



# **TRUEFOOD**

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## **Traditional United Europe Food**

### **WP 7- Environmental, Societal, Human and Economic impact of innovation**

#### **WP 7.5.5**

#### **Traditional products and the economic impact of innovation**

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#### **Final Report**

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## 1. Introduction

In the framework of the Truefood-Project<sup>1</sup> which is financially supported by the European Commission, the University of Applied Sciences Weihenstephan analyses the economic impacts of innovations on small and medium sized enterprises (SMEs) of the food industry. In this context a specific focus is devoted to innovations in traditional food products (TFPs). One important aim is the elicitation of the current situation regarding product innovations in companies of the food industry. As many new products do not succeed at the market and have to be withdrawn within the first year after their introduction (Madakom 2001), another important task of this project is to find out which factors are responsible for success and failure of product innovations as well as to which extent these factors are realized by SMEs of the food industry.

In the scope of the present final report important results which had been elaborated within the Truefood-Project (mainly the results of the written company survey and additional case studies) are presented. Based on these results recommendations are elaborated in order to improve the success for companies in the food industry.

The report is structured as follows: Firstly the methodology of the company survey and the case studies is presented (chapter 2). Chapter 3 deals with important results which had been elaborated within the company survey as well as the case studies including general information about the company and the situation of innovation. As successful innovations are very important for companies, factors which impact the success of innovations in a positive way are handled in a separate chapter (chapter 4). In chapter 5 recommendations and conclusions are given.

## 2. Methodology

The written company survey had been carried out in Germany, Italy, the United Kingdom and Poland. It had taken place in the time period September 2007 to March 2008. The questionnaire contains 25 questions classified in different categories (see appendix 1). One category deals with general information about the companies. Furthermore the questionnaire contains questions regarding the situation of innovations as well as questions dealing with success and failure of innovations. In Germany altogether 2,469 food companies have been contacted. 226 (9 %) of the questionnaires which have been sent back from these companies are utilizable for this survey. In Italy 56 (2 %) of 2,870 contacted companies have sent back utilizable questionnaires and in the United Kingdom 25 (1 %) of 2,603 company representatives have filled in the questionnaire. In Poland only 6 of 1.127 contacted companies have attended the survey. To increase the response rate several measures (e.g. contacting the companies two times) have been taken. Nevertheless the rate of answers is quite low. Some information which had been requested in the questionnaire is very sensitive but necessary for analysing the requested topics (e. g turnover, profit). For this reason only few company representatives have been willing to attend the survey. This could be an explanation for the low rate of response. However for getting an adequate and comprehensive insight into the situation of innovation it had been necessary to ask these data. As the rate of returned Polish questionnaires is too low for getting a representative insight into the Polish food industry, Polish results are not included in the statistical analysis but only adducted for qualitative comparison with other countries in some cases.

The case studies which have been carried out via phone based interviews should deepen the results of the written company survey. For structuring the interviews an interview guide had been developed which contains similar topics as the written company survey does (see appendix 2). The structure of the questionnaire and the interview guide mainly differs in the kind of question. Whereas the questionnaire mainly contains closed questions with response options which are limited to certain specifications the phone interviews had been carried out in a way as the interview guideline does not contain any given response options. The interview had rather been carried out as a dialogue. The interviewer only gave response options if the interview stagnated.

For testing the interview guide some pre-tests had been carried out. Thus it got clear that the interview guide had to be modified in some points. Representatives of different companies in Germany and

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<sup>1</sup> See website: [www.truefood.eu](http://www.truefood.eu)

Italy had been interviewed. Further companies contacted in the United Kingdom and Poland could not be interviewed due to timing difficulties of the contacted persons or due to confidentiality reasons.

Mainly companies of the dairy and beverages industry as well companies processing fruit and vegetables were interviewed. Furthermore companies processing meat are included in the case studies. Although it was quite difficult to find adequate companies which are willing to provide information about the companies as well as the situation and impacts of innovation altogether 14 firms of the food industry could have been interviewed. However, in some cases the respondents were not able or willing to comment on some questions due to confidentiality reasons. The interviews had been carried out in the time period November 2008 to March 2009.

Data of the written company survey have been analyzed with the statistic programme SPSS Version 15.0. The collected information of the telephone interviews in the framework of the case studies are mainly analyzed in a qualitative way.

### **3. Results of company survey and case studies**

In the following the results are presented which had been elaborated based on the results of the written company survey and case studies. Comments and recommendations which came from the experts were taken into account as well.

#### **3.1 General information about the company**

In the first part general information about the company which had been elaborated within the company survey and the case studies is presented. Firstly the proportion of SMEs, measured by the number of employees and the annual turnover is specified. Furthermore some information regarding the branch segmentation and the proportion of TFPs are made.

##### **3.1.1 Number of employees and annual turnover**

According to literature up to 99 % of the food and drink companies in the EU are SMEs (CIAA 2003). One indicator for measuring the company size is the number of employees. The sample of the written company survey corresponds approximately to the information given in scientific literature as the sample in all countries also consists mainly of SMEs (with less than 200 employees). In Germany (71 %) and in the United Kingdom 72 % of companies are small and medium-sized. In Italy the percentage of SMEs is even higher (91 %). The German dataset contains mostly companies which employ between 50 and 199 persons (33 %) whereas the samples of Italy and the United Kingdom mainly consist of small companies which employ 20 to less than 49 persons.

The percentage of large enterprises particularly in Germany and the United Kingdom in the sample is higher than literature indicates. However, according to CIAA 2003 the high percentage of SMEs applies in particular to Mediterranean countries like Italy. Thus the sample structure of the survey corresponds approximately to the data provided in literature.

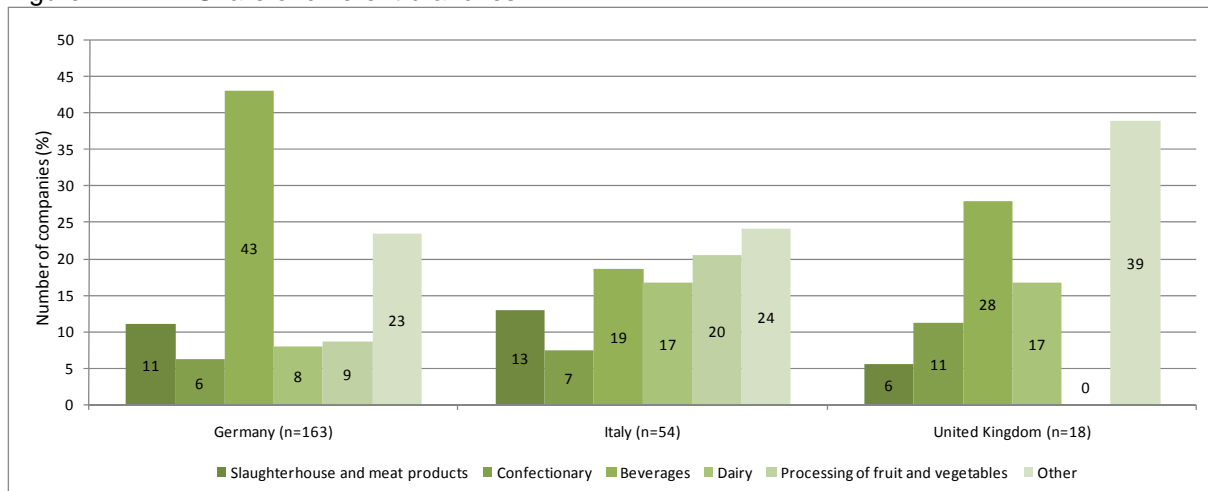
Another indicator for company size is the turnover which is realized within one year. In 2006 German companies which have attended the written company survey had an average turnover of 118.65 millions €. According to many definitions companies with an annual turnover less than 40 millions are regarded as SMEs. That is about 53 % of the German sample. The percentage of SMEs in Italy is 73 %. The average turnover in 2006 was 29.14 millions € in Italy. The companies in the sample of the United Kingdom realized an average turnover of 21.34 millions € in 2006. The percentage of SMEs is 81 %.

##### **3.1.2 Branch segmentation**

The sample of the written company survey contains many companies of the beverages industry. Literature also indicates that the beverages industry is one of the key branches of the food industry with a relatively high rate of product innovations (Menrad 2004). Another focus of the sample is on "other food products" which is explicable by the fact that most companies who state this response produce bakery products and pasta. Bakery products belong to the category "various food products" which is the largest sector of the food and drink industry (CIAA 2006). According to CIAA 2006 the meat sector is also a key branch of the food industry. However, in the sample the rate of companies which produce meat products is rather low. With respect to product innovations the meat processing industry does not belong to the top branches of the food industry (Menrad 2004). In Italy a relatively

high percentage of companies processes fruits and vegetables what is typical for the food industry of this country. Figure 1 gives an overview about the share of different branches in the sample of the company survey by country.

Figure 1: Share of different branches



Source: Company survey of University of Applied Sciences Weihenstephan 2008

### 3.1.3 Proportion of Traditional Food Products (TFPs)

Generally the proportion on turnover realized with TFPs is high in all analyzed countries. Thus most companies attending the written company survey state that between 80 % and 100 % of turnover in 2006 has been achieved with TFPs. However it has to be said that almost a fifth of SMEs in the United Kingdom value the proportion of TFPs on turnover in 2006 rather low (between 0 % and less than 20 %).

## 3.2 Situation of product innovation

This chapter gives an overview about the current situation of product innovations in the answering companies of the food industry. First of all it is shown which importance companies ascribe to product innovations. Furthermore the innovation activity of interviewed companies is characterized. The activity regarding innovations had been measured in several ways (e.g. number of launched products, proportion of turnover realized with new products). Beyond, impacts of innovations on costs had been analyzed and are shown in the following, namely the proportion of innovation costs on total costs of a company. Beside the current situation of companies regarding research and development as well as the co-operation behaviour of companies is characterized.

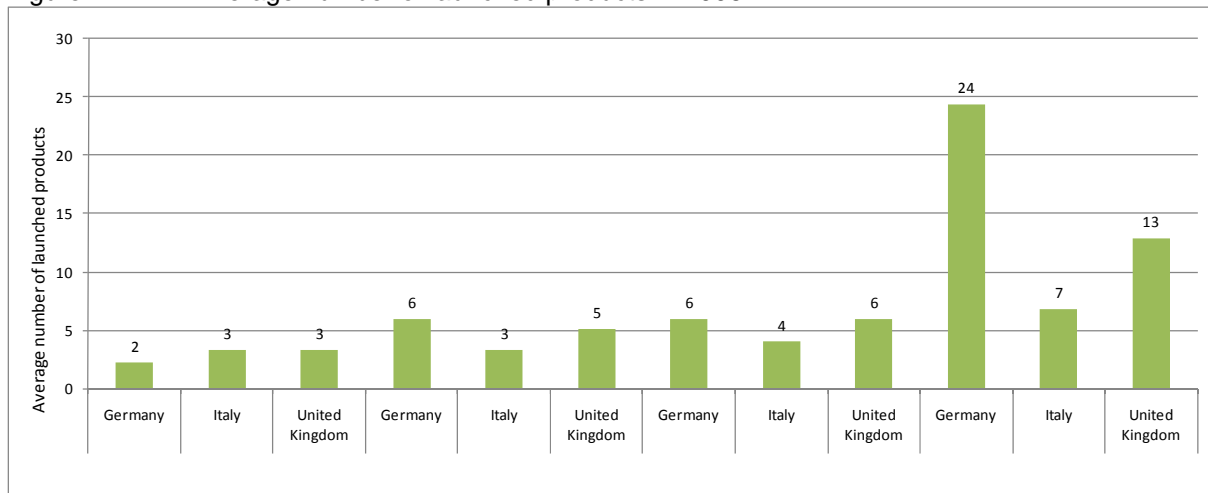
### 3.2.1 The significance of innovations from the companies' point of view

The significance of innovations had been mainly discussed within the phone interviews in the scope of the case studies. Companies' representatives producing fruit and vegetables as well as companies of the dairy industry attach great importance to the realisation of product innovations. Interviewees explain that due to the market saturation of the food and beverages industry the realisation of innovations is an important possibility to differentiate from competitors. One interviewee asserts the realisation of new products supports also the listing of the standard range in food retailing stores as the company gets more interesting for retailers. Another interviewee points out that innovations had to be developed in order to follow for the change of consumer demands (functional food, wellness, health trend). In many cases innovations are not only realized to raise the annual turnover but mainly for saving consumer loyalty. The attitude of companies' representatives of the beverages industry is slightly different. In their opinion innovations are not absolute vital for the success and the competitiveness of the company.

### 3.2.2. Innovation activity of companies

There are different methods to measure innovation activities in the food industry. One criterion for measuring the innovation activity is the number of new products which have been launched by companies in a certain period of time. There are big differences concerning the published numbers of "new" food products in scientific literature. Reliable data of the number of new products are hardly available in literature as complete information is rarely collected due to the large number of products and producers. Furthermore it is difficult to differentiate between new products, improved products and products which are insignificantly modified (Stockmeyer 2001).

Figure 2: Average number of launched products in 2006



Source: Company survey of University of Applied Sciences Weihenstephan 2008

Figure 2 shows the average number of new products which have been brought to the market by the respondents of the written company survey in the year 2006. In average 24.4 new products have been launched by large enterprises in Germany whereas SMEs brought 14.2 new products onto the market. Around 63 % of product innovations have been launched by large companies. According to Menrad (2004) large enterprises have launched 56 % of product innovations between 1999 and 2001 in Germany. Thus the German results regarding this issue are approximately in accordance with literature. The case studies also give approximately equivalent results as the bigger part of innovative products had also been introduced by large companies.

Another indicator to analyze the propensity of innovation is the number of patents owned by companies. Table 2 shows that most companies of the sample of the written company survey have not filed any patent in the previous 3 years (see Table 1). Literature also indicates that patents are possessed by only a small number of food industry companies (CIAA 2006).

Table 1: Filed patents in the previous 3 years

Number of patents	SMEs			Large enterprises		
	Germany (n=116)	Italy (n=32)	United Kingdom (n=18)	Germany (n=30)	Italy (n=4)	United Kingdom (n=6)
No patents (%)	83.0	81.3	83.3	66.7	100.0	83.3
1 to 4 patents (%)	12.8	9.4	16.7	30.0	0.0	0.0
5 to 10 patents (%)	3.4	6.3	0.0	3.3	0.0	16.7
More than 10 patents (%)	0.8	3.0	0.0	0.0	0.0	0.0
Total (%)	100.0	100.0	100.0	100.0	100.0	100.0

Source: Company survey of University of Applied Sciences Weihenstephan 2008

Besides measuring the innovation activity by the number of new products which have been launched by companies as well as by the number of filed patents, another possibility is to have a look at the proportion of turnover which is realized with innovative products within a certain period of time.

Interviewees of case studies indicate that the proportion of turnover which is realized with a new product highly varies as it depends on multiple factors (e.g. kind of innovative product, grade of acceptance of the consumers and retailers, total market volume of the respective part of the food market, market share of company). In the year 2007 the proportion of turnover ranges between less than 1 % and 30% in the interviewed case study companies. In average companies realized 12% of turnover with new products.

Information which is given by companies of the written survey in this respect is similar to those of the case studies. As shown in Table 2 almost a half (46.4 %) of requested SMEs in Germany realized a proportion between 5 and less than 20 % of turnover with innovative products in 2006, whereas the main part thereby devolves to the turnover class of 5 and less than 10 % (36.5 %). 16 % of SMEs state that they realized 30 % and more of the turnover in 2006 with innovative products. Almost a 10<sup>th</sup> of the companies did not realize any turnover with innovative products.

Similar to the German results many Italian respondents (31.6 %) indicate proportions of turnover with innovative products ranging between 10 and less than 20 % (see Table 2). About a quarter of SMEs realized a proportion of turnover of at least 30 %. 7.9 % of Italian companies state that innovative products had no share on turnover in 2006. In the United Kingdom 58.8 % of companies realized a proportion of 20 % and more with innovative products in 2006. However, almost a fifth of UK companies had no turnover with innovative products (see Table 2). In Poland most companies of the sample achieved between 5 to less than 20 % of turnover with innovative products in 2006.

**Table 2: Proportion of turnover with innovative products in 2006 (SMEs)**

Turnover with innovative products	Proportion of companies in turnover class		
	Germany (n=137)	Italy (n=38)	United Kingdom (n=17)
30 % and more (in %)	16.0	26.3	29.4
20 to less than 30 % (in %)	14.6	7.9	29.4
10 to less than 20 % (in %)	10.2	31.6	17.7
5 to less than 10 % (in %)	36.5	15.8	0
More than 0 to less than 5 % (in %)	13.9	10.5	5.9
None (in %)	8.8	7.9	17.6
Total (%)	100.0	100.0	100.0

Source: Company survey of University of Applied Sciences Weihenstephan 2008

Interviewed companies agree that a new product needs some time to get established on the market. This means that the proportion of turnover which is realized with new products in the first year of introduction is not very high. If the product is successful, the interviewees expect a significant growing of turnover with these innovative products in the second and third year after market introduction. However the level and speed of turnover growth significantly differs between the products – even if successful – as the development and life cycle of each product is different.

### 3.2.3 Expenditures for innovation activities

Both the written company survey and the case studies give information about the expenditures for innovation activities in proportion to the annual turnover in companies.

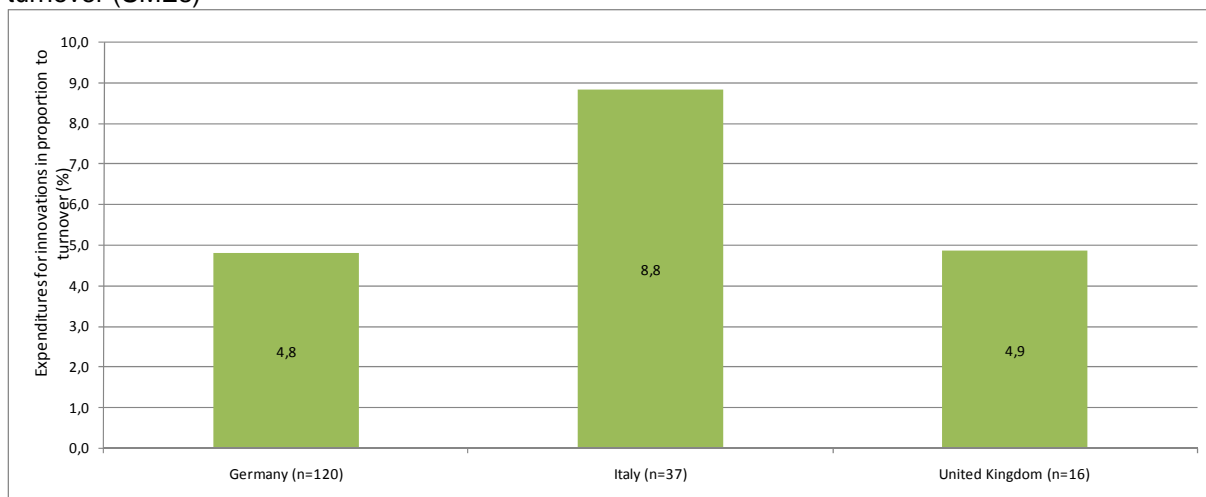
Interviewees of case studies note in this context that it is quite difficult to give general information about the costs which are incurred due to product innovations as those costs mainly depend on the grade of innovation. Interviewees refer that expenditures for product variations (e.g. variations in packaging) are significantly lower compared to the expenditures for real innovations (e.g. a complete new product with significantly different characteristics compared e.g. to the previous product) as for real innovations oftentimes expensive technical equipment is needed and long-running R&D activities (with high risk of failure) have to be carried out. Thus a very big part of innovations in small companies is product variations. So these companies indicate that costs for new food products (in proportion to the total costs) are rather low as the technical and organisational processes in the company do not have to be changed for the production of the new products. Furthermore it is not necessary to realize new (company) acquisitions for developing new product innovations. Thus the proportion of costs for new products is less than 1% in most of the interviewed companies.

The results of the written company survey are different as the expenditures for innovation activities in proportion to annual turnover of large enterprises attending the survey is lower than the expenditures of SMEs: SMEs in Germany and the United Kingdom both spent on average about 5 % of the annual turnover for innovation activities. The expenditures for innovation activities in Italy have been even higher (8.8 %). In Germany 1.9 % of total turnover in 2006 have been spent for innovation activities by large companies, in Italy large enterprises have spent 4.6 % of expenditures in proportion to annual

turnover for innovation activities and in the United Kingdom the expenditures of large enterprises for activities dealing with innovations were 2.6 % in proportion to the annual turnover.

In literature there is no statistical information available concerning expenditures for innovation activities referring to the EU food industry. However data for Germany are existent. According to the economic research institute ZEW on average 1.7 % of annual turnover have been expended for innovation activities industry-wide in the year 2003 (ZEW 2005). A possible explanation for the high proportion of innovations expenditures in SMEs in companies attending the written company survey is that mainly SMEs which are interested in innovation activities might have participated in the survey while in contrast SMEs with no or very low innovation activities might not have answered the questionnaire. Results of large enterprises regarding expenditures for innovation activities are almost in accordance with scientific literature.

Figure 3: Average expenditures for innovation activities in the year 2006 in proportion to annual turnover (SMEs)



Source: Company survey of University of Applied Sciences Weihenstephan 2008

Companies' representatives interviewed in the scope of case studies state that most costs are incurred in the field of marketing and promotion of new products. Furthermore interviewed companies have expenditures when they introduce the products onto the market as they have to pay specific fees or have other expenditures for getting the new products listed from food retailers and for production tests. In bigger companies also expenditures in the field of research and development (R&D) are incurred in the costs of new products whereas R&D activities only play a minor role for SMEs.

Many interviewed producers of fruit or vegetable products and beverages companies carry out sensory tests in which the sensory quality of a new product and the possible long-term effects of the combined ingredients have to be tested. In addition, such companies carry out production tests in which the technical feasibility of the innovation ideas is tested before introducing new products. These production tests can be very cost-intensive as in many cases it is necessary to produce several times small-scaled charges until a satisfactory result is achieved. The charges which have been produced in the scope of the production tests can not be sold and have to be disposed thus adding significantly to the development costs of such innovative products.

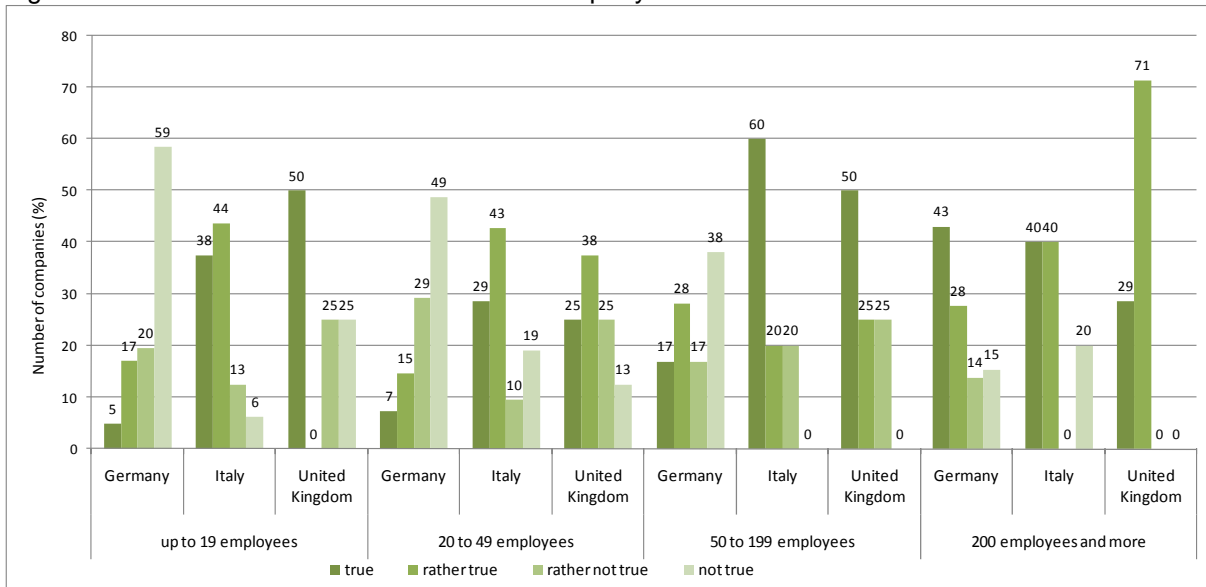
### 3.2.4 Activities in research and development (R&D)

As internal research and development (R&D) departments of industrial companies are an important source for carrying out innovation activities (e.g. BMBF 2006) respondents of the written company survey are requested to evaluate the statement "Our company carries out internal R&D". 37.6 % of German companies and 11.5 % of Italian companies do not carry out any internal R&D. In the United Kingdom 8.7 % of the surveyed companies indicate that no R&D activities are realized inside the company.

To assess if there are differences regarding R&D activities between different sizes of companies, Figure 4 gives an overview about the R&D activities of companies split into different classes of

employees. The respondents evaluate the statement “The company carries out internal R&D activities” with the options “true”, “rather true”, “rather not true” or “not true”.

Figure 4: Evaluation of the statement “Company carries out internal R&D activities”



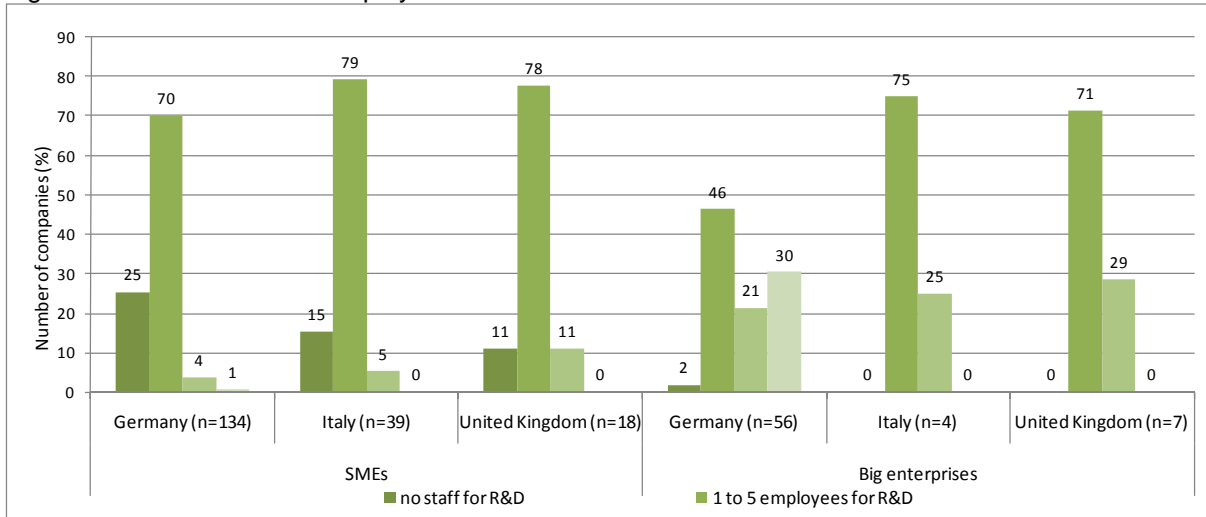
Source: Company survey of University of Applied Sciences Weihenstephan 2008

If the results of Germany are considered it is obvious that the proportion of answers “true” and “rather true” with respect to internal R&D activities grows with increasing size of company. Thus only 22 % of companies with up to 19 employees indicate that the statement that their company carries out internal R&D activities is “true” or “rather true” (see Figure 4). On the other hand, 71 % of companies which employ more than 200 persons indicate “true” or “rather true” to this statement (see Figure 4). The interviews with companies’ representatives in the scope of case studies also indicate that in SMEs rather low R&D activities are carried out. In comparison to Germany, Italian companies state in the whole more frequently “true” or “rather true”. Moreover, carrying out internal R&D activities is not as clearly linked to the number of employees as in the case of the German companies. Thus more than three-fourth of companies with up to 19 employees indicate “true” or “rather true” that R&D is carried out within the company in Italy (see Figure 4). Similar to Italian companies, companies located in the United Kingdom state more frequently “true” or “rather true” as German companies. The frequency of statements “true” or “rather true” grows with the increasing number of employed persons and thus all UK companies with at least 200 employees indicated “true” or “rather true” that internal R&D activities are carried out within the company.

Figure 5 provides information about the number of employees who are active in the field of internal R&D. As a result of above analysis large enterprises in all analyzed countries have more staff for internal R&D available than SMEs. For example, in Germany more than a third of SMEs and in contrast only 1.8 % of large enterprises have no staff for internal R&D. 30.4 % of large enterprises have more than 10 employees who carry out internal R&D activities (see Figure 5).

Companies of the written company survey are requested to give information regarding R&D activities which are carried out outside the company. In this case external partners carry out R&D in co-operation with the companies. It arises from the results that less SMEs source out R&D activities to external partners compared to large companies. So about 64 % of German SMEs indicate “not true” that they authorize external partners to carry out R&D. In contrast only 29 % of large enterprises indicate that this statement is “not true”. In Italy about 60 % and in the United Kingdom almost three-quarter (70 %) of both SMEs and large enterprises state that they do not co-operate with external R&D partners.

Figure 5: Number of employees for internal R&D activities

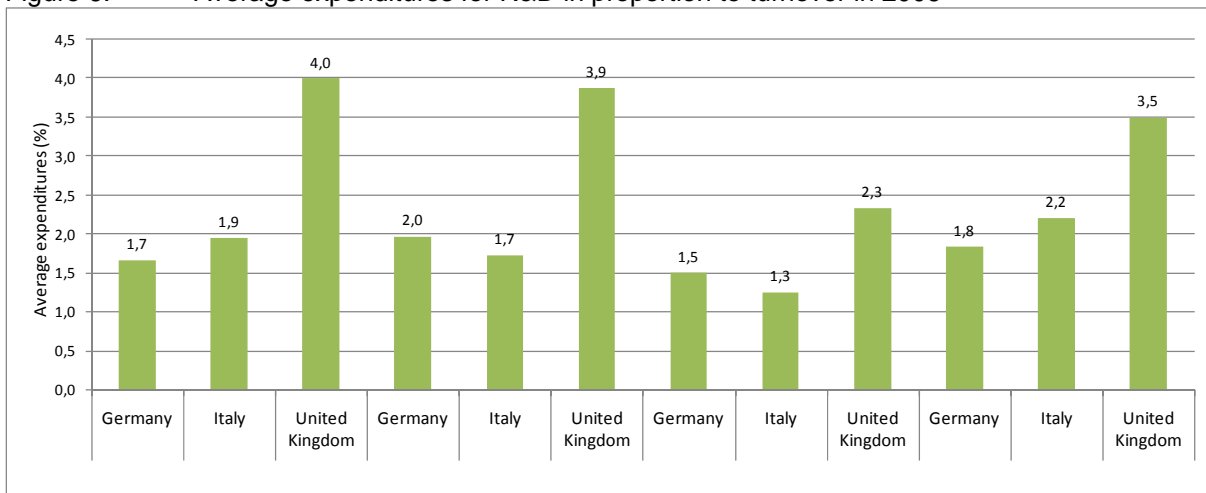


Source: Company survey of University of Applied Sciences Weihenstephan 2008

Within a further question, companies' representatives attending the written company survey give information about their expenditures for R&D. Figure 6 shows the expenditures for R&D in proportion to the companies' turnover in 2006.

In Germany about 17 % of all surveyed companies did not spend any money for R&D activities, in Italy 13 % and in the United Kingdom 5 % of companies did not have any expenditure for R&D. If all countries are considered the average proportion of expenditures to annual turnover ranged between 1.3 % and 3.9 % (see Figure 6). There are no significant differences between the different company sizes.

Figure 6: Average expenditures for R&D in proportion to turnover in 2006



Source: Company survey of University of Applied Sciences Weihenstephan 2008

In scientific literature there is no statistical information available concerning financial resources devoted to R&D activities of the EU food industry. However it is possible to rely on data for Germany. According to literature the R&D intensity of the food industry is frequently one of the lowest among all industries (BMBF 2000, 2002). According to Haid (2000) the average R&D expenditures in food industries amount to about 0.2 % of annual turnover. Thus the results of the survey are significantly above branch average what might be explicable by the fact that in particular companies which are interested in R&D and innovation activities might have participated in the survey. Another possibility to explain the differing results are different understanding and definitions of expenditures for R&D activities in food industry companies.

### 3.2.5 Degree of novelty of new products

Table 4 provides information about the degree of novelty of new products which have been launched in the previous 3 years. For this purpose companies of the written company survey should indicate in which proportion they have launched products with a high level, products with a medium level and products with a low level of innovation<sup>2</sup>.

**Table 4: Degree of novelty of new products in the food industry**

Level of product innovation in previous 3 years	SMEs			Large enterprises		
	Germany (n=107)	Italy (n=28)	United Kingdom (n=10)	Germany (n=56)	Italy (n=3)	United Kingdom (n=4)
High level of innovation (%)	23.9	17.0	26.4	18.4	16.7	34.5
Medium level of innovation (%)	43.0	40.5	45.5	46.9	40.0	29.5
Low level of innovation (%)	33.1	42.5	28.1	34.7	43.3	36.0
Total (%)	100.0	100.0	100.0	100.0	100.0	100.0

Source: Company survey of University of Applied Sciences Weihenstephan 2008

As shown in Table 4 there are no significant differences regarding the level of innovation of launched products between the analyzed countries. In SMEs of Germany and the United Kingdom mostly products with a medium level of novelty have been launched in the previous 3 years (see Table 4). In Italy the proportion of products with medium level and low level is rather balanced. Products with a high level of novelty (“real novelties”) have been launched by the smallest proportion of SMEs. There is a similar situation regarding the degree of novelty of launched products in large enterprises. However it is obvious that the proportion of products with a high level of innovations have been stated to be relatively high by the sample in the United Kingdom (see Table 4).

In accordance to the results of the survey scientific literature indicates as well that radical innovations are very rare in the food industry. Most innovations in the food industry can be characterized as incremental innovations or even imitations (Grunert et al. 1997).

### 3.2.6 Effects of innovations

In the scope of the case studies it has been discussed which effects occur for the companies when launching new food products. Almost all companies state that new markets could be opened up due to the realisation of new product innovations by enlarging the customer-base. One producer of fruit and vegetables indicates that the company could also open up new international markets by introducing new products. More than half of the asked companies also could increase the market share. Besides, due to innovation activities jobs could be maintained in the companies. Three of the interviewed companies could also hire new employees as the qualification of employees which are involved in innovation activities has to be quite high. This applies in a special way to employees who are active in the field of R&D. According to interviewees such employees must be able to develop new product concepts from existing products and they must be familiar with new technical developments and scientific methods or instruments. Furthermore the motivation of employees could be increased when innovative products are developed and introduced onto the market as employees are pleasant to be a part of a company with an innovation friendly business culture. One interviewee belonging to the dairy industry indicates that the awareness level of the company has been grown through innovation activities. This has also a positive effect on the image and finally to the sales figures of the company.

### 3.2.7 Barriers of innovations

An important question is if there had been any barriers in the last years that made it difficult for companies to be innovative. For two interviewed companies (both producers of fruit and vegetables) there haven’t been any barriers which made it difficult to realize innovations in the past. In the remaining interviewed companies some internal or external barriers impeded the innovation activities in the last two years.

Mainly companies of the beverages industry have internal problems which dated from lack of financial and personnel resources. Furthermore some of these companies have difficulties with the uncertainty on the market so that it is a rather unpredictable risk for them to develop and launch product innovations.

<sup>2</sup> This means that the companies assessed the degree of novelty of their innovations by themselves.

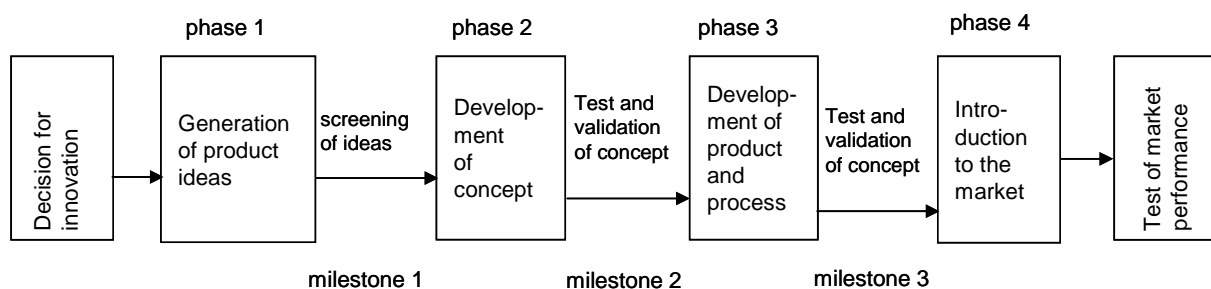
The other branches which are included in the case studies rather struggle with external barriers. Companies have to consider many national and international regulations regarding food and food additives when they bring a new product into the market. According to most interviewees these regulations (mainly the regulations of the EU-legislation, for example the "Novel Food regulation") are very intransparent and equivocal. German companies' representatives also criticize that the translations of the regulation from English into German are very bad. Furthermore the regulations for declaration of food ingredients are changing permanently. Summing up, there are a lot of bureaucratic hurdles for companies when they want to develop a new product and introduce it onto the market. Due to these hurdles many companies hesitate to realize innovations in particular in fields of the food industry in which a special market approval is needed. Companies of the dairy industry also indicate that the price decline of dairy products and the high and increasing market power of the food retailers are reasons for companies to reduce innovation activities.

### 3.2.8 The process of innovation

A very important and detailed part of the case studies was about the process of innovation in companies. The interviewees had been requested to characterize how the development of a new product (i.e. from the idea for a new product until the introduction into the market) is carried out in their company.

The process of innovation in interviewed small and medium sized companies is different from the process in large enterprises. In the following the process of innovations how it runs in large enterprises is presented. For better understanding Figure 7 shows a model of the innovation processes as it is run in large enterprises.

Figure 7: Process of innovation



Source: Own depiction on Stockmeyer 2001

As illustrated in Figure 7 in large enterprises product ideas are generated after deciding that a new product will be developed. Generally, every employee of the company is indicated to make suggestions regarding potential new products. However employees of the marketing department, the product management and the R&D department are mainly responsible for the finding of ideas. One interviewed company processing fruit and vegetables does not generate own ideas but they only react on ideas which their costumers come up with. However it has to be said that this company does not produce products for the private end consumer. They rather provide ingredients for other food processing companies.

The generated ideas are collected and screened, i.e. ideas are assessed according to certain criteria. For example it has to be checked if the ideas are in line with the business concept as well as the image of the company. The next step of the innovation process is to develop the product concept and to test this concept. In this context several questions relating to the potential new product have to be clarified. So it has to be considered in which markets the new product could be presented and which competitors are on the market. Furthermore it has to be considered if the development of the product is feasible and practicable within the company and if additional resources are needed for the concept und product development. If the validation of the concept is positive, the phase of the product development is initiated. In this Go-phase the product concept is polished. A prototype is developed and several test runs are carried out, i.e. several product samples have to be produced to test the product characteristics (e.g. taste, color, texture). Beyond it has to be tested how the different ingredients of a new product interact among each other. Furthermore tests have to be carried out for finding out the best before date as well as to find out how to store the products in an optimal way. When the results of these tests are satisfactory, the innovative product is introduced into the market.

However the innovation process is not finished after this phase as the market and sales performance of the new product has to be checked, i.e. the market and sales development of the new product is watched to see if any changes have to be considered and the product eventually has to be reworked.

The scopes in the different phases of the innovation process are largely allocated in large enterprises. For example the generation of ideas is mainly the task of the marketing department, the product management and the R&D department. The interdisciplinary team of the product management is also responsible for the concept development. Personnel employed in the purchasing department supply the raw material which is needed for the production of innovative products. The test runs are carried out by the R&D department (often in collaboration with the producing unit of the company) Interviewees had been asked about the role of the general management regarding innovations. Oftentimes the general management is informed about innovation ideas and milestone which had been carried out within the innovation process. However it is not actively involved within the finding of product ideas as well as the management of innovation processes. The task of the general management is mainly to approve new products.

Furthermore, the interviewees had been asked which departments play the most decisive role within the process of innovation in their opinion. For one interviewee the product development is the most important department within the innovation process as in most companies main responsibility for product innovations is within this department. Other interviewees indicate that all departments and persons that are involved in the process of innovation are important in at least one stage of the innovation process.

As in large enterprises, in most SMEs the process of innovation follows certain schedules, too. However these schedules are not such determined as they are in large enterprises. The managing procedures are less tightly organized. SMEs often lack different departments and in contrast to large enterprises all scopes often are in the hand of the general manager or the owner of the company. So in interviewed SMEs new product ideas often are initiated by the manager. Those ideas often are inspired by the suggestions and wishes which are expressed by the costumers. Furthermore, the offering of products on the retail markets is a source of inspiration for new product ideas as well.

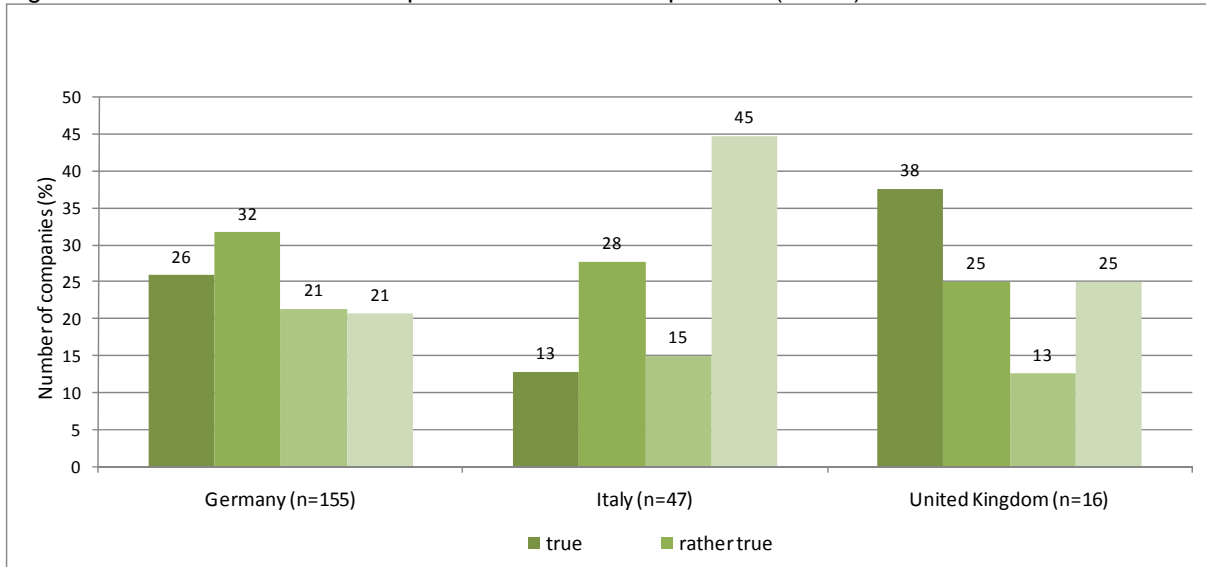
Interviewees had been asked which situations and points within the process of innovation are critical for its success.

In the opinion of about half of interviewees, it is very critical if product defects are noticed rather late, namely during or after the market entry of a new product as the necessity of postprocessing of new products during the introduction phase generally has financial consequences (e.g. higher expenditures for the product development). So it is very important to carry out product tests very carefully before the introduction onto the market for minimizing such product defects. For about 17% of interviewed companies the communication and co-operation of different departments which are integrated in the innovation process is a critical point as well which decides between success and failure of a certain product. So it is very important that the aims of innovations are clearly defined for avoiding misunderstandings between the different departments. Before realizing an innovation project it is important to fix the project planning activities in a written document. It has to be paid attention that the developed schedule is followed during the development process.

### **3.2.9 Co-operation with external partners**

Both the written company survey and the case studies analyzed the co-operations behaviour in the scope of innovation projects of companies. Figure 8 shows how companies attending the written company survey evaluate the statement "Our company co-operates with external partners within innovation projects". About 60 % of German SMEs as well as SMEs from the United Kingdom indicate that this statement is "true" or "rather true". In Italy about 40 % of companies choose "true" or "rather true" (see Figure 8). 40 % of Polish companies state that the statement is "true" or "rather true".

Figure 8: Evaluation of co-operation with external partners (SMEs)



Source: Company survey of University of Applied Sciences Weihenstephan 2008

For comparison the results of large enterprises in Germany are considered as well. Not even 5 % of large enterprises indicate that it is “not true” that they work with external partners within innovation projects whereas for more than three-fourth this statement is “true” or “rather true”. One third of interviewees of case studies indicate that they do not co-operate with partners in innovation activities because they are able to accomplish all tasks accruing within the innovation process without any external support. However, in the opinion of two third of the interviewed companies it is hardly possible to do innovations without the support of external partners.

It is additionally interesting which kind of partners companies prefer to co-operate with. For this purpose the representatives are requested to evaluate the extent of co-operation with domestic partners as well as with foreign partners. In Germany, Italy or the United Kingdom respectively the collaboration with domestic partners is more widely used than the collaboration with foreign partners. So, only 19.4 % of German and 13.1 % of Italian companies indicate that it is “true” or “rather true” that they co-operate with foreign partners, whereas for 63 % of companies in Germany and 39.6 % of companies in Italy it is “true” or “rather true” to work together with domestic partners. In the United Kingdom 25.1 % of SMEs state that a co-operation with foreign partners is “true” or “rather true” and 62.6 % indicate a co-operation with domestic partners to be “true” or “rather true”. Large enterprises more frequently co-operate with foreign partners than SMEs. So 46 % of large enterprises in Germany indicate that it is “true” or “rather true” that they work together with foreign partners. In Italy 40 % of large enterprises and in the United Kingdom almost three-fourths of enterprises state this way. Empirical results of analyses of co-operations of food companies in the EU also confirm that domestic partners are preferred as partners in innovation projects (Christensen et al. 1996).

However it is not only interesting if companies prefer national co-operation partners or partners from abroad, also the specific kind of co-operation partners is relevant. For this purpose the companies are requested to give information with which kind of co-operation partner they have worked with within the previous 3 years.

As shown in Table 5, in the previous 3 years the proportion of SMEs working together with suppliers is quite high. For example 73.3 % of SMEs in the United Kingdom and 65.3 % of German SMEs have co-operated with suppliers of raw material. 66.7 % of SMEs in Italy worked together with suppliers of machinery (see Table 5). The Polish sample also mostly co-operated with suppliers. Case studies provide the same results in this regard: Mainly producers of fruit and vegetables are supported by suppliers of raw material like concentrates of food ingredients. These suppliers often support companies within the required specifications of ingredients. Furthermore many food companies can’t produce the needed packages for the new products and need the support of packaging companies. In the literature similar results can be found: The co-operation activities of 116 food SMEs in Germany have been investigated in a survey in the years 1995 to 1997. In accordance to the results of this survey, a lot of analyzed companies (74 %) gave high relevance to the inclusion of supplying industry companies in innovation projects (Menrad 2004).

Universities or other educational institutions might also have a considerable relevance as co-operation partners for SMEs as around one third of German or Italian food SMEs and half of UK food SMEs co-operate with these partners. 60 % of SMEs of the United Kingdom co-operated with retail companies in the previous 3 years whereas rather few SMEs in Germany or Italy had co-operations with retailers (see Table 5). Competitors of the same branch and commercial R&D companies do not play a major role as partners for co-operations (see Table 5). The results of large enterprises are comparatively the same. There are no eye-catching differences between SMEs and large enterprises regarding the type of co-operation partner.

Phone interviewed companies which do not co-operate often fear copying of ideas when external partners have an insight into the structures and development processes of their company. One interviewed company worked together with partners in previous innovation projects, however this co-operation had been stopped as problems with the partners incurred mainly due to demarcation disputes.

**Table 5: Proportion of all partners which co-operate with SMEs within innovation projects**

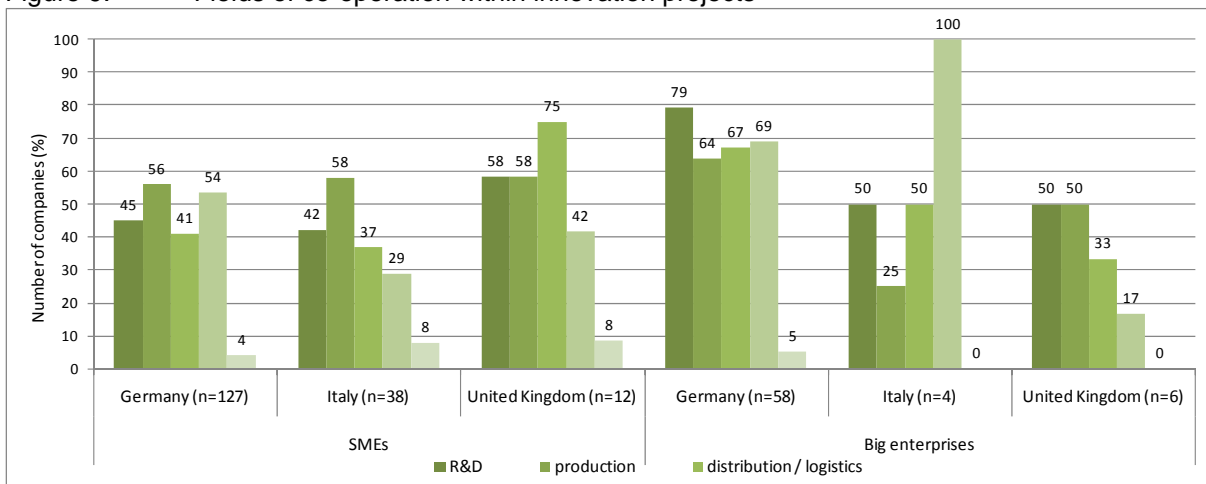
Type of co-operation partner	Germany (n=147)	Italy (n=39)	United Kingdom (n=15)
	Universities or other educational institution (%)	<b>34.7</b>	<b>33.3</b>
Private or public research institutions (%)	21.1	28.2	26.7
Commercial R&D companies (%)	7.5	7.7	26.7
Enterprises within the own company group (%)	22.4	10.3	40.0
Suppliers of raw material (%)	<b>65.3</b>	<b>53.8</b>	<b>73.3</b>
Suppliers of ingredients (%)	<b>42.2</b>	23.1	<b>60.0</b>
Suppliers of machinery (%)	33.3	<b>64.1</b>	<b>66.7</b>
Competitors of the same branch (%)	25.2	10.3	13.3
Consulting firms, market research companies (%)	17.0	25.6	26.7
Retail companies (%)	23.1	12.8	<b>60.0</b>
Other institutions (%)	4.8	7.7	6.7

Source: Company survey of University of Applied Sciences Weihenstephan 2008

Figure 9 gives information about the fields on which companies work together with external partners. More than half of German SMEs co-operate in the fields "production" (55.9 %) and "communication" (53.5 %). However the fields "distribution/logistics" and "R&D" might also not be insubstantial according to the statements of the respondents (see Figure 9). Similar to Germany, many SMEs from Italy co-operate in the fields "production", "distribution" and "research and development". However the proportion of companies working together in the scope of "communication" is considerably lower than in Germany. It's obvious that the proportion of SMEs of the United Kingdom co-operating in the field of "distribution and logistics" is higher than in the other analyzed countries (see Figure 9). In Poland SMEs work with external partners in the fields "production" and "R&D". If the results of large enterprises are referred in comparison, it can be ascertained that large enterprises in Germany particularly co-operate more frequently in the field of "R&D" as SMEs. According to a survey which has analyzed the co-operation activities of 116 food SMEs in Germany in the years 1995 to 1997 joint R&D projects have been regarded as a very important form of co-operation (Menrad 2004). Thus the results of our survey are in line with findings of previous studies in Germany.

The percentage of large enterprises co-operating with external partners in "production", "distribution/logistics" and "communication" is also higher in comparison to SMEs (see Figure 9). All Italian representatives of large enterprises attending the survey indicated that they have co-operations in the field of "communication" (see Figure 9).

Figure 9: Fields of co-operation within innovation projects



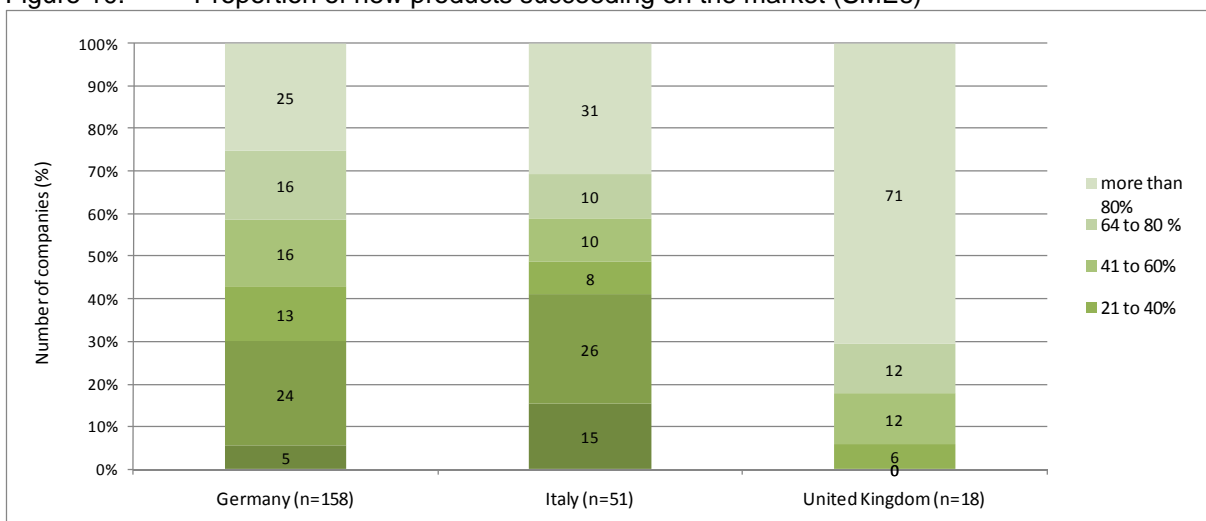
Source: Company survey of University of Applied Sciences Weihenstephan 2008

#### 4. Success factors of innovation

Product innovations are vitally important for the competitiveness of food industry companies. Thus it is very important to ascertain factors that lead to success. Success factors indicate the essential, long-term valid determinants for the accrual of success or failure of an activity (Schmalen 2004). However, the term “success” holds very differing parameters (Schmalen 2004). Financial parameters (e.g. market share, growth in sale) are dominating for measuring the success but also emotional or qualitative parameters became more important in recent years. The assessment of success with regard to the consumers (e.g. consumer satisfaction and utility) and to the process development is of high importance as well (Griffin and Hauser 1996). As the innovation success of a company is such an important issue, both the written company survey and the case studies deal intensively with this subject.

In the following the innovation success of companies attending the written company survey is measured by the proportion of successful products. Companies indicate which proportion of new products having been launched in the previous 3 years is still on the market.

Figure 10: Proportion of new products succeeding on the market (SMEs)



Source: Company survey of University of Applied Sciences Weihenstephan 2008

About 5 % of German SMEs and 15 % of SMEs in Italy indicate that no product which has been launched in the previous 3 years could succeed on the market. Both in Germany and Italy, in about a

quarter of companies up to 20 % of new products are still on the market. In nearly 30 % of German companies and one fifth of Italian companies between 20 % and 60 % of new products have succeeded on the market. In about 16 % of German and 10 % of Italian companies the success rate of new products ranges between 61 % and 80 %. In Germany a quarter of SMEs estimate that more than 80 % of new products are still on the market. In Italy about 31 % indicate this way. Representatives of the United Kingdom estimate the rate of success of new products higher as companies located in Germany and Italy (see Figure 10). For example almost three-quarter of companies in the UK estimate that more than 80 % of new products which have been launched in the previous 3 years are still on the market. Most companies of Poland indicate that up to 20 % of new products are still on the market.

If the results of large enterprises are drawn for comparison, large companies in Germany estimate the succeeding rate of new products on the market slightly higher than SMEs. In Italy and the United Kingdom the differences between large companies and SMEs regarding this indicator are rather marginal.

According to literature a high percentage of newly introduced products only “survive” a limited period of time on the market. For example studies from Ernst & Young and AC Nielsen (1999) and Booz, Allen & Hamilton (1992) show that there is a notable high rate of new introduced products which do not succeed on the market. Other authors support this high rate of new product failure in food retailing as well (Martinez and Briz 2000; Behr's Verlag 2002). In Germany, during 2000 and 2001 around 50 % to 67 % of the new products have been withdrawn within one year from the food retailing shelves. After 3 years the “survival” rate of new products tends towards 25 % (Madakom 2001). However, results show that companies which attended the survey estimate the rate of success much higher than reported in literature (see Figure 10).

It is a similar situation found in the results of the case studies. Interviewed companies indicate even higher rates of innovation success as companies attending the written company survey do. So according to 66% of the interviewed companies all products which had been introduced in the last two years are still on the market. In the remaining companies 66 % respectively 80% of new products had been successful after market introduction.

Differences between literature and analyzed data might be explained by several factors. Again it might be the case that companies which participated in the written survey might be more R&D and innovation oriented than others which refused to participate (which would be supported by the result regarding the high expenditures for R&D activities in the samples of all countries). Another source of differences can relate to the definition of “innovations” or “new products” which frequently is only partially comparable between different studies. Furthermore it has to be considered that both the written company survey and the case studies underlie “self-estimations” of companies, whereas other studies e.g. analyse the assortment of a sample of food retail stores over time (e.g. Madakom 2001).

Factors which yield success and reasons for failures of innovations have been analyzed by numerous scientific and empirical studies in recent years. According to literature there is no single “magical” factor which is responsible for success or failure of innovations but only the interaction of many influencing variables can explain success or failure of new products (Perlich and Staerkle 1987). In the following the results of the survey are compared with aspects which have been identified as success factors in literature for getting insight to what extent companies of the food industry realize these aspects. The explanations refer to SMEs as this type of company is the main objective of investigation in the Truefood project. The results of large companies are drawn in some cases for comparison, especially if they differ notably from the results of SMEs.

In chapter 4.2 an index is presented which shows the common frequency distribution of variables which had been identified as success factors in literature and several indicators for innovations success (number of new products in 2006, proportion of successful products, proportion of turnover realised with new products in 2006) which had been asked in the written company survey. So it can be verified if there are coherencies between the realisation of success factors and the specification of indicators of innovation success in the surveyed companies (Brosius 2006). In this way it can be found out if the results of the company survey are in accordance with literature. By using the Chi-Square-test it can be verified if the observed coherencies are significant (Brosius 2006). Most literature sources indicate that a probability of error of 5 % or less allows assuming a coherency.

The success factors are arranged according to the following fields:

- Situation and competition on markets
- Market research and marketing
- Innovation management
- Product characteristics
- Role of food retailers.

In the following different figures are presented (11 to 14) which demonstrate the average values of different statements of respondents. For creating these figures the answering categories for the relevant statements have been transferred to mentioned figures in the following way: 1 represents "true", 2 "rather true", 3 "rather not true" and 4 "not true". Afterwards the arithmetic mean of these figures has been calculated according to the answers given by the companies. This calculated arithmetic mean of relevant statements is presented in Figures 11 to 14. Furthermore, the standard deviations of the arithmetic means, meaning the dispersion about the means, is also presented in Figures 11 to 14.

## **4.1 Realisation of success factors within the surveyed companies**

### **4.1.1 Situation and competition on the market**

#### *Grade of concentration*

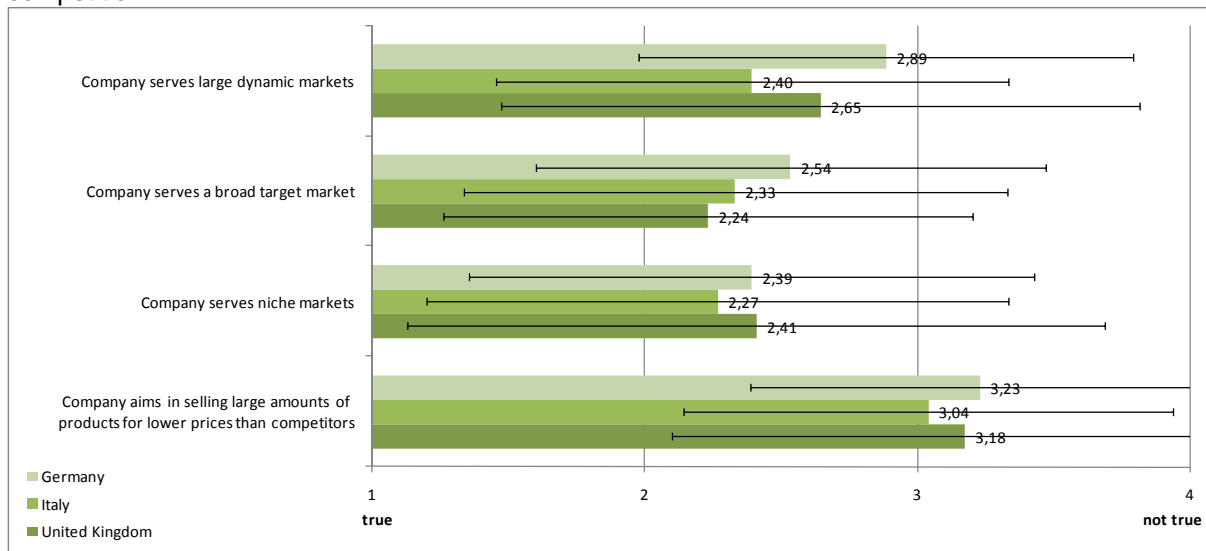
Concerning the market, the grade of concentration of suppliers can be seen as a determinant of success (Roggenkamp 2002). Regarding this, respondents are requested to evaluate the statement "Our company serves large dynamic markets". In all countries this statement is estimated between 2.4 to 2.89 on average meaning between "rather true" and "rather not true" by SMEs (see Figure 14). Large companies rather tend more towards to large dynamic markets. According to Schmalen (2004) a higher rate of successful new food products are introduced in growing and dynamic markets. However, so far scientific literature does not agree on the most adequate type of market in order to promote or facilitate innovation activities (Roggenkamp 2002).

#### *Target market*

Figure 11 shows that both broad target markets and niche markets are served with about the same relevance by respondents of SMEs. In an average, large enterprises more often serve broad target markets. Regarding the optimal target market there is no accordance in scientific and management oriented literature. On the one hand a broad target market could be a success factor as the presence of consumers is quite high due to a high grade of distribution. As shown by actual studies products often fail which have not reached a distribution of more than 35 % of the average turnover in the 20<sup>th</sup> week after launching a new product (Schmalen 2004).

On the other hand it can also be successful to concentrate on niche markets (Cooper 1979). Thereby it is very important to realize the needs of specific target groups via a professional market research and transfer into innovative product concepts. An active analysis of target groups contains an analysis of consumer needs, trends and searching for market niches (Schmalen 2004). In this context it can be shown that including consumers and consumers' needs in an early stage of the product development process can be important for the success of the developed food product (Sparke 2008).

Figure 11: Average values of influencing factors regarding the situation of market and competition



Source: Company survey of University of Applied Sciences Weihenstephan 2008

### The pricing strategy

Regarding the optimal pricing strategy neither the high-price strategy nor the low-price strategy can be identified as an explicit success factor. Depending on the requirements and aims of companies both strategies could lead to innovation success (Nieschlag et al. 2002; Kotler and Bliemel 2001; Meffert 2000). The aim of the high-price strategy is to skim variable willingness to pay of consumers in different phases of the life cycle of a product (Nieschlag et al. 2002; Kotler and Bliemel 2001; Meffert 2000). Requirements for a successful high-price strategy are according to Nieschlag et al. (2002); Kotler and Bliemel (2001) and Meffert (2000):

- Products which are difficult to imitate so that the risk of launch of competing products is limited
- Distribution via marketing intermediaries with high-price strategy
- High income target group rewarding special benefits of the product with higher prices
- Products with special USP.

If the low-price strategy is applied a fast market penetration is aimed at thereby accepting a minor profit per produced unit. Requirements for a successful low-price strategy are according to Nieschlag et al. (2002); Kotler and Bliemel (2001) and Meffert (2000):

- Products with a high price-elastic demand
- Distribution via price aggressive marketing intermediaries
- Purchasing power of low income customers can be skimmed
- Competing companies should be kept (at least for a short time period) from the market introduction or rather be squeezed out of the market.

According to the survey's results most SMEs apply a high-price strategy as the statement "Our company aims in selling large amounts of products for lower pricing than competitors" meets only low approval by companies' representatives. The average values regarding this statement range between the answer categories "rather not true" and "not true" (see Figure 11). However companies from Poland rather prefer applying the low-price strategy on average. Large companies also tend towards a high-price strategy.

### The time-to-market strategy

The timing of the market entry can decide on success or failure of an innovation. In some studies the time of market entry is indicated as a main reason for stopping an innovation project (Plewe 2001).

Regarding the optimal time of market entry no general statement is possible as different factors influence the optimal time-to-market strategy. There are different options for the timing of market entry Nieschlag et al. (2002); Kotler and Bliemel (2001) and Meffert (2000)

- First-to-market strategy (the company brings a real innovation onto the market as a pioneer)
- Early-to-market strategy (the company follows the pioneer in an early stage before the market is growing intensively)
- Me-too strategy (the company enters the market in the growing phase with a me-too product)

In Germany most of respondent SMEs follow the early-to-market strategy (43.6 %). Few companies (23.3 %) bring a real innovation onto the market as a pioneer. In Italy the proportion of the three strategies is rather balanced. Companies of the United Kingdom prefer the first-to-market strategy (42.7 %), followed by the early-to-market strategy (39.8 %) (see also 3.2). In Germany the proportion of pioneers in large companies is slightly higher than in SMEs (27.1 %). In the other countries differences between large companies and SMEs are marginal.

Both the first-to-market strategy and the early-to-market strategy have advantages and disadvantages. An advantage of the first-to-market strategy is that a leading position against the competitors can be built up. Furthermore entry barriers for competitors can be established and there might be some flexibility regarding the pricing strategy due to the “quasi-monopoly” situation after launching a highly innovative product. However, companies applying the first-to-market strategy have to create consumer needs and carry the expenditures for establishing and developing the market segment (e.g. expenditures for communication and information) for their own what can include substantial investments and a high risk of failure for the company (Nieschlag et al. 2002; Kotler and Bliemel 2001; Meffert 2000).

If the market entry is strategically planned companies which apply the early-to-market strategy could have similar chances as the pioneers but less risk and costs. Furthermore the pioneer has already informed retailers and consumers about the specific advantages of new product innovations. However, entry barriers of the pioneer have to be overcome by fast-following companies (Nieschlag et al. 2002; Kotler and Bliemel 2001; Meffert 2000).

According to literature the application of the me-too strategy dwarfs the success of innovations as companies which apply this strategy have to gear to the competitors and thus they just have a restricted room for manoeuvres on the market (Nieschlag et al. 2002; Kotler and Bliemel 2001; Meffert 2000).

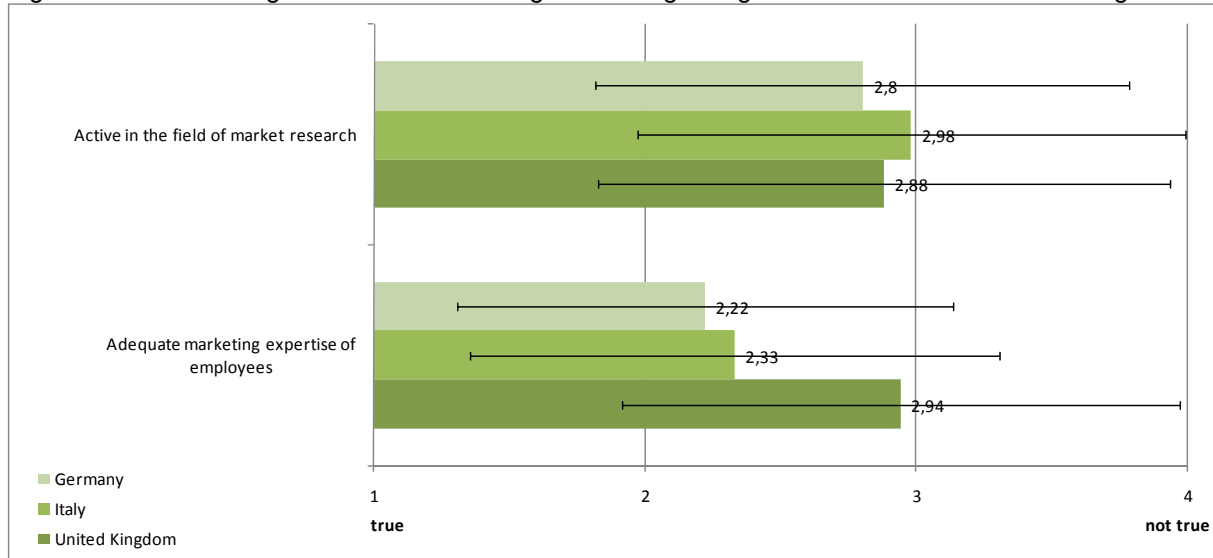
#### **4.1.2 Market research and marketing**

According to scientific literature market research is a central prerequisite for the innovation success especially in the food industry (Rothwell et al. 1974). An effective market analysis which contains for example knowledge of requirements and buying behaviour of consumers impacts the success in a positive way. According to Schmalen (2004) the planning quality of marketing actions is quite important regarding the success of innovation projects. This applies in particular to a specific education and know-how expertise of the involved personnel. Furthermore carefully planned marketing activities as well as adequate employees that carry out these activities are important for the innovation success (Rothwell et al. 1974).

When having a look at the answers of the companies it gets clear that in Germany and Italy the statement “Adequate marketing expertise of employees” is valued in average as “rather true”. In the United Kingdom this statement meets less approval as the average value of this statement is placed to be “rather not true” (see Figure 12).

In the case of the company survey “activities in the field of market research” of SMEs are not rather highly geared in the analyzed countries as the average values are placed almost at “rather not true” (see figure 12). In all analyzed countries only about 12 % of SMEs state that this statement is “true”. In average, the activity of large companies regarding market research is slightly higher.

Figure 12 Average values of influencing factors regarding market research and marketing



Source: Company survey of University of Applied Sciences Weihenstephan 2008

### 4.1.3 Innovation management

#### *Internal organization within the company*

For a successful realisation of innovation processes a concerted planning, steering and controlling of the activities as well as an adequate environment within the company is needed. The innovation management has to create an adequate conceptual framework for innovation processes (Maidique and Zirger 1990). According to Maidique and Zirger (1990) planning is a very important criterion for the success of a new product. For this reason particular attention should be paid to the quality of planning processes of such activities. Thereby it is advisable to involve all phases of the development process into the project planning (Maidique and Zirger 1990). According to their own view planning of the distribution requirements and channels of distribution, planning of the target market, planning of the positioning of a new product against competing products and calculating the financial effects of innovation projects is realized by a high part of companies as these statements of the questionnaire are stated “true” or “rather true” by most respondents. Planning of advertising efforts and the design of new products in Germany is carried out to a higher level than in the other analyzed countries as almost three quarter of German respondents state this statement is “true” or “rather true”, whereas in Italy about 47 % and in the UK 57 % of respondents state this way. In Germany about half of the companies answer that the statement “Planning activities are fixed up in a written document” is “true” or “rather true”. In Italy 44 % of companies and in the UK 35 % of companies state “true” or “rather true” to this question (see Figure 13).

#### *Attitude of the management towards innovations*

An important basic condition influencing the success of innovations is a management style which is in favour of innovation activities. The scientific literature agrees that a co-operative management style is motivating for the creativity and own initiatives of employees. Typical for a co-operative management style is the involvement of employees in decision-making processes and a wide autonomy of employees how to realize specific projects (Hauschildt 1997). The attitude and behaviour of the employees is closely linked to innovation success. This includes actively looking for new ideas and positive attitude towards innovations in the project management (Beham et al. 2006).

Many companies agree that employees have room for manoeuvres and authority to decide as in Germany about 62 % of respondents and in the United Kingdom about 65 % of respondents state this statement is “true” or “rather true”. Even more than three quarter of SMEs in Italy state this way.

The results show that there is room for improvement in many companies in this point as considering this statement about 58 % of respondents in Germany and almost three quarter of respondents in Italy state “rather not true” or “not true”. In the United Kingdom the proportion of SMEs providing time and funds to employees who are involved in innovation projects is higher than in the other analyzed countries as only 39 % of respondents state “rather not true” or “not true”. Considering this statement

large companies in all analyzed countries state on average between the answer categories “true” and “rather true” (see Figure 13).

In all analyzed countries innovation activities are dealt by the general management to a high proportion (see Figure 13). Furthermore, the attitude and the behaviour of the employees are closely linked to innovation success. Among other, this includes active looking for new ideas (Beham et al. 2006). For motivating employees to look for new ideas it is important to honour proposals regarding innovation projects in terms of money or otherwise. In Germany about 60 % of SMEs and in Italy about 65 % of SMEs state it is “rather not true” or “not true” that employees who contribute ideas regarding innovation projects are honoured. In the United Kingdom the commitment of employees is slightly more disseminated as 41.1 % of respondents state this way.

According to studies dealing with success factors of the food industry the formation of competent cross-section-oriented and project teams and the stimulation of co-operation between different departments are also considerable success factors (Menrad 2001). About 40 % of German SMEs and 65 % of Italian SMEs state that it is “true” or “rather true” that specific project teams are established for innovation projects. In the United Kingdom about 45 % of respondents state this way. In Italy and the United Kingdom about 70 % of SMEs state that the statement “There is a close co-operation between different departments” is “true” or “rather true”. In Germany the co-operation between different departments is lower than in the other analyzed countries as only 58 % of SMEs state “true” or “rather true” regarding this statement. In large companies in Germany and the United Kingdom slightly more specific project teams are established for innovation projects. In Italy there are no big differences between SMEs and large companies regarding the establishment of specific project teams. In all analyzed countries more respondents in large companies than in SMEs state that it is “true” or “rather true” that different departments co-operate closely in innovation projects.

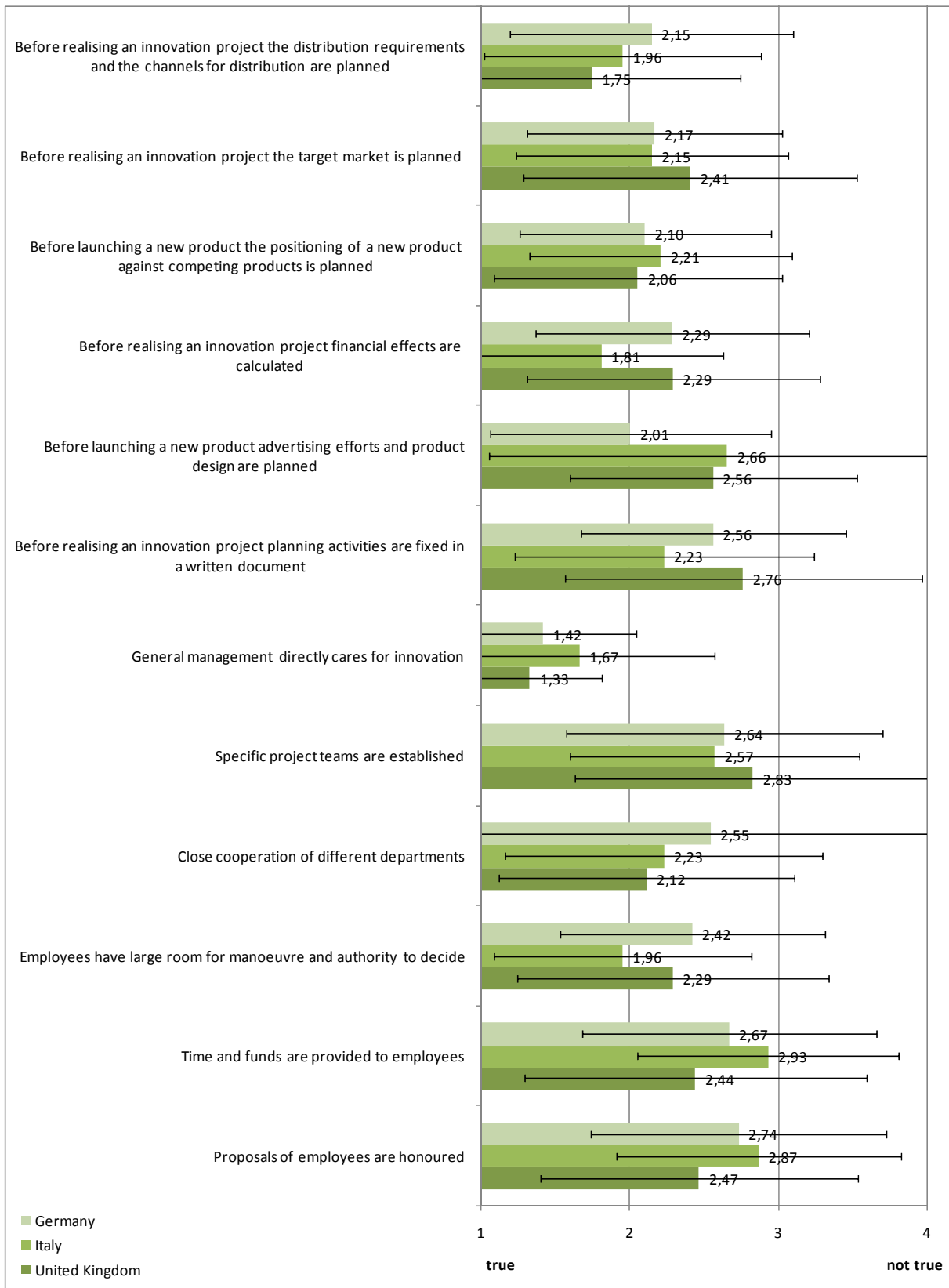
#### *Co-operation with external partners*

According to literature co-operations with external partners advance the innovation success of new products. As mentioned in chapter 2.9 about 60 % of German SMEs as well as SMEs from the United Kingdom indicate that it is “true” or “rather true” that they have co-operated with external partners in the previous 3 years. In Italy about 40 % of companies state this way. In Poland 40 % of companies carry out co-operations with external partners (see also chapter 3.2.9). In large companies in Germany and the United Kingdom more co-operation activities are carried out. In Germany about 77 % and in the UK about 71 % of large companies state the answer categories “true” or “rather true”. In Italy there are no notable differences between large companies and SMEs regarding the co-operation behaviour.

According to the results of previous studies there are much higher chances for successful innovations if a company continuously exchanges ideas with other companies of the same branch and co-operates intensively with them (Schmalen 2004). The results of the survey show that a quarter of SMEs in Germany co-operate with companies of the same branch. In Italy (10.3 %) and the United Kingdom (13.3 %) the proportion of companies which co-operates with partners of companies of the same branch is lower. The co-operation between SMEs and suppliers is quite high as for example 73.3 % of SMEs in the United Kingdom and 65.3 % of German SMEs have co-operated with suppliers of raw material. 66.7 % of SMEs in Italy worked together with suppliers of machinery.

Co-operation with universities or other research institutions is also possible. These partners are able to boost the success in realizing of innovations (Beham et al. 2006). According to the results of this survey universities or other educational institutions have a considerable meaning as co-operation partners for a part of SMEs (see also chapter 3.2.9). In Germany and Italy about a third of respondents co-operated with universities or other educational institutions. In the United Kingdom more than half of the respondents have co-operation partners in such institutions.

Figure 13: Average values of influencing factors regarding innovation management



Source: Company survey of University of Applied Sciences Weihenstephan 2008

#### 4.1.4 Product characteristics

The attributes and characteristics of new food products determine the success of innovations to a high extent.

##### *Product advantage*

According to many authors an important aspect for the success of innovations is a specific product advantage which is recognised by the consumers or food retailers (Maidique and Zirger 1990). This means that products should contribute to an improved problem solving or better satisfaction of consumer needs compared to prior products. It is also important that these product advantages are visible for the consumers and communicated by producers (Cooper and Kleinschmidt 1993).

The requirement that a new product should contribute to a better problems solution as well as a better satisfaction of consumer needs is achieved by a big parts of companies as 82 % of German SMEs state "true" or "rather true" that new products contribute to an improved problem solving or better satisfaction of consumer needs. In Italy three fourth of respondents and in the UK 88 % of respondents state this way.

There is a similar situation regarding the communication of product advantages to consumers. Most SMEs state "true" or "rather true" that "product advantages can be communicated in an easy way to the consumers" (see Figure 14).

##### *Degree of novelty*

In scientific literature there is no accordance regarding the product attribute "degree of novelty" with respect to its impact on innovation success. Generally it is acknowledged that simple me-too products often do not have specific advantages for consumers or food retailers thus it might be difficult to achieve long-term economic success with such products despite they are offered to a lower price. Some scientists use the contrary argument that a low degree of innovativeness facilitates the success of new products (Kotzbauer 1992).

As already shown in chapter 3.2 most respondents of Germany and the United Kingdom have launched products with a medium level of novelty. In Italy the average proportion of products with medium level and low level is rather balanced. Products with a high level of novelty ("real novelties") have been launched only by a limited number of SMEs.

##### *Product concept*

An emotional product concept matters in the food industry (Schmalen 2004). New products should be marketed embedded in a certain subjective environment in which the product is in harmony with the needs and behaviour of the target group, the selected distribution channel, the positioning of the product in its competitive environment, the image of the company and the presentation of the product. As processes of acceptance and adoption of new products take some time the concept should be held unmodified over a longer time period (Schmalen 2004).

According to the view of respondents the positioning, the target group and the design of new products harmonise well as most respondents valued this statement with "true" or "rather true" (see Figure 14). In Germany and Italy the influencing factor "New products are permitted unmodified for a longer period of time" is realized in large part of the answering SMEs while in the United Kingdom this statement is valued "rather true" in average.

##### *Product defects*

According to a significant number of studies the reasons for failure of innovations are often linked to product defects (Hopkins and Bailey 1971). The necessity for making additional modifications in the new product during the introduction phase is regarded as being problematic as there are financial consequences (e.g. higher expenditures for the product development) (Boutellier et al. 1997) and negative side effects on the trust and image of the company and its products. According to Cochran and Thompson (1964) defects in product characteristics (e.g. lack of durability) which are

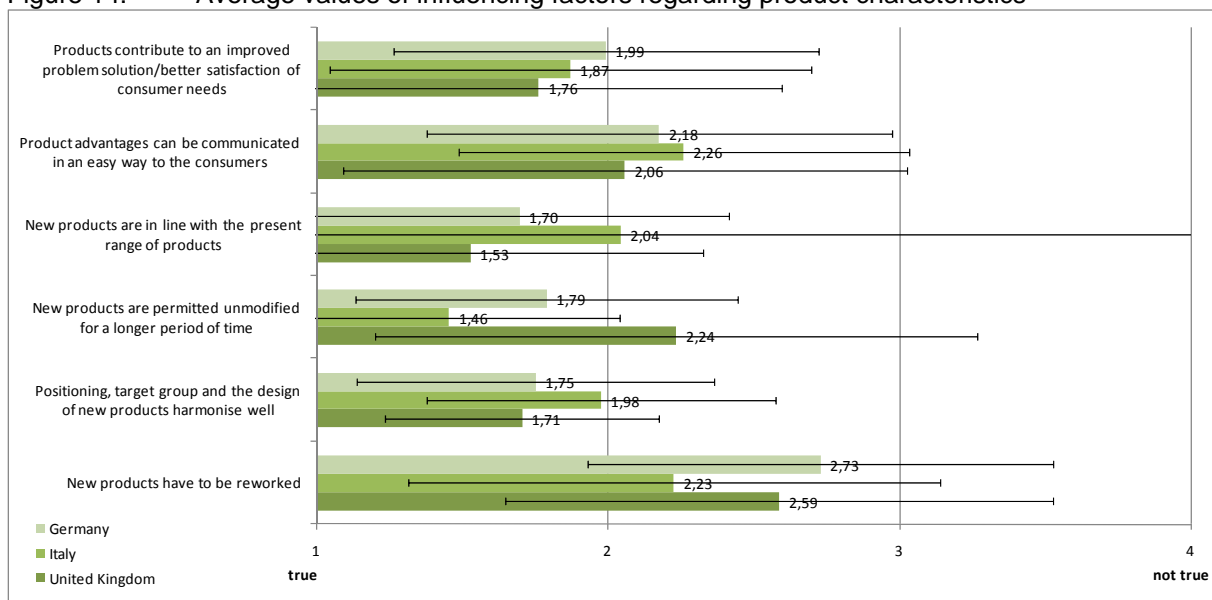
detected firstly after launching a new product are seen as the most crucial reasons for failure of such products.

In the UK about a half of SMEs state that it is “rather not true” or “not true” that „new products have to be reworked” during the introduction phase. In Germany about two third of respondents and in Italy 41 % of respondents state this way. In Polish companies product defects might play a more important role as most companies value this statement between the answer categories “true” and “rather true”.

### Synergy effects

The using of synergy effects is important for the economic success of a company. Synergy effects mean accessing of resources which are already available in the company (Cooper 1979; De Brentanni 1989). For realizing synergy effects a new product should be adapted in the consisting product line (Schmalen 2004). The results of this survey show that in most companies in all analyzed countries new products are well embedded in the present range of products in most companies (see Figure 14).

Figure 14: Average values of influencing factors regarding product characteristics



Source: Company survey of University of Applied Sciences Weihenstephan 2008

### 4.1.5 Role of food retailers

Due to its bottleneck-function (via listing or non-listing of new food products) food retailers are of specific relevance for the success of innovations in the food industry. Therefore the adoption behaviour of the food retailers is a factor which impacts the success of innovations of the food industry (Pfeiffer 1981). The attendance of the food retailers for including a new product in their sales program is a critical success factor for SMEs (Menrad 2003).

In all analyzed countries the proportion of companies whose new products are fast incorporated in the assortment of trading partners and companies which have problems with the listing of their innovative products is rather balanced. So in Germany 50 % of SMEs states that it is “true” or “rather true” that trading partners fast incorporate new products in their assortment. In Italy 55.3 % of respondents and in the UK 47 % of respondents state this way. The situation is similar in large enterprises.

## 4.2 Interrelationship between success factors of innovations and indicators for innovation success

In the following paragraph it is presented if there are any interrelationships between the realisation of success factors and the success of a company measured by several indicators for innovation success:

- Number of new food products which had been launched in 2006
- Proportion of turnover which had been realised with new products in 2006
- Proportion of successful products in 2006 (in %) (i.e. which % of new products survived on the market)

For analysing the interrelationship between the success factors for product innovations and the selected innovation success indicators a contingent analysis has been carried out: Firstly cross tables have been established between a selected success factor and a specific success indicator, followed by a Chi-square test which analyses the statistical significance of the interrelationships. Table 6 gives an overview about the calculated coherencies between the analysed parameters. A positive coherency indicates that the realisation of a certain success factor impacts the product innovation success of a company in a positive way. A negative coherency means the opposite (the realisation of a certain success factor impacts the innovation success of a company in a negative way). Blue coloured fields notify that the observed coherencies are significant, i.e. that the probability of error of the analysed interrelationship is 5 % or lower.

#### *Situation and competition on the market*

Regarding the optimal size of the market, results indicate that serving large dynamic markets might have a positive impact on the innovation success of a company as there are positive coherencies between this success factor and the three indicators for innovation success. However, only the coherency between this success factor and the success indicator “Number of new products in 2006” is statistically significant on a 5 % level while no statistically significant interrelationships can be observed with regard to the other two innovation success indicators (see Table 6).

The coherencies of the other selected success factors related to the situation of the market and the three indicators for innovation success are rather vague and not statistically significant on a 5 % level (see Table 6). There is a positive coherency between the indicator “Number of new products in 2006” and the serving of broad target markets whereas the coherence between this indicator and the serving of niche markets is slightly negative. Considering the indicator “Proportion of turnover with new products in 2006” the opposite interrelationship can be observed (see Table 6). The coherences between the indicator “Proportion of successful products” and the type of market is neutral. However, it has to be said that the significance of these coherences is not assured as the probability of error is rather high (see Table 6). As scientific literature also does not agree on a specific type of market and the probability of innovation success (see also chapter 4.1.1) the inconsistencies of the results (as well as the low statistical significance) found in our survey are in line with the outcome of previous research projects.

As mentioned in chapter 4.1.1 scientific literature indicates that neither the high price strategy nor the low-price strategy can be identified as an explicit success factor for innovation success. Depending on the requirements and the aims of companies both strategies can lead to innovation success. The results of the company survey confirm this assumption as there are no clear interrelationships between the statement “Company aims in selling large amounts of products for lower prices than competitors” and the selected indicators for innovation success. So the coherencies of this factor and the indicators “Number of new products in 2006” and the “Proportion of turnover with new products in 2006” is positive while the coherency between this factor and the indicator “Proportion of successful products in 2006” is slightly negative. However, only the interrelationship between this factor and the indicator “Number of new products in 2006” is statistically significant on a 5 % level (see Table 6).

#### *Market research and marketing*

The results of our company survey indicate in a strong way that there is a positive impact between activities in the field of market research and the innovation success of a company. As shown in Table 6, there are statistically highly significant positive coherencies between this success factor and the indicators “Number of new products in 2006” and “Proportion of turnover with new products in 2006”. As mentioned in chapter 4.1.2 activities in the field of market research are often hardly realised in the companies participating in the company survey. Thus enhancing activities in the field of market research can be a way to improve the innovation success in companies of the food industry.

There are also statistically highly significant positive coherencies between “Marketing expertise of employees” and the “Number of new products in 2006” as well as the “Proportion of successful

products in 2006". The coherency of this success factor and the "Proportion of turnover with new products" which had been tested during the analysis as well is also positive, but with a rather high probability of error (see Table 6). Nevertheless, it can be concluded that enhancing market research activities as well as ensuring high marketing expertise of the employees seem to be important instruments to improve the success of product innovations in the food industry.

#### *Innovation management*

As it is shown in Table 6, the realisation of success factors in the field innovation management impacts the success of a company in a positive way as there are mostly positive coherencies between the success factors and the indicators for innovation success in this field. Literature also indicates that for a successful realisation of innovation processes a concerted planning, steering and controlling of innovation activities as well as an adequate environment within the company is needed (see chapter 4.1.3). Results presented in chapter 4.1.3 show that planning activities are realised by a high part of the companies participating in the survey. According to scientific literature a co-operative management style is motivating for the creativity and own initiatives of employees. Typical for a co-operative management style is the involvement of employees in decision-making processes and a wide autonomy of employees how to realise specific projects. The attitude and behaviour of the employees is closely linked to innovation success. This includes actively looking for new ideas and positive attitude towards innovations in the project management.

The results of the company survey confirm literature in this aspect as many statistically highly significant positive coherencies can be observed between indicators for innovation success which had been considered and success factors which deal with the attitude of the management towards innovations (see Table 6). However, there is room for improvement for many companies in the realisation of factors which handle with the attitude of the management towards innovations. For example 58 % of respondents in Germany and about three quarter of respondents in Italy state that it is "rather not true" or "not true" that time and funds are provided to employees for innovation projects. There is a similar situation with the statement "There is a close co-operation between different departments".

#### *Product characteristics*

As mentioned in chapter 4.1.4 a specific products advantage which is recognised by the consumers and food retailers is a very important aspect for the success of innovations in the food industry. This statement is also confirmed by the results of the survey. As shown in Table 6 there are positive coherencies between the success factors "Products contribute to an improved problem solution/better satisfaction of consumer needs" and "Product advantages can be communicated in an easy way to the consumers" and the indicators for innovation success which had been considered. It is obvious that almost all coherencies are significant (see Table 6). As shown in chapter 4.1.4 the requirement that an innovative product should contribute to a better problem solution and a better satisfaction of consumer needs is achieved by a big part of companies so that there is only limited room for improvement in this respect.

Regarding the product concept scientific literature indicates that an emotional product concept matters in the food industry. So new products should be embedded in a certain subjective environment in which the product is in harmony with the needs and behaviour of the target group and the selected distribution channel. As shown in Table 6 the results of the company survey are not totally harmonising with each other regarding this success factor. There is a significant positive coherency between these success factors and the success indicator "Number of new food products" while the interrelationship to the success indicator "Proportion of turnover with new products in 2006" seems to be rather neutral (see Table 6).

Table 6: Interrelationships of success factors and indicators for innovation success

Success factors for innovation	Indicators for success of product innovations		
	Number of new products in 2006	Proportion of successful products in 2006	Proportion of turnover with new products in 2006
Company serves large dynamic markets	Positive (p=0.020)	Positive (p=0.223)	Positive (p=0.593)
Company serves a broad target market	Slightly positive (p=0.583)	Neutral (p=0.333)	Slightly negative (p=0.832)
Company serves niche markets	Slightly negative (p=0.444)	Neutral (p=0.223)	Slightly positive (p=0.142)
Company aims in selling large amounts of products for lower prices than competitors	Slightly positive (p=0.002)	Negative (p=0.630)	Slightly positive (p=0.763)
Active in the field of market research	Positive (p=0.001)	Positive (p=0.250)	Positive (p=0.011)
Marketing expertise of employees	Positive (p=0.004)	Positive (p=0.010)	Positive (p=0.121)
Before realising an innovation project the distribution requirements and the channels for distribution are planned	Positive (p=0.006)	Positive (p=0.063)	Positive (p=0.384)
Before realising an innovation project the target market is planned	Positive (p=0.029)	Positive (p=0.059)	Positive (p=0.749)
Before launching a new product the positioning of a new product against competing products is planned	Positive (p=0.534)	Positive (p=0.424)	Slightly positive (p=0.659)
Before realising an innovation project financial effects are calculated	Slightly positive (p=0.178)	Neutral (p=0.163)	Slightly positive (p=0.446)
Before realising an innovation project planning activities are fixed in a written document	Positive (p=0.004)	Slightly positive (p=0.094)	Positive (p=0.470)
General management directly cares for innovation	Positive (p=0.551)	Positive (p=0.208)	Positive (p=0.124)
Specific project teams are established	Positive (p=0.000)	Positive (p=0.002)	Positive (p=0.042)
Close co-operation of different departments	Positive (p=0.001)	Positive (p=0.015)	Positive (p=0.001)
Employees have large room for manoeuvre and authority to decide	Positive (p=0.031)	Positive (p=0.007)	Positive (p=0.138)
Time and funds are provided to employees	Positive (p=0.000)	Positive (p=0.015)	Positive (p=0.098)
Proposals of employees are honoured	Positive (p=0.335)	Positive (p=0.122)	Positive (p=0.835)
Adequate marketing expertise of employees	Positive (p=0.004)	Positive (p=0.250)	Positive (p=0.121)
Products contribute to an improved problem solution/better satisfaction of consumer needs	Positive (p=0.006)	Positive (p=0.000)	Positive (p=0.000)
Product advantages can be communicated in an easy way to the consumers	Positive (p=0.028)	Positive (p=0.081)	Positive (p=0.033)
New products are in line with the present range of products	Positive (p=0.047)	Positive (p=0.295)	Neutral (p=0.002)
New products are permitted unmodified for a longer period of time	Positive (p=0.552)	Positive (p=0.336)	Neutral (p=0.975)
Positioning, target group and the design of new products harmonise well	Positive (p=0.400)	Positive (p=0.815)	Neutral (p=0.863)

Source: Company survey of University of Applied Sciences Weihenstephan 2008

## 5. Summary, conclusions and recommendations

The current Final Report targets on presenting important results which had been elaborated within the Truefood-Project. The aim of our University within the Truefood-Project is to analyse the practical handling of innovations in TFPs and their economic impacts in SMEs and thus elaborate conclusions and recommendations to better introduce and link innovative activities to this group of companies. As product innovations are vitally important for the competitiveness of the food industry it is essential to ascertain factors that lead to success of product innovations within this industry. For this reason it had been analysed which factors are important for the innovation success of a food industry company and to which extent these success factors are realised by small and medium-sized companies. Furthermore, recommendations are given how to improve the success rate of product innovations in SMEs of the food industry.

In the view of most companies' representatives the realisation of product innovations are very important for several reasons like e.g. to differentiate from competitors or to save consumers' loyalty. However, it appeared very difficult to extract a homogenous picture with respect to the innovation situation of the analysed companies. Taking into account the inputs of the companies for product innovations, the number of employees e.g. in R&D or innovation activities as well as the expenditures spent for this purpose are important factors measuring the innovation activities of the companies. According to the interviewees of the case studies it is difficult to give general information about the expenditures which are incurred due to product innovations as the costs mainly depend on the grade of innovation. As by far the highest part of innovations in SMEs are product variations which need only low changing in technical and organisational processes for developing and producing such products the proportion of costs for new products is rather low in most companies.

Other possibilities to measure the innovation situation of food SMEs are output indicators. In this respect, one criterion to measure the innovation activity is the proportion of turnover which is realised with new food products within a certain period of time. According to the interviewees of the case studies the proportion of turnover which is realised with a new product depends on several reasons like e.g. the kind of innovative product or the level of consumers' acceptance. In food industry companies which had been interviewed in the scope of the case studies, the proportion of turnover ranged between less than 1 % and 30 % in 2007. In average companies realised 12 % of turnover with new products. A similar range of figures could be found in companies which have attended the written company survey.

With respect to the effects of product innovations almost all companies involved in the case studies state that new markets could be opened up due to the realisation of new product innovations by enlarging the customer-base. More than half of the asked companies also could increase the market share. However, there have been some internal and external barriers in the last two years which made it difficult for companies to be innovative. Internal problems mainly refer to lack of personnel and financial resources as well as organisational problems (e.g. in innovation management) while external barriers are mainly based on intransparent, equivocal and fast changing regulations (mainly regulations on EU level) which make it difficult for SMEs to follow the current status of legislation. According to the interviewees this is an aspect which impedes product innovations in particular in knowledge-intensive areas of the food industry like functional food, wellness food or health-oriented nutrition. Not least against the political will to lower bureaucracy in particular for SMEs activities on a EU and national level should be enhanced which aim to harmonize regulations between different areas of policy as well as to lower the requirements for SMEs.

Regarding the process of innovation there are differences between SMEs and large enterprises, although the process of innovation follows certain schedules both in large enterprises and SMEs. However, in large enterprises these schedules are more fixed and follow defined rules compared to SMEs. SMEs often lack specific departments which deal with innovation so that responsibility for product innovations is often in the hand of the general manager or the sales responsible of the company. So the general management is often initiator of new products in food SMEs. In this context an important source of inspiration are often the suggestions and wishes expressed by the customers or retailers. In this sense it seems important that food SMEs involve private customers or food retailers to a higher extent in their innovation activities in order to be able to respond to their changing needs and wishes.

Scientific literature also indicates that co-operation with external partners is an important field to improve the innovation activities in the food industry. One third of the interviewees during the case studies stated that they do not co-operate with partners in innovation activities because they are able to accomplish all tasks accruing within the innovation process without any external support. Two third of interviewed companies indicated that it is hardly possible to do innovations without the support of external partners. About 60 % of the German and British SMEs which attended the written company survey indicated that it is "true" or "rather true" that their company co-operates with external partners. In Italy or Poland about 40 % of the companies choose "true" or "rather true" for this statement. In this sense there seems to be also room for improvement with respect to co-operation with external partners in particular from academia, food retailers or private customers which are so far under-proportionally involved in innovation activities of food SMEs.

As product innovations are vitally important for the competitiveness of food industry companies, it is very important to ascertain factors that yield to success. For this purpose the results which had been elaborated within the Truefood project are compared with aspects which have been identified as success factors in literature to get an insight to what extent companies of the food industry realise these factors. Furthermore, it is analysed to which extent there are interrelationships between variables which had been identified as success factors for product innovation in scientific literature and several indicators for innovation success which had been asked in the written company survey. In this way it can be tested if the success factors which had been identified by literature can be ascertained by the empirical results of the company survey. Furthermore, it can be shown to which extent the respective factors are already realised by the companies which participated in the survey.

One important area of success factors for product innovation refers to the character and the competition on the target market of food industry companies. The statement "Our company serves large dynamic markets" is estimated between "rather true" and "rather not true" by most SMEs and also most large companies tend towards large dynamic markets. According to Schmalen 2004 more successful products are introduced in growing and dynamic food markets. Regarding the optimal target market there is no accordance in scientific literature as both a broad target market and a niche market can lead to success. Results of this survey show that both types of markets are served in about equal shares by respondents of SMEs. The statistical analysis of the success factors of product innovations and the selected innovation indicators shows that it has a positive impact on the innovation success of a food industry company to serve large dynamic markets as there are positive coherencies between serving dynamic markets and several indicators of innovation success while other success factors related to the character and competition on the target market do not show any statistically significant interrelationship to the selected innovation indicators.

Regarding the optimal pricing strategy neither the high-price strategy nor the low-price strategy can be identified as an explicit success factor. The results of the company survey confirm this finding in scientific literature as there is no statistically significant interrelationship between the factor "Company aims in selling large amounts of products for lower prices than competitors" and the tested indicators for innovation success. Most SMEs of the sample prefer a high-price strategy.

According to literature market research is a central prerequisites for the innovation success especially in the food industry (Rothwell et al. 1974). The planning quality of marketing actions is quite important regarding the success of innovation projects (Schmalen 2004). So a specific education and know-how expertise of the involved personnel plays a critical role. The empirical results of the company survey strongly confirm scientific literature as there is a statistically significant positive impact between activities in the field of market research and the innovation success of a company. However, only a minority of the food SMEs participating in the survey actively analyse the markets and the behaviour of their customers (e.g. only around one third of the German food SMEs are active in this field). In this sense there is need for (directly or indirectly) increasing market research activities of the food industry not least against the fact that hybrid-type consumers more frequently tend to change their attitudes and behaviour. In order to consider the specific situation of food SMEs easy-to-handle market research instruments need to be developed and implemented in the industry (Sparke 2008) to allow SMEs to analyse their markets and customer needs as well.

According to scientific literature carefully planned marketing activities as well as an adequate expertise of the employees who carry out these activities are important for innovation success (Rothwell at al. 1974). The empirical results of this project also show statistically significant positive coherencies between this success factor and the selected innovation indicators like the number of new products launched in 2006. With respect to the expertise of employees carrying out marketing activities there

seems to be room for improvement as well since the statement “Adequate marketing expertise of employees” is valued in average as “rather true” in Germany and Italy while in the United Kingdom this statement meets less approval as the average value is placed to be “rather not true”. In this sense the companies should invest in the marketing know-how of their employees either via (internal) on-the-job education activities or by hiring people who have the required theoretical background and practical experience.

The empirical results of the company survey show that the realisation of success factors in the field of innovation management impacts the innovation success of food industry SMEs in a positive way as there are statistically significant positive coherencies between the analysed success factors and the defined indicators for innovation success in this field. Managerial literature also indicates that the planning quality of marketing actions is quite important regarding the success of innovation projects. According to scientific literature a co-operative management style is motivating for the creativity and own initiatives of employees. Typical for a co-operative management style is the involvement of employees in decision-making processes and a wide autonomy of employees how to realise specific projects. Furthermore, actively looking for new ideas and positive attitude towards innovations in the project management are beneficial for the innovation success. The results of the survey confirm scientific literature in this regard as many statistically significant positive coherencies can be observed between indicators for innovation success and success factors which deal with the attitude of the management towards innovations. However, there is room for improvement for many companies in this field: Almost 60 % of respondents in Germany and about three quarter of respondents in Italy state that it is “rather not true” or “not true” that time and funds are provided to employees for innovation projects. There is a similar answering behaviour regarding the statement “There is a close co-operation between different departments”. Although in general the management of a food industry company appears to be in favour of product innovations there seems to exist some difficulties to create and implement an innovation friendly culture in the companies. This relates in particular for providing the necessary time and resources for this purpose. However, it has to be stated that it seems hardly possible for food SMEs with traditional products to survive in “the battle of innovation” in the coming years without higher investments in R&D, personnel and other resources. This also relates to the management-related know-how and expertise of these companies.

According to many sources of literature the attributes and characteristics of new food products have a crucial impact on the success of innovations. The product advantage which is recognized by consumers or food retailers is an important aspect for the success of innovations. It is also important that these product advantages are visible for the consumers and communicated by producers. The empirical results which had been elaborated through the company survey in the Truefood project confirm these findings in literature as there are statistically significant positive coherencies between the success factors “Products contribute to an improved problem solution/better satisfaction of consumer needs” and “Product advantages can be communicated in an easy way to the consumers” and several indicators for innovation success. The requirement that an innovative product should contribute to a better problem solution and a better satisfaction of consumer needs is already achieved by a big part of the companies participating in the survey – so that the room for improvement seems to be restricted in this field.

According to literature an emotional product concept matters in the food industry. So it is beneficial for the innovation success if products are embedded in a certain subjective environment in which the product is in harmony with the needs and behaviour of the target group and the selected distribution channel. The empirical results of the company survey don’t indicate a homogenous picture in this respect: While there is a statistically significant positive coherency between the statement “New products are in line with the present range of products” and the innovation indicator “Number of new food products”, the interrelationship between this success factor and the innovation indicator “Proportion of turnover with new products” is rather neutral. Furthermore, it can be observed that this success factor is already realised by many answering SMEs thus providing only limited room for improvement.

To sum up it can be concluded that several success factors in the fields “market research and marketing”, “innovation management” and “product characteristics” which had been extracted from scientific and managerial literature could be ascertained by the empirical results of the company survey carried out in the frame of the Truefood-project. Success factors in the fields “product characteristics” and “marketing expertise of employees” are already realised by a rather high part of companies. There is substantial room for improvement in the field “innovation management”, mainly regarding personnel issues (e.g. only low funds are provided to employees for innovation projects, lack

of close co-operation between different departments) and in the field "market research of companies". Both areas are mainly influenced by internal decisions of the respective food industry companies and thus can be more independently changed than e.g. the character of a specific market.

## 6. References

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