CHAIN APPROACH TO IMPROVE MARKET ACCESS OF TRADITIONAL FOOD PRODUCTS

A.Sebők[*], X. Gellynck[**], B. Kühne[**], A. Molnar[**], A. Papp[*], T. Kuti[*], V. Piana[***], M. Contel[***]

[*]Campden & Chorleywood Food Industry Development Institute, Hungary; [**]Ghent University, Department of Agricultural Economies, Division Agro-food Marketing, Belgium; [***]Progetto Europe Group, Italy

1.   INTRODUCTION

Traditional foods play an important role in maintaining the diversity of foods in Europe by the time of globalised food trade. They provide pleasure(Hersleth at al. 2008.) to the consumer, are part of the cultural heritage (Palloné, 2003), (Popovics, 2008) and contribute to the quality of life. Traditional foods are produced frequently by SMEs in limited quantities. In many cases they are not well–known outside their local area or region. On a food market dominated by multiple retailer chains the above mentioned limitations together with the limited financial and human resources of the SMEs cause major barriers of accessing to the market. As a consequence of that one of the key challenges of maintaining the sustainability of the production of traditional food products is how to ensure a reliable and ongoing market access and supply also to consumers outside the local area of production.

On a global market organisations nowadays no longer compete as independent entities, but as chains (Christopher, 1998, Cox 1999, Lambert and Coops, 2000). The effectiveness of the operation of the food chain can represent an advantage or a barrier in the competitiveness of their chain members.

Although several studies were carried out on the consumer aspects on certification and labelling of origin of traditional food products relatively limited information is available on the operation of traditional food chains and their potential to implement innovative solutions.

In current scientific debates, innovation is considered to be a key driver of economic growth and an instrument to achieve sustainability and cohesion (Mytelka and Smith, 2002; Pittaway et al., 2004). Thereby innovation is understood as a consequence of various non-linear learning processes involving different kinds of actors. The networking plays an important role in the innovation competence. The recent research results demonstrate that participation in networks explains differences in innovation competence in the agro-food sector (Vermeire et al., 2007). The findings of the SMES Task Force of the ETP Food for Life (Sebok et al.; 2007) showed that the barriers and constraints of innovation of food SMEs can be grouped into the following main categories: emotional, cultural barriers, trust (social capital), lack of information, lack of knowledge/skills, high cost compared to available resources, limited resources, time constraints, legal barriers, lack of customer responsiveness. Networking and collaboration activities can help to overcome these barriers.

Within the TRUEFOOD project (an integrated FP6 project, financed by the EU Commission on innovative solutions for traditional foods) a specific activity is focused on improving

market access. The aim of this paper to provide a summary of the results that are related to the chain approach of innovation in production and supply of traditional foods. This paper is focused on the experiences collected on the operation of and innovation in traditional food chains, provides a brief overview of an inventory developed on successful practices of using supply chain management resources and marketing management capabilities and the main purpose of this paper is to summarise the results of a questionnaire survey conducted on the innovation capacity and collaboration of the traditional food chains. The objective of this work was to understand and measure the bottlenecks and success factors of traditional food chains and to develop a method, which is suitable for their determination.

2. METHODS

2.1 Development of the inventory of success cases

The successful practices and cases for the inventory were collected by desk research. Personal experiences were also described and additional information was collected during the focus group discussions and interviews with the chain members. This information was structured into chapters following the main aspects developed for identification of the bottlenecks and success factors of traditional food chains in exploiting supply chain management and marketing management resources and capabilities. Main aspects for supply chain management contain networking, chain approach – collaboration, chain approach – balance of power and satisfaction, resources and institutions. Marketing management aspects contain market information, market segmentation, marketing strategy, elements of the marketing mix, marketing budget and market evaluation. Since one case may represent several aspects cross-references to the other relevant aspects were provided with their descriptions.

2.2 Data collection method

A survey questionnaire was developed through desk research using the tool for identification of bottlenecks and success factors described in 2.1, followed by 2 focus group discussions / country in Belgium, Hungary and Italy.

Quantitative data were collected via interviews with managers of 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 traditional bakery products such as scones, Danish pastry curls with cocoa). First, traditional food manufacturers were identified in each subsector and selected for interviews.

During the interviews, each focal company (the food manufacturer) (FC) was asked to identify their suppliers (S) and their customers (C). In the next phase, one of their suppliers and one of their customers were selected and interviewed. In this way, representatives of 91 traditional direct food chains (including 91 suppliers, 91 focal companies and 89 customers) were interviewed. The interviews were carried out between December 13, 2007 and June 20, 2008.

Mainly face-to face interviews were applied. In Hungary in addition to the face-to-face interviews phone interviews and a few self-registered questionnaires were applied as well to balance the very high rejection rate for the face-to-face interviews. In all cases the

respondents had the opportunity to ask clarifications if they had difficulties in understanding some of the questions.

The innovation capacity was measured through the availability of resources including human efforts and financial efforts, the innovation projects implemented by the traditional food supply chain members and the results of the innovation activities. The collaboration was measured through joint activities of the supply chain members along the chain and collaboration between the supply chain members and third parties.

2.2   Data analysis

The questionnaire used in the survey was structured to get relevant information on innovation capacity, different collaboration activities, and their impact on perceived profitability and business growth.

An innovation capacity score was introduced in the following way. The mean of the scores of human efforts, financial efforts and results of innovation and the total number (sum) of innovation activities were standardized for each chain members. The average of the standardized scores of the four variables was determined. This score describes the innovation capacity of a supply chain. If this value is 1 the supply chain has a maximal innovation capacity, if it is 0, the supply chain has a minimal innovation capacity. Scores describing the collaboration were summarized and standardized for each chain member and for each supply chain. This collaboration score describes the level of the collaboration of a supply chain. If this value is 1, the supply chain collaborates very well if it is 0, the partners in the supply chain do not collaborate at all.

The data were analysed by summary statistics and cross tabulation to get a general overview of the results. The Kruskal-Wallis test ($\alpha=5\%$) was used to identify whether there are significant differences between the innovation capacity of the chain members and also between the collaboration. The Mann-Whitney test ($\alpha=5\%$) was used to explore differences between 2 independent variables. The relationships between the variables were analysed with Spearman's correlation. K-means cluster analysis was used to identify typical groups of the supply chains with different levels of innovation capacity.

3.   RESULTS

3.1   Considerations for innovation in traditional food chains

A definition of traditional foods was developed from the aspects of the businesses participating in the chain, which was verified by focus group discussions and during the chain interviews. According to that the view of the chain members is the following:

1. **PRODUCTION**: the key steps of production must be local (national/regional/local). Once firms start to produce in other countries, the food is no longer considered as traditional.
2. **AUTHENTIC**: the product has to fulfil at least one of the following steps:
   - authentic recipe (mix of ingredients) and/or
   - authentic origin of raw material and/or
   - authentic production process

3. **COMMERCIALLY AVAILABLE** for the public for at least 50 years (= 1950 and before) in stores or restaurants; it may happen that during that period the food product disappeared from the market, but it was on market at least 50 years ago.
4. **GASTRONOMIC HERITAGE**: the product must have a story which is -or can be- written down in 2-3 pages.

By comparing this definition to the consumer driven definition: "*A traditional food product is a product frequently consumed or associated to specific celebrations and/or seasons, transmitted from one generation to another, made in a specific way according to the gastronomic heritage, distinguished and known because of its sensory properties and associated to a certain local area, region or country.*" developed by an other working team in the TRUEFOOD project dealing with consumer aspects (Hersleth et al., 2008a) it can be established that commercial availability is a key factor for chain members.

Innovation in the food sector has a specific character. Radical changes in the food, particularly in its composition and structure at molecular level frequently provoke consumer rejection partly because of food safety concerns, partly because of the learned nature of taste. Therefore incremental innovation and innovation, which improves the product attributes and the related pleasure, convenience, health functions and services without changing the nature of the food, are more acceptable. The sensory properties to which the consumers are used should always be maintained or implemented. This is well reflected by the acceptance of possible innovation at traditional foods, which was determined by the WP1 team of the TRUEFOOD project (Hersleth et al., 2008 b).

The innovations with the highest rates of acceptance are: labels that guarantee the origin of the raw material; using organic raw materials; new process improving safety; reduction of fat content; packaging that preserves the sensory quality; recloseable packaging; more variety in the offer and the possibility to buy the traditional food from the manufacturer.

The source of innovation is not uniform in the different sectors. At least four groups can be distinguished as: sectors developing inputs for other sectors; sectors, which base their innovation on the input of other sectors (Martin and Scott 2000); sectors innovating through the development of complex systems and sectors innovating through the use of research intensive technologies. The food sector belongs to the group, which bases its innovation on the inputs of supplying sectors.

Therefore collaboration with other chain members along the chain to develop new core competencies through combination of capabilities and resources of the chain members on which the competitive edge can be based provides new opportunities (Gellynck at al., 2008).

In a programme for "Traditions, Flavours, Regions" (Euroterroirs) led by the Hungarian Community Agricultural Marketing Centre more than 300 typical, local products with specific geographical origin were collected.

This collection covers specific varieties of produce, nuts, breeds of animals and processed foods all with distinguishable sensory properties.

They are grouped into 15 categories, including vegetables, fruits, bakery products, meat products, meat, poultry and game, dairy products, drinks, etc. At these products innovation

has to be carried out with specific care. Change of sensory properties will result in loosing the identity and traditional character. Therefore for our research we chose examples from the largest groups as processed vegetables, bakery products and meat products.

By analysing the operation of the traditional food chains three major bottlenecks are identified related to the supply chain and the marketing resources of traditional food producers, especially SMEs:
1. The lack of understanding the importance and benefits of improving supply chain and marketing resources, *e.g.*:
   - The lack of collaboration, trust and confidence between peers;
   - The improper use of the existing networks because of the lack of understanding.
2. The lack of knowledge about appropriate methods and skills, *e.g.*:
   - The satisfaction imbalance due to the huge bargaining power of the supermarket/hypermarket chains and their low price policies;
   - The inefficient use of alternative distribution channels (like specialized shops or HORECA);
   - The difficult access of traditional foods to the international market.
3. The lack of financial, infrastructure and human resources, *e.g.*:
   - The low availability of financial resources caused by the limited own internal resources and the low availability of external resources (like the lack of governmental support or institutional support);
   - The low marketing budget due to the limited financial resources which hampers the use of systematic marketing and market research activities.

Success factors include quality approach, collaborative use of resources, common view of chain members, networking and collective activities (collective marketing, collective market research, collective research and training). It can be concluded that networking and collaboration between partners along the supply chain and peers in innovation, marketing management and distribution have a key importance. Also networking and collaboration will be enhanced by sharing information, common thinking and joint use of the resources.

3.2 Inventory of best practices on reducing bottlenecks and promoting success factors at traditional food supply chains

The objective of this inventory is to provide structured information for SMEs and other food businesses and for organisations supporting them with methods and solutions, which have already been applied successfully in traditional and conventional food supply chains for elimination and reduction of the bottlenecks. These successful examples demonstrate that there are several ways how SMEs can improve the performance of the chain in which they operate and demonstrate also the benefits of implementing the chain management approach.

Examples of innovative use of supply chain resources cover networking, collaboration of chain members, resources, institutions. Examples of innovative use of marketing management resources cover market information, marketing strategy, and from the elements of the marketing mix cover product assortment, distribution and product advertising and promotion.

Table 1. <u>Success stories in the current version (issue 2) of the inventory on best practices</u>

Innovative use of supply chain resources	No. of cases	No. of cross-references
Networking	6	11
Chain approach-collaboration	12	14
Chain approach-balance among the chain members	0	0
Resources	3	11
Institutions	10	7
Innovative use of marketing management		
Market information	0	4
Market segmentation	8	10
Marketing objective	0	0
Marketing strategy	3	4
Marketing mix	30	22
Marketing budget	0	0
Marketing evaluation	0	0
Total:	**64**	

3.3   Innovation capacity and supply chain performance

The innovation capacity and the collaboration of the traditional food supply chains were measured in three European countries and explored the main factors that influence the innovation capacity and the supply chain collaboration.

Table 2. Innovation capacity and collaboration

Standardized data *Innovation capacity*	*Italy*	*Hungary*	*Belgium*	*Mean-Total*	*Asymp. Sig. (2-tailed)*
Human efforts	0.27	0.32	0.38	0.32	0.351
Financial efforts	0.24	0.28	0.26	0.26	0.574
Innovation activities	0.50	0.44	0.49	0.48	0.225
Innovation results	0.65 C	0.73 B	0.74 A	0.71*	0.008
Average	0.42	0.44	0.47	0.44	

In summary, the total innovation capacity of the chains did not show significant differences by countries but the comparison of the different aspects of innovation shows different patterns (Table 2.).

Different members of traditional food chains show differences in preferences for different types of innovation (Table 3).

Table 3. Types of innovation projects financed by the members of traditional food chains

	Proportion of chain members spending on a typical innovation (%)		
	Food manufacturers	Suppliers	Customers
Product development	71	62	30
Process development	69	73	22
Market research	53	48	49
Organisational development	49	54	53

Food manufacturers spend most frequently on product development and nearly similarly frequently on process development, followed by market research and organisational development. Suppliers spend most frequently on process development, followed by product development, organisational development and market research. At customers the most popular type of innovation is organisational development, followed by market research, by product development and process development consecutively, but with significantly less frequency.
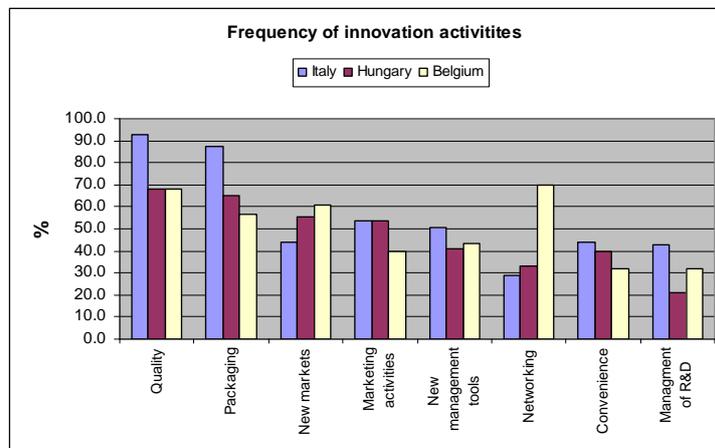

Figure 1. Innovation activities by countries

The type of innovation activities shows quite different patterns by countries (Figure 1.). In Italy and in Hungary the most frequent activity was the improvement of the quality and packaging. The main innovation activities applied in Belgium are networking, improving the quality and entering new geographical markets. The networking is remarkably more frequently applied in Belgium than in Italy or Hungary. The Belgian chains rate their own innovation activities more successful than the Italian or in Hungarian chains.

A cluster analysis was carried out on the standardized scores of the four variables (human efforts, financial efforts, innovation activities and innovation results) of innovation capacity of the supply chains. Based on the evaluation of the results 3 clusters of the chains were

identified with low, medium and high innovation capacity. The differences between these clusters are more remarkable at human and financial efforts than at innovation results. The supply chains with low innovation capacity answered that they are less profitable and realized smaller business growth than the supply chains with medium or high innovation capacity. This suggests that the level of innovation capacity have a remarkable effect on perceived profitability and business growth (Figure 2.). Higher innovation capacity is linked to higher perceived profitability and business growth.
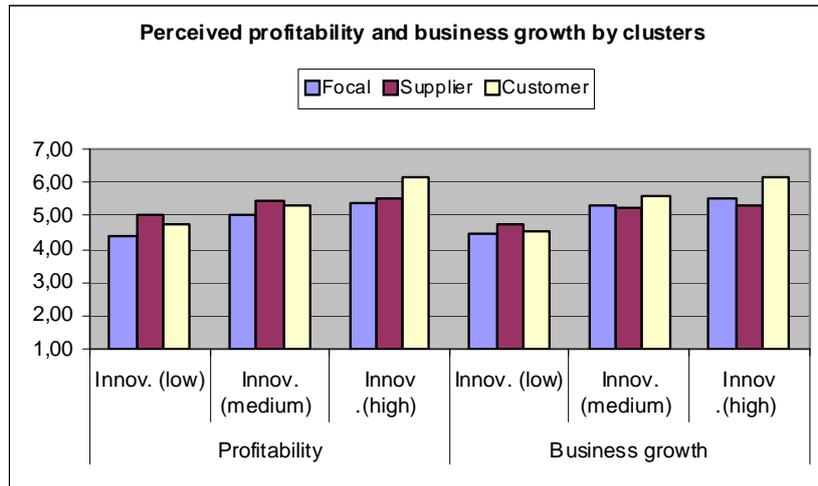
Figure 2. Relationship of innovation capacity and perceived profitability, business growth
(1=completely disagree; 7=completely agree)

3.4 Collaboration

Table 4. Standardised data on collaboration of chains

Collaboration					
	Italy	Hungary	Belgium	Mean-Total	Asymp. Sig. (2-tailed)
Collaboration	0.43 AB	0.37 B	0.5 A	0.43*	0.007

1=maximum level; 0= no collaboration;
A, B, C- indicate samples with significant differences (5%)
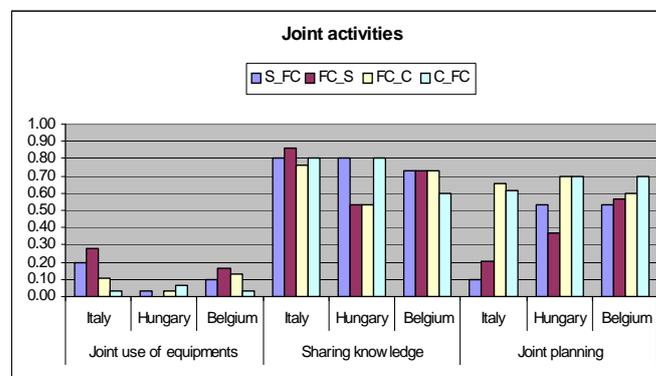

Figure 4. Collaboration – Joint activities

8

The most frequent joint activity in the traditional food supply chains is sharing knowledge followed by joint planning of activities, joint R&D and joint used of equipments.
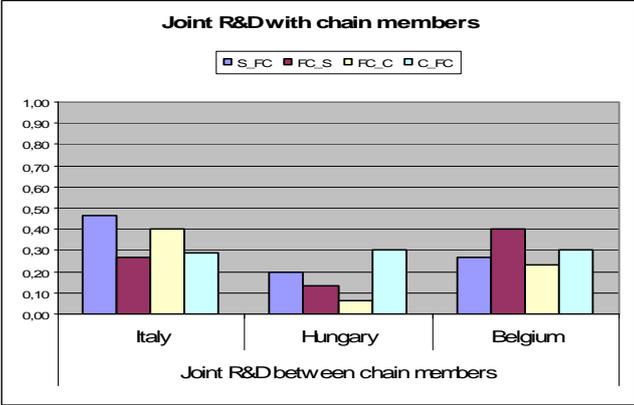

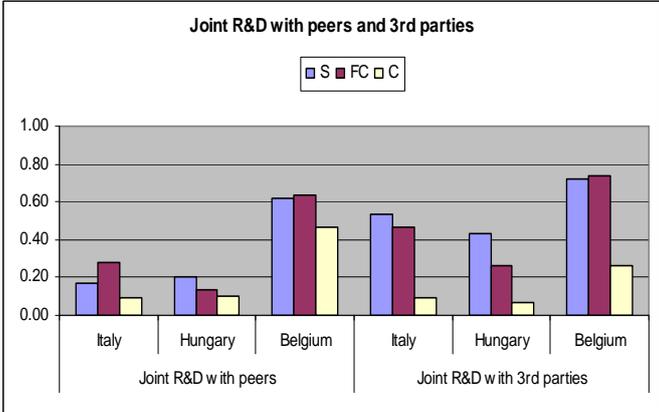Figure 5. Collaboration – Joint R&D with chain members

Figure 6. Collaboration – Joint R&D with peers and 3rd parties

The most frequent type of joint activity is sharing knowledge. Joint use of equipments is rarely applied. Joint R&D with chain members is a less frequent type of collaboration. It is less frequent in Hungary than in Italy or Belgium. Joint R+D with 3rd parties are more frequent than with peers. In general the Belgian supply chains show the highest level of collaboration, while the level of the collaboration is the lowest in Hungary. Similarly the proportion of those who carry out joint R&D with peers and third parties are remarkably higher in Belgium compared to Hungary and Italy.

4. CONCLUSIONS

In summary the collaboration have a significant effect on the innovation capacity of the traditional supply chains. More intensive collaboration leads to higher innovation capacity, which has an influence on the perceived profitability and business growth. Collaboration along the chain provides new opportunities to develop new core competencies, on which competitive edge can be based. Thus we can conclude that the collaboration is an important success factor.

These results confirm that the different cultural background has an effect on the innovation capacity, but the results shall be considered by the different aspects of innovation as the amalgamation of the results on the different aspects may hide the differences.

5. ACKNOWLEDGEMENT

6. REFERENCES

- Gellynck, X.; Molnar, a.; Sebők, A.; 2008. *Introduction to Chain Management*, TRUEFOOD – Training Material. Module 1.
- Gellynck, X. et al. 2008. TRUEFOOD Info Sheet WP5. How can you strengthen your marketing and supply chain management capabilities? Improved marketing and food supply chain organisation methods for traditional food SMEs.
- Hersleth,M. et al. 2008a TRUEFOOD Info Sheet WP1. A consumer driven definition of Traditional Foods and information about consumer's image of Traditional Foods.
- Hersleth,M. et al. 2008b TRUEFOOD Info Sheet WP1. Which innovators do European consumers accept in Traditional Food Product?
- Martin,S.; Scott,J.T. 2000. *The nature of innovation market failure and the design of public support for private innovation*. The Research Policy 29. 434-447
- Mytelka, L.K. and Smith, K., 2002. *Policy learning and innovation theory: an interactive and co-evolving process*. Research Policy, 31 (8-9): 1467-1479
- Palloné Kisérdi, I. 2003. *Hagyományos és táj-jellegű termékeink perspektívái az Európai Unióban*. Konzervgyártás 51(3), 88.
- Pittaway, L., Robertson, M., Munir, K., Denyer, D. and Neely, A., 2004. *Networking and innovation: a systematic review of the evidence*. International Journal of Management Reviews, 5-6 (3-4): 137-168
- Popovics,A. (2009) A földrajzi helyhez kapcsolódó és a hagyományos Magyar termékek lehetséges szerepe az Élelmiszer fogyasztói magatartásban. PhD. thesis, Szent István University, Gödöllő
- Sebők,A.; Anker-Moller,R.; Drausinger,J.; de Gooijer,K.; Gellynck,X.; Groó,D.; Morais,F.; Munksgaard,L.; Napper,D.; Ohlsson,T.; Rossi,D.; Schiefer,G.; Strubbe,K.; Vermeire,B., 2007. *Findings, recommendations of the SMES Task Force of the ETP Food for Life*, draft position paper to the Board (Version 2/05.07.2007)
- Van der Vrande, V., de Jong Jeroen, P.J., Vanhaverbeke W., Rauchemont M., 2008. *Open innovation in SMES: Trends, motives and management challenges*, Report published under SCALES (Scientific Analysis of Entrepreneurships and SMEs). www.entrepreneurship-sme.eu
- Vermeire, B., Gellynck X., Bartoszek, P. and Rijswijk, L., 2007. *Strategic objective for developing innovation clusters in the European food industry*, Ghent University