfaction. The different combinations of these service recovery tools however result in different satisfaction scores that suggest that service recovery tools should be selected according to service characteristics. We emphasize the role of emotions. With regard to the main effects, we found that the display of emotions lead to the highest satisfaction score compared to

the impact of compensation, consumer choice or explanation. The highest satisfaction can be obtained with the combination of compensation, emotions and consumer choice.

Our research has limitations. One limitation is that only one service was investigated in both studies. By increasing the number of services the external validity of the research could be improved. Second, our research results could be refined by increasing the number of independent variables and the complexity of the research design.

Appendix 1: Mean values of satisfaction by levels of the independent variables

Independent variable	Independent variable	Independent variable	Satisfaction
			Minimum: 3, Maximum: 15
Compensation			F=70,66 Sig. 0,000
Yes			9,47
No			7,67
Display of			F=479,09, Sig.0,000
emotions			
Yes			10,86
No			6,33
Consumer			
choice			F=9,74, Sig. 0,002
Yes			8,87
No			8,27
Explanation			F=5,167, Sig. 0,023
Yes			8,81
No			8,35
Compensation	Display of emotions		F=10,176, sig.0,001
Yes	Yes		11,39
	No		7,54
No	Yes		10,31
	No		5,13
Compensation	Display of emotions	Consumer choice	F=3,73, Sig.0,054
Yes	Yes	Yes	11,62
		No	11,19
	No	Yes	7,59
		No	7,50
No	Yes	Yes	10,49
		No	10,12
	No	Yes	5,96
		No	4,31

References

Bitner, M.J., Booms , B.H., Tetreault, M.S. (1990). The Service Encounter: Diagnosing Favorable and Unfavorable Incidents, Journal of Marketing, Vol. 54, p.71–84.

Clemmer, E.C., Schneider, B. (1996). Fair Service, Advances in Services Marketing and Management, Vol. 5, 109–126

Davidow, M. (2003). Organizational Response to Consumer Complaints: What Works and What Doesn't. Journal of Service Research, Vol. 5, No.3, Feb, 225–250

DeWitt,T., Brady, M.K. (2003). Rethinking Service Recovery Strategies. The Effect of Raport on Consumer Responses to Service Failure. Journal of Service Research, Vol.6, No.2, 193–207

Goodman,J. (2000). Creating a Customer Feedback System that Has Maximum Bottom Line Impact. Customer Relationship Management, March-April, 289–296

Grönroos,C. (1988). Service Quality: The six Criteria of Good Perceived Service Quality. Review of Business, 9 (Winter), 10–13.

Hockut,M.A., Bowers,M.R., Donavan,D.T. (2006). The art of service recovery: fact or fiction? Journal of Service Marketing, Vol.20, No.3, 199–207

Hui, M.K. Bateson,J.E.G. (1991). Perceived Control and the Effects of Crowding and Consumer Choice on the Service Experience. Journal of Consumer Research, 18 (2), 174–184

Mattila, A.S. (2002). The Role of Emotions in Service Encounters, Journal of Service Research, 4, 4, 268–277

Mattila, A.S. (2001). The Impact of Relationship Type on Consumer Loyalty in a Context of Service Failures. Journal of Service Research, Vol.4, No.2, 91–101

Mattila,A.S., Enz,C.A. (2002). The role of emotions in Service Encounters. Journal of Service Research, 4 (4) May, 268–277

Maxham, J.G., Netemeyer, R.G. (2002). Modeling customer perceptions of complaint handling over time: the effects of perceived justice on satisfaction and intent. Journal of Retailing, Vol.78, 239–252

McCollough,M.A., Berry,L.L., Yadav,M.S. (2000). An Empirical Investigation of Customer Satisfaction After Service Failure and Recovery, Journal of Service research, Vol.3, No.2, Nov., 121–137

Patterson,P.G., Cowley,E., Prasongsukarn,K. (2006). Services Failure Recovery: The moderating impact of individual level cultural value orientation on perceptions of justice. International Journal of Retailing, Vol. 23, 263–277

Pugh, D.S. (2001). Emotional contagion in the service encounter, Academy of Management Journal, Oct., 44,5, 1018–1026

Seiders,K. – Berry, L.L. (1998). Service fairness: What is it and why it matters. Academy of Management Executive, 12. 8–20

Shoefer,K., Ennew,C. (2005). The impact of perceived justice on consumers' emotional responses to service complaint experiences. The Journal of Services Marketing, VOl.19, No.5, 261–270

Smith,A.K. , Bolton,R.N. (2202): The Effect of Customers' Emotional Responses to Service Failures on Their Recovery Effort Evaluations and Satisfaction Judgments. Journal of the Academy of Marketing Sciences, 30 (1), 5–23

Smith,A.K. , Bolton,R.N., Wagner,J. (1999). A Model of Customer Satisfaction with Service Encounters Involving Failure and Recovery. Journal of Marketing research, Vol. XXXVI, August, 356–372

Sparks,B, Fredline,L. (2007). Providing an Explanation for Service Failure: Context, Content, and Customer Responses. Journal of Hospitality and Tourism Reserarch, 31 (2), 241–260

Swanson,S.R., Kelley,S.W. (2001). Attributions and Outcomes of the Serivce Recovery Process. Journal of Marketing Theory and Practice, Fall, 50-65

Tax,S.S., Brown,S.W., Chandrashekaran,M. (1998). Customer Evaluations of Service Complaint Experiences: Implications for Relationship Marketing. Journal of Marketing, 62 (April) 60–76

Yagil,D. (2002). The relationship of customer satisfaction and service workers' perceived control. International Journal of Service Industry Management, 13 (4) 382–398

Use of coordination spheres in food economics

József Tóth

Corvinus University of Budapest (CUB),
Department of Agricultural Economics and Rural Development,
jozsef.toth@uni-corvinus.hu, www.uni-corvinus.hu

Abstract: The coordination plays central role in the economics. The conventional economic theory looks at the market and enterprise (or hierarchy) as two different, separated manner of coordination of economic goods and services. However the modern organization theory, price theory and institutional economics show that different types (not only market and enterprise, but also several types of hybrid forms) of coordination (or governance structure) necessarily live together in the current economic system.

Based on my previous research on the field of regional clusters in the food industry I came to the conclusion that the cluster is one of the spheres where economic coordination can occur. At the same time I pointed out that the ways of coordination can be ordered on an ordinary scale according to its normative or positive nature.

I've also found that the choice between the coordination spheres (market, enterprise or cluster) is not arbitrary, but instead depends on the interest's dimension which is represented by the exchange of goods and services in question.

Key words: exchange, coordination, institutions, governance structure

Introduction

The question of economic coordination became widely debated issue among economic theorists (*Kornai*, 1983, *Williamson*, 2002). These approaches "are all alike in their acceptance of organizations as entities to be analyzed in order to understand the allocation, coordination, and creation of resources" (*Ménard*, 1996).

The analysis of food industry's clusters in Hungary has guided me to recognition that in these clusters the most important object of economic exchange is the information among cluster members. If the information is matter of supply and demand, what factors and in which way of mechanism determine the equilibrium on that specific market? – it was the question, I tried to clarify in this paper.

1. Regional clusters and coordination

It is an important fact of cluster analysis that geographical concentration advantages in a given area cannot, or can only rarely be, identified entirely. A cluster cannot therefore be broken down into enterprises, as in a wider sense all of them share in the given advantages as part of the cluster. It follows that the expression 'regional cluster' is an abstraction, as definite geographical borders of the cluster may not be known. However, in order to deal more deeply with this issue we need a notion of a cluster as a form of cooperation which solely incorporates just those obviously sharing some geographical advantage.

There exists no definable common activity among enterprises working in the same agglomeration area in the absence of special relationships. Those identifiable external effects and interactions belong to the definition of clusters:

- A locally qualified workforce available
- A concentrated presence of suppliers
- Vertical relationships among members of a cluster
- Intensive information exchange between enterprises and institutions
- Diversified institutions and infrastructure endorsing specialized activities of a cluster
- Trust and common sense of socio-cultural identity among members based on the same values.

In a cluster, among the complex set of interactions, emphasis is rather based on 'soft', non-measurable factors like trust, creative ability and knowledge 'overflow'. Therefore a precise cluster definition based on which sharp line of demarcation could be drawn between pure agglomerations and complex clusters is not possible, Commonalities of different cluster-aspects, nevertheless, may be given:

– Some permanent cooperation is observable between enterprises
– Enterprises share their resources with each other
– Enterprises create intensive relationships with local institutions

* Research was supported by Hungarian funds OTKA T 046882 as well as NKFP 4_014_04.

– Cooperating enterprises and institutions are concentrated geographically

Nonetheless, clusters also can be interpreted from the enterprise theory point of view, by which we get closer to an exploration of factors for economic success and competitiveness and thereby to a demonstration of the development possibilities for competitiveness positions based on management of clusters. The market, the enterprise, and in addition, the cluster, is a scene of change. In order to use change to explain the market, the enterprise and the cluster in the same way, the definition should be general enough. Accordingly, "change is a transaction between actors, in which one party allocates some good, information or knowledge to the other party, which the other party has not had before, and by which this latter can obtain advantages" (*Kapás*, 2002).

In a cluster, the object of change is typically information or (special) knowledge. Information and knowledge change has the extraordinary specialty – due to frequency of changes in relationships – of being mostly random, but the intensity of the relationship guarantees its materialization.

A cluster then – similarly to a market or an enterprise – is a coordination field of change (mainly of information and knowledge) and is not a coordination mechanism of its own but rather the place of its materialization. Therefore, systematization of the mechanisms coordinating change (even in the field of clusters) is needed.

2. Economic coordination in different fields

Coordination is the central problem of economics. Traditional economic thought treats market and enterprise as two discrete, insular mechanisms. In the last decade, observance of a spread of diverse hybrid forms – like clusters – has raised the question whether coordination mechanisms really exist in such a discrete, insular form (*Coase*, 1937/2004, *Ménard*, 1996). Market – as an enterprise – cannot be treated as a coordination mechanism, but rather a result or field of their operation. The diverse existence of hybrid forms – like clusters – certifies that the existence of coordination mechanisms in different proportions finally determines the concrete field in which coordination takes place.

Economic coordination mechanisms can be set on an ordinal scale, in which 'positive' coordination is meant (through a competitive price system) to create market equilibrium. Market competition, based on supply-demand circumstances, decides whether economic decisions of market actors are adequate. The realized price cannot be judged and does not contain any values. The price mechanism of a market thereby **positively defines the equilibrium price without any reference to pre-defined values,** so this coordination rightfully composes the starting point of an ordinal scale.

The situation is totally different in the case of ethically-incurred types of economic coordination (e.g. corporate social responsibility, inheritance, bestowal, etc.). Here there naturally exists **an a priori value-order or normative** aspect, based on which the decision comes into existence. Such transactions are regulated by totally different mechanisms to those belonging to the field of positive coordination. Ethical coordination is thereby rightfully treated as one located near the normative end point of a sequence scale of economic coordination mechanisms.

It is evident that various stages exist between the two points which incorporate some characteristics of coordination found in both positions. It is also natural that there are no unequivocal demarcation terminologies; furthermore, a difference can not be interpreted between various modes concerning 'positivity', or 'normativity'. *Table 1* summarizes that which is mentioned above.

Table 1: Coordination Mechanisms

Type of economic coordination mechanism	Typical field of coordination	Nature of coordination
Competition/price system	Market	POSITIVE
Contract	Market/Enterprise	
Order/planning	Enterprise	
Cooperation	Enterprise/Enterprise network/Cluster	
Business ethics, trust	Enterprise network/Cluster	NORMATIVE

Source: Authors' own composition

It is also evident that, in different coordination fields, coordination modes are presented simultaneously but there always exists one which clearly typifies the given field and gives it its main character. This thought is presented in *Figure 1.*

In *Figure 1*, there is no distinct hierarchy between fields of coordination. Meanwhile, it is important to see that various coordination problems can be managed in different fields by economic actors. From this point of view, regional clusters are primarily appropriate for managing such economic problems where the main characteristic of the core coordination problem can not be typified by only (material) dimension. There exists some common value-order, some normative in a given region, orientation to which seems evident to market actors. This value-order is not ethical in its nature by all means but represents such an economic value

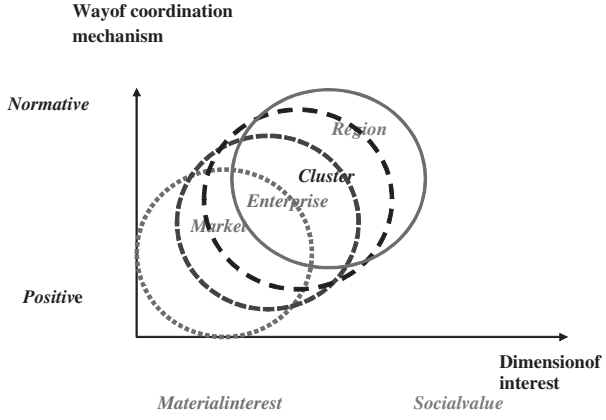


Figure 1: Linkage of economic coordination fields
Source: Authors' own composition

like the excellence of a wine-regions' wine. This value becomes a common organizing force for grape producers and wine processors. We state that from the aspect of success or commitment in competition, whether someone reckons this common value as one's own and takes it into consideration during one's economic decisions is of prominent importance.

3. Choice of the coordination field

Now, we are able to give a general rule for making choice between different fields of coordination. During my research in the past ten years I came to the conclusion that the market, the enterprise and the cluster have got the same substance: all of them serve the same economic function, namely they are the fields, where economic transactions take place. Regarding that serve for the same function, they can be analyzed with the same methods and tools. At the same time they are separated from each other with respect to the creation and maintenance cost of equilibrium in the different fields as well as the dimension of interest which is represented by the object of transaction. Following this rule we can make optimal choice between the different fields of coordination. This rule is presented in *Figure 2.*

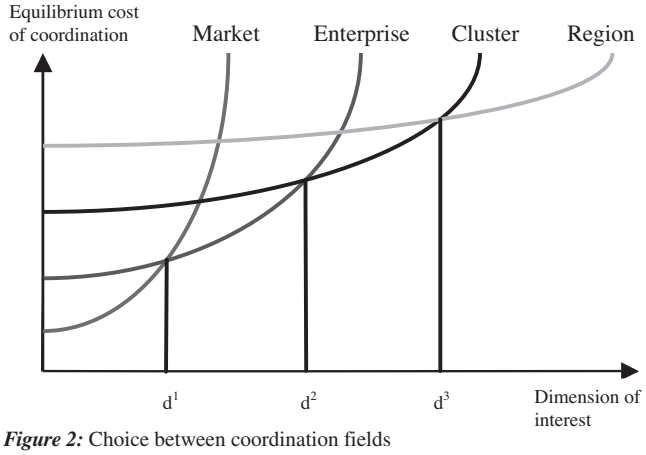


Figure 2: Choice between coordination fields
Source: Based on *Williamson* (1991) and *Ménard* (1996), the authors' own composition

Conclusion

According the general rule the market as coordination field has got economic advantages compared to the enterprise till the dimension of interest exceeds d^1. After this point the enterprise supplies more economic benefits in terms of less costly solutions. When the object of the transaction represents highly compound interest, the cluster, then the region or even the whole society seems to be the most appropriate field of economic coordination.

Non the market players, nor the decision makers are probably not conscient rule followers in this respect. Although the parallel presence of all these coordination fields in the economy reflects the fact that the actors would like to spare with coordination cost, so the general rule has got influence on their decisions.

References:

Kornai, J. (1983): Bürokratikus és piaci koordináció, Közgazdasági Szemle, 30(9), Szeptember, 1025–1038. o.

Ménard, C. (1996): WHY ORGANIZATIONS MATTER: A JOURNEY AWAY FROM THE FAIRY TALE Atlantic Economic Journal, Volume 24, Number 4 / December, pp. 281–300

Kapás, J. (2002): Piacszerű vállalat és vállalatszerű piac. Közgazdasági Szemle, XLIX. évf., Április 320–333. o.

Coase, R.H. (1937/2004): The Nature of the Firm, Economica 4, 386–405.

Williamson, O. E. (2002): The Theory of the Firm as Governance Structure: From Choice to Contract, The Journal of Economic Perspectives, Vol. 16, No. 3. (Summer, 2002), pp. 171–195.

Maskell, P., Lorenzen, M. (2003): The Cluster as Market Organization, DRUID Working Paper No 03–14

Williamson, O. E. (1991): Comparative Economic Organization: The analysis of Discrete Structural Alternatives, Administrative Science Quarterly, 36 (2), 1991, pp. 269–296.

The situation of the Hungarian agricultural higher education

Sándor Magda – Andrea Herneczky – Sándor Marselek – Erika Varga

Károly Róbert College, 3200 Gyöngyös, Mátrai u. 36.

Abstract: The knowledge-based, competitive economy places a great emphasis on the education system. The responsibility of higher education is to impart knowledge of high standard which is in harmony with the continuously changing environment. Higher education has a special role in the knowledge-based economy since it does not only have to fulfil educational but also research an innovation tasks.

The decrease in the traditional role of agriculture as well as international tendencies facilitate diversification, i.e. the emergence of new roles and the relevant activities. Due to the diversification of agriculture fields like environmental protection, bioenergetics, and rural development have become more emphatic.

The growing importance of these new fields is also significant from the point of view of education. Well trained professionals are of vital importance for the agriculture.

A significant number of fresh graduates are not employed in their profession; they find a job in other areas or continue their education in a different field of interest.

This research is based on a representative survey amongst agricultural graduates. Its objective is finding facts about how the graduates of the past five years assess higher education training and also about the factors employers take into consideration when employing a fresh graduate.

Key words: competitiveness, higher education, employment, mobility

1. Introduction

Nowadays knowledge has been given a greater and greater importance. The condition of human resources can decisively determine the economic development of the countries. If we agree that the most important task of education is to train workforce and prepare the people to be integrated in the economy, it is easy to admit that the basis of economic competitiveness is well-qualified labour force. Based on this, knowledge-based society makes such demands on the system of education that can help improve the competitiveness of the economy. The same holds true in respect of agricultural education.

With the scientific and technological development there have been new requirements made regarding knowledge as studying and knowledge itself have become more and more economic factors. From the aspect of the national economy the main function of education is to contribute to the economic growth. This possibility has been highly appreciated to prevent the consequences of the global crisis and triggers a different role of education.

The national and global crisis has had a serious impact on Hungary. To recover the economy, points of breaking out must be defined. We have comparative advantages regarding agricultural production and water supply so they must be made use of when utilising our resources. High standard education as the basis of development can also be accompanied.

2. Materials and methods

During our research both primary and secondary sources were applied. Questionnaires were filled in by the former students of agriculture in the past decade which pointed out the utilisation of the gained knowledge, the necessity of practical training, the role of foreign languages, the needs for continuous further trainings and socialisation at work among others. Several hundreds of questionnaires were sent out and their evaluation is in progress now. The primary research included interviews with renowned agricultural specialists e.g. how they saw agricultural higher education and what changes they recommended etc.

The data of the Central Statistical Office and www.felvi.hu are being used for the research to gather all possible information relevant for the topic and to provide the specialists of the future who determine agricultural training with relevant data. The examination focuses on the question how and to what extent the competencies developed by college education can be utilised in the world of labour.

2.1 Presenting the national higher education

The appreciation of knowledge in the labour market can also be illustrated by the data below. While 3.2% of the active population graduated from an institution of higher education in 1960, this proportion increased to 12.3% at the time of the change of the regime and was 14.2% in 2000. In 2006 it reached 16.5%.

From the beginning of the 1990s integration to higher education was given a greater and greater emphasis in Hungary. The number of students in higher education dramatically rose. This growth was without any interruption till 2004. Since then we can notice a decrease in the number of applicants *(Table 1)*.

Table 1: The number of applicants and those admitted to higher education

Year	Applicants			Admitted		
	Total	Under-graduate bachelor	Financed by the state	Total	Under-graduate bachelor	Financed by the state
2001	148880	48622	50826	98031	83642	106288
2002	164219	51148	55161	108903	87405	115072
2003	159885	50561	55108	106024	84857	103163
2004	167082	53155	59641	109562	94048	115798
2005	149829	51195	60028	102960	90601	114008
2006	132527	52850	57796	93898	83836	103422
2007	108854	50405	48724	81563	76392	88794
2008	96986	48567	52776	81101	65240	81389

Source: www.felvi.hu

At the 1990s one of the reasons for the dramatic growth was the fact that the generation born at the end of the 1970s reached the age of 18–19. On the other hand, the number of unemployed also increased due to the economic transformation so in the case of applicants to higher education „procrastinating" entry to the labour market was also a motivating factor.

Analysing the Eurostat data of 2006 we can conclude that the mobility of the Hungarian college and university students significantly lags behind the European average. The problem is not only that a relatively small part of students were given the chance to study abroad for a shorter or a longer time but also the fact that the Hungarian institutions of higher education were not able to provide foreign students with attractive courses -except only some of them. After the change of the regime the growing need for higher education qualification had to be met in many areas so besides working, a lot of people are engaged in different types of trainings (distance education, correspondence etc.).

With the globalisation of the economy knowledge and education are also globalised. Globalisation and information boom created new challenges to higher education (*Wachtler-Marselek,* 2001). The transformation of higher education became indispensable. The creation of such uniformed system ensuring shifts between both majors and institutions was drawn up that helps both student and teacher mobility besides preserving the intellectual achievements and traditions of the single countries so that knowledge piled up in each country could be invested not only within national borders but also beyond them (*Magda* et al., 2008).

Erasmus programme also helps mobility. At its 1997 launch almost 3 thousand students of the EU took part in it and now 160 thousand students can gain foreign experience every year within its frames. By 2012 the number of participants is expected to grow to 3 million for the full period of the programme. Erasmus supports approximately 25 thousand short term stays abroad for the teachers per year. The programme is also popular in our country and the number of participating students and teachers is on the rise-although not fast enough. To improve this, organisational measures should be taken and steps to make the programme popular are recommended after having studied the present situation carefully.

The tertiary system of education created in the country can make higher education of an acceptable standard possible if the content is good enough. Three objectives are usually separated and addressed in higher education to support competitiveness and create a future as expected in the national development plan:

- the first output (BSc) should serve a competitive labour market,
- the second output (MSc) should be capable of development and scientific training,
- the third output (PhD) should serve the competitive basis for basic sciences, research and development even by international standards (*Magda,* 2006).

The number of applicants to higher education has gradually been decreasing since 2004 but the ratio of being admitted is getting better. Fewer and fewer students wish to go on studying but the chance of being admitted is significantly improving. In 2004 the ratio of being admitted was only 65.6% while in 2008 83.4% of the applicants were successful.

Regarding more and more important programmes, applications between 2001 and 2008 decreased everywhere. Especially it was agriculture, economic sciences and IT which lost popularity. The trend is shown by *Figure 1.*

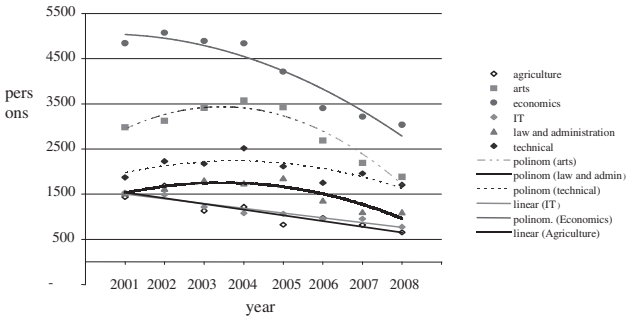


Figure 1: The number of applicants to different important trainings
Source: own compilation based on www.felvi.hu

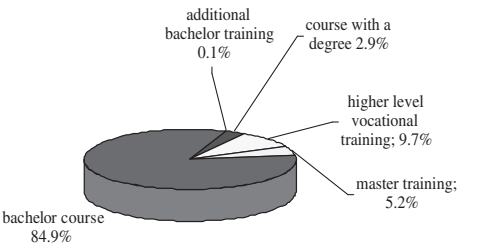


Figure 2: The participation of students admitted to different courses
Source: www.felvi.hu

In 2008 84.9% of the students enrolled for a bachelor course and 5.2% for a master course. The proportion of higher-level vocational training has also increased *(Figure 2.)*

69% of the students admitted wanted to carry on studying in undergraduate, 27.8% in correspondence, 1% in evening and 2.2% in distance education courses in 2008. 35% of them have to pay for their tuition fees while the fees of the remaining 65% are covered by the state. Knowing a foreign language is not satisfactory in the case of 51.5% as they do not possess any language certificates.

2.2. The situation of agricultural education, regional tendencies

The running of agricultural enterprises requires broad knowledge as without entrepreneurial, market, marketing and technological knowledge no success can be made. According to some data the national agricultural enterprises are less competitive and the employees in Hungarian agriculture are underskilled *(Table 2)*.

Table 2: The division of employees by the highest qualification

Name	Total		Agricultural	
	Employee			
	1990	2005	1990	2005
lower than 8 classes of primary school	5.2	0.5	11.4	2.0
8 classes of primary school	33.4	15.1	43.9	31.4
secondary school without GCSE with a professional certificate	24.4	28.9	24.8	35.4
secondary school with a GCSE	24.8	34.7	14.4	22.0
university, college etc.	12.3	20.8	5.5	9.2
TOTAL	100.0	100.0	100.0	100.0

Source: Central Statistical Office (hereinafter referred to as CSO), 2008

The Central Statistical office examined the regional differences of agriculture in 2008. In the past seven years hardly any change was made in the agricultural qualification of sole entrepreneurs. The Economic Structural Survey of 2007 showed that the main part (almost 87%) of the producers conducted their businesses with or without any practical experience. Only 2% of them had a college or university degree while 6–6% finished secondary or primary agricultural schools, respectively. Lack of expertise can conserve the past, prevents the implementation of modern, environmentally-friendly and competitive technologies and makes our backlog even greater *(Table 3)*. According to the survey of *Székely-Pálinkás* (2007) the economic competitiveness of the national agricultural enterprises is questionable.

Underqualification is general and there is no difference between the regions in this respect.

Interest in agricultural education decreased between 2002 and 2007 both in secondary and higher education as well as in andragogy. It is very regrettable as vocational training could be one of the key factors in agricultural development.

Table 3: The composition of sole entrepreneurs by agricultural qualification

Name	2000	2003	2005	2007
no experience	27.9	8.5	7.8	11.2
practical experience [a/]	…	79.1	79.8	75.6
elementary	64.8	4.8	4.9	5.7
secondary	5.9	5.5	5.6	5.6
higher education	1.9	2.1	1.8	1.8
TOTAL	100.0	100.0	100.0	100.0

[a/] Methodological change; Source: CSO, 2008

174 institutions carried out secondary-level agricultural training in the country in 2007 where altogether 5.9 thousand students studied- three-quarters of them at vocational and special vocational schools while one-quarter at secondary technical schools. Between 2002 and 2007 the total number of students at agricultural special institutions decreased by more than 14%. While the number at vocational schools decreased, the one at secondary technical schools increased.

The number of agricultural students has significantly been decreased in all the regions in the past five years with the exception of Central Hungary where there was an 8% growth. During this period the southern part of the Great Plains suffered the gravest decrease of over 24%.

The agricultural higher education ensures the supply of specialists in the areas of agriculture, forestry, fishery and animal sciences. *Between* 2002 and 2007 only 10.5 thousand students were engaged in agricultural higher education, i.e. 3% of the total number *(Table 4)*.

Table 4: The data of students in agricultural special trainings in higher education based on location, 2007

Region	students			
	persons	breakdown %	in percentage of 2002	persons per 100 thousand inhabitants
Central Hungary	3829	36.6	95.5	132.2
Central Transdanubia	70	0.7	37.8	6.3
West Transdanubia	1503	14.4	92.0	150.6
South Transdanubia	1112	10.6	158.2	115.8
North Hungary	906	8.7	84.2	73.3
North Great Plains	1602	15.3	68.1	105.8
South Great Plains	861	8.2	32.1	64.5
Foreign	579	5.5	91.9	X
TOTAL	10462	100.0	78.8	104.1

Source: CSO, 2008

To sum it up, interest in the traditional agricultural majors in higher education such as plant production, animal breeding and agricultural engineering has decreased. However, in parallel the majors of food engineering, landscape engineering, economic engineering, environmental management engineering, rural development engineering, mechanical engineering and game management engineering are gaining more and more popularity. The students have a

vision of the future here and these are the trainings that are less accompanied by heavy, demanding tasks and duties in practice.

Besides the academic vocational training of the young, the training and further training of producers and agricultural managers is also a significant task as their level of qualification is still very low nowadays. The number of those enrolled for agricultural vocational trainings, forestry and fishery has dramatically been fluctuating lately. In 2007 6.2 thousand students took part in agricultural adult training in the country that comprises hardly 3% of the 203 thousand participants taking part in non-institutional vocational training.

2.3 Practical training-illustrated by a French example

Training in agricultural education at all levels is mainly theoretical. Manual working tasks can only be acquired in practice. The costs of practical training are high so schools cannot cover them. *Somogyi* (2007) explains that in France there is a kind of educational form that could be transplanted. It is easy to realise if young persons from the countryside went on studying, they were quite likely not to return to the village so in terms of labour force they are lost to the farming communities. If they stayed there, they would not be educated and this would not serve community interests, either. The establishment of the first community centres has its roots in this situation where the families involved undertake the education and practical training of the children of the farming families in the neighbourhood. The activity concentrates on three main ideas till today:

- the personal responsibility for the children
- alternating, rotating form of education, i.e. a given period (usually 1–2 weeks) at a boarding school and the same amount of time in the farm,
- not only a form of education but also socialising and involving students in the life of the community.

This form of education introduces the world of labour starting from the age of 14, their requirements are acceptable and these young people, who are experts in practice, too, with a degree, could serve as the basis of agricultural higher education after graduation. Such form of training could be organised around famous, traditional schools in the regions depending on the role of agricultural production.

2.4 The agricultural research

The National Office for Research and Technology spent more than 15 billion Ft on research that help increase market and competitiveness as well as modernise production processes in 2004 and 2005. The winning projects could obtain an average of 60–100 million Ft support. In our country there are more than 300 research institutes connected to a part of agriculture (plant production, animal breeding, veterinary, forestry, game management, agricultural technology, agricultural biotechnology etc.).

The total number of full-time employees in R&D was almost 26 000 in 2007 and 12% of them had a close contact with agriculture as a science. In 2007 of the 246 billion Ft spent on research almost 20 billion was spent on agricultural research, the main part of which was financed by the central budget. In 2007 there were 2400 national research topics nationwide, 40% of which was carried out in Central Hungary.

The international agricultural research can only amount to 5% of the total research. The businesses engaged in agriculture possess research institutes to enhance their market effectiveness and competitiveness so in 2007 there were 93 such institutions employing approximately 800 persons.

3. Preliminary results and discussion

The preliminary results can be assessed on the basis of the 100 questionnaires returned so some conclusions can also be drawn. The problems of finding a job are huge and 19% of the job seekers can find a relatively slight number of jobs that are in connection with their profession.

17% of the applicants could have been employed in jobs where a degree is not necessary and in the case of 15% professional practice was missing. Due to the lack of foreign language knowledge 14% of them could not find a job at all. The opportunities for professional practice and internship during the training period were not regarded favourably by the students: the professionals of the places for internship were not interested in imparting their knowledge and it was only in some cases when students were treated as a colleague in the future. 62% of them thought “they had been made maximal use of and left alone”. 37% of the students stated to have been working without any professional challenges. Rethinking the professional practice is a very topical question also on the basis of the questionnaire.

28% of the graduates regarded a deeper insight into foreign languages, 15–15% into finance and accountancy as well as legal studies, 13–13% into economics and marketing important.

4. Conclusions and recommendations

Undoubtedly, there is also a need for a shift in attitude in education, as well. The greater proportion of participating agricultural professionals in producing plants is indispensable if we do not want to make our backlog even bigger. A shift to practical training is essential and we can follow the French example above. Most students can only partly use their theoretical knowledge and finding the suitable position is a cause for concern nowadays. According to the survey the most important things are taking teaching foreign languages more seriously as well as updating and broadening knowledge in finance, accountancy, law, economics and marketing.

Despite the present grave economic situation finding a job was generally successful but not in production rather in the sectors of commerce, services, education or public administration. Counselling activity and training in rural development should be improved as there are significant shortcomings.

The agricultural trainings and further trainings for adults is also a form to be updated in our rapidly changing world.

References

Castells, M.: *A hálózati társadalom kialakulása*. Gondolat – Infónia Kiadó, 2000.Budapest, pp. 1–662.

Magda, S.: Tudomány és felsőoktatás. *Gazdálkodás 2006.50. évf. 6. sz.* pp. 68–73.

Magda, S. – Herneczky, A. – Marselek, S.: A felsőoktatás és az agrároktatás dilemmái. *Gazdálkodás 2008. 52. évf. 5. sz.* pp. 432–444.

Somogyi, N.: Szakképzés – másként Franciaországban. *Az Európai Unió Agrárgazdasága, 2007. 12. évf. 4. sz.* pp.16–18.

Székely, Cs. – Pálinkás, P.: A hazai mezőgazdasági vállalkozások menedzsmentje európai összehasonlításban. *Gazdálkodás 2007. 51. évf. 6. sz.* pp. 3–16.

Végh, Z. (szerk.): A mezőgazdaság fejlettségének regionális különbségei. *KSH, Szeged, 2008.* pp. 1–203.

Wachtler, I. – Marselek, S.(2001): A gazdasági mérnöki szak minőségpolitikájának feladatai a SZIE GMFK oktatásában. Minőségoktatók. VI. Országos Konferenciája, Budapest, 2001. pp. 38–40.

www.felvi.hu

Using DEA to evaluate efficiency of higher education

Réka Tóth

Faculty of Applied Economics and Rural Development
University of Debrecen Centre for Agricultural Sciences and Engineering

Abstract: The aim of the higher education reform process both in Hungary and in the European countries is establishing a competitive, qualitative higher education with efficiently operating institutions. The question of efficiency needs increased attention not only because of the decline of the state support but also the rapid raise of the student mass.

In the education system it's not easy to measure the output of the services. The situation is more complicated if an organisation or a sector has multiple inputs and outputs. In this case a possible method of determining efficiency is Data Envelopment Analysis. In my paper I'd like to introduce this method and use it to compare the efficiency of higher education systems. Furthermore I am examining whether their efficiency is influenced by the extent of the contribution of the state and the private sector or socio-economic factors like GDP per capita and education level of parents.

Key words: higher education, production efficiency, data envelopment analysis, Tobit regression, sensitivity

1. Introduction

1.1. Efficiency considerations in the financing of higher education

The viewpoints applied by the different education researchers and analysts for the assessment of the financing systems differ or can differ slightly, their common feature is that they all contain efficiency and equity criteria. Market regulation, quality development and other issues to be studied can be interpreted as parts of the former viewpoints or separately from them.

Most of the analysts differentiate external and external efficiency in the field of education. *Kováts* (2006) defines three different types of efficiency: allocative, production and dynamic efficiency. Allocative or economic efficiency is the best possible utilization or distribution of the available limited resources for maximizing usefulness (consumer welfare). Production or cost efficiency defines the requirement that the ratio of the production factors should be optimal so that a maximum output could be achieved with the given inputs. Dynamic efficiency refers to the prospective efficiency and determines innovation, the renewal and adaptation ability of the organizations (GVH, 2007). In the present paper, I study the production efficiency of the European higher education systems and relate it to certain elements of the financing mechanism and socio-economic factors.

1.2. Justification of the role of state and private sector in higher education

Observing the higher education institutions as a whole, the ratio of public funds used exceeds 70%, in extreme cases – mainly in Scandinavia – it can reach even 97–98%. It is a fair question why the state finances universities and colleges to such a high extent that is why the state should have a role in higher education. Numerous Hungarian and foreign studies have studied this problem the bases of which were the views of M. Friedman and A. O. Hirschman.

Until the end of the 1980s (the middle of the 1990s) – when higher education was free almost everywhere – the analyses emphasised that higher education have a certain public usefulness for society: the average educational and cultural levels and the amount and quality of human resources are improved resulting in higher living standards. These effects of higher education are called environmental effects or externalities in technical terms. Among others, this is what justifies the necessity of state support and the use of public funds (*Friedman,* 1996).

In addition, there are rational reasons for the state contribution of higher education: one is the imperfection of the capital market. *Friedman* (1996) explains that the banks and financial institutes do not give enough loans for investing into "people", because it is less safe compared to investment into physical capital. Fixed loans have high risks also for the state. Last but not least, the imperfection of information should also be mentioned as an argument for state support.

The above thoughts of *Friedman* (1996) can be considered as a part of the human capital theory which might be the most important approach to the economic role of human resources; this theory is of major importance for the subject of the present study. It has been defined by T. W. Schultz. *Schultz* (1983) claims that although it is against our basic values and beliefs to consider human beings as capital goods, this kind of thinking can answer numerous economic questions and problems. Investment into human capital is important because the acquired knowledge is a decisive factor in economic progress and also because it is a good investment for the individual. One or the major beneficiaries

of higher education are the individuals, therefore, they have to make a direct contribution to the costs of their own education.

2. Materials and methods

While allocative efficiency can be interpreted at the level of society, production efficiency refers to the operation of a company or organization. Organizations – including higher education institutions – can increase their production efficiency either by increasing their output at a constant input or by obtaining the same output with reduced inputs. For determining production efficiency it is usually applied the well-known formula: Efficiency = output / input.

In my study, I apply one input and two output variables for comparing the European higher education systems. The OECD publication, Education at a Glance containing detailed and comprehensive statistics was used as a data source. The input variable is the ratio of expenditure spent on higher education institutes to GDP, the output variables are the ratio of people with a diploma to the total population and their employment rate. For the first output variable, the OECD provides the data according to age groups (the differentiate 4 age groups). As my study focuses on the short term effects of education, the age group of 25 and 34 years was selected, the data represent the ratio of those with a diploma within the population aged between 25 and 34 years. The variables of DEA model are demonstrated in table 1, the values refer to the year 2006.

If I used the above formula for calculating efficiency scores, I could compare the value of the input variable to only one of the output variables. However, the countries do not only aim for highly qualified professionals, but they also want that these people could find employment. Therefore, such an efficiency index is needed which can handle if there are multiple input and output variables at an organization. For solving this problem, two major trends were formed: stochastic (based on probability) analysis and the so-called Data Envelopment Analysis (DEA) requiring mathematical programming. For calculating the efficiency index, I used the DEA method which I would like to describe briefly.

The DEA method was worked out by Farrel, Debreu and Koopmann, then it was further developed by Charnes, Cooper and Rhodes at the end of the 1970s. Its basic objective was to determine which units of the organizations (DMUs: decision making units) having several input and output variables operate less efficiently. Since if only one input variable and one output variable are taken into consideration, then only partial efficiency indices can be calculated which can be misleading. Later, a demand arose that the method should provide information how the input units could be changed in order to improve performance. (*Cooper* et al., 2007) DEA – similarly to production efficiency – can be interpreted with both input-oriented or output-oriented approaches. The output-oriented approach focuses on how high maximal output can be achieved with the same amount of resources. *Tibenszkyné* (2007) states that the output-oriented approach is the appropriate one for higher education because the principle of cost minimization is not applied according to the market conditions. It should also be taken into consideration that the integration of resources is not always the same in the education process. If they would be utilized at the same level, then we should calculate with constant Return to Scale (CRS), accordingly, variable return to scale (VRS) is preferable. The output-oriented VRS indices of DEA can be obtained by solving the following linear programming equations:

$$\max \Phi_k + \varepsilon \sum_{r=1}^{s} s_r + \varepsilon \sum_{i=1}^{m} s_i \text{, supposing that} \quad (1)$$

$$\Phi_k y_{rk} - \sum_{j=1}^{n} y_{rj} \lambda j + s_r = 0 \qquad r = 1 \ldots s$$

$$x_{ik} - \sum_{r=1}^{n} x_{ij} \lambda j - s_i = 0, \qquad i = 1 \ldots m$$

$$\sum_{j=1}^{n} \lambda j = 1, \qquad \lambda j, s_r, s_i \geq 0, \; j = 1 \ldots n$$

Table 1: Variables of the output-oriented DEA model

Countries	VARIABLES OF THE STANDARD DEA MODEL			NON-DISCRETIONARY INPUTS		
	Ratio of expenditure spent on higher education to GDP (Input)	Ratio of people with diploma to total population (Output1)	Employ-ment rate of people with diploma (Output2)	GDP per capita in current US$ (GDPP)	Parental educational attainment (PEA)	Public-to-total expenditure ratio (PTT)
Austria	1,3	19	85,9	38669	77	92,9
Belgium	1,2	42	83,6	37779	60	90,6
Czech Republic	1,0	15	85,1	14037	89	81,2
Denmark	1,7	41	87,4	50712	78	96,7
Finland	1,7	38	85,0	40040	80	96,1
France	1,3	41	83,0	36656	61	83,6
Germany	1,1	22	84,3	35054	83	85,3
Greece	1,5	27	83,3	27731	53	96,7
Hungary	1,1	21	81,8	11227	77	78,5
Iceland	1,2	32	92,0	54582	64	91,2
Italy	0,9	17	80,6	31490	47	69,6
Netherlands	1,3	36	86,4	40436	70	77,6
Poland	1,6	28	83,5	8881	49	74
Portugal	1,4	20	86,4	18407	20	68,1
Slovak Republic	0,9	17	84,9	10217	86	77,3
Spain	1,1	39	83,4	27905	43	77,9
Sweden	1,6	39	87,3	42278	82	88,2
Turkey	1,0	13	75,5	5448	22	91,5
United Kingdom	1,3	37	88,1	39281	67	66,9

Source: OECD (2008), WRI (2006)

In this system of equations s means the number of inputs, m the number of outputs. y_{rk} is the sum of the r outputs of the k. production unit, x_{ik} is the sum of its i inputs. S_r and s_i stands for the weights of the outputs and inputs. The k. unit is considered efficient, if its efficiency score, $Ö_k$ is equal to 1.

The standard DEA model incorporate only discretionary inputs, those whose quantities can be changed at the DMU will, and don't take into account the presence of environmental factors – as non-discretionary inputs. These socio-economic differences can play an important role in determining heterogeneity accross DMUs. The most relevant variables can influence educational outcomes are household wealth, parental education and state support of higher education. Household wealth is measures by GDP per capita refers to 2006. Parental educational attainment means the percentage of population aged 45–54 that has attained at least upper secondary education in 2006. State support is given by the percentage of state contribution to the expenditures of higher education institutions in 2005. (The values of the variables are presented in table 1.) In my paper I'd like to measure the effect of these factors to the efficiency of European higher education systems using a two-staged model.

If z_k is a non-discretionary input, the following regression is estimated:

$$\Phi_k = z_k \beta + \varepsilon_k \quad (2)$$

The efficiency scores are resulted by solving the equations above in the first stage. Â is the parameter of the non-discretionary input to be estimated in step two. Since Φ_k is not a measured, but a calculated bounded variable ($\Phi_k \leq 1$), I'll use the censored Tobit-regression. (ATS, 2008) This regression model shows which non-discretionary variable has significant effect on the performance of the higher education systems. In the case of the significant variables, sensitivity analysis provides the minimum magnitude of change required in variable values to reclassify a DMU. The absolute value of this sensitivity score doesn't give us useful information. More important is the comparison of the rates of each countries, because I'd like to answer which country reacts more sensitively to the changes of the environmental factors.

3. Results and discussion

In table 2 I report results for the standard DEA variable-returns-to scale efficiency scores and peers of each of the 19 considered countries.

It's easy to observe from table 2 that most efficient countries with the standard approach are Belgium, Denmark, Iceland, Italy, the Slovak Republic and Spain. Hungary is ranked to the 16. place. If our country wants to become efficient, it will have to aim at the position of Iceland and the Slovak Republic – as peers. Greece, Poland and Turkey are located on the opposite end of the rank. Turkey is the only state with efficiency score under 0,9, since the ratio of the population that has attained tertiary education is only 13%,

Table 2: Results for higher education efficiency

Countries	OUTPUT-ORIENTED DEA		
	VRS	**Rank**	**Peers**
Austria	0,934	15	Iceland
Belgium	1,000	1	Belgium
Czech Republic	0,975	11	Iceland, Slovak Republic
Denmark	1,000	1	Denmark
Finland	0,964	12	Denmark, Iceland
France	0,983	9	Belgium, Denmark, Iceland
Germany	0,940	13	Iceland, Slovak Republic
Greece	0,905	18	Iceland
Hungary	0,913	16	Iceland, Slovak Republic
Iceland	1,000	1	Iceland
Italy	1,000	1	Italy
Netherlands	0,976	10	Belgium, Denmark, Iceland
Poland	0,908	17	Iceland
Portugal	0,939	14	Iceland
Slovak Republic	1,000	1	Slovak Republic
Spain	1,000	1	Spain
Sweden	0,990	8	Belgium, Denmark, Iceland
Turkey	0,865	19	Iceland, Slovak Republic
United Kingdom	0,998	7	Belgium, Denmark, Iceland

Source: own calculations

and the employment rate of people with a diploma is almost 10% less, than the European average.

In order to analyse the effects of the environmental factors I create three models. The first model contains all the explanatory variables. Table 3 provides information on the parameter estimates and values of significance and R^2.

Table 3: Censored normal Tobit results

	Model 1	**Model 2**	**Model 3**
Constant	1.047293 (<0.0001)	1.060891 (<0.0001)	0.907923 (<0.0001)
GDPP	$0.229e^{-5}$ (0.0008)	$0.2536e^{-5}$ (0.0003)	$0.2151e^{-5}$ (0.0048)
PEA	0.000506 (0.2628)		
PTT	-0.002139 (0.0257)	-0.001993 (0.0500)	
R^2	0,611	0,532	0,337

Source: own calculations

The education level of the parents doesn't prove to be statistically significant, probably because European countries try to actively monitor and sustain the high equity of schooling. According to an OECD-study prepared in 2007 equity "implies ensuring that personal and social circumstances – for example gender, socio-economic status or ethnic origin – should not be an obstacle to achieving educational potential." (OECD, 2007) That's why in model 2 there are only two variable: GDP per capita and public-to-total expenditure ratio. If we accept the significance level of 0,05, the estimated coefficients of both non-discretionary

inputs are statistically significant. While higher GDP per capita results in more efficiency, public-to-total expenditure ratio is related negatively to the efficiency measure. For example, an increase of the state support of higher education sector reduces to the efficiency score. In other words, the higher private contribution to the expenditures of universities and colleges implies that the given country moves closer to the theoretical production possibility frontier. Since the GDP per capita has the most significant effect to the efficiency score, it worth studying what happens by dropping out both of the other explanatory factors. Despite of the fact that GDP per capita behaves significant in model 3, model 2 is much better, because R2 is almost 20% higher – the variance of GDPP and PTT explains more than the half of the variance of DEA variable-returns-to-scale efficiency values.

The last operation of my study is analysing the sensitivity of the performance of higher education systems to the changes of the significant non-discretionary inputs separately. By calculating the minimum necessary magnitude of change in the variable values to the improvement of the state's position, I'm able to make a sensitivity ranking regarding to the explanatory factors. Figure 1 illustrates the rankings of the European higher education systems.

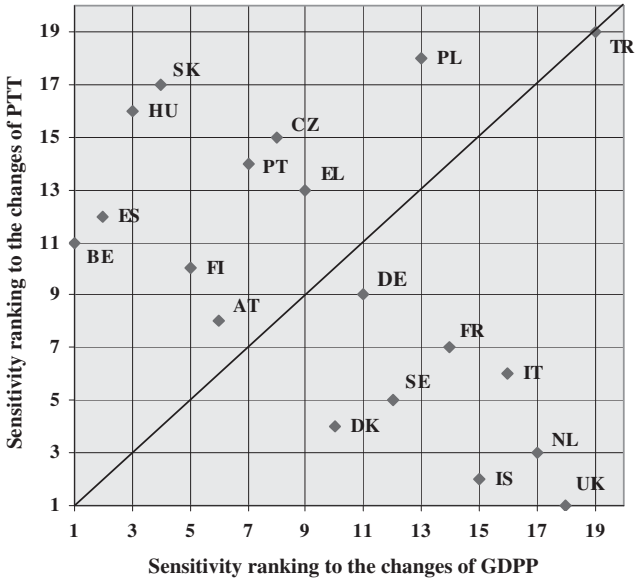


Figure 1: Sensitivity rankings of European higher education systems
Source: own demonstration

In the case of the countries below and to the right of the diagonal the changes of GDP per capita induce most substantial shift of the efficiency measures than the changes of the state support of higher education. On the other hand, states above and to the left of the diagonal react more sensitively to the changes of PTT. By comparing the details of figure 1 to the value of GDPP and PTT it's possible to observe that the poorer countries are located above and to the left of the diagonal, while richer states with lower levels of state support are found on the opposite side of the figure. The last important conclusion is that the changes of GDP per capita are more significant at two thirds of the most efficient higher education systems, than the shift of PTT.

4. Conclusion

In my study, I aimed to determine the relationship between the efficiency of European higher educations systems and the degree of state support as well as the family's socio-economic background. I found that the GDP per capita has the most considerable influence on what results the countries achieve in higher education relative to their inputs, and the degree of the state contribution is negatively correlated to the efficiency measure. I can conclude that the rise of the private contribution to the expenses of higher education (for example by introducing tuition fees) is a more effective tool of the enhancement of efficiency in the poorer countries than in the richer ones.

References

Cooper, W. – Lawrence, M. S. – Tone, K. (2007): Data Envelopment Analysis – A Comprehensive Text with Models, Applications, References and DEA-Solver Software, Springer Science and Business Media, New York, 1–2. ISBN 0-387-45281-8

Friedman, M. (1996): Capitalism and freedom. Akadémiai Kiadó, Budapest, 94–117. ISBN 963-056-994-9

Hirschman, A. O. (1995): Exit, voice and loyalty. Osiris Kiadó, Budapest, 108–112. ISBN 963-3790-80-8

Kováts G. (2006): A felsőoktatási intézmények finanszírozási modelljei. Közgazdasági Szemle, LIII. 2006. október. 919–938. ISSN 1588-113X

Schultz, T. W. (1983): Investment in human capital. Közgazdasági és Jogi Könyvkiadó, Budapest, 60–61. ISBN 963-221-250-9

Tibenszkyné Fórika K. (2007): Az oktatás hatékonyságának mérése a ZMNE 2006-ban végzett hallgatóin DEA módszer használatával. Hadmérnök, II. évf., 2. szám ISSN 1788-1919

ATS (2008): Stat computing – SAS – Data Analysis Examples – Tobit Analysis. University of California – Academic Technology Services.
http://www.ats.ucla.edu/stat/sas/dae/tobit.htm

GVH (2007): Verseny és termelékenység. Budapest, 2007. június 12. http://www.gvh.hu

OECD (2007): No more failures: Ten steps to equity in education.
http://213.253.134.43/ oecd/pdfs/browseit/9107041E.PDF

OECD (2008): Education at a Glance – OECD indicators. Paris, http://www.sourceoecd.org

WRI (2006): Earthtrends – Environmental variables. World Resources Institute,
http://earthtrends.wri.org/text/economics-business/variable-638.html

Total Quality Management in the food industry – Current situation and potential in Germany

Clemens Morath and Reiner Doluschitz

University of Hohenheim, Institute for Farm Management,
Computer Applications and Business Management in Agriculture, D-70593 Stuttgart,
morathcl@uni-hohenheim.de, doluschitz@uni-hohenheim.de

Abstract: The requirements in terms of information availability, risk precaution and control in the food industry continue to increase. In this context the interest of companies in the Total Quality Management (TQM) approach is also increasing. This development attracts notice to Business Excellence and connected systems. Similarly, various quality management tools and techniques are available. In this regard a research project analyzed to what extent the companies in the food industry apply different activities of the TQM scheme. The research calculates the importance that the companies attach to different requirements of TQM and how they implement them. Additionally, statistical analysis provides evidence that there is a positive correlation between the implementation of the activities of TQM and the medium- to long-term success of a company. In this article the methodology and major findings of this research project are presented.

Key words: Food Industry, Total Quality Management, Ordinal Logistic Regression, Business Excellence

1 Introduction

The food industry aims at ensuring the harmlessness of its products and providing important information for its business partners along the food chain and consumers. On the other hand, the focus of the enterprises extends and the meaning of quality changes when considering the processes from the broader point of view of the stakeholders, who can influence business processes. As a consequence the enterprises use different instruments and systems, particularly Integrated Management Systems, to guarantee certain quality standards. Within the framework of a research project titled 'Implementation and potential of Total Quality Management in enterprises in the food industry', the use, relevance and efficiency of Integrated Quality Management Systems, or so-called Total Quality Management (TQM), was investigated (*Morath,* 2008). Furthermore, the potential of TQM to provide improvement in food industry enterprises has been analyzed and recommendations deduced.

2 Materials and methods

The approach of TQM is based on a holistic connotation of quality and covers all areas of organization and external relations of a company (*Gucanin,* 2003:23). In TQM, quality is defined by the subjective expectations and requirements of the internal and external stakeholders of the enterprise.

A very well-known approach to Integrated Quality Management Systems is that of the European Foundation for Quality Management (EFQM). This foundation developed the EFQM Excellence Model and split the different aspects that must be taken into consideration into nine areas. *Figure 1* shows that five of them are the so-called enabler areas (leadership, employee orientation, policy and strategy, partnerships and resources, processes). They deal with what the organization is doing and how it is acting. The other four areas are the result areas (employee satisfaction, customer satisfaction, society acceptance, key performance results). They deal with what the organization achieves. The results are caused by the enablers and the enablers can be improved on the basis of the results. Based on the nine areas mentioned, the approach of the EFQM Excellence Model has been applied to guarantee systematic data collection and analysis within the scope of the research project at hand.

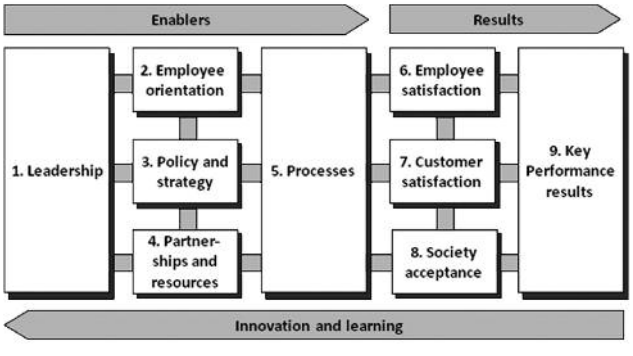


Figure 1: EFQM Excellence Model (own illustration, adapted from EFQM, 2003:12)

Some quality awards like the EFQM Excellence Award (EFQM, 2009), the Ludwig-Erhard-Prize in Germany (ILEP, 2009) and different quality awards in Germany's federal

states offer self-assessment questionnaires to the enterprises. These questionnaires ask if the enterprises fulfil the various requirements of TQM. The questionnaires can be used for evaluation for the various quality awards as well as for self-assessment, for an enterprise to investigate its own strengths and weaknesses in terms of the TQM requirements. Based on the EFQM Excellence Model and the mentioned questionnaires the statements for the empirical part of the research project were defined. The statements were in line with the nine areas of the EFQM Excellence model (EFQM, 1999; 2003). These statements are always related to one of the nine areas. The target recipients of the questionnaire survey had to judge if they could agree with the statements from their enterprise's point of view. They could select answers from 'meets fully', 'meets mostly', 'mostly not true', 'not true' or 'unspecified'. Besides these statements linked with the nine areas, the recipients had to answer some other, mostly open, questions related to TQM in their enterprises in order to provide more detailed information.

The collection of primary data was carried out as an internet survey of companies in the German food industry. This method was identified as the most effective one for the present study (*Atteslander,* 2006:147). Likert scalings including four levels were used. The open questions at the end of the questionnaire focused on more detailed and qualitative information about TQM. The use of the internet was very advantageous due to the large number of potential users in the survey (sample = 3000); the automated and, thus, error-free data transfers; improved ways of contacting the participants; and for the recall of recipients that do not respond. The invitation to answer the questionnaire was sent to persons responsible for quality management in their respective enterprises. They received fax and email messages. Including the recall the recipients were contacted not more than three times. Of the companies contacted, 750 followed the link to the questionnaire and 442 provided complete answers and could therefore be considered within the statistical analysis.

Following this step, the generated response data were evaluated using quantitative statistical analysis in the form of an ordinal logistic regression. Ordinal logistic regression was chosen because it uses all the information of the data collected with Likert scale levels, can handle multiple independent variables, allows comprehensive statements about the relation of the variables and allows predictions of the dependent variables (*Janssen and Laatz,* 2007:456ff.). Ordinal logistic regression uses a regression equation and tries to model a correlation between an ordinal scaled dependent variable and one or more independent variables (*Janssen and Laatz,* 2007:456). A test of significance proves afterwards if the correlation is statistically verifiable. The formal approach of ordinal logistic regression is comparable with logistic regression and can be divided into the following steps (*Backhaus* et al., 2006:433ff.):

1. Model formulation
2. Estimation of the regression function
3. Interpretation of the regression coefficients
4. Verification of the overall model
5. Verification of the characteristic variables

The statistical calculations were done with SPSS. Prior to making the calculations the rank correlation according to Spearman was calculated to find the significant variables. A p-value of 0.05 was used as the level of significance. Besides ordinal logistic regression, the frequencies were also calculated.

The targeted food industry in Germany is predominantly medium-sized. The surveyed sample has the same segmentation as the industry as a whole. Three branches of the trade – production, processing and preserving of meat and meat products; manufacture of other food products; and manufacture of beverages – are strongly represented. They contribute more than 72% to the sample. The other enterprises represent the six other branches of the trade. They are: processing of fruit and vegetables; manufacture of grain mill products, starches and starch products; manufacture of dairy products; manufacture of prepared animal feeds; processing and preserving of fish and fish products; and manufacture of vegetable and animal oils and fats. Of the companies surveyed, 70% had 10 to 249 employees.

The enterprises often had one or more certificate of a quality management system, though it is surprising that at least 85 companies, or 19.2%, indicated that they had no certification. The predominantly used standard is the International Food Standard (IFS); 198 enterprises (44.8%) indicated that their enterprise is IFS-certified. Certifications based on the DIN EN ISO 9001 were second in prevalence with 170 enterprises and a percentage of 38.5%. The third highest group applies the QS certificate (Qualität und Sicherheit), amounting to 112 enterprises (25.3%).

It is important to determine whether quality management is important to enterprises and, especially, their management boards. One remarkable result is that 74% (329 of 442) of the enterprises declared that quality management is handled directly by the management board. Respondents' statements concerning the overall assessment of quality management systems are predominantly positive. It can be assumed, therefore, that willingness to integrate TQM is fairly high.

3 Current situation regarding Total Quality Management applications in the food industry

Companies are implementing different activities and meeting the requirements of TQM in an appropriate way. Particularly in matters where the companies have to realize mandatory measures or implement measures which have any visible impact, the enterprises reach high levels of achievement. This includes, for example, the reduction of environmental damage, in which category the enterprises are particularly successful. Another example is that, in most cases, one can notice that the implementation of an organizational structure is ensured throughout the management levels.

Some of the statements of enterprises when judging their own situations received outstanding positive evaluation results:

- Many of the enterprises declared that they are systematically recording data about the business customer satisfaction; 79% agreed with this statement primarily or fully. This shows that the enterprises try to collect enough information to evaluate each situation in the right way and improve processes. Unfortunately other statements show that the collected data is not used to the full extent.
- The companies make an effort to avoid problems, taking the first step of collecting and asking for complaints. Most of the companies use an institutionalized complaint and feedback system. The next step – to really avoid the problems – is not always done. This step would include measures like process optimization and product adaptation.
- Another positive remark is that respective managers are accessible regarding the concerns of the staff. This comment shows a similar situation to the two above. The companies prepare structured processes to act in the right way; the next and important step is how the information that is collected is used or how the involved managers help and react to the staff. This question can not be answered by the enterprises as positively as the question of the accessibility of managers.
- With regard to the nine areas of the EFQM Excellence Model, particularly in the areas of leadership, key performance results and society acceptance, the companies have fulfilled the requirements of TQM to a high extent.
- In the areas of policy and strategy, partnerships and resources as well as processes, the levels of realization of the requirements are at least good in the surveyed enterprises.

In contrast to the positive fulfilment of some requirements of TQM, there are also some other requirements that are, as yet, insufficiently fulfilled, based on the majority of the qualifying answers *(Figure 2)*.

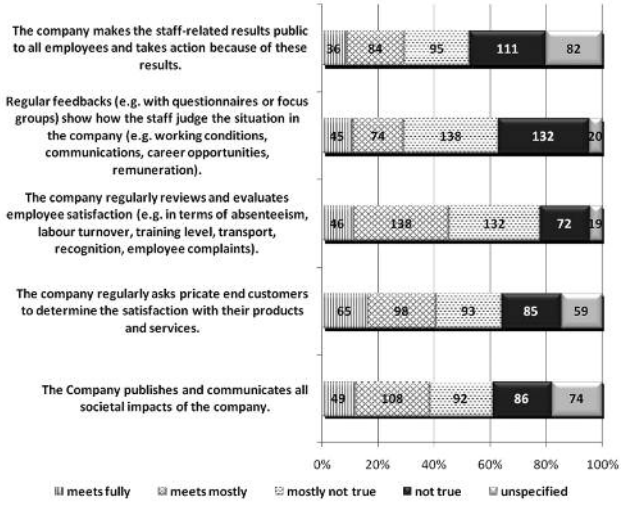


Figure 2: Negative statements concerning the implementation of TQM in the food industry (own calculation, n=400 to n=409)

For example, the companies do not regularly collect feedback about what their employees think about the situation in the company. Furthermore, only a minority of companies publish and communicate all societal impacts of their activities. Both these results show the small influence of the interests of stakeholders such as employees and society on the activities of the enterprises. Only 163 companies can refer to a periodic customer survey in which they collect information about customer satisfaction with their products and services. Therefore, the potential for improving the quality of the companies according to TQM requirements is still significant, according to the above mentioned results.

A low fulfilment of the requirements can be detected in areas in which successful improvement is not directly visible, or in which their influence does not have a direct effect on the company's success. This is visible especially at the areas of employee and customer satisfaction. Furthermore, the statements regarding employee orientation, as well as regarding partnerships and resources, show that the fulfilment of requirements has to be improved in these cases.

Companies have already initiated numerous activities to improve quality, such as:

- training and continuous education (indicated by almost all enterprises);
- involvement of suppliers in quality management processes (more than half of the enterprises do this);
- use of quality circles and teamwork, as well as two-way auditing schemes of internal units of the organization (these are common at about half of the enterprises).

The use of training, internal and external audits, and quality circles especially show positive effects on the enterprises' success. Other activities may cause dissatisfaction. These consequences of the TQM activities often appear with respect to requirements of high documentation and administration efforts, and sometimes difficulties in carrying out customer surveys.

The questionnaire asked the companies to rank the nine areas of TQM in terms of what impact they have on the medium- to long-term economic success of the company. The highest rated area was customer satisfaction; 41.1% of the companies answered that this area has the highest impact on their medium- to long-term economic success *(Figure 3)*. The variables of leadership was rated the highest by 32.9%. In contrast, the smallest impact by far was found for the variables of society acceptance: 54.4% of the companies judged this to have the lowest impact on the economic success of all the areas. The second lowest impact was attached to the variables of partnerships and resources.

Ordinal logistic regression could verify whether there is a positive correlation between the extent of the TQM activities of an enterprise and its medium- to long-term economic success, and whether the conclusions concerning the recommendation of TQM activities are valid. It is noticeable that the impact of TQM activities on economic success is weighted differently by the enterprises on their own in comparison with the results of the statistical analysis. The

enterprises answered that the impact of the activities that can be added to the variables of customer satisfaction and leadership is high, but that the impact of partnerships and resources as well as society acceptance is low. This is, so far, in contrast to the results of the statistical analysis because it indicates that the impact of customer satisfaction, employee satisfaction, and partnerships and resources is very high.

rank	1	2	3	4	5	6	7	8	9	Ø	σ	Test
7. Customer satisfaction	41.1%	18.5%	13.5%	9.3%	4.8%	5.8%	0.8%	3.8%	2.5%	2.72	2.13	2.90
1. Leadership	32.9%	17.8%	15.8%	9.0%	7.0%	6.5%	6.0%	2.0%	2.8%	3.10	2.22	3.30
9. Key performance results	19.1%	20.9%	12.1%	9.3%	8.0%	7.3%	7.8%	9.8%	5.8%	4.03	2.60	4.24
3. Policy and strategy	11.8%	21.2%	11.8%	17.4%	9.6%	8.1%	7.1%	6.8%	6.3%	4.16	2.40	4.42
6. Employee satisfaction	4.8%	10.1%	14.3%	12.1%	13.3%	11.3%	19.6%	10.8%	3.8%	5.08	2.20	5.30
5. Processes	4.8%	6.5%	12.3%	12.3%	21.2%	16.4%	12.6%	8.3%	5.5%	5.13	2.07	5.38
2. Employee orientation	4.3%	7.8%	10.3%	12.3%	17.1%	16.6%	15.9%	12.3%	3.3%	5.25	2.08	5.50
4. Partnerships and resources	3.3%	6.0%	5.5%	10.6%	10.1%	14.8%	14.8%	26.1%	8.8%	6.05	2.19	6.36
8. Society acceptance	5.5%	3.3%	5.3%	2.5%	4.3%	4.3%	7.8%	12.6%	54.4%	7.30	2.52	7.61

Ø = arithmetic average σ = standard deviation = highest share
Test = Middle rank of Friedman-Test = lowest share

Figure 3: The impact of the activities of the EFQM Excellence Model on the medium- to long-term economic success of the companies (own calculation, n=397 to n=399)

4 Potential of Total Quality Management in the food industry

Deficits and potential are visible in five sections. These sections are presented briefly.

Treatment and use of data: Potentials are realized by ensuring that operational, economic and competition data is up-to-date and used for strategy development and continuous improvement of processes. Moreover, these data should be made easily available to employees and business partners. Process data should be used for permanent improvements.

Employees: Of the companies surveyed, 30.9% have significant deficits in terms of involving all executives in visibly and immediately rewarding performance improvements of staff. The employees' interests should be seriously taken into account. The greatest potential of the enterprises can be generated by gathering regular feedback (e.g. through questionnaires or focus groups) about how the staff see the situation in the company (e.g. in terms of working conditions, communication, career opportunities, remuneration). Two thirds of the enterprises could clearly improve their current situations in this way. Furthermore, the measurement and evaluation of employee satisfaction at periodic intervals (e.g. by looking at absenteeism, labour turnover, training levels, transport, recognition, employee complaints) must be implemented or improved by half of the enterprises; they must publish these results and the use of them will lead to clear consequences. One possibility for increasing the involvement of employees is to reward their commitment to a larger extent. The results of the research project indicate that almost half of the companies should start or expand their rewarding system to improve the efforts of the staff and performance in terms of business success. This rewarding has to be done by all the executives directly. Half of the companies are not publishing staff-related outcomes for all employees at the moment. They should begin to do this and deduce consequences on the basis of these results. It is important that planning and training regarding employees are deduced from the company's strategic plans and objectives. In terms of improvements, it is also important to integrate employees into the continuous improvement process and, additionally, to educate and train them in the plans that are relevant for them. Another possibility for improvement can be achieved in 30.3% of the companies if the employees acquire skills to take independent decisions and initiate changes on a process level to implement improvements. To ensure that employees can contribute to improvements, they must be empowered to make independent decisions.

Society: Of the companies surveyed, 43.5% indicated that publishing and communication of all of their societal impacts, or the improvement of their communication, are important steps towards gaining overall quality improvement. Through these measures all the information is accessible to all the directly and indirectly affected and interested parties. Therefore the first objective of the companies should be to improve their commitment to and reputation in society. The second should be to publish and communicate all societal impacts of the companies' activities.

Customers: Improved contact with private consumers is indicated as a helpful measure by at least 44.5% of the companies. To achieve this, these companies must ask their customers or measure regularly to get information about their satisfaction with their products and services. A popular method that should be applied by all the enterprises is to survey private consumers regularly about their satisfaction with the products and services. Afterwards, the methods should be applied in order to improve customer satisfaction and products.

Resources: In this area 31.6% of the companies indicated that they should look more closely at the technologies they use and should implement a routine procedure to develop and establish alternative and new technologies. Of the companies, 37.7% indicated that further improvements can be accomplished by establishing a routine procedure that ensures that the best use of knowledge will be achieved.

5 Discussion and recommendations

On the basis of the results of the research project and considering other experts' publications, one can deduce recommendations for the food industry companies that want to increase the quality of their enterprises.

Disagreements with other authors can only be found in minor aspects. For example, it is uncertain whether the number of different certification systems will stay high or will decrease, as Poignée and Schiefer assume (*Poignée and Schiefer,* 2007:175). As a second example it is questionable whether the problematic points of interviews with customers

are as a result of the organization itself and execution of the interviews, or rather a lack of knowledge on the part of the customers (*Niessen and Hamm,* 2007:424f.). The other and main results of the research project could be confirmed by other experts.

The TQM approach is useful for companies in terms of improving their business performance. This is in accordance with the findings of Pöchtrager (2002). Unfortunately the enterprises only use this approach to a limited extent, so that the activities required by the TQM can not develop their full potential. The enterprises should particularly consider the concerns of employees; they are better able to assess their processes and improve them and, in addition, their motivation is important. In this respect it is helpful to provide transparency and visualize the usefulness of the activities of the quality management system to all employees. Moreover, the leaders must exemplify the companies' philosophies and desire for quality through their own behaviour. To prepare staff for adequate operation in their duties, training and continuous education should be compulsory, but it is important that training and education efforts are adjusted to what the employees need in their jobs so that unnecessary resource consumption can be avoided. It is also recommended to examine the contacts of the enterprise and get in touch with new partners to maintain the existing contacts and to work on new members in the network.

To keep the efforts of documentation simple and the motivation high, the quality management systems of the enterprises should be kept strictly lean. Therefore it is important that the continuous improvement process is used in terms of the quality management system itself and not just for the requirements of the TQM system.

Employees need to know that their work is valued; therefore, companies should more significantly reward the efforts of employees. Furthermore, enterprises should measure the satisfaction of employees as well as collect and analyze the feedback of the employees about how they judge their situation in the enterprise. As a consequence of this the enterprises must communicate the results and initiate the necessary steps of implementation; otherwise, they would not be using the information they get. This is also true for all the societal implications.

6 Conclusion

In the context of the research project at hand, a fairly high implementation level of the requirements of TQM in the food industry has been found. The positive correlation between the fulfilment of the requirements of TQM and the economic success of the companies could be verified statistically. The enterprises implement the quality assurance activities that can be measured and indicate a direct effect in many cases. On the other hand, the activities show deficits in using the measured data to the full extent or in using the activities for indirect or non-monetary benefit. The efforts of the enterprises in terms of issues of quality suggest that they will continue to improve their activities towards TQM.

References

Atteslander P. (2006): Methoden der Empirischen Sozialforschung. 11th edition. Erich Schmidt Verlag, Berlin.

Backhaus, K., Erichson, B., Plinke W. and Wieder R. (2006): Multivariate Analysemethoden. 11th edition. Springer, Berlin.

EFQM (1999): Excellence bestimmen – Eine Fragebogen Methode. European Foundation for Quality Management, Brussels.

EFQM. (2003): Excellence einführen. European Foundation for Quality Management, Brussels.

EFQM (2009): EFQM Excellence Award. [Online] Available from: http://ww1.efqm.org/en/Home/Ourservices/Recognition/EFQMExcellenceAward/tabid/154/Default.aspx (access: 1.06.09)

Gucanin A. (2003): Total Quality Management mit dem EFQM-Modell. uni-edition, Berlin.

Janssen J. and Laatz W. (2007): Statistische Datenanalyse mit SPSS für Windows. 6th edition. Springer, Berlin.

Morath C. (2008): Umsetzung und Potenziale des ganzheitlichen Qualitätsmanagements in Unternehmen des Ernährungsgewerbes. Cuvillier Verlag, Göttingen.

ILEP (2009): Initiative Ludwig-Erhard-Preis – Auszeichnung für Spitzenleistungen im Wettbewerb e.V. [Online] Available from: http://www.ilep.de (access: 1.06.09)

Niessen J. and Hamm U. (2007): Verknüpfung von Daten des täglichen Kaufverhaltens mit Befragungsergebnissen über das bekundete Kaufverhalten und Einstellungen von Verbrauchern. In: F. Kuhlmann and P.M. Schmitz (eds.): Good Governance in der Agrar- und Ernährungswirtschaft. Landwirtschaftsverlag, Münster-Hiltrup, pp. 417–426.

Poignée O. and Schiefer G. (2007): Regional quality programs: Relevance, objectives and strategies. In: L. Theuvsen, A. Spiller, M. Peupert, and G. Jahn (eds.): Quality Management in Food Chains. Wageningen Academic Publishers, Wageningen, pp. 163–176.

Pöchtrager S. (2002): Die Ermittlung der Bedeutung von Erfolgsfaktoren in Qualitätsmanagementsystemen mit Hilfe des analytischen Hierarchieprozesses am Beispiel der österreichischen und südtiroler Ernährungswirtschaft. Österreichischer Kunst- und Kulturverlag, Wien.

Long-term government responses to sustainable tourism development: principles and strategies

Katalin, Vargáné Csobán[1] – Andrea, Bauerné Gáthy[2]

[1]Department of Technical Languages and Communication Studies
[2]Department of Rural Development and Agricultural Economics University of Debrecen, Faculty of Applied Economics and Rural Development H-4032, 138. Böszörményi, Debrecen, Hungary
csobankatalin@agr.unideb.hu – gathya@agr.unideb.hu

Abstract: Tourism is one of the leading sectors in the world economy. Enhancing its well-known economic, social and environmental benefits while managing its negative impacts are highly important for the national governments in European Union. Strategic planning is essential to meet the long term requirements of sustainability. National sustainable development strategies and tourism strategies are fundamental means of strategic planning as they provide guidance for the decision-makers of the tourism sector.

The member states of the European Union have prepared their national sustainable development strategies, furthermore the Union's common strategy and the national strategies of some member states have already been revised and renewed by now. The Hungarian strategies – National Sustainable Development Strategy and National Tourism Development Strategy – were completed the World Tourism Organization published its twelve aims for an agenda for sustainable tourism in 2005. Consequently these strategies are expected to contain references to the sustainability requirements and environmental, economic and socio-cultural aspects of tourism development.

In the present study we analyse the issues of sustainable tourism development in the sustainable development strategies of the EU and Hungary and the National Tourism Development Strategy of Hungary 2005-2013 with special attention to the principles laid down by the WTO in 2005. Our aim is to investigate the cohesion between the principles of sustainable development and sustainable tourism, and their manifestations in some of the strategic documents influencing Hungarian tourism development.

Key words: sustainable tourism, national strategies, World Tourism Organization

1. Introduction

During the last ten years the strategic approach strengthened in the EU. National planning related to many different topics is significant in all of the member states. Preparing sustainable development strategies and national development plans are community requirements, while in most countries strategies regarding education, energy, transport, tourism, healthcare, research, competitiveness, etc. have also been prepared.

In Hungary the national tourism development strategy was completed by 2005, while the national sustainable development strategy was published in 2007. In this paper we confine our research area to the analysis of the strategic documents, as the actual impacts of these strategies can not be evaluated yet. Assessments is further complicated by the fact that the relevant set of indicators to measure progress towards sustainability is not specify in the above mentioned documents.

2. Material studied and Methods

First of all, we determine the strategic documents which may have a positive influence on tourism development in Hungary from the point of view of sustainable development.

Furthermore, we review the concept of sustainability, and we also demonstrate the growing demand for strategic planning at national and supranational level.

The results of our research are based on the former critical comparative analysis of the EU sustainable development strategies (EC 2001, CoEU 2006), the Hungarian sustainable development strategy and the national tourism development strategy (NFÜ-KvVM, 2007; Magyar Turisztikai Hivatal, 2005), as well as, our previously conducted researched concerning the issues of tourism in the national strategies for sustainable development in the European Union. (*Vargáné – Gáthy,* 2005)

3. Results and Discussion

3.1. Sustainable tourism development

Sustainability has become a major issue in tourism policy in Europe. The Fifth Action Programme on the Environment of the European Union entitled "Towards Sustainability" emphasizes the role of tourism in achieving the targets of sustainable development. (CEC, 1993)

Following the publication of this document sustainable

tourism was put to the centre of scientific debates, which resulted in an increasing number of definitions and interpretations. The most commonly used definition is that of the World Tourism Organization (WTO), according to which ”sustainable tourism should:

1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
2) Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
3) Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.” (WTO-UNEP, 2005, p. 11.)

This definition explicitly refers to the three main pillars of sustainable development that is the ecological, socio-cultural and economic aspects. This approach is adopted and further developed by several tourism researchers. For example, Coccossis’ categorization gives a good overview of the various interpretations of sustainable tourism. Firstly, he describes the *economic sustainability of tourism*, which aims at the viability of tourist activity in economic terms. Secondly, he mentions interpretations largely based on ecology as a sociocultural and political view, which emphasizes the need for *ecologically sustainable tourism*. He notes that the so-called *sustainable tourist development* approach creates a link between the first two, recognizing the need to protect certain aspects of the environment in order to ensure long-term economic competitiveness. Finally, he cites another viewpoint according to which tourism is part of a *strategy for sustainable development.* This assumes that environmental conservation, economic efficiency and social equity are equally important. This integrated approach dominates the current scientific debate on tourism. (*Coccossis,* 1996)

The environmental, economic and social issues provide a framework, within which the WTO formulated twelve aims for the agenda for sustainable tourism. These are the following:

1) *Economic Viability:* To ensure the viability and competitiveness of tourism destinations and enterprises, so that they are able to continue to prosper and deliver benefits in the long term.
2) *Local Prosperity:* To maximize the contribution of tourism to the economic prosperity of the host destination, including the proportion of visitor spending that is retained locally.
3) *Employment Quality:* To strengthen the number and quality of local jobs created and supported by tourism, including the level of pay, conditions of service and availability to all without discrimination by gender, race, disability or in other ways.
4) *Social Equity:* To seek a widespread and fair distribution of economic and social benefits from tourism throughout the recipient community, including improving opportunities, income and services available to the poor.
5) *Visitor Fulfilment:* To provide a safe, satisfying and fulfilling experience for visitors, available to all without discrimination by gender, race, disability or in other ways.
6) *Local Control:* To engage and empower local communities in planning and decision making about the management and future development of tourism in their area, in consultation with other stakeholders.
7) *Community Wellbeing:* To maintain and strengthen the quality of life in local communities, including social structures and access to resources, amenities and life support systems, avoiding any form of social degradation or exploitation.
8) *Cultural Richness:* To respect and enhance the historic heritage, authentic culture, traditions and distinctiveness of host communities.
9) *Physical Integrity:* To maintain and enhance the quality of landscapes, both urban and rural, and avoid the physical and visual degradation of the environment.
10) *Biological Diversity:* To support the conservation of natural areas, habitats and wildlife, and minimize damage to them.
11) *Resource Efficiency:* To minimize the use of scarce and non-renewable resources in the development and operation of tourism facilities and services.
12) *Environmental Purity:* To minimize the pollution of air, water and land and the generation of waste by tourism enterprises and visitors. (WTO-UNEP, 2005)

3.2. Sustainable tourism development and strategic planning

”A strategy determines a goal and outlines the direction and approaches needed to get there.” (WTO-UNEP, 2005) Consequently, strategies should include the desired outcomes and define the stakeholders, whose responsibility is to work for those outcomes. Strategies also determine the actual policies that should be more precise and more specific. According to the WTO there are three basic types of strategy that have relevance to sustainable tourism. First, the overall tourism strategies embracing sustainability principles. Second, other relevant government strategies dealing with sustainable tourism and finally, strategies for sub-sectors of tourism.

The WTO claims that every country should have a strategy to serve as a framework for the development and management of tourism. It is also recommended that instead of having a separate strategy for sustainable tourism, the concept of sustainable development should penetrate the mainstream tourism strategy of a country. The tourism organization also warns that it is not adequate to discuss sustainability as a separate issue within a tourism strategy concentrating on impacts and their management only.

Consequently, a tourism strategy should reflect the consensus of the stakeholders, promote planning at the local level, and concentrate on the above mentioned aims of sustainable tourism specifying concrete objectives, policies and actions, as well. (WTO-UNEP, 2005)

Besides mentioning national tourism development strategies the WTO lays special emphasis on the various types of strategic documents which are necessary for ensuring sustainable tourism. National sustainable development strategies are listed in the first place, but the importance of local level strategies is also highlighted. Sustainable tourism requires strategy-making both at the national and the local level, the main difference being in their approach: national strategies should identify policies and instruments, while local documents are about the local objectives and priorities. (WTO-UNEP, 2005)

The number of the national strategies, regarding various topics (such as economy, transport, tourism, energy, education, etc.) definitely increased during the last decades. Strategy design could be considered a new framework for community planning. An important element of this phenomenon is the appearance of the national strategies for sustainable development, which respond to the most important challenge of our days: the global ecological crisis.

It could be surprising that none of the EU documents describes the criteria required for a strategy. In our opinion, the major – and mostly interrelated – characteristics of a strategy are the following: *a comprehensive and systematic view, fundamentally new objectives, a long-term approach, and interpretation as a learning process.* (*Gáthy* et al., 2006)

We are going to consider these requirements in our analysis.

3.3. The connection between sustainability principles and aims for sustainable tourism in strategic documents

The European Union adopted a sustainable development strategy in 2001, which was revised in 2005 and renewed in 2006. (EC, 2001; CoEU, 2006). This strategy and the Lisbon strategy can be considered as two fundamental documents of the EU.

Several EU documents emphasize that sustainable development is a concept encompassing the totality of social and economic life and necessarily influences all EU strategic ideas, policies, and activities, including tourism development policies. The principles of sustainable development also require that social and economic objectives should coincide with environmental-ecological constraints.

Consequently, the sectorial strategies including the tourism strategies should meet the requirements published in the sustainable development strategies. It implies that the twelve aims for an agenda for sustainable tourism elaborated by the WTO in 2005 should be coherent with the national sustainable development strategies. In the following part we shortly analyse whether such a connection exists among the above mentioned documents. However, it must be noted that the sustainable development strategies do not have to specify the exact sectorial objectives.

The *Sustainable Development Strategy of the EU* emphasizes, that "…All policies must have sustainable development as their core concern." (EC, 2001, p. 6.). The strategy focuses on a small number of problems which pose irreversible threats to the future well-being of the European society. References to these unsustainable trends can be found among the twelve aims for the agenda for sustainable tourism (e.g. social equity, global warming, bio-diversity, resource efficiency, transport congestion).

Table 1.: The connection between the principles of the renewed EU SSD and the aims of sustainable tourism

Environmental protection	**Social equity and cohesion**	**Economic prosperity**	**International responsibility**
Physical Integrity	*Social Equity*	*Economic Viability*	*Cultural Richness*
Biological Diversity	*Visitor Fulfilment*	*Local Prosperity*	
Resource Efficiency	*Local Control*	*Employment Quality*	
Environmental Purity	*Community Wellbeing*		

Source: CoEU, 2006 and WTO-UNEP, 2005

The *Renewed EU Strategy for Sustainable Development* mentions that however unsustainable trends still persist, there are some new challenges arising. The main challenge is to gradually change our current unsustainable consumption and production patterns and the non-integrated approach to policy-making. We could find a link between principles of Renewed EU SDS and twelve aims for the agenda for sustainable tourism. (CoEU, 2006)The four key objectives are in close connection with the aims of sustainable tourism. *(Table 1)*

The *Hungarian sustainable development strategy* does not discuss the issue of tourism separately, which cannot be considered as a weakness because it is the task of sectorial strategies, policies and plans. However, it includes the principles which were also specified by the WTO. (NFÜ-KvVM, 2007) Therefore the Hungarian national sustainable development strategy provides a suitable background for the tourism development strategies and policies.

In the following part we intend to analyse the connection between the principles of Hungarian national strategy for sustainable development and the aims for the agenda for sustainable tourism formulated by WTO.

The *National Tourism Development Strategy of Hungary 2005–2013* was published in 2005 following a two-year-old preparatory period. Its major objective is to improve the citizens' quality of life in the country through tourism.

The strategy starts with a situation analysis based on five pillars (competitiveness and quality of life, supply of tourism, conditions of tourist reception, human resource, and finally the institutional background), while "sustainable development" is discussed as a separate issue among the so-called horizontal topics. Although the WTO recommends

that sustainability should not be treated as a separate section of a strategy but the principles reappear all throughout the document, as we will see. According to the situation analysis sustainable tourism development exists only theoretically in Hungary, as long as there is no set of indicators to assess whether a tourism product or a destination operates in a sustainable way. Other topics of the analysis, like social equity and competitiveness are also in close connection with the requirements of sustainable development.

Obviously, the most significant parts of the strategy deal with the future vision and the strategic objectives for tourism development. In these two parts we can find references to all of the aims specified by the WTO. As far as the future vision of tourism is concerned, in the section entitled "Possibility and responsibility" quality is highly emphasized. On the one hand quality is related to the tourism product, which entails the introduction of a reliable quality assurance system and a widely accepted quality label. On the other hand, quality should be a major characteristic of people's life. Quality of life is ensured by the local communities, who participate in the decision making processes and take advantage of the benefits of tourism. The future vision includes references to other issues that are milestones on the way to sustainable development, such as carrying capacity of the environment, partnership among the stakeholders, decision-making at the most appropriate level complying with the principle of subsidiarity, the government's role in regulating the industry, etc.

The document defines the strategic directions of tourism development as well, which definitely correspond to the aims of sustainability. Firstly, it is noted that the measures to achieve sustainable development have not been taken yet so the strategy has a great significance. The impacts of tourism on the quality of life is discussed in connection with sustainability, and it is divided into three main parts. First, the social impacts are mentioned: the local control is encouraged in tourism planning, and social equity is promoted by the participation of disadvantaged social groups in tourism activities. The aims of local prosperity and economic viability are related to the topics of rural development, creation of job opportunities and retention of the local population. Secondly, contribution to the conservation of the Hungarian cultural heritage is discussed, which contains references to the aims of cultural richness and physical integrity. The third part deals with the environmental impacts of tourism. The aims of biological diversity, resource efficiency and environmental purity are clearly related to this part of the strategic directions.

The aim of visitor fulfilment appears in another chapter of the strategy, which discusses the possibilities for improving the conditions of tourist reception. Finally, the issue of employment quality is closely related to the chapter on human resource development.

4. Conclusion

First of all, we could find a strong link between the principles of the Renewed EU SDS and the twelve aims for the agenda for sustainable tourism. (CoEU, 2006, WTO-UNEP, 2005) The four key objectives are in close connection with the aims of sustainable tourism.

Secondly, the Hungarian sustainable development strategy does not discuss the issue of tourism separately, however it includes the principles which were also specified by the WTO. (NFÜ-KvVM, 2007) Therefore the Hungarian national sustainable development strategy provides a suitable background for the tourism development strategies and policies.

Finally, it can be concluded that the Hungarian National Tourism Development Strategy reflects the aims of sustainable tourism specified by the WTO. However, further investigation is required to decide whether monitoring the implementation of the strategies could be efficient without a set of universally accepted indicators.

References

CEC (Commission of the European Communities) (1993): *Fifth Programme on the Environment 1994–1997: Towards Sustainability* DG XI, CEC, Brussels

Coccossis, Harry (1996): *Tourism and Sustainability: Perspectives and Implications,* In: Priestley G.K., Edwards J.A., Coccossis H. (eds): *Sustainable Tourism? European Experiences,* CAB International, Wallingford, 1996, p. 202 (pp. 1–21)

CoEU (2006): *Renewed EU Sustainable Development Strategy*, Council of the European Union, Brussels, 9 June 2006, 10117/06, 29 p.

EC (2001): *A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development*, European Commission, Brussels, 15. 5. 2001 [COM (2001) 264 final], pp. 1–17.

Gáthy, A. – Kuti, I. and Szabó, G. (2006): *Fenntartható fejlődési politikák és stratégiák az Európai Unióban*, In: Bulla Miklós – Tamás Pál (szerk.): Fenntartható fejlődés Magyarországon (Jövőképek és forgatókönyvek), Új Mandátum Könyvkiadó, Budapest, 2006, 511 o. (165–194. o)

Magyar Turisztikai Hivatal (2005): *Nemzeti Turizmusfejlesztési Stratégia 2005–2013,* www.mth.gov.hu

NFÜ – KvVM (2007): *Nemzeti Fenntartható Fejlődési Stratégia*, Budapest, 2007. június, 64 o. (*Hungarian National Strategy for Sustainable Development*)

Vargáné Csobán K. – Gáthy A. (2005): *A turizmus kérdései az Európai Unió tagországainak nemzeti fenntartható fejlődési stratégiáiban*, AVA 2 — „Agrárgazdaság, Vidékfejlesztés és Agrárinformatika" Nemzetközi Konferencia, Debreceni Egyetem AVK, Debrecen, 2005. április 7–8., 12 p. CD-kiadvány

WTO-UNEP (2005): *Making Tourism More Sustainable, A Guide for Policy Makers,* WTO UNEP, Paris, Madrid p. 209

Marketing Characteristics of Tokaj Wine Specialities Based on Factor and Cluster Analyses

László Kárpáti* Zoltán Szakál**

**University of Debrecen karpati@agr.unideb.hu*
***College of Nyíregyháza szakal@nyf.hu*

Summary: The marketing kind of analysis in the domestic and international markets of Tokaj's wine speciality has not happend yet. The present research scientific method supportedly defines the consumers of Tokaj's wine speciality and it determinates the overlay receipt. The basis of the questionnaire research at the wine consumers cirlce is a representative sample of 1179 people. It confirms the truthfulness with factos and cluster dissection. On the hungarian market 5 sections can be devided, which has been determined by the earning category, the wine savvy and the referene price interval.

Tokaj Wine Specialities named "late vintage" are also available. This name can be confusing for the consumer, some do not understand in what they differ from other Tokaj Wine Specialities, as actually all Tokaj Wine Specialities are late vintage wines; particularly, wine is harvested later than usual, occasionally in October or November.

The findings obtained during the research can be utilised in practice, too. In accordance with the results and conclusions, we have several practical suggestions.

Our methodological suggestion is that the result of the cluster analysis based upon a large number of representative sample should be cross-checked with focus group tests; what is more, upon justification and verification, a detailed analysis of the given segments can also be performed better with this method. It would be worth studying the exact reasons for the popularity of wines with the name "late vintage". Such types of Tokaj Wine Specialities should be given higher priority in marketing terms. My suggestion is that the type of wine accepted and liked by consumers should be kept count of as Tokaj Wine Specialities officially, too.

The future marketing strategy has to be developed by knowing the sections and by it's further research which has to integrate to the strategy of Tokaj's wine region.

1. Introduction, objective

Some of the world's wine-growing regions have a special microclimate and other individual endowments that allow the making of wines of a special quality and offer dessert wines a unique taste and flavour. The **origin-protected name of "Tokaj"** (the area is located in the North-Eastern corner of Hungary) obliges the Hungarian wineries to produce a really excellent quality, a unique product, **Hungarica.** The product is specific and outstanding in the national mythology and Hungarian wine-growing. The national anthem also refers to the national treasure that can be produced only in the historic wine district of Tokaj-Hegyalja thanks to the microclimate and the special technology. Tokaj Wine Specialities are: Tokaj Aszú, Tokaj Szamorodni, „Máslás"[1], „Fordítás"[2], Late Harvest Tokaj Wine Speciality. The value of Tokaj wine is granted by the harmony emerging from the specific quality, the limited quantity and the age-long work. Carrying the reputation of Hungary, these products should be popularised not only in Hungary, but abroad, too. There is no marketable strategy to think in the long run in one single product any longer, so the purpose in the future is to develop and sell several products or services with maximal customer satisfaction. Besides the foreign companies, the Hungarian producers and investors will have to find their account and have become able to compete on the world market.

The **purpose of this study** is to provide an overall picture of **the Hungarian wine specialities' market position**. The direct purpose is to outline the market of Tokaj Wine Specialities, and study (verify or refute) the statements of the hypotheses. The indirect purpose is that the efficiency of the scientific methods is to be proven again in connection with their theoretical and practical application.

Our hypotheses (H1-H5) are, as below:

H1 **Method relevance**. The practical applicability of the cluster analysis should be verified by subsequent focus group tests. The qualitative procedures preceding the research and the latter-mentioned procedure strengthen the results.

H2 **Integrability of regional researches.** The wine consumption and wine purchasing habits of Budapest and

1 This Tokaj Wine Speciality is produced from must poured onto the lees of szamorodni or aszú, or from wine of the same year through alcoholic fermentation, has a characteristic aging scent and taste, and is aged for minimum two years prior to the distribution, one year of which in wooden barrels.

2 This Tokaj Wine Speciality is made from must poured onto mashed aszú grapes and originating from a certain habitat, or from wine of the same year through alcoholic fermentation, is aged for minimum two years prior to the distribution, one year of which in wooden barrels, and has a characteristic of aging scent and taste.

North-Alföld Region are different concerning Tokaj Wine Specialities, so the data recorded in the two spots cannot be contracted.

H3 **Studies of interrelations.** The purchasing and consumption of Tokaj Wine Specialities is in relation to the age, sex, income, educational background, and the knowledge of special, wine-related material.

H4 **Inclination to determine the price.** During purchasing, the price is the most important aspect, where there is no difference between the admitted and the actual reference prices.

H5 **Market segmentation**. The sample (n=1.179) is fit for segmenting. Therefore, there exist criteria that make the creation of target groups possible.

Dessert wine specialities made naturally can be sold with proper marketing work anywhere in the world, and a higher price can be generally achieved. Tokaj Wine Specialities also belong to these wines. There are hardly any market researches on Tokaj Wine Specialities in the technical literature. Our own researches and publications prepared five years ago were about Tokaj Aszú, the market properties of this wine speciality were studied. This research shows that the lovers of Tokaj Aszú and other wines is divided half and half. In the latter case, Egri Bikavér is among the first ones. It can be established that the majority (85%) only occasionally purchases the aszú. Regular customers are in minority, their proportion totals nearly 15% (*Szakál,* 2002).

61% of the sample buys aszú primarily as a gift, while 39% for own consumption. Tokaj Aszú is particularly purchased for Christmas holidays, but it is also a popular drink on family gatherings (23%). These family festivals include birthdays, namedays and other family gatherings. Only 12% of the consumers purchase wine at Easter and on New Year's Eve. Only 4% of the sample population drink Tokaj Aszú on Whitsun (*Szakál,* 2003).

The majority (47%) does the shopping at shopping centres, supermarkets; 22% at wine shops and 16% in discount stores. Fewer customers go to mini supermarkets, convenience stores and wineries.

Most people spend an average amount of HUF 1,500 – 4,000 annually (exchange rates of HUF/EUR were between 250–270 during the investigation) on Tokaj Aszú (44%). 17% of the sample population devotes less than HUF 1,500 to this purpose. Customers spending between HUF 4,000 and 8,000, and above HUF 8,000 represent nearly the same proportion, some 20-20%. Most people allocate less than HUF 4,000 annually on Tokaj Aszú wines (*Szakál,* 2002, 2003).

According to *Piskóti* (2002) we could summarise the consumption of sweet wines, especially regarding Tokaj wines in Hungary in the following points.

- Consumers purchase these wines for special occasions, on the festive boards, generally as an accompaniment to desserts. .
- The Tokaj Aszús made by the new, leading Tokaj wineries.
- Tokaj Aszú means a rich cultural and historical tradition to most Hungarian consumers.
- The great majority of Tokaj Aszú has always been consumed abroad.

Hajdu (2004) establishes that wine marketing is the combination of marketing and wine sciences, where the marketing methods, attitudes and concepts should be known, and basic oenology is also essential. According to *Lehota – Fehér* (2007) it means the purpose and means system of the adaptation of enterprises dealing with oenology and distribution to the market environment. Technical literature divides this material into two parts: marketing as a descriptive discipline and marketing management focusing on planning and execution.

The field of wine marketing covers the following main issues:

- needs and demand,
- products, services and ideas,
- the exchange, transactions, market actors, and the relations between them (power, confidence, conflict, common value, commitment, etc.),
- performance indices (cost, profit, value, satisfaction, etc.),
- marketing means, the elements of the marketing-mix (*Lehota – Fehér,* 2007; *Gosch,* 2003).

According to *Szakály* (2007), the domestic food economy can have no such problems that could not be solved with creative marketing. This can apply to even a sector, including the wine sector. The research carried out by *Fowler* (2000) and *Lockshin* (2003) shows that income is the key factor in the wine purchaser's behaviour. *Reisezenstein* et al. (1980) point out that the consumer primarily decides upon the price and oral advertising. *Cox – Rich* (1967), *Dodds – Monroe* (1985), *Monroe – Krishnan* (1985) used the price when analysing the Australian wine consumers as a segmentation criterion. According to *Rekettye* (1999), it is the proportion of the perceived value, which is especially important concerning Tokaj Wine Specialities, the perceived utility of the product and the perceived consumer expenditures. The accurate specification of perception and sensation would largely promote the consumer's value perception. Consumers generally assess the actual price by comparing it to other prices directly available and their price memories stored in their mind and related to the given product.

Lakner-Sass (1997) state that on the export markets it is not sufficient only to advertise certain products but we should make sure that that pleasant, positive impressions appeared in the consumer's mind about Hungary and the Hungarian agriculture, and we can start building the image of the products only after this. The token of the sector's competitiveness is quick and efficient communication, it is strengthened by *Kárpáti* et al (2006), as well.

Szabó (2007) supposes that during the wine marketing research a detailed study of the elements of the marketing-mix is essential. The distribution channel is an important criterion for decision when selecting the correct marketing activities. According to the data of *Heijbroek* (2001), in most EU Members States the proportion of chains represents 40–70% in the wine trade, and this figure is expected to

increase. *Löffer-Scherfke* (2000) and *Holland* (2004) state that the significance of direct marketing will grow.

On the basis of the bibliographical survey, it can be established that the technical literature on wine marketing concordantly discusses, proves and supports certain marketing –mix elements, but practically companies cannot fully take advantage of the possibilities. The study fulfils a long-term demand, as no such a comprehensive research material specifically focusing on the Tokaj Wine Specialities has been published and especially the special consumer segments have not been defined up to the present.

2. The research methodology and data

The sampling techniques can be divided into two fundamental groups: the non-random and the random sampling techniques. The former covers the arbitrary, the judgement, the quota and the snowball sampling. The latter includes the simple random, the systematic, the stratified, the nested and other sampling techniques (*Malhotra,* 2001; *Lancaster* et al. 2002; *Csapó-Kárpáti,* 2003).

During the research, we applied the random sampling techniques; anyone could get into the sample. In the questionnaire, taking all question combinations into consideration, the types of survey levels were the following: 62 nominal, 23 ordinal, and 20 scale-type questions. We used open and yes-no questions, combination tables and multiple choice questions, too. In several cases, an order of ranking had to be established.

We have tested the reliability of the data set with the reliability analysis. The analysis constitutes a Chronbach alpha index, which decides the reliability. The value of this index should be higher than value 0.6 (*Barrett,* I22, 2007).

Calculation of the reliability coefficient:

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum_{I=1}^{k} s^2{}_i}{s^2{}_T}\right),$$

where k= number of questions s^2_i*= the variance of question i.* s^2_T*= the variance of the test value –* α *can take values between negative infinity and 1 (although only positive values make sense). Some professionals, as a rule of thumb, require a reliability of 0.70 or higher before they will use an instrument.*

In the case of paired samples, each observation sequence refers to the same respondents. The differences are studied with the paired sample t-test. For the calculation, we establish a variance expressing the differences for each pair (indicated with D) and calculate its average and variance, and then the t statistics. The degrees of freedom are "n-1", where "n" is the number of observation pairs (*Szűcs,* 2002).

The chief component analysis (factor analysis) aims to transform the set of variables (questions) with linear transformation into a new variable set having a lower number variables than in the original one, which enables us to determine the majority of the variables (questions) more easily. The chief component analysis allows us to establish theoretical variables that are in close correlation with the real variables, nearly independent of each other, and their number is minimal as compared to the sample under study.

The index tests the extent of the partial correlations between the variables studied in the factor analysis. No latent structures can be found in a variable set having distinguished pairs. Calculation of the KMO index:

$$KMO = \frac{\sum_i \sum_j r_{ij}^2}{\sum_i \sum_j r_{ij}^2 + \sum_i \sum_j a_{ij}^2} \qquad i \neq j$$

There is a KMO statistic for each individual variable, and their sum is the KMO overall statistic. KMO varies from 0 to 1.0. Overall KMO should be 0.50 or higher to proceed with factor analysis. If it is not, remove the variable with the lowest individual KMO statistic value one at a time until KMO overall rises above 0.50, and each individual variable KMO is above 0.50.

The communalities of each variable are values that show the extent the chief components jointly explain the given variable. The value of the communality may be equal to maximum 1. The higher its value is, the more the chief components characterise, explain the given variable (*Wagner,* 2000; *Malhotra,* 2001).

The method groups the entities of the population by several variables. When creating groups, we aim to establish clusters whose elements are as closely related to each other as possible and relatively more deviate from the elements of the other clusters. Agglomerative procedures include several procedures; I have selected Ward's method because its concept rests on bases similar to the variance analysis, so it minimises the information loss caused by the group contraction. Information loss means the sum of square numbers of deviation of elements from their group average (*Malhotra,* 2001; *Bauer-Berács,* 1999; *Strecker* et al., 1996).

The consumer research primarily aims to outline the consumption habits concerning the Tokaj Wine Specialities in the region under survey. This research was conducted in the North-Alföld Region and Budapest. The surveys were made in early 2006, basically on the following venues: hypermarkets in Debrecen, Nyíregyháza and Szolnok (Tesco, Interspar, Cora), busy public areas in the cities and other areas of the region, educational institutions, at West End City, Pólus Center and busy public areas, educational institutions in Budapest.

Representativity in the statistical sense means that by random sampling the rate of the basic criteria of the population must be close to the rates of the sample. The high number of elements (n=1,179) guarantees that each customer group purchasing Tokaj Wine Specialities took part in the survey with an appropriate rate of participation.

As for the sexes, the sample corresponded to the portion of statistical population, so it has been in accordance with the

expectations. There was no quota sampling; it is a simple coincidence that the sample corresponded to the desired rates concerning the area. Considering the ages, the age group of the young people (18–25 years) was overrepresented, while the group of 36–45 years was represented well.

Weighting was performed on the basis of qualifications and income, too, but the chance of getting into the sample can be considered quite high. This is shown by the fact that an assessable number of elements got into the sample for each category. During the sampling, we carried out a questionnaire survey in six different places for 6 months. It had to be established whether the **samples** coming from various areas **can be integrated or not.** First we studied the integrability of the sample areas. One of my hypotheses was that the responses collected in Budapest would largely differ from the country data. We applied the **paired t-test** as a method of proving.

We highlighted three fundamental properties typical of the purchasing power: net income per capita, expenditure on wines and Tokaj Wine Specialities in HUF. Only the results obtained between Budapest and Szolnok region suggested that they are not integrable; however, the difference could be observed only for one aspect (expenditure on wines) and to just a small extent, the separate handling of the samples would be unreasonable. **During the survey, it has been established that the samples obtained in various places can be integrated**. The paired two-sample t-statistics showed no difference in the purchasing power at 5% significance level in the given regions. We tested the reliability of the data set with the "reliability" analysis. The analysis forms a Chronbach alpha index[3] , which is determinant regarding reliability. The value of this index is higher than the necessary minimum value of 0.6. Consequently, we considered the data suitable for further tests.

The methods applied to study the consumer's side during our own research were as follows: Partition ratios, Mean calculations, averages, standard deviation, Analysis of reliability, Paired t-test statistics, Pearson-type Chi-square statistics, Mann-Whitney-Wilcoxon statistics, principal component analysis, factor analysis, cluster analysis, focus group tests. During the research, we carried out the statistical analyses with three key programs and software. The applied programs were: MS Excel, SPSS and Surveyz.

Generally, the focus group tests precede the questionnaire survey. During our research I did right the opposite so that I can verify whether the invited focus group members fulfilling certain main criteria really belong to one segment. Another aim was that if the above-mentioned target is reached, then we find out such things about the segments that would be more difficult to know by other methods. The main purpose of the focus group test is that the researcher gains insight into an issue of interest to him or her based upon the conversation of the members of the appropriate market segment.

3 The Chronbach alpha index equals the arithmetic average of the coefficients obtained from all possible split-halves. It shows the appropriate inner consistency of the questions.

According to *Veres* et al. (2006) audio and video recording must also be made during the focus group tests. During our research, the members of the focus group did not approve the making of such recording, without providing reasons. Nevertheless, they permitted the presence of a psychologist. However, the refusing, uncooperative attitude could not be felt on the discussions, which was also supported by the psychologist.

During our research two focus group interviews were carried out. The main features are summarised by *Table 1*, as follows.

Table 1. General characteristics of the focus group test

	Group analysis of cluster 3	**Group analysis of cluster 5**
Time	19 July 2007 10.00–12.00 am	20 July 2007 10.00–12.00 am
Venue	A winery in Tokaj	
Number of participants	7 persons	
Moderator	1 person	
Clinical Psychologist	1 person	
Total participants	9 persons	
Main purpose	Verification of the cluster results of the quantitative test for two target groups.	

According to the psychologist, overall the participants were open and honest. The specialist analysed the participants' behaviour during and after the study. It was established that both focus groups supplied information whose reality content cannot be questioned on the basis of psychological analyses.

3. The factoring method and analysis

The factoring method is used for measuring the effect of several independent variables. The questionnaire covers relatively lots of questions that may include criteria belonging to one factor, so in this way we can simplify the characterisation of each target group. The Kaiser-Mayer-Olkin (KMO) criterion amounted to 0.696 for the own sample, which can be deemed as appropriate.

I applied several methods to study how many factors can be set up. The Scree-test (elbow-rule; takes into consideration the full variance), the maximum likelihood method (it examines the adjustment of the model with the observed data, and calculates an adjustment index for the factor number determined by us) and the variance proportion method (it specifies the factor number based upon the aggregate percentage of variance) also verified that the 8-factor application was the most reliable choice.

45 of the 70 variances were suitable for the factor analysis based upon the measuring level, of which the 25 variances were involved in the factor analysis as the others abated the factor analysis. I could establish assessable factors

Table 2. Explained variance – with principal component analysis

Factor	Calculated extraction			Rotated calculated value		
	Total	Variance %	Cumulated %	Total	Variance %	Cumu-%
1	6.4	23.8	23.8	5.2	19.1	19.1
2	3.0	11.1	34.9	2.4	8.9	28.0
3	2.5	9.4	44.3	2.3	8.5	36.5
4	1.7	6.3	50.6	2.1	7.8	44.3
5	1.5	5.5	56.1	2.0	7.4	51.7
6	1.3	4.6	60.7	1.7	6.4	58.1
7	1.2	4.3	65.0	1.5	5.7	63.8
8	1.1	4.0	69.0	1.4	5.1	68.9

Table 3: Rotated factor matrix and explained variance

	f1	f2	f3	f4	f5	f6	f7	f8	Explained variance * 68.9=100%
How often do you buy aszú essence/essence?	0.91								27.72%
How often do you buy fordítás?	0.84								
How often do you buy szamorodni?		0.87							12.92%
How often do you buy aszú?		0.65							
How many bottles of aszú essence, Tokaj essence do you buy a year?			0.93						12.34%
How many bottles of fordítás, máslás do you buy a year?			0.90						
How many bottles of aszú essence, essence do you buy as a gift a year?			0.85						
How many bottles of fordítás, máslás do you buy as a gift a year?			0.66						
How many bottles of szamorodni do you buy a year?				0.76					11.32%
How many bottles of Tokaj aszú do you buy a year?				0.71					
How many bottles of szamorodni do you buy as a gift a year?				0.58					
How many bottles of Tokaj aszú do you buy as a gift a year?				0.56					
Journalists' opinion, influence					0.84				10.74%
Opinion, influence of Internet information					0.77				
Strangers' opinion, influence					0.72				
Salespersons' opinion, influence					0.57				
Friends' opinion, influence						0.77			9.29%
Spouse's opinion, influence						0.68			
Parents' opinion, influence						0.47			
Earlier experience, taste						-0.60			
How much would you spend on Máslás fordítás?							0.97		8.27%
How much would you spend on Tokaj essence?							0.97		
How much would you spend on Aszú?							0.94		
Spending on Tokaj Wine Specialities in percentage of spending on wine								-0.82	7.40%
How much do you spend on wine yearly?								0.80	
Explained variance (68.9=100%)									100%

* The 8 factors accepted explain 68.9% of the variance.

of these based upon the communalities, which exceeded the value of 0.7 for most of the variables. The primary purpose was to maximise the variance of the principle components, which resulted in the rotated factor matrix. The factor weights demonstrate the correlation between the original variable and the given factor – hose value varies from -1 to 1. *Table 2* shows the explained variance, which I calculated with the principal component analysis, applying the SPSS programme.

The accepted 8 factors explain 68.9% of the variance. We left out factor 9, as in this case the eigenvalue fell below 1, which was not acceptable.

Factor 1 (f1) is related to the frequency of purchasing exclusive wine specialities (eseence, fordítás, máslás) while factor 2 (f2) is connected to the two most widely known Tokaj Wine Specialities (aszú and szamorodni). Factor 3 (f3) shows the number of bottles of exclusive wine specialities purchased – whether for own consumption or as a gift. Factor 4 (f4) is similar to the previous one, but here the focus is on more widely known Tokaj Wine Specialities. Factor 5 (f5) covers the external influencing factors, while factor 6 (f6) includes the influencing elements in the consumer's direct environment. The former refers to the journalists, the strangers, the Internet, the salespersons, while the friends, parents, partner and earlier experience belong to the latter category. As for (f6), the earlier experience as a factor is indicated with an opposite sign. Factor 7 (f7) is the internal reference price, and factor 8 (f8) refers to spending on wine specialities. The interesting point of (f8) is that the more one spends on wine, the less they spend on Tokaj Wine Specialities, so the proportion is inversed.

Table 3 demonstrates the rotated factor matrix, based upon which eight well-dividable factors could be specified.

4. Findings based on cluster analysis

The **cluster analysis** fundamentally aims to reveal, with respect to the regions under survey, what consumer groups can de identified among the purchasers of Tokaj Wine Specialities. In this case the basic task is to find the variables that cause the differences among the groups. During the analysis I applied the Ward-process, which is based upon the variance. The centroid method led to a similar result. I performed a run-off with the K-means process, too, which created only two clusters, one of which with a low number of elements. *Table 4* demonstrates the impacts of the factors in each cluster.Clusters can be at the same time considered as consumer segments in marketing terms, so hereinafter they will be called segments.

Table 4. The impacts of factors in each cluster

Factor Clusters and rank numbers	f1	f2	f3	f4	f5	f6	f7	f8
Cluster 1	0.140	-0.054	-0.068	-0.192	0.070	0.378	-0.063	-0.207
rank number	*4*	*8*	*6*	*3*	*5*	*1*	*7*	*2*
Cluster 2	0.100	0.118	-0.095	-0.027	-0.028	-0.190	-0.143	-0.159
rank number	*5*	*4*	*6*	*8*	*7*	*1*	*3*	*2*
Cluster 3	-0.181	0.052	-0.094	0.028	0.083	-0.025	-0.095	0.313
rank number	*2*	*6*	*4*	*7*	*5*	*8*	*3*	*1*
Cluster 4	0.147	-0.079	0.035	-0.094	0.011	0.554	0.097	-0.197
rank number	*3*	*6*	*7*	*5*	*8*	*1*	*4*	*2*
Cluster 5	0.053	-0.199	0.041	0.197	-0.073	0.040	0.097	0.133
rank number	*6*	*1*	*7*	*2*	*5*	*8*	*4*	*3*

Clusters for the North-Alföld Region and Budapest, and their main characteristics for purchasers of Tokaj Wine Specialities in 2007 (n=1179).

Consumer segments distinguished are, as below:

1. Survivors" having a low income

Price interval: < 800 forints

- price-sensitive
- place of purchasing: discount stores, hypermarkets
- usually semi-sweet wines are preferred, do not take risks, conservative, over 18, wine culture is not typical, undemanding towards themselves, demanding for packaging, estimated share: 75%

2. "Wise middle-class" having a normal income

Price interval: 600–1,500 forints
- the family's monthly net income totals 150–300,000 forints
- born between 1940 and 1970, over 35 , hypermarkets, brand loyalty
- price-sensitive, but think in a closed price interval
- estimated share: 12%

3. "New generation" having a normal income

Price interval: 800–3,000 forints
- the family's monthly net income totals 150–300,000 forints
- fans of wine culture, born after 1970, age between 18 and 30
- purchase wines everywhere
- often go on trips in wine districts
- brand loyalty
- their closed price interval is broader
- estimated share: 6%

4. "The wine-conscious rich" having a high income

Price interval: 1,100 forints <
- the family's monthly net income is over 300,000 forints
- fans of wine culture
- age over 30
- more reasonable decision
- open to everything, innovative group
- often go on trips in wine districts, on wine festivals
- slight snobbery effect
- brand loyalty
- their closed price interval is broader
- estimated share: 3%

5. "The rich elite" having a high income

Price interval: 1,500 forints <
- the family's monthly net income is over 300,000 forints
- strong snobbery effect
- brand-orientedness
- high price and packaging are decisive
- the wine must comply with the social expectations
- sometimes go on trips in wine districts, but visit the top wineries
- brand loyalty
- their closed price interval is broader
- estimated share: 4%

The data in Table 4 demonstrate that the principal components show a heterogeneous picture. (f1) is represented with nearly the same weight in each cluster. In group 3 it shows a negative relation, and in group 5 it plays a role below the average. (f2), the standard Tokaj Wine Speciality frequency factor, has taken the largest positive value in cluster 2 and the largest negative value in cluster 5. Considering (f3) the correlation is negative in the first three groups, and positive in clusters 4 and 5. The largest positive value of (f4) can be observed in segment 5, while the largest negative-signed value is typical in cluster 1. Principal component (f5) has very low values in all of the clusters. The highest positive value of direct influence factor (f6) can be found in segments 1 and 4, while the lowest negative value is typical of group 2. Factor (f7) is negative in the first three clusters, and positive in groups 4 and 5 – these are very low values. The highest activity can be observed in case of the last (f8) principal component. It takes its largest value (0.313) in cluster 3. The largest negative correlation appears in cluster 1.

During the survey, 5 clusters could be identified clearly. When characterising each group, I involved not only the principal components but other invariables, too to obtain a more comprehensive picture.

5. The findings of the focus-group control testing

We have carried out the focus group test to strengthen the statistically-founded theoretical cluster, namely, to study whether these segments actually exist.

The test can be divided into 3 sections. Section 1 is the selection of the participants, section 2 covers the answering of specific questions and completion of tasks within the focus group, while section 3 includes answering the "segment-specific" questions of the focus group and completion of such tasks. The tests primarily aim to prove that the cluster analysis is actually relevant and whether the segment test achieves the desired results. Some questions are directed at a more thorough understanding of the segment, while the others rather study the relevance of the earlier cluster analysis.

We could interview and analyse over 10 respondents by cluster. I asked them to complete the questionnaire on their habits of consuming and purchasing Tokaj Wine Specialities, and then I verbally asked about the main criteria that should be fulfilled so that they can become members of the segment. These main criteria were the results of the earlier cluster analysis. The number of persons contacted was reduced, and finally 7–7 respondents were selected.

They were invited to the focus group study. The participants received a bottle of Tokaj wine at the end of the study as a motivation means.

The second phase consisted of 7+1 tasks for the group members. We placed 7 types of wine on the table for the group members and asked them to decide which they knew. In another task, they were requested to indicate the wines that they had already tasted.

The wines analysed during the survey were the following:
- Béres Wine Estate: Late Harvest, 2003 (1)
- Erdős Winery: Late Harvest, 2004 (2)
- István Szepsy Winery: Tokaj szamorodni sweet, 2003 (3)

– Disznókő Hattyús: Tokaj szamorodni sweet, 2003 (4)
– Oriens Pincészet: Tokaj aszú 3-butt, 2000 (5)
– István Kiss Winery: Tokaj aszú 3 puttonyos, 1999 (6)
– Tokaj Merchant's House: Tokaj aszú 4-butt, 2001 (7)

Exhibits 1 and 2 summarise the attitude of the group members regarding the wines under survey in terms of the relevant general aspect, the bottle form and the label. Evaluation was made on a scale ranging from 1 to 7, where "1" means "I do not like it at all", while "7" is "I expressly like it."

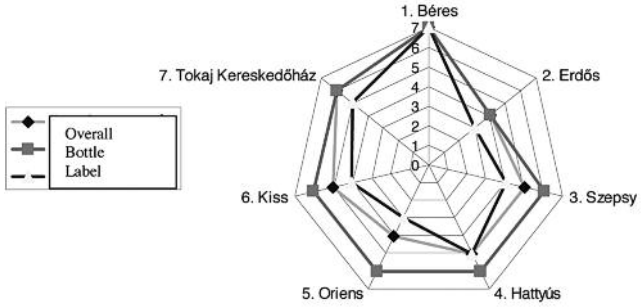


Exhibit 1. Attitude studies in segment 3

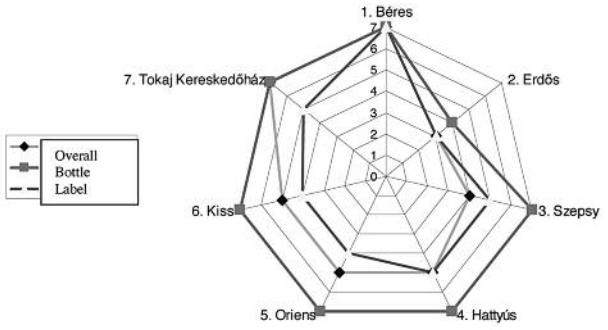


Exhibit 2. Attitude studies in segment 5

Segment 5 results show that it is the wines of Béres Winery and Tokaj Merchant's House that had the most positive impact on the respondents. In the case of both segments, the wine of Erdős Winery had the worst results. Few know them and people do not particularly like their appearance. It can also be observed that segment 3 gave score 7 only to the wine of Béres Wine Estate and underestimated the other wines in all the three aspects. The order of rank for this segment (on the average, considering all the three aspects): Béres (1), Hattyús (4), Tokaj Merchant's House (7). The order of rank for cluster 5 (on the average, considering all the three aspects): Béres (1), Tokaj Merchant's House (7), Hattyús (4).

The first section of the session was finished with blind tasting and re-evaluation. During the tasting, the participants did not know which wine they were drinking. They were requested to set an order of rank for the most tasteful wines. Wines could be retasted. Taking the average of cluster 3 into consideration, the wine of Disznókő Hattyús took the first place. The wine of Béres Wine Estate was the second, while the wine of Szepsy ranked the third. This was followed by wines no. 6., 2., 7., and 5. Cluster 5 made a different order of rank, except for the first place. The order of rank in this group: 1.: Disznókő Hattyús, 2.: Erdős Winery, 3: Szepsy, 4: Béres, 5.: Tokaj Merchant's House, 6.: Kiss Winery, 7.: Oriens. After the evaluation we showed the wines and let the group talk. We asked them to reconsider their responses and tell us whether they would modify the order after the result of the blind tasting. The responses were reliable: they were almost sure they would have made a different evaluation, except for the appearance.

During the study it could be established that the characteristic features of segments 3 and 5 studied in the focus group corresponded in all respects with the features of clusters 3 and 5 from the cluster analysis on a sample of 1,179 persons. In both cases, e.g. the attainment regarding the price interval did not exceed +/-200 forints. It can be stated that the members of segment 5 with a high income are also enthusiastic over wine culture, but in reality they were not so competent, at least in the focus group under survey. In segment 5, respondents rather consume Tokaj Wine Specialities because of the alcohol content and entertainment. Cluster 3 rather focuses on the enjoyment of the product group Segments 3 and 5 jointly think that quality is important and expected in the case of this product. These latter statements did not turn out during the large-sample cluster analysis.

6. The analysis and main statements of the study hypotheses

H1 Method relevance

The practical applicability of the cluster analysis may be verified by subsequent focus group tests. Providing a certain frame, the qualitative procedures preceding the research and the latter-mentioned procedure underlie the realistic results.

The first methodological hypothesis refers to the applicability of an extra step of the research process. The technical literature suggests the focus group tests prior to the actual research; nevertheless, it is possible to apply it unreasonable after the statistical research. The practical relevance of the result of the cluster analysis can be controlled in this way. When compiling the focus group, we filtered the participants several times to find out whether they are actually members of the theoretical clusters produced with a scientific method. The filter questions before inviting the participants, as well as the topics and tasks arisen during the focus group test really verified the results of the cluster analysis, so **Hypothesis H1 can be defended**.

H2 Integrability of regional researches

The wine consumption and wine purchasing habits of Budapest and North-Alföld Region are different concerning Tokaj Wine Specialities.

During the market research, two methods were used to study H2: the paired t-statistics and the cluster analysis. In principle, both methods should have verified the assumption; still, just the opposite occurred– both procedures refuted the statement. During the t-statistics there was only one index in the case of which we can speak about difference, but its proportion and extent did not justify the separate examination of the data surveyed in Budapest and the North-Alföld Region. **Hypothesis H2 can be rejected.**

H3 Studies of interrelations.

The purchasing and consumption of Tokaj Wine Specialities is in relation to the age, sex, income, educational background, and the meeting of special, wine-related material of knowledge.

Raising hypothesis H3 includes various aspects. During the purchasing process numerous factors play an important part in the fact which product the consumer buys finally. This is especially true for wines, since the vintage and thus the wine supply changes from year to year. When purchasing Tokaj Wine Specialities, the price level higher than that of the average wines means further risk factors to the customer. It can be stated that, using the method of the Chi-square test and the cross-table analyses, in certain cases there is no difference. Summing up, it can be established that **Hypothesis H3 can be defended,** though only with comments**.** Cluster analysis is suitable to highlight the most important differences. As for the age, clarification is necessary, since this is a segment criterion that is related to the life cycle and also refers to the difference between the generations. The result of the cluster analysis is that there is such a "new generation" segment with completely different purchasing habits of Tokaj Wine Specialities. They will comprise the consumer group of the future.

H4 Inclination to determine the price.

During purchasing, the price is the most important aspect, where there is no difference between the admitted and the actual reference price.

Regarding market research, it is an interesting finding that "with no stakes" people would give more money for a Tokaj Wine Speciality than they actually do. When purchasing Tokaj Wine Specialities, the primary aspect is not the price, but the earlier experiences and the quality. These are followed by the price, particularly the price interval, which depends upon the monthly net income of the given consumer's family. The statement is true for purchasing for both own consumption and for gift-buying. **Therefore, Hypothesis H4 can be refuted.** If the consumer is wine-adept, he or she can make a decision more sensibly and pay attention to the price-value ratio, which in certain cases can mean cheaper wines, too. In the various clusters different price interval categories emerged, which is related to the income. If the customer is not wine-adept, he or she will attach greater importance to the design, the appearance. In this case other people's recommendations hold far greater role in the purchasing decision process.

H5 Market segmentation.

The Hungarian consumer sample is fit for segmenting. Therefore, there are criteria that make the creating of a target group possible.

During the cluster analysis, groups can be distinguished clearly. We could demonstrate characteristics that enable us to create and define separate segments and target groups. Clusters can be characterised unambiguously and have individual features and style. The "weapons" of marketing can be applied well, and a marketing mix can be compiled and operated efficiently for each segment separately. **Therefore, hypothesis H5 can be defended**.

7. Conclusions

In Hungary the level of wine culture is low yet, but a favourable change has already started, and a new generation has emerged that respects, moderately consumes wine and is interested in oenology, viniculture. If the consumer has already met a knowledge material on wine, a rational consumer decision (considering the price-value-quality ratio) can be observed.

Tokaj Wine Specialities named "late vintage" are also available. This name can be confusing for the consumer, some do not understand in what they differ from other Tokaj Wine Specialities, as actually all Tokaj Wine Specialities are late vintage wines; particularly, wine is harvested later than usual, occasionally in October or November.

The findings obtained during the research can be utilised in practice, too. In accordance with the results and conclusions, we have several practical suggestions.

Our methodological suggestion is that the result of the cluster analysis based upon a large number of representative sample **should be cross-checked with focus group tests**; what is more, upon justification and verification, a detailed analysis of the given segments can also be performed better with this method. It would be worth studying the exact reasons for the popularity of wines with the name "**late vintage**". Such types of Tokaj Wine Specialities should be given higher priority in marketing terms. My suggestion is that the type of wine accepted and liked by consumers should be kept count of as **Tokaj Wine Specialities officially,** too.

The **wine district Community marketing** strategy should adapt itself to the national wine marketing strategy, at the same time; the higher level should also take into consideration the wine district ideas – "destination management". This requires discussions, so the **wine district ideas should be harmonised** (with a consensus) and **validated**.

References

Bauer A. & Berács J. (2007): A marketing alapjai (Foundations of Marketing), (ISBN 9789639698161), Aula Publisher, Budapest, 414 p.

Cox, D. E. & rich, S. U. (1967): Perceived risk and consumer decision making. In: Lockshin, 2003.

Csapó Zs. & Kárpáti L. (2003): Marketing és kereskedelem (Marketing and Commerce), Campus Publisher, Debrecen, 106 p.

Dodds, W. & Monroe, K. B. (1985): The effect of brand choice information on subjective product evaluations, 2003.

Fowler, T. (2000): Getting the most with your label dollar, Wines & Vines August/2000, pp. 36–40.

Gosch, F. (2003): Weinmarketing, Österreichischer Agrar Verlag, Wien, 210 p.

Hajdu (2004): Wine marketing, Mezőgazda Publisher, Budapest, 208 p.

Heijbroek, A. M. (2001): The wine industry uncorked, Food & Agribusiness Department, Rabobank International Utrecht, Hollandia, 2007.

Holland, H. (2004): Direct Marketing, Franz Vahlen Verlag, München, 411 p.

I22 (2007): Barrett, P.: Assessing the Reliability of Rating Data, http://www.pbarrett.net

Kárpáti et al. (2006): Marketing az Európai Unió egységes piacán (Marketing in the Single Market of the European Union), European Communities Publishing House, Luxemburg

Lakner Z. & Sass P. (1997): The competitiveness of vegetables and fruits, Szaktudás Publisher, Budapest, 186 p.

Lancaster, Massingham, Ashford (2002): Essential Marketing, McGraw-Hill International (UK) Education, Anglia, Berkshire, 544 p.

Lehota J. & Fehér I. (2007): Wine export marketing, SZIE Marketing Institute – EU Leonardo Projekt, Gödöllő.

Lockshin, L. (2003): Consumer Purchasing Behaviour for Wine: What We Know and Where We Are Going; Marchés et Marketing du Vin Centre de Recherche de Bordeaux Ecole de Management, n°57-03 Août 2003.

Löffer, H. & Scherfke, A. (2000): Direct marketing, Cornelsen Verlag, Berlin, 235. p.

Malhotra, N. K. (2001): Marketingkutatás (Market Research), Műszaki Publishing House, Budapest.

Monroe, K. B. & Krishnan, R. (1985): The effect of price on subjective product evaluations, Perceived Quality, Lexington Books, USA, Lexington, pp. 209–223.

Piskóti I. (2002): The wine marketing strategy of the Tokaj – the Community marketing concept of the Tokaj-Hegyalja Wine District, University of Miskolc, Marketing Institute, Miskolc.

Reizenstein, R. & Barnaby, D. (1980): Assessing Consumer and Retailer Perception of Table Wine and Wine Store Attributes, Advances in Consumer Research, Vol. 7., pp. 95–100.

Rekettye G. (1999): The price in marketing, Műszaki Publishing House, Budapest, pp. 51–53.

Strecker, O., Reichert J., Pottebaum, P. (1996): Marketing in der Agrar- und Ernährungswirtschaft, Methoden der empirischen Marktforschung, DLG Verlag, Frankfurt, pp. 478–479.

Szabó Z. (2007): The marketing-aspect analysis of the distribution channels of wine; Doctoral Dissertation, Gödöllő.

Szakál Z. (2002): Market research on the Tokaj Aszú; Gazdálkodás, 4/XLVI, Budapest, 36 p.

Szakál Z. (2003): The present and future of Tokaj Aszú; ACTA Agraria Debreceniensis, Debrecen.

Szakály Z. (2007): The Conference Publication of Community Marketing, University of Kaposvár, Kaposvár.

Szűcs I. (2002): Alkalmazott Statisztika (Applied Statistics), Agroinform Publisher, Budapest, 551. p.

Veres Z. & Hoffmann M.-Kozák Á. (2006): Introduction to Market Research, Akadémiai Publisher, Budapest, 511 p.

Wagner, P. (2000): Marketing, Eugen Ulmer Verlag, Stuttgart, pp. 3385.

The role of leaders' emotions

Kornélia Lazányi

Corvinus University of Budapest
1093 Budapest, Fővám 8, Hungary

Abstract: Western cultures support the notion that the ideal 'professional' behaviour for a leader is primarily rational and carefully controlled emotionally. The relationship of reason and emotion is often played out as one of mutual exclusion, and moreover as one representing hierarchy of leaders and followers. Power positions in most organizations are ritually emphasized through strict emotional control/suppression. Thus this display of unemotional rationality is held to be synonymous with control, may actually belie emotional and psychical insanities, and indicate organizational incongruities. Since, emotions play crucial role in the regulation of workplace relations. Negative emotions are the basis of awareness and positive ones are that of trust, and hence they both are needed in everyday situations. Leaders' emotions can be used as tools to motivate and to express individualist attention and caring. However, this use of emotions as tools may come at a price for those leaders who are less apt at emotion regulation. In sum, workplace is an emotional place and it is of best interest of the organizational members, – both the leaders and those led, – to understand the leaders' genuine and displayed emotions, their antecedents and their consequences.

Key words: emotion, emotional labour, leadership

Introduction

The investigation of emotions at workplaces is a relatively new research area of organisational behaviour. In Western societies, emotions have so far been regarded as irrational and dysfunctional factors, and incorporated in models as disturbing factors at the very best (*Arvery* et al, 1998; *Ashforth and Humphrey,* 1995; *Muchinsky,* 2000). Concurrently with a growing literature on workplace climate, work morale, and emotional intelligence (EI), researchers have started to focus more and more on the investigation of the emotional component of working. Despite this tendency, genuine emotions of leaders (more often than not different from those displayed) are explored to a very little extent.

An interest taken in the role of emotions in the leadership process is mostly the invention of the twenty-first century. In literature on leadership, the desirability of 'emotional arousal states' leaders should create in others is highlighted. In most approaches, numerous behaviours with emotional implications, such as lending support, developing trusting relations, exhibiting moral integrity, providing safety, fostering collaboration, offering intellectual stimulation, encouraging organizational learning, and practicing consultative and shared decision making, are endorsed (*Leithwood* et al, 1999). Such leadership skills have been variously referred to as "socio-emotional" orientation (*Bales,* 1950), "leader consideration" (*Fleishman,* 1957), or "human relations skills" (*Likert,* 1967). *Goleman* et al. (2003) even argue that emotions and emotional intelligence lie at the core of effective leadership. In line with this view, *George* (2000) and *Dasborough and Ashkanasy* (2002) claim that leadership is an emotional process in which leaders express emotions and try to arouse emotions in their subordinates. Control of the emotions of their staff is thus one of the most important means by which leaders can improve staff performance and productivity (*Humphrey,* 2002).

The power of a leader's emotions as a leadership tool is appreciated by all leadership styles that flatter the "charismatic" aspect of a leader. Thus, charismatic leaders, resonant leaders, and transformational leaders all use emotions to motivate employees, communicate a vision, and excite followers to work towards long-term ideals and strategic objectives. These competencies are to establish warm, empathic, non-directive, trusting relations with subordinates, so empathy, active listening and other interpersonal skills are supposed to be inevitable for leaders. The focus is mostly on the emotions the leader stimulates in others in the process of generating productive behaviour. But throughout all the theories the emotions of a leader were hardly ever considered.

What is more, leaders are supposed to be unemotional. Power positions in most organizations are ritually emphasized through strict emotional control/suppression. A rational attitude is a must for leaders. Accordingly, emotions in organizations are political. In literature, such skills as problem solving, strategic planning, and even reflective practice are considered from an exclusively rational perspective. The display of unemotional rationality is held to be synonymous with control. However, this concept is essentially mistaken because even the most rational leader is subject to his/her own transrational values that are sustained by his/her own emotions (*Hodgkinson,* 1990). Reason itself is not free from an emotional foundation and, even in the purest of intellectual moments; emotions are present because of the mind itself being a seamless blend of thinking and feeling (*Damasio,* 1994).

Organizations have a variety of mechanisms at their disposal to regulate emotions at the workplace. These mechanisms mostly aim to either prevent emotions from arising in the first

place or "safely" control those as may arise, regardless of the fact that emotions can have positive effects. Emotional display rules exist in each and every workplace. These include expectations that organizational members be pleasant and helpful, and express a minimum of hostility and negative emotions (*Cropanzano* et al., 2000). *Mann* (1999), for example, found similar rates of performance of emotional management occurring among colleagues to those occurring between staff and customers. Respondents reported that in 53% of interactions, they had smiled because this was expected of them, rather than because a smile expressed their true feelings. These findings suggest that emotional management within organizational boundaries should be paid more attention by researchers. *Strazdins* (2002) supports this point of view, claiming that emotional labour is not restricted to particular professional roles, but managers as well as workmates perform emotional management. *Briner and Totterdell* (2002) claim that managerial jobs include an additional element of emotional labour, because tasks will probably be performed better if leaders fake enthusiasm in order to motivate their staff. *Mann* (1999) also found that emotional labour is influenced by roles and status. Emotional management by leaders has contents and meanings different from those associated with emotional management by subordinates.

Material and methods

I have researched 36 physicians at the University of Debrecen Medical and Health Sciences Center. The participation in the research was voluntary. 9 leaders (heads of institutes, departments, wards) and 27 non-leaders (from now on subordinates) filled out the questionnaire. I have used the Positive and Negative Affect Schedule – Expanded Form (PANAS-X) questionnaire (*Watson and Clark,* 1994) to investigate the true and displayed emotions of the leaders and their subordinates.

The PANAS-X contains 60 emotions that can be compressed into two general (Positive Affect, Negative Affect), or 11 basic (Fear, Hostility, Guilt, Sadness, Joviality, Self-Assurance, Attentiveness, Shyness, Fatigue, Serenity, Surprise) emotion scales.

My questionnaire contained the PANAS-X twice. First the respondents were asked to rate the listed emotions on the basis how they feel each one of them in the course of their daily work. Secondly they had to rate them on the basis of their emotional displays. They had to score on a five point scale how often and how intensely they were displaying a given emotion.

Results and discussion

Emotions are feelings experienced, interpreted, controlled, and expressed (*Thoits,* 1989; *Mills and Kleinman,* 1988). They arise from social interactions, and are influenced by social, cultural, interpersonal, and situational factors (*Martin,* 1999). Emotions are aroused by the individual interpretation of events. According to *Fisher and Ashkanasy* (2000), emotions can be defined as the complex of cognitive and physiological processes, willingness to act, and subjective feelings. Emotions are displayed through many channels, including kinesics (such as bodily posture and hand gestures), prosodic (such as vocal intonation and pitch) and facial expressions.

Emotions are individual, although socially constructed to a degree (*Hare,* 1986). According to *Fineman* (1993), there exists a social consciousness of what are the correct emotions in specific situations. Individuals create meaning and content about one's own and others' emotions on the basis of emotional codes and 'schema' that contain guidelines for socially acceptable emotions within a given culture. According to *Lazarus* (1991), the variety, quality and intensity of emotions reflect how the person in question interprets and reacts to ongoing organizational events.

Human emotions can be divided into two broad categories. These two categories are called negative and positive, and should be regarded as polarities. (These descriptions do not imply any value judgment, but are designed to signify senses of action induced.) Negative emotions are fuelled by an underlying fear of the unknown or other people's actions, and a need to control or stop them to avoid being harmed (*Watson and Clark,* 1984). On the other hand, positive emotions are fuelled by an underlying desire for unity and enjoyment.

Positive emotions enhance creativity, encourage helping behaviour and cooperation, and reduce aggression against either the organization or people. A negative affect leads to a more thorough treatment of information and hence better judgments in situations where difficult and complex problems need to be solved. Sad people seek and consider more information and process persuasive messages more thoroughly. In contrast, individuals in a positive mood tend to prefer the use of simple heuristics and decisional shortcuts, or base their judgments on stereotypes.

While emotions alter rapidly, they are intense and represent responses to a particular event. They play a number of functional roles, such as preparing for actions, steering attention, sharpening memory, adapting behaviour to tasks and goals, ensuring adaptation to changing social requirements, affecting the behaviour of other people and supporting decision-making processes (*Reilly and Seibert,* 2003). Very often it is emotions felt that give leaders a hand in replying to problems too complex to analyse.

Table 1 shows the scores given to 60 different emotions by leaders and by subordinates. I have indicated the emotions that had the greatest differences between that of a leader and that of a subordinate. Letter 'A' spotlights emotions, which are felt more often or more intense by leaders. Letter 'B' highlights emotions that are felt by leaders less often or less intense than by subordinates.

The genuine emotions of leaders and subordinates are different in the field of most basic emotive factors as well. This difference may be the consequence of the different work demands and expectations, but also could serve as a basis for the internal selection process for an organization *(Figure 1).*

Table 1: Differences in genuine emotions of leaders and subordinates

Descriptive Statistics	Subordinate (N=27)		Leader (N=9)		Difference in Means	Highest Differences
	Mean	Std. Deviation	Mean	Std. Deviation		
Active	3,93	0,92	4,44	0,53	-0,52	A
Afraid	2,30	1,03	1,56	0,53	0,74	
Alert	4,07	0,78	3,89	0,78	0,19	
Alone	2,15	1,17	1,67	0,71	0,48	
Amazed	1,81	0,68	1,78	0,67	0,04	
Angry	2,81	0,96	2,78	0,97	0,04	
Angry at self	2,52	0,98	2,00	1,00	0,52	
Ashamed	1,85	0,86	1,44	0,73	0,41	
Astonished	2,63	1,04	1,78	0,83	0,85	
At ease	2,48	1,25	3,11	1,05	-0,63	A
Attentive	4,07	0,78	4,00	1,00	0,07	
Bashful	2,22	0,93	1,67	1,00	0,56	
Blameworthy	1,81	0,88	1,67	0,87	0,15	
Blue	1,81	0,96	1,11	0,33	0,70	
Bold	3,48	0,98	4,11	0,93	-0,63	A
Calm	3,44	1,37	4,11	0,60	-0,67	A
Cheerful	3,70	0,72	4,00	0,50	-0,30	
Concentrating	3,85	0,86	4,00	0,71	-0,15	
Confident	3,74	0,71	4,00	0,50	-0,26	
Daring	2,63	0,97	3,00	1,32	-0,37	
Delighted	2,48	0,98	2,22	1,09	0,26	
Determined	3,74	0,71	4,11	1,05	-0,37	
Disgusted	1,67	0,88	1,00	0,00	0,67	
Disgusted with self	1,30	0,72	1,11	0,33	0,19	
Dissatisfied with self	3,11	1,09	3,00	1,12	0,11	
Distressed	2,07	1,14	1,67	0,71	0,41	
Downhearted	2,33	0,83	1,56	0,73	0,78	
Drowsy	1,89	0,85	1,22	0,67	0,67	
Energetic	3,74	0,81	4,00	0,87	-0,26	
Enthusiastic	2,48	1,12	2,33	0,71	0,15	
Excited	2,89	1,09	2,33	1,22	0,56	
Fearless	1,93	1,07	2,67	1,22	-0,74	A
Fightened	1,96	1,16	1,22	0,44	0,74	
Guilty	1,89	0,85	1,78	1,09	0,11	
Happy	3,41	1,01	3,78	0,97	-0,37	
Hostile	1,89	1,01	1,33	0,71	0,56	
Inspired	2,44	0,89	2,89	1,27	-0,44	
Interested	4,11	0,58	4,22	0,97	-0,11	
Irritable	2,56	1,12	2,22	0,97	0,33	
Jittery	1,89	0,85	1,44	0,73	0,44	
Joyful	3,15	0,99	3,33	0,71	-0,19	
Lively	3,78	0,64	3,89	1,05	-0,11	
Loathing	1,74	1,02	1,11	0,33	0,63	
Lonely	1,96	1,32	1,67	1,12	0,30	
Nervous	2,89	1,22	1,78	0,83	1,11	B
Proud	3,11	1,05	3,11	0,60	0,00	
Relaxed	2,74	1,06	2,89	1,36	-0,15	
Sad	2,78	1,09	1,67	0,50	1,11	B
Scared	1,89	0,97	1,44	0,73	0,44	
Scornful	1,67	0,92	1,56	1,13	0,11	
Shaky	2,59	0,89	1,44	0,53	1,15	B
Sheepish	2,67	1,11	1,67	0,50	1,00	B
Shy	3,04	0,98	2,00	1,00	1,04	B
Sleepy	1,89	0,80	1,22	0,44	0,67	
Sluggish	2,07	0,83	1,67	0,71	0,41	
Strong	3,63	0,63	4,11	1,05	-0,48	
Surprised	2,37	0,93	1,89	0,78	0,48	
Timid	2,15	1,20	1,56	0,53	0,59	
Tired	3,15	1,17	2,56	1,33	0,59	
Upset	2,70	1,10	1,78	0,83	0,93	

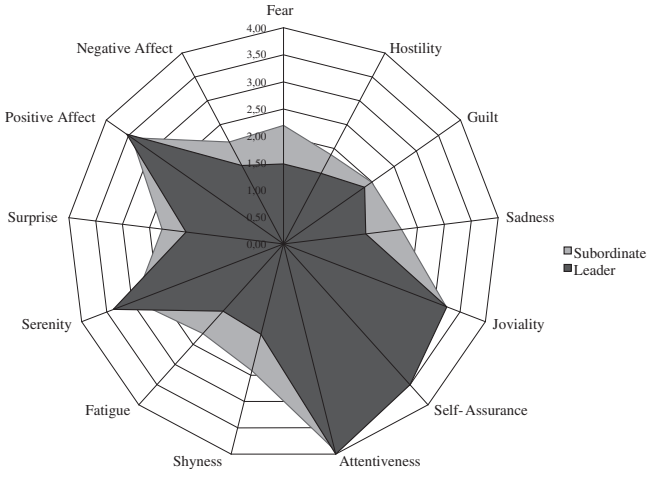


Figure 1: Genuine emotions of leaders and subordinates on the basis of general and basic emotion scales

Emotions affect organisational behaviour in multiple ways. The impact may be direct, such as behaviours provoked by different emotions, and indirect, such as those which affect performance via mediating mechanisms, e.g. motivation and perception. However, not only organizational behaviour is affected by emotions, but organizational processes also modify emotions. Panic reactions of others can intensify, while calm, reassuring behaviours of reference people weaken, the intensity of emotional reactions. Consequently, the emotions of leaders are of utmost influence and importance. *Totterdell and Holman* (2003) have found team members' moods to be systematically linked, especially tightly in the leader-to-follower relation.

Emotions are definitely present in both leaders and those led, but, until recently, leaders' emotions have gone unacknowledged in research, theory and, perhaps, even practice. However, leaders constantly have to manage their emotions to behave in a way leaders are expected to, because they directly influence not only the performance of their subordinates, but that of the whole organization.

There is significant difference between true and displayed emotions both in leaders and in led *(Table 2)*. The differences stand for altered emotions, emotional labour. Letter 'A' highlights emotions, where true emotions are less strong or less frequent, than the displayed ones. Letter 'B' highlights emotions, where true emotions are more frequent, more intense, than displayed ones.

Newcombe and Ashkanasy (2002) have demonstrated how emotions influence the way in which subordinates perceive their leaders. They found that the emotional expressions of leaders were given more weight than the actual content of their messages. Emotional expressions of leaders are essential when subordinates are interpreting their sincerity (*Humphrey,* 2002; *Dasborough and Ashkanasy,* 2002). In fact, a leader's emotions have strong effects on others'. Leaders who feel excited, enthusiastic, and energetic themselves are likely to similarly energize their followers, so are leaders who feel distressed and hostile likely to negatively activate their followers. For example, a leader's

Table 2: Difference between genuine and displayed emotions of leaders and of subordinates

Difference between true and displayed emotions	Subordinate (N=27)	Emotional Labour	Leader (N=9)	Emotional Labour
Active	0,11		0,11	
Afraid	0,22		0,26	
Alert	-0,22		0,44	
Alone	0,11		0,37	
Amazed	0,44	B	-0,11	
Angry	0,11		0,37	
Angry at self	0,33		0,37	
Ashamed	0,00		0,07	
Astonished	0,00		0,44	
At ease	0,11		0,04	
Attentive	-0,22		0,22	
Bashful	0,56	B	0,30	
Blameworthy	0,11		-0,15	
Blue	-0,11		0,33	
Bold	0,00		0,19	
Calm	-0,22		-0,11	
Cheerful	0,11		0,30	
Concentrating	-0,33	A	-0,30	A
Confident	-0,33		0,30	
Daring	-0,22		-0,11	
Delighted	-0,44	A	0,15	
Determined	0,00		0,07	
Disgusted	-0,44	A	0,19	
Disgusted with self	-0,11		-0,11	
Dissatisfied with self	0,56	B	0,63	B
Distressed	0,22		-0,07	
Downhearted	-0,11		-0,04	
Drowsy	0,00		0,30	
Energetic	-0,22		0,22	
Enthusiastic	0,00		0,07	
Excited	0,33		0,37	
Fearless	-0,22		-0,56	A
Fightened	0,00		0,19	
Guilty	0,56	B	-0,37	A
Happy	-0,11		0,33	
Hostile	-0,11		0,30	
Inspired	-0,44	A	-0,11	
Interested	0,00		0,19	
Irritable	-0,11		0,41	
Jittery	0,33		0,19	
Joyful	0,33		0,04	
Lively	-0,33	A	0,26	
Loathing	0,00		-0,04	
Lonely	0,44	B	-0,07	
Nervous	0,11		0,59	B
Proud	0,33		0,07	
Relaxed	0,22		-0,30	A
Sad	-0,67	B	0,44	B
Scared	0,22		-0,04	
Scornful	0,22		0,30	
Shaky	0,00		0,30	
Sheepish	-0,11		0,59	B
Shy	-0,22		0,44	
Sleepy	0,22		0,33	
Sluggish	-0,33		0,22	
Strong	-0,22		0,00	
Surprised	-0,11		-0,15	A
Timid	0,33		0,04	
Tired	0,22		0,26	
Upset	-0,22		0,52	B

Table 3: Difference between emotions displayed by leaders and subordinates

Descriptive Statistics	Subordinate (N=27)		Leader (N=9)		Difference in Means	Highest Differences
	Mean	Std. Deviation	Mean	Std. Deviation		
Active	3,81	0,96	4,33	0,71	-0,52	
Afraid	2,04	1,34	1,33	0,71	0,70	
Alert	3,63	1,24	4,11	0,60	-0,48	
Alone	1,78	0,97	1,56	1,13	0,22	
Amazed	1,93	1,00	1,33	0,87	0,59	
Angry	2,44	1,12	2,67	1,32	-0,22	
Angry at self	2,15	1,17	1,67	0,71	0,48	
Ashamed	1,78	0,89	1,44	0,73	0,33	
Astonished	2,19	1,00	1,78	0,97	0,41	
At ease	2,44	1,19	3,00	1,32	-0,56	
Attentive	3,85	0,95	4,22	0,67	-0,37	
Bashful	1,93	1,14	1,11	0,33	0,81	A
Blameworthy	1,96	1,09	1,56	0,53	0,41	
Blue	1,48	0,80	1,22	0,44	0,26	
Bold	3,30	1,23	4,11	1,05	-0,81	B
Calm	3,56	1,09	4,33	0,71	-0,78	B
Cheerful	3,41	0,97	3,89	0,78	-0,48	
Concentrating	4,15	0,66	4,33	0,50	-0,19	
Confident	3,44	1,19	4,33	0,50	-0,89	B
Daring	2,74	1,02	3,22	1,20	-0,48	
Delighted	2,33	1,11	2,67	1,22	-0,33	
Determined	3,67	0,73	4,11	0,78	-0,44	
Disgusted	1,48	0,85	1,44	1,33	0,04	
Disgusted with self	1,41	0,93	1,22	0,67	0,19	
Dissatisfied with self	2,48	1,28	2,44	1,24	0,04	
Distressed	2,15	0,99	1,44	0,73	0,70	
Downhearted	2,37	1,11	1,67	1,00	0,70	
Drowsy	1,59	0,75	1,22	0,44	0,37	
Energetic	3,52	0,98	4,22	0,67	-0,70	
Enthusiastic	2,41	1,01	2,33	1,00	0,07	
Excited	2,52	1,09	2,00	1,12	0,52	
Fearless	2,48	1,34	2,89	1,45	-0,41	
Fightened	1,78	1,31	1,22	0,44	0,56	
Guilty	2,26	1,13	1,22	0,44	1,04	A
Happy	3,07	1,11	3,89	0,78	-0,81	B
Hostile	1,59	0,89	1,44	1,33	0,15	
Inspired	2,56	1,09	3,33	1,22	-0,78	B
Interested	3,93	0,73	4,22	0,67	-0,30	
Irritable	2,15	1,06	2,33	1,50	-0,19	
Jittery	1,70	0,91	1,11	0,33	0,59	
Joyful	3,11	1,01	3,00	1,12	0,11	
Lively	3,52	1,05	4,22	0,67	-0,70	
Loathing	1,78	1,15	1,11	0,33	0,67	
Lonely	2,04	1,13	1,22	0,44	0,81	A
Nervous	2,30	0,87	1,67	0,87	0,63	
Proud	3,04	1,13	2,78	0,97	0,26	
Relaxed	3,04	1,09	2,67	1,22	0,37	
Sad	2,33	1,11	2,33	0,87	0,00	
Scared	1,93	1,04	1,22	0,44	0,70	
Scornful	1,37	0,74	1,33	0,71	0,04	
Shaky	2,30	1,10	1,44	0,73	0,85	A
Sheepish	2,07	1,00	1,78	0,83	0,30	
Shy	2,59	1,01	2,22	1,20	0,37	
Sleepy	1,56	0,93	1,00	0,00	0,56	
Sluggish	1,85	0,86	2,00	1,00	-0,15	
Strong	3,63	1,15	4,33	0,50	-0,70	
Surprised	2,52	1,01	2,00	0,87	0,52	
Timid	2,11	1,05	1,22	0,44	0,89	A
Tired	2,89	1,31	2,33	1,22	0,56	
Upset	2,19	1,11	2,00	1,41	0,19	

sad emotional expressions make him appear less efficient and followers who observe a sad leader feel less enthusiasm and more fatigue (*Glaso* et al. 2006).

There is usually a double standard for compulsory emotions inside organizations. Leaders must express emotions reflecting a state of inner psychic balance and rationality (*Putnam and Mumby,* 1993; *Ashforth and Humphrey,* 1993). Subordinates on the other hand are expected to behave towards their superiors with submission, respect and politeness, which might require suppression of strong positive or negative feelings (*Rafaeli and Sutton,* 1987; *Fineman,* 1993; *Briner and Totterdell,* 2002).

Anger, for example, is a prerequisite for leaders while being a luxury for subordinates (Tiedens, 2000). Although anger can lead to counterproductive work behaviours and often has a disruptive effect, anger is also a sign of power. Male leaders are perceived as more efficient when they show anger than when they show sadness or react with a neutral expression. Similarly, people attribute more power to a leader who shows anger than one who shows sadness.

Table 3 and *Figure 2* indicate how much the emotions displayed by leaders differ from those displayed by subordinates. Letter 'A' spotlights emotions, which are displayed more often or more intense by leaders. Letter 'B' highlights emotions that are displayed by leaders less often or less intense than by subordinates.

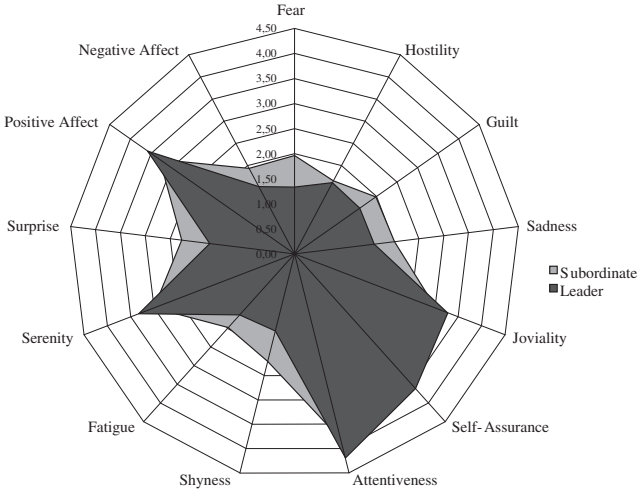


Figure 2: Difference in emotions displayed by leaders and subordinate

The difference between the leaders' and subordinates' displayed emotions is consistent with literature data cited above *(Figure 2)*.

Conclusions

Emotions at the workplace are not ubiquitous but may be employed to foster organizational goals; this, however, needs to be done wisely because, as qualitative research shows, leaders do not always find their true feelings conform to their roles (*Ashforth & Toumiuk,* 2000). As adequate feelings do not erupt spontaneously or automatically, leaders modify their display of emotions either by deep acting or by surface acting (*Ashforth & Humphrey,* 1993; *Hochschild,* 1979, 2003). Emotions can be faked but this faking bears a price. A good emotional leader seeks ways to make employees' natural feelings be like those which are good for the job. Helping employees to be more empathic in their interactions with clients and creating an environment which is perceived as just, are two important means leading to this goal. But who gives a hand to leaders? Do they have to strive for proper emotions all by themselves for both their own and others' sake? Is emotional management a burden or a prospect for leaders?

The requirement to show organizationally demanded emotions was originally thought to be a source of stress leading to burnout. Firstly, a leader who uses his or her emotions strategically risks a necessity to "create" the right emotions for the right purpose on a regular basis. But those who on a daily basis feel obliged to 'fake' emotions and play an emotional role will experience emotional dissonance and hence be at risk for burnout in the long run.

The second problem is that the success of charismatic leadership is intrinsically based on the perception of the genuineness of a leader's emotions. Consequently, emotional behaviours that are simply used as tools may not work, but even have perverse side effects. Followers react negatively to a leader whose verbal message does not match their emotional expressions in emotional tone. Leaders who unsuccessfully try to mask their negative emotions are also likely to be perceived as manipulative and having self-serving intentions. This is why leaders should especially be adept in regulating their emotions perfectly all the time.

However, it turned out that frequency, duration and intensity of emotional labour are not systematically related to burnout. In fact, in a frequently cited article on emotional labour, *Morris and Feldman* (1997) argue that emotional labour need not to be uniformly or equally damaging to all individuals. They point out that not only are there cases where leaders simply go on automatic pilot, but that there are situations where emotional labour reduces uncertainty or helps avoid embarrassing interpersonal situations and hence may actually lead to increased job satisfaction. Due to personal or job characteristics, individuals in jobs with high levels of emotional labour may actually report higher levels of satisfaction and personal accomplishment, and suffer less from burnout. Showing leader-like emotions may result in increased self-esteem and improved leader-to-subordinate relationship, which further amplifies the leader's sense of worth.

References

Arvey, R. D., Renz, G. L., Watson, T. W. (1998): Emotionality and job performance: implications for personnel selection. Research in Personnel and Human Resources Management, 16. pp. 103–147.

Ashforth, B. E., Humphrey, R. H. (1993): Emotional labor in service roles: The influence of identity. Academy of Management Review, 18. pp. 88–115.

Ashforth, B. E., Humphrey, R. H. (1995): Emotion in the workplace: A reappraisal. Human Relations, 48. pp. 97–125.

Ashforth, B. E., Tomiuk, M. A. (2000): Emotional labor and authenticity: Views from service agents. In S. Fineman (Ed), Emotions in organizations (pp. 184–203). New Delhi: SAGE

Bales, R. F. (1950): Interaction process analysis. New York: Addison-Wesley.

Briner, R. B. and Totterdell, P. (2002): 'The experience, expression and management of emotion at work', in P. Warr (Ed.) Psychology at Work, London: Penguin.

Cropanzano, R., James K., Konovsky, M. A. (1993): Dispositional affectivity as a predictor of work attitudes and job performance. Journal of Organizational Behavior, 14. pp. 595–606.

Damasio, A. (1994): Descartes' Error: Emotion, Reason and the Human Brain (New York: Avon Books).

Dasborough, M. T. and Ashkanasy, N. M. (2002): 'Emotion and attribution of intentionality in leader-member relationships', The Leadership Quarterly, Vol. 13, pp. 615–634.

Fineman, S. (Ed.) (1993): 'Organizations as emotional arenas', Emotion in Organizations, Thousand Oaks, CA: Sage, pp.9–35.

Fisher, C. D., Ashkanasy, N. M. (2000): Emotions in organizations. Journal of Organizational Behavior, 21. pp. 121–234.

Fleishman, E. A. (1957): A leader behavior description for industry. In R. M. Stogdill and A. E. Coons (eds.), Leader behavior: Its description and measurement. Columbus: Bureau of Business Research, Ohio State University.

George, J. M. (2000): 'Emotions and leadership: the role of emotional intelligence', Human Relations, Vol. 53, No. 8, pp.1027–1055.

Glaso, L., Ekerholt, K., Barman, S., Einarsen, S. (2006): The instrumentality of emotion in leader-subordinate relationships. International Journal of Work Organisation and Emotion, Vol. 1, No. 3, 2006

Goleman, D. (1995): Emotional Intelligence. New York: Bantam Books.

Hare, R. (1986): The social construction of emotions. New York: Basil Blackwell.

Hochschild, A. R. (1979): Emotion work, feeling rules, and social structure. American Journal of Administrative Science Quarterly, 36. pp. 245–268.

Hochschild, A. R. (1983): The managed heart: Commercialisation of human feeling. University of California Press, Berkeley.

Hodgkinson, C. (1990): Educational leadership: The Moral Art (Albany NY: State University of New York Press).

Humphrey, R. H. (2002): 'The many faces of emotional leadership', Leadership Quarterly, Vol. 13, pp.493–504.

Lazarus, R.S. (1991): Emotion and adaptation, New York: Oxford University Press.

Leithwood, K., Jantzi, D. and Steinbach, R. (1999): Changing Leadership for Changing Times (Philadelphia, Penn: Open University Press).

Likert, R. (1967): New patterns of management. New York: McGraw Hill

Mann, S. (1999): 'Emotion at work: to what extent are we expressing, suppressing, or faking it?', European Journal of Work and Organizational Psychology, Vol. 8, No. 3, pp.347–369.

Martin, S. E. (1999): Police force or police service? Gender and emotional labor. In: Steinberg R. J., Figart D. M. (Eds), Emotional labor in service economy. The Annals of the American Academy of Political and Social Science, 561. pp. 111–126.

Mills, T., Kleinman, S. (1988): Emotions, reflexivity, and action: An interactionist analysis. Social Forces, 66. pp. 1009–1027.

Morris, J. A., Feldman, D. C. (1997): Managing emotions in the workplace. Journal of Managerial Issues, 9. pp. 257–274.

Muchinsky, P. M. (2000): Emotions in the workplace: The neglect of organizational behavior. Journal of Organizational Behavior, 21. pp. 801–805.

Newcombe, M. J. and Ashkanasy, N. M. (2002): 'The role of affect and affective congruence in perceptions of leaders: an experimental study', Leadership Quarterly, Vol. 13, pp.601–614.

Putnam, L. L. and Mumby, D. K. (1993): 'Organizations, emotion, and the myth of rationality', in S. Fineman (Ed.) Emotion in Organizations, Thousand Oaks, CA: Sage, pp.36–57.

Rafaeli, A., Sutton, R. (1987): Expression of emotion as part of the work role. Academy of Management Review, 12. pp. 23–37.

Reilly, J., Seibert, L. (2003): 'Language and emotion', in R.J. Davidson, K.R. Scherer and H.H. Goldsmith (Eds.) Handbook of Affective Sciences, New York: Oxford University Press.

Strazdins, L. (2002): 'Emotional work and emotional contagion', in N.M. Ashkanasy, W.J. Zerbe and C.E.J. Härtel (Eds.) Managing Emotions in the Workplace, New York: M.E. Sharpe, pp.111–134.

Thoits, P. A. (1989): The sociology of emotions. Annual Review of Sociology, 15. pp. 317.

Tiedens, L. Z. (2000): 'Powerful emotions: the vicious cycle of social status positions and emotions', in N.M. Ashkanasy, C.E.J. Härtel and W.J. Zerbe (Eds.) Emotions in the Workplace. Research, Theory and Practice, Westport, CT: Quorum Books, pp.71–81.

Totterdell, P., Holman, D. (2003): Emotion regulation in customer service roles: Testing a model of emotional labor. Journal of Occupational Health Psychology, 8. pp. 55–73.

Watson, D., Clark, L. A. (1984): Negative affectivity: The disposition to experience negative emotional states. Psychological Bulletin, 96. pp. 465–490.

Strategic approach to sustainable business of Galenika Fitofarmacija A.D. in a context of accession of Republic of Serbia

Dijana Zečević

University of Belgrade and International MBA network
MBA in Agribusiness and Commerce

Strategic management is ultimately concerned with the quest for sustainable advantage. To be practical, advantage for commercial firms concerns earnings and sustainable means a concern with earnings into the future. Pearce and Robinson define strategic management as a set of decisions and actions that results in the formulation and implementation of plans designed to achieve a company's objectives. David says that strategic management can be defined as the art and science of formulating, implementing, and evaluating cross-functional decisions that enable an organization to achieve its objectives. Strategy is also hierarchical concept – it takes place at three different levels: corporate, business, and functional. These levels correspond with the activities of managers in different parts of the organization.

Galenika Fitofarmacija Joint-Stock Company is the largest Serbian manufacturer of products for crop and plant protection and the products for communal hygiene. This company has successfully been operating on the domestic industrial area since 1955, the time when the first herbicide of the Galenika of that time was manufactured.

Since 1991 it has become one of the seven shareholding companies of Galenika and achieves the status of the autonomous legal person. In 1997 this company continued to operate as the joint-stock company. In the changed social ambience the Galenika Fitofarmacija has overcome the transitional problems and implemented the successful ownership transformation.

In 2001 the company became one of the first four companies the shares of which were traded on the Belgrade Stock Exchange, and since 2005 the company operation has been transferred to the continuous trading method.

Galenika Fitofarmacija manufacturing programme is based on its own trademark, but also this company cooperates with the world companies, through representatives' offices, cooperation and the distribution. Alongside its own production Company is in a position to offer and perform the manufacturing services, as well as storing for the business partners from our country and from abroad.

Mission of the company is to provide farmers with the effective tool in performing high yield and quality production as well as securing safe food for consumers and maintaining and improving environmental protection. Galenika Fitofarmacija, by improving business performances, is striving to achieve the level of quality required and business performances of SME agrochemical companies in the European Union. This achievement would enable company to expend its business on regional market.

Company's business is facing many challenges – increasing competition from domestic and foreign companies, changing pesticide regulations, unfavorable public opinion towards pesticides, location of production facilities in the vicinity of densely populated area etc. But, of all challenges the most threatening is changing pesticide regulation in the context of EU accession of Republic of Serbia. New pesticide legislation in Serbia will be harmonized to those in EU, which would impose insurmountable obstacles for executing business activities in usual fashion.

There are several way in which Company could adopt its business in new environment. Company can stay in the industry with altered fashion of performing business operations, or exit industry and start a fully new business. After evaluation of major strengths and weaknesses – IFE matrix, and evaluation of economic, social, cultural, demographic, environmental, political, governmental, legal, technological, and competitive information – EFE matrix, strategic analyzing tool has been constructed – IE matrix, which indicates that Company should maintain its position in industry. Staying in industry could be achieved in a different ways. In order to evaluate which way suits most to results of internal and external analysis, the Quantitative Strategic Planning Matrix – QSPM has been constructed. QSPM will gives the Company a systematic approach for evaluating alternate strategies, and helps to decide which strategy is best suited to Galenika Fitofarmacija. In this matrix to alternative strategy has been evaluated: original strategy – investment in product development (Compilation of Registration documentation in accordance with Annex 3) and second recommendation/strategy – entering in a wholesaling and

representation of some other producer of pesticides. First strategy – investment in product development (Compilation of Registration documentation in accordance with Annex 3) has overall score of 6.83, while opposing strategy – entering in a wholesaling business with plant protection products and representation of foreign companies has overall score of 5.99, which indicates that first strategy suits better to internal and external features of the companies. Financial analysis of first strategy indicates positive Net Present Value, and Internal rate of return of 14,18%

In order to implement selected strategy Action program has been formulated with clear definition of responsibilities and timetable in the framework of which suggested strategy is about to be executed.

The elements of strategic and marketing planning applied in the case of Avital company

Sanja Milikic

University of Belgrade and International MBA network
MBA in Agribusiness and Commerce

Presently, the environment that is characterized by rapid changes in all social spheres, the challenges of rapid adaptation and survival in the market, the ability of thinking and acting in front of ''time'' is one of the key factors of success. Every day we have witnessed a large decline of the number of companies, poor implementation of many projects, poor implementation of government reforms, and life challenges of people to find work. On the other hand, there are individuals, organizations and companies that face challenges and changes very fast in all world markets and societies. Question that could be asked based on this is ''Why and how some companies manage it and the other not?''

Today's business, which is based on the current circumstances that we live and work in, can not offer long-term growth and development without thinking and forecasting what may happen, for three, five or more years in advance. What is the prerequisite for long-term growth and development is a process that allows us to ''connect the present and future'', i.e. strategic planning process (*Bennett,* 1995).

The marketing and strategic planning result in close correlation.

As the marketing has very high importance for the business, marketing strategy could be identified with the management strategy as a whole. Intensive changes in the business environment (in the local and the world) have contributed to the more "extended" and "deeper" concept of marketing. Even the very definition of marketing evolved. Marketing is defined as a business function that aims to better satisfy the needs, desire and demand of buyers/customers with the realization of profit for the company. Today, marketing gets new features and dimensions and is defined as "the process of securing the optimum level of customer's satisfaction with the achievement of optimal profit for the company and the optimal financial and work satisfaction for all employees in the company, all without damage to the physical and social environment"(*Filipović and Kostić,* 2003a).

Marketing is not just a sale or economic propaganda; marketing is a philosophy of business.Marketing as a business concept based on the old truth that says: "Only a company that knows how to sell, it is certain that it will produce (*Filipović and Kostić,* 2003b)..

Both of the concepts which supplement each other serve to direct and realize company's goals and control its implementation activities and success.

In this work the bases of strategic and marketing planning will be presented. The process of strategic and marketing planning will be described, specific strategic methodologies generally used will presented, as practical demonstration of some strategic and marketing aspects will be shown.

For the purpose Avital Company will serve as an example, as a Company which lack both strategic and marketing planning. The work will be dedicated to the information and knowledge sharing among company's staff, company's management awareness raising and advisory purpose.

Some aspects of Avital Company present business activities will be described which will serve as a baseline analysis that needs to be improved.

As the Company's management expressed the wish and need of being acquainted with the strategic and marketing planning process in general, the special attention in the work is given to the review of literature.

It is expected that this work will lead the management to realize the importance of planning and further more implementation of the plans as the only one way which will lead them toward aims settled and their successful accomplishment.

This work is dedicated to the issues of strategic and marketing planning as the they refer to the need of the long-term tendency adaptation and processes in the wider business environment.

Short description of strategic and marketing management as scientific disciplines is given, describing their importance and advantages when applied in achieving business success.

In the paper, the market and their variables are described, creating the environment in which companies interact. The methodology of market analysis is given as the way to penetrate into new market. It starts with analysis of macro and micro environment of the company, than analyse the competitors and consumers, define market segments and the strategies to run business. The global strategies of entering the market are described as well as getting into new markets.

The choice of the strategy turns to be the most sensitive question since it determinates the key questions of comapany's success.

Avital Company had served as an company where some issues and aspects of strategic and marketing planning were applied.

Also, the issue of investment into irrigation system, as the main product Avital Company offers to the market, and their justification was analysed through the metodology of repayment term of the investments.

References

Bennett Peter D. (1995): "Dictionary of Marketing Terms", 2nd ed., Chicago: American Marketing Association

Filipović V, Kostić M, (2003a): „ Marketing menadžment", FON-Menadžment, Beograd, str. 106-107

Filipović V, Kostić M, (2003b): „ Marketing menadžment", FON-Menadžment, str. 93, Beograd, 2003

The evolution of the Avacongress

András Nábrádi

University of Debrecen, Faculty of Agricultural Economics and Rural Development, Hungary

In the early 1990's MBA educations started independently in Warsaw, Prague, and Debrecen. In the middle 1990's a small network was estblished with the mentioned institutions, as well as supporters from different universities like Wageningen, Aberdeen, Cork, later Fayetteville from Arcansas (USA). In the beginning of the 21st century the network became bigger. That time did Kiev join the Network, and started negotiations with Moscow Paralell to extended network leading by Warsaw University we applied for a EU Leonardo grant. The proposal was to develop the teaching and learning materials in the programme to a common approved standard. In order to improve the quality of teaching a set of commonly approved, standardized teaching materials had been develeoped: Handbooks for modules taught within 7 courses of the MBA programs: Public Policy, Economics, Management, Marketing, Finance, Operational Methods and International Agribusiness. Handbooks and case studies had been put on Warsaw University's website and are now accessible for teachers and students from all academic institutions participating in the project. Materials had been developed by teams of experts in specific fields from different Universities. The whole set of materials was prepared in English. Another product of the project is the quality assurance standards applied by all MBA programs and an accreditation procedure for the International Board. That time formulated the name AGRIMBA which is official name of the International Network on Agribusiness and Commerce.

Extended activities in the middle of the decade, the scientific periodical APSTRACT was born

Together with some of the Network members we applied successfully for Tempus grants, and started agribusiness education emprovement in Zagreb University, later in Belgrade and Novi Sad. That time was an idea formulated: establishing a periodical, dealing with applied economics, agribusiness and commerce as well as giving platform to the MBA and PhD students sharing results with the wider audience their diploma or doctoral works. From the idea to reality, after two preparational years, was born the Network's Scientific periodical APSTRACT in 2007.

The mission of AVA Conference is similar to the Network

One year after the establishment of the Faculty of Agrieconomics and Rural Develepment in Debrecen University the leadership of the faculty decided to initiate a new international scientific conference in 2003. The name of the event is an acronym: starting letters of agrieconomics, ruraldevelopment and informatics, which abbreviation is in Hungarian language: AVA. The conference was successfully organized in 2005 as well as in 2007. In the year of 2008 after the closing of the Zagreb Tempus program the leadership of the Network has rewieved common activities back to this decade. That time was a new idea formulated: renaming of the original AVA abbreviation to the international one, keeping the mission of these conference series but adding some new elements to it.

The decision was made, that the congress will be organized on behalf of the Network. It was decided that the new-old name is still AVA, acronyme of: Aspects and Visions of Applied Economics and Informatics. The language of the congress is English, and has to be circulated within the network members. The next AVA-CONGRESS will be in Wageningen in 2011.

Mitigation activities to reduce emission of agricultural greenhouse gases in Hungary

János Lazányi

University of Debrecen Faculty of Applied Economics and Rural Development
H-4032 Debrecen, Böszörményi út 138. Hungary

Summary: Pressure on natural resources and the global environment have been identified as the most important challenges to maintain prosperity and improve environmental care. Agriculture is responsible for only a small proportion of carbon dioxide (CO_2) emissions, but the sector is more closely associated with emissions of other greenhouse gases such as methane (CH_4) and nitrous oxide (N_2O). The global warming potential of agricultural activities defined as greenhouse gas (GHG) emissions in CO_2 equivalents is relatively low in Hungary, when calculated per land area. However this difference decline, when a GHG emission is calculated per product unit, as yields are lower then in West European countries. Environmental load caused by agriculture is also low in Hungary, where increasing part of EU resources are used for the long-term preservation of natural resources and for the raising of awareness of sustainable farming. The strength of the environmental situation of Hungary, consist of several elements, such as the rich bio-diversity, the significant size of territories falling under natural protection, the extent and importance of forests and the low environmental load from crop production. Among the weaknesses the nitrate load of the animal husbandry farms, the increasing water and wind erosion, the soil compaction and degradation have to be taken into consideration. Climate change has high risk potential and the mitigation activities of the New Hungary Rural Development Programme (HRDP) are investigated in this paper with the aim to increase mitigation activities in rural area and reduce the causes of climate change.

Key words: Climate change, Rural Development Programme, Mitigation, Hungary

Introduction

The biosphere is a strong determinant of the chemical composition of the atmosphere. A wide range of carbon, nitrogen, and sulphur gases have been emitted and absorbed by the biosphere. There are also evidences that the expanding human use and alteration of the biosphere for food, fuel and fibre production are contributing to increasing atmospheric concentrations of GHG gases. The dominant gas in this category is carbon dioxide (CO_2). Other important GHG gases include methane (CH_4) and nitrous oxide (N_2O). Indirect GHGs, including carbon monoxide (CO), oxides of nitrogen (NO_x), and volatile organic compounds are also produced from land-use change and forest management activities, where burning is involved.

The global warming potential of organic and integrated farming systems is considerably smaller than that of conventional. Recent analyses have suggested that growth of existing forests in temperate regions may be a significant carbon sink potentially as much as 0.7 Pg C annually. Estimates of CO_2 emissions due to land-use change vary considerably according to the fate of the land cleared, the amounts of biomass contained in different ecosystems and the amount of carbon released, when soils are disturbed.

Agriculture is the largest user of rural land, and a key determinant of the quality of the countryside and the rural environment. The importance and relevance of rural development have increased with the recent enlargement of the European Union and contributes to sustainable development. The new agricultural model reflects the role of multifunctional farming, diversity of landscapes, cultural and natural heritage. The guiding principles for the CAP are set out by the European Council of Goteborg, which concluded, that economic performance of agriculture must go hand in hand with the sustainable use of natural resources. CAP minimizes waste production, maintains biodiversity, preserves ecosystems and avoids desertification. CAP encourages healthy, high-quality products, environmentally sustainable production methods including organic production and the protection of biodiversity.

The new rural development policy can make a key contribution to competitiveness and sustainable development in the coming years. Agriculture and forestry represent more than 90% of land use in Hungary and the environmental performances of them are closely connected to preservation and enhancement of natural resources. As regards water quality, total nitrogen surplus has declined since 1990, although some regions still experience some nutrient leaching. Problems of soil degradation persist in many areas of Hungary, although, an increasing share of agricultural area is devoted to organic production and integrated farming. With the implementation of about 2 million hectares of Natura 2000 territory, there are significant advances in the protection of biodiversity. The former value of the protected

areas in Hungary was about 0.75 million hectares, 90% of it remains in Natura 2000, and further 1.2 million hectares have been added. The present value reaches 1.92 million hectares, 21% of the total territory of Hungary.

Long-term trends in forestry also shape climate change mitigation in Hungary as forested area in 1922 was as low as 8%. Now, forestry occupies more than 18% of the country and becoming increasingly important in water management and in the fight against erosion and the harmful consequences of climatic change. The size of forestry in nature conservation areas is considerable and additional areas have already been designated as parts of the Natura 2000 network. In this way, rural areas face particular challenges as regards growth, jobs and sustainability. The agricultural and food sectors, on the other hand, profit the opportunities offered by new approaches, technologies and innovation to meet market demand both in Europe and globally. Investment in human capital will allow rural areas to look to the future with confidence.

Material and methods

Agriculture and forestry sector is unique in having the ability to produce and to sequester greenhouse gases, as well as to provide biomass-derived renewable energy. In this paper climate change mitigation is considered on the bases of the New Hungary Rural Development Programme. Mitigation activities to reduce agricultural greenhouse gases emissions are focused on the following subjects:

- **CH_4 emissions from enteric fermentation in domestic livestock:** Methane is produced as a by-product of enteric fermentation, a digestive process by which carbohydrates are broken down by micro-organisms into simple molecules. Both ruminant and some non-ruminant animals produce methane, but ruminants are the most important source since they are able to digest cellulose, due to the presence of specific micro-organisms in their digestive tracts. The amount of CH_4 released depends on the type, age and weight of the animal, the quality and quantity of the feed and the energy expenditure of the animal.
- **CH_4 emissions from manure management**: CH_4 is produced from the decomposition of manure under anaerobic conditions. These conditions often occur where large numbers of animals are managed (dairy farms, beef feedlots, swine and poultry farms), and manure is stored in large piles or disposed of in lagoons.
- **N_2O emissions from manure management**: During storage of manure, some manure nitrogen is converted to N_2O. Emissions of N_2O related to manure handling are included in this source category. Manure-related N_2O emissions from soils are considered as agricultural soil emissions.
- **CH_4 emissions from rice cultivation**: Anaerobic decomposition of organic material in flooded rice fields produces methane. The amount CH_4 emitted is a function of soil type, temperature, irrigation practices and fertiliser use. The integrated CH_4 flux depends upon the input of organic carbon, water regimes, soil type, time and duration of drainage.
- **CH_4, CO, N_2O, and NO_X emissions from the burning of agricultural residues:** The burning of crop residues is a significant source of emissions of methane, carbon monoxide, nitrous oxide, and nitrogen oxides. Since 1995, burning of agricultural residues is banned in Hungary
- **CH_4, CO_2, and N_2O emissions from agricultural soils**: Emissions of N_2O from agricultural soils are primarily due to the microbial processes of denitrification. Direct soil emissions may result from the following nitrogen input to soils: (1) synthetic fertilisers, (2) nitrogen from animal waste, (3) biological nitrogen fixation, (4) reutilised nitrogen from crop residues, and (5) sewage sludge application. Soil cultivations also increase soil organic matter mineralisation and N_2O emissions. Increased amount of nitrogen added to the soil generally result in higher N_2O emissions. Direct soil emissions of N_2O from grazing animals and indirect N_2O emissions take place after nitrogen is lost from the field as NO_x, NH_3 and after leaching or runoff. Agricultural soils may also emit or remove CO_2 and/or CH_4 when peat compost is used as a soil amendment. Carbon dioxide emissions from limed soils are also important.
- **CO_2 and N_2O emissions from land use change:** Most important land-use changes that result in GHG emissions and removals are (i) changes in forest and other woody biomass stocks, (ii) forest and grassland conversion, (iii) abandonment of croplands, pastures, plantation forests, or other managed lands and (iv) changes in soil carbon.

GREENHOUSE GASES EMISSION AND MITIGATION ACTIVITIES

1. / Strategic objectives of the New Hungary Rural Development Programme

In line with the overall aim of sustainable development, HRDP seeks to change the management of farming so as to improve the connections between environmental, social and economic impacts of rural development. The main strategic objectives under which rural development activities will be supported during the period 2007–2013 are as follows:

Axis 1: ***Improving the competitiveness of the agricultural and forestry sector:*** Minimum of 10% of national rural development fund should be committed to Axis 1 including payments for young farmers, early retirement of farmers and farm workers, modernisation of agricultural holdings, improving the economic value of

forests, supporting producer groups and promotion activities under food quality schemes.

Axis 2: ***Improving the environment and the countryside***: Minimum of 25% of national rural development fund should be committed to Axis 2 including agri-environment payments, Natura 2000 payments, forest-environment payments, restoring forestry potential and introducing prevention actions, support for non-productive investments.

Axis 3: ***The quality of life in rural areas and diversification of the rural economy***: Minimum of 10% of national rural development fund should be committed to Axis 3 payments including diversification into non-agricultural activities, encouragement of tourism and basic services for rural population, village renewal and development, training and skills acquisition measures.

Axis 4: ***Leader:*** The LEADER approach is used for the delivery of the other three axes through area based local development strategies, local public-private partnerships, implementation of innovative approaches, implementation of cooperation projects, networking of local partnerships.

2./ Emissions of greenhouse gases

Carbon dioxide is the main climate change gas, produced largely by combustion of fossil fuels *(Figure 1 and 2)*. Emissions of carbon dioxide are from direct energy use, such as diesel in tractors, gas to heat and electricity in livestock buildings. Agriculture and forestry currently account for about 10–11% of total greenhouse gas emissions. Agriculture is responsible for a very small share of CO_2 emissions and the sector can help to mitigate CO_2 emissions from other sources through carbon sequestration in soils and timber by land use, land use change and forestry (LUCUF). Agricultural practices are more significant sources of other gasses, including methane, and nitrous oxide, which significantly contribute to climate change *(Figure 2)*. In 2007, energy sector accounted for just over 70% of CO_2 emissions. Since 1985, emissions from energy, industrial processes and agriculture have fallen continually, while those from waste management have risen, as shown in *Figure 3*.

Emissions of methane and nitrous oxide from agriculture have declined substantially in the early 1990s, largely because of a reduction in livestock numbers and fertiliser use *(Figure 4)*. In 2007, agriculture produced 33% of the total CH_4 emissions. Emissions of methane fell by 48% between 1985 and 2007. About 86% of this methane comes from enteric fermentation and 14% from manure management. Nitrous oxide emissions also fell by 40 per cent between 1985 and 2007 and agriculture is the main source, accounting for about two thirds of N_2O emissions. This originates mainly from agricultural soils. The nitrous oxide emissions arise from manures and artificial fertilisers. Methane and nitrous oxide have global warming potentials that are greater than carbon dioxide by 21 and 310 times respectively.

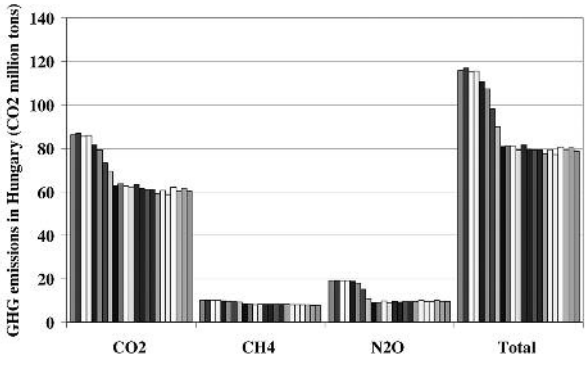


Figure 1: Emissions of different GHG in Hungary between 1985 and 2007 (million tons)

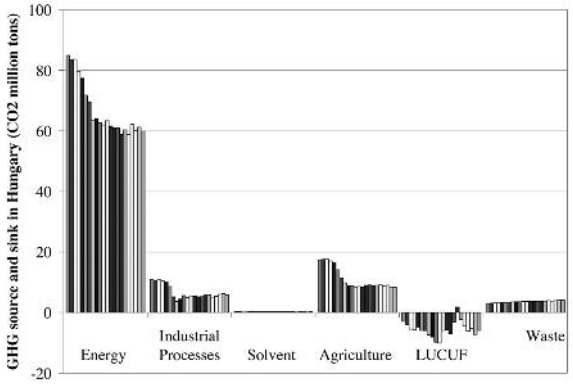


Figure 2: Greenhouse gas source and sink in Hungary between 1985 and 2007 by categories (million tons)

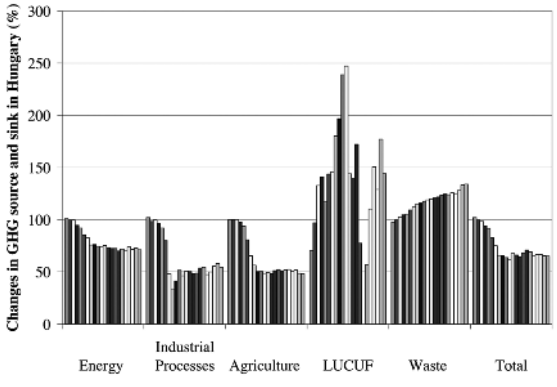


Figure 3: Changes in GHG source and sink in Hungary between 1985 and 2007 by categories (%)

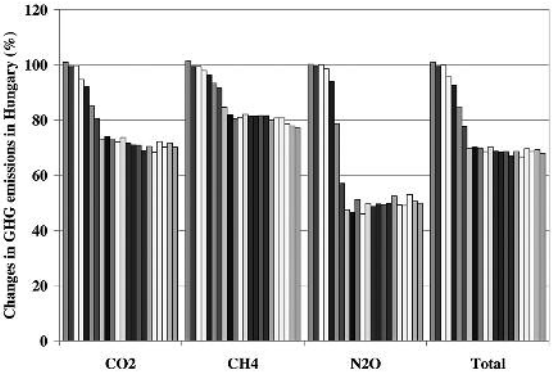


Figure 4: Changes in different GHG emissions in Hungary between 1985 and 2007 (%)

3. / Climate change mitigation in the New Hungary Rural Development Programme

Specific attention is given for measures to improve manure storage and spreading techniques to reduce nitrate loss and CH_4 emission. Efficient management of solid and liquid manure is essential for the reduction of methane emissions, originating from biological fermentation in livestock manure management. Manure management and septic pits are good examples of investments, similarly to equipment for precision farming and spreader for better application of mineral fertilisers and organic manure. One of the objectives of the HRDP based on National Agri-Environmental Programme (NAEP) is to support the development of organic farming as an environmentally-friendly method of production. The objective is to ensure adequate levels of technical and economic knowledge, skills in management and sustainable management of natural resources including the requirements of cross compliance, renewable energy sources and organic production. Climate change mitigation benefits are likely as the global warming potential of organic and integrated farming systems is considerably lower, than, that of conventional. HRDP also promotes the use of environmental planning in farm management practices, such as nutrient management and crop rotation planning. Soil and water protection scheme provides support for nutrient management, including storage and application of livestock manures.

HRDP supports the development of environmentally-friendly production method with economic potential. In this respect, important objectives of the HRDP are to conserve soil and water resources, including those areas affected by erosion and risk of nutrient losses. Soil and water protection scheme provides support for the introduction of sustainable crop rotations, intercropping, green cover and legumes such as peas, beans, lupine, soybean, alfalfa and clover. Purchase and installation of new equipment also improves energy efficiency.

HRDP intends to restore traditional agricultural landscape features, which have cultural, scenic and environmental value. A corresponding activity is the maintenance of high natural value grasslands and livestock management. Measures involve the maintenance of a maximum density of livestock in order to assure a good ecological state for the meadows and pastures and to keep permanent grass cover. The extensive grassland scheme promotes grassland management based on animal husbandry. Extensive pastures management, diversification of grass species and reduced fertilisation help to increase soil organic levels and climate change mitigation objectives.

Conversion of agricultural land into forest and conversion of arable land to permanent pastures are connected to soil erosion control and has an effect on GHG mitigation. Ensuring adequate levels of technical and economic skills in management and business, new technologies, product quality and safety, sustainable management of natural resources, renewable energy use and organic production are the most important operational objectives. Development of new technologies and processes, forestation of non-agricultural land will also contribute to climate change mitigation and enhance biodiversity in Hungary.

To meet the particular requirements linked to the nitrate directive in livestock sector HRDP states that animal husbandry in Hungary lacks compliance with environmental protection requirements, and significant investments are needed in manure storage and management. Within the framework of HRDP, the storage and use of manure, including biogas production facilities are supported. Investments in equipment for better application of mineral fertilisers and manure are also detailed in the programme. Actions on energy-saving machinery involve strong emphasis on environmentally sound, cost-efficient and energy-saving equipment, but details are also important in respect of climate change mitigation.

Organic farming and grassland management schemes promote the adoption of environmental friendly management practices compliant with the rules and regulations of organic production in order to preserve grassland habitats of high natural value. HRDP includes the integrated crop production scheme, which involves sustainable nutrient management, integrated plant production, crop rotation and soil cultivation. Soil conservation techniques, such as reduced tillage, permanent green cover, catch crops, stubble management are also integrated in the HRDP in order to improve quality of soil, surface and ground waters. The integrated crop production scheme promotes rational nutrient management. The anti-erosion scheme applies various methods at arable lands, including conversion of low fertility arable lands into forestry or grassland. In areas threatened by floods, erosion and on land near vulnerable water resources, supports are granted for the first forestation. This is in line with management of greenhouse gases.

Organic matter plays an important role in maintaining soil fertility and structural stability. Soils are a major reservoir of carbon. The lost soil carbon is likely to increase CO_2 concentration in the atmosphere, and exacerbating global warming. Loss of soil carbon also affects soil functioning, resulting in an increase of erosion and loss of soil biodiversity. Mitigation measures of HRDP encompass the control of carbon losses from soils. Protection against erosion is a well defined climate change mitigation objectives similarly to the use of water reservoirs and livestock protection on semi-natural and natural grasslands. Extensive pastures management and protection of biotopes of semi-natural and natural grasslands totally excludes mineral fertilizers and liquid manure from protected area. This applies to land situated in a vulnerable zone delimited with the Directive 91/676/EEC and in less favoured areas. These measures are also in line with climate change mitigation objectives.

Agriculture can also be used to produce renewable energy, both as biomass and bio-fuels. Sources of energy include both residues and crops grown for energy. While the carbon savings from using perennial energy crops are

significant, net carbon savings from annual food crops such as cereals and oil crops, which can be used to produce transport fuels, are much lower and have different environmental impacts. To meet both energy and environmental objectives the location, landscape characteristics, water availability, the size and arrangement of planted fields have to be considered. Important aims of HRDP are to address climate change objectives with increasing emphasis on resource protection for the benefits of society.

The drivers for increased energy efficiency are mainly economic. The contribution of resource efficiency can make to climate change mitigation are recognised in the HRDP, as well as the benefits for soil, air and water quality. This suggests a need for public intervention in support of innovative technologies and resource management techniques. Anaerobic digestion (AD) is a renewable energy technology that has significant potential to contribute to climate change and wider environmental objectives. It helps reduce greenhouse gas emissions by capturing methane from the decomposition of organic materials, such as manure and slurry, food waste and sewage sludge. The biogas can then be used as a renewable energy source for heat, power or as a transport fuel. Public intervention is necessary to disseminate the technology and to help early adopters. Specialist advice and training help farmers adapt to the challenges of CAP reform and to the increasing emphasis on mitigating the effects of climate change.

Public intervention is necessary to disseminate results of R&D activities. HRDP helps agriculture and forestry sector to play its full part in tackling climate change and exploring how environmental stewardship can contribute to achieving the climate change objectives. This includes promoting resource efficient farm management and developing a communicational strategy to raise awareness of climate change issues. Taking forward the non-food crops strategy to substitute fossil fuels with renewable products and measures under nitrates action plan, which also support climate change mitigation goals in Hungary. Trainings in agriculture and forestry include tasks related to renewable energy, such as production, utilization and primary processing of biomass for energetic purposes. Without this, the opportunity to bring the technology to market and achieve the public benefits might be lost. Support granted to farmers and forest holders to cover the utilization of professional advisory services, and increase awareness in the field of climate change mitigation to maintain good agricultural and environmental condition.

Discussion

The New Hungary Rural Development Programmes from 2007 to 2013 are based on recognition of the need for healthy functioning of the environment and economy. Many aspects of the environment, such as the quality of air and water are improving, but the challenge is to encourage production and consumption patterns to reduce environmental impacts. This creates opportunities for less resource use, pollution and waste throughout the entire food chain and consequently increases competitiveness of farming and food businesses. This can be achieved through raising awareness of the economic and environmental opportunities, applying resource efficient techniques, making use of innovative technology, access to advice on resource efficiency, helping farmers and land managers understand the increasing need to protect soil organic matter. To mitigate climate change, rural development requires strategic approach to competitiveness, job creation and improved governance in the coming years.

References

Annual Status Report of the Annual Inventory of Hungary 2009. United Nations Framework Convention on Climate Change (UNFCCC)

Council Regulation (EC) 1698/2005 on Support for Rural Development by the European Agricultural Fund for Rural Development

IPCC (Intergovernmental Panel on Climate Change, (2007): The physical science basis, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge.

IPCC (Intergovernmental Panel on Climate Change), (2007) Climate change 2007: mitigation, Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge

New Hungary Rural Development Programme is the National Rural Development Programme prepared for the 2007–2013 period

Report of the Individual Review of the Greenhouse Gas Inventory of Hungary Submitted in 2006. United Nations Framework Convention on Climate Change (UNFCCC)

Report of the Individual Review of the Greenhouse gas Inventories of Hungary Submitted in 2007 and 2008. United Nations Framework Convention on Climate Change (UNFCCC)

WMO Statement on the Status of the Global Climate in 2008. World Meteorological Organization (WMO), Geneva, Switzerland.

Information for authors

Applied Studies in Agribusiness and Commerce is the official periodical of the International MBA Network in Agribusiness and Commerce for the discussion and dissemination of applied research in agricultural economics, agribusiness and commerce performed within the International MBA Network. Submitted manuscripts should be related to the economics of agriculture, natural resources, environment, or rural development. Papers should have a practical orientation and demonstrate innovation in analysis, methods or application. Topic areas include production economics and farm management, agricultural policy, agricultural environmental issues, regional planning and rural development, methodology, the marketing of agricultural and food products, international trade and development. Applied Studies publishes practical research and case studies, as well as papers discussing policy issues. Shorter features include book reviews and comments on previously published articles. In addition, the journal publishes the Annual report of the International MBA Network in Agribusiness and Commerce enabling the members of International MBA Network to have immediate access to the papers. All articles will be held to the same set of scholarly standards

Submissions: Articles should be submitted to the Editor by e-mail, prepared in a recent version of Word for Windows. One printed copy of the complete article should be sent via post. Articles should be written in English. Reactions to articles previously published in the Applied Studies in Agribusiness and Commerce may be sent to the Editor; critical comments and suggestions are always welcome.

Editor: *Prof. Dr. András Nábrádi*
Faculty of Agricultural Economics and Rural Development
University of Debrecen
138. Böszörményi út 4032 Debrecen Hungary
tel: 36 52/526901, fax:
e-mail: agrimba@agr. unideb.hu

Length: Articles should not exceed 20 pages, including abstract, tables, figures, and graphs. Shorter articles will also be considered.

Formating: Font size 10, with margins; top 6 cm, bottom 5 cm, left 4.5 cm and right 4 cm on A/4 sheets. Manuscripts should be headed with the title of the paper, initial(s) of first name(s) and surname(s) of author(s), and the institute where the research was carried out. Papers should be divided into the following sections: Abstract, Introduction, Materials and Methods, Results and Discussion, Acknowledgements, References. Abstracts of maximum 300 words are required for all the manuscripts. Up to 5 key words should be added at the end of the abstract. Units should conform to the International System of Units (SI).

Layout: The name and affiliation of the author(s) should be given on the first page. An abstract of no more than 200 words should precede the text of the article. The abstract should give a clear idea of the main conclusions of the article, the methods employed and some indication of the line of reasoning. Provide a maximum of five key words below the abstract. General acknowledgements and background information to the article, such as sponsoring bodies of the research project, should appear in the foot notes of the manuscript. Manuscripts should be divided into sections, each with numbers and section heading. Use no more than two grades of headings. Footnotes should appear at the end of the page on which they are inserted. Collect references are at the end of the manuscripts. References are cited in the text by giving the name of the author/editor, year of publication, all in parentheses (*Nábrádi* et al., 1997) or (*Nábrádi* (ed.), 1997). The list of references should only include publications cited in the text. Publications should be cited in alphabetical order by authors' names, year of publication, title of the paper, title of the journal, volume number, first and last page. Tables should be numbered consecutively and placed in their position in the text. Tables spreading across double pages are difficult to read and typeset. Type table column headings with an initial capital only. Number figures consecutively and place them in their positions in the text. Camera-ready copies of line drawings and photos should be submitted. Mathematical formulas should be placed also in the paper.

Refereeing process: Submitted papers are sent to two independent, anonymous reviewers, selected by the Editorial Board members, for judgement on their appropriateness for publication in the Studies. Lists of Editorial Board members can be found on the inside cover the Applied Studies. The recommendations of the refereeing panel are made known to the authors by the Editor. Revised articles should be sent directly to the Editor in the same way as first submissions.

Proofreading: Proofs are sent to authors for reading and correction directly by the publisher and a date for the return of proofs will be given; corrections arriving after the stated date will only be incorporated if time is available.

☐ **Printed version:** 30 € / For students: 15 €

☐ **DVD version:** 40 € / For students: 20 €

☐ **Printed and DVD version:** 45 €

☐ **Online version:** 26 € / For students: 13 €

Number of copies: .....

Our prices are including postage fees.
We will renew your magazine subscription without interruption.

Subscription data:

Name of subscriber: .....

Billing data
Name: .....
Billing address: .....
Tax number: .....
Other: .....

Contact person
Name: .....
Address: .....
Telephone: .....
Fax: .....
E-mail: .....

Shipping data:
Name: .....
Address: .....
Telephone: .....
E-mail: .....

Payment method

☐ Cheque ☐ Personally *at the Agroinform Publishing House*

☐ Bank transfer *(the invoice is sent with the magazine by post)*

Note: .....

.....

Date: .....

.....
Sign

If you have any question, please call our contact person **Bence Bolyki**
Address: Agroinform Corporation, H-1149 Budapest, Angol street 34. • Phone & fax center: + 36 1 220-8331
Mobile: + 36 20 314-5377 • E-mail: bolyki_bence@agroinform.com • Skype: bolyki_bence • www.agroinform.com

AGROINFORM
PUBLISHING HOUSE

Editor: *Prof. Dr. András Nábrádi – Editorial office:* H–1149 Budapest, Angol u. 34.
Phone/fax: (36-1) 220-8331 • E-mail: studio@agroinform.com
Executive publisher: István Bolyki, managing director
Typography: Opal System Graphics • *Production:* Agroinform Visual Studio
The publication is distributed by AGROINFORM Publishing House • www.agroinform.com
H–1149 Budapest, Angol u. 34. • Phone: (36-1) 220-8331
HU-ISSN 1789-221X

ABSTRACT

Contents

Typography: OPAL www.opalsystem.com