An empirical analysis of international consumers' associations with Bavarian food products by means of concept mapping

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Abstract

Purpose – Knowledge of consumers' perception of foreign food products can be a key element for successful international marketing strategies, as operating on a regional or global level requires deep knowledge about international markets. Purchase decisions for most products are strongly linked to a person's attitude towards these products, which are determined by beliefs and meanings associated with the product. In this context, the purpose of this paper is to analyze and compare the perception of Bavarian food products in an international context.

Design/methodology/approach – The qualitative technique of concept mapping has been used to uncover and visualise consumers' semantic networks regarding Bavarian food products. Two European countries – Bulgaria and Romania – as well as two Asian ones – China and South Korea – are exemplary selected for this study.

Findings – The results clearly show that the two frequently mentioned associations across all four countries are the same while the other associations which were enumerated show a greater heterogeneity. Furthermore the study provides empirical evidence that the associations regarding Bavarian food products of the European countries are more similar to each other than the Asian ones. South Koreans have more indirect than direct associations with Bavarian food products and Chinese semantic networks regarding Bavarian food products are the least complex. These findings are underpinned by network analysis.

Originality/value – This study adds to the existing literature on country image by exploring international consumer's cognitive networks regarding Bavarian food products by means of concept mapping.

Keywords Network analysis, Associative network, Bavarian food products, Concept mapping
Paper type Research paper

Introduction

Changes in the global marketing environment can be challenging for international companies on the one hand, but can also create new possibilities on the other hand. International firms face increasing competition. Globalisation and new players on the world food market like China challenge export positions (Kearney, 2010; Gracia and Albisu, 2001; Braun, 2007; Traill, 1998). Knowledge of consumers' perception of foreign food products can be a key element for successful international marketing strategies, as operating on a regional or global level requires deep knowledge about consumer trends.

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Based on that knowledge decisions can be taken with regard to the global standardisation of marketing strategies or their adaptation to each individual market.

Purchase decisions for most products are strongly linked to a person's attitude towards these products, which are determined by beliefs and meanings associated with the product (Kroeber-Riel *et al.*, 2009; Peter and Olson, 2010). In this context, the aim of the present study is to analyse and compare the perception of Bavarian food products in an international context. Two European countries – Bulgaria and Romania – as well as two Asian ones – China and South Korea – are selected. While Bulgaria and Romania are two potential target markets for Bavarian exports, China is one of the most important export markets for Bavaria and also one of the largest and the most dynamic consumer group. Furthermore South Korea shows a particularly high growth rate in the last years regarding Bavarian exports (Zheng, 2010; Bayerische Industrie- und Handelskammer, 2012). Because of their attractive position in the Bavarian export market Bulgaria, Romania, China and South Korea have been chosen for the present study.

After analysing which information is stored in consumers' minds we also want to answer the question if and what are substantial country differences regarding consumers' associations with Bavarian food products through network analysis. The findings help marketers in taking appropriate international marketing decisions.

In the past many studies in marketing and agricultural economics on country image have been conducted (for detailed overviews see also Pharr, 2005; Roth and Diamantopoulos, 2009). They often focus on the idea that country-of-origin or region-of-origin attributes (geographical indications) can have a positive influence on consumers' perception of a product (Schooler, 1965; Verlegh and Steenkamp, 1999; Balabanis and Diamantopoulos, 2004; Loureiro and Umberger, 2005; Ehmke *et al.*, 2008) as well as a negative influence if, e.g. the product or a product category does not fit to the country or the region (Roth and Romeo, 1992; Ittersum *et al.*, 2003). The influence of country-of-origin/region-of-origin attributes depends on consumer characteristics such as socio-demographics or cultural differences (Guina and Giraldi, 2012) but also on product attributes (Agrawal and Kamakura, 1999; Ward *et al.*, 2003). These various perceptions of one country can significantly influence consumers' attitudes towards products made in specific countries. Several studies address mainly the different perception of consumers regarding foreign products in comparison to home grown products (e.g. Knight, 1999; Balabanis and Diamantopoulos, 2004; Ehmke *et al.*, 2008). Other studies address consumers' perception regarding various products made in a particular country (e.g. Shimp *et al.*, 1993). Finally one last big research stream treats the combination of different information cues on a product (e.g. price, brand or packaging) with the country-of-origin attribute (e.g. Papadopoulos, 1993; Dentoni *et al.*, 2009). There are only a few studies which have analysed the image of Bavarian food products specifically (Gerschau, 1989; Balling, 1993). To the authors' knowledge, there are no existing studies analysing associations regarding Bavarian food products stored in international consumer minds. Thus this study adds to the existing literature on country image by exploring international consumer's cognitive networks regarding Bavarian food products by means of concept mapping.

This paper is structured as follows. First we describe the theoretical background covering schema theory and the spreading activation network model. This is followed by the methodological background including the technique of concept mapping as well as network analysis. The paper presents the results and concludes with a discussion of the main findings and recommendations for marketers.

Theoretical background

As this present study should give insights into international consumers' associations with Bavarian food products we want to explore international consumers' cognitive structures regarding food products from one selected area in Germany namely Bavaria. Cognitive structures are crucial for explaining how concepts in people's long term memory are organised and related to each other (Shavelson, 1974). It is important to know that every individual person has a different way to process and interpret information, thus cognitive structures vary from person to person and need to be analysed separately (Engel *et al.*, 2006). In general consumers' knowledge can be differentiated into episodic or semantic knowledge. While episodic knowledge is dealing with certain occurrences that happened in people's lives, semantic knowledge is related to personal meanings and beliefs about a certain object or environment (Tulving, 1972). Both types of knowledge are seen as the generalised knowledge. In this study we will focus on semantic knowledge which is heavily linked to episodic knowledge (Mitchell, 1982).

According to Quillian (1968) semantic knowledge or memory can be represented as a network of nodes and connecting links which we call semantic networks or associative networks. Many types of information and knowledge can be organised and linked together via semantic networks (Peter *et al.*, 1999; Mitchell, 1982). Figure 1 shows an example of an associative network of knowledge for vanilla ice cream.

Schemas are representatives of knowledge structures and consist mostly of episodic or semantic general knowledge (Leigh and Rethans, 1983; Peter and Olson, 2010). Schemas are a subset of semantic networks and can be activated in any decision making situation because they help to give meaning to a given key impulse and they also help to interpret and classify aspects as new, routine or kind of extraordinary (Erasmus *et al.*, 2002; Jonassen *et al.*, 1993). Based on Axelrod (1973) schemas are the most valuable instruments people are using. Semantic or associative networks (which include the aforementioned schemas) are organised in a node link structure where

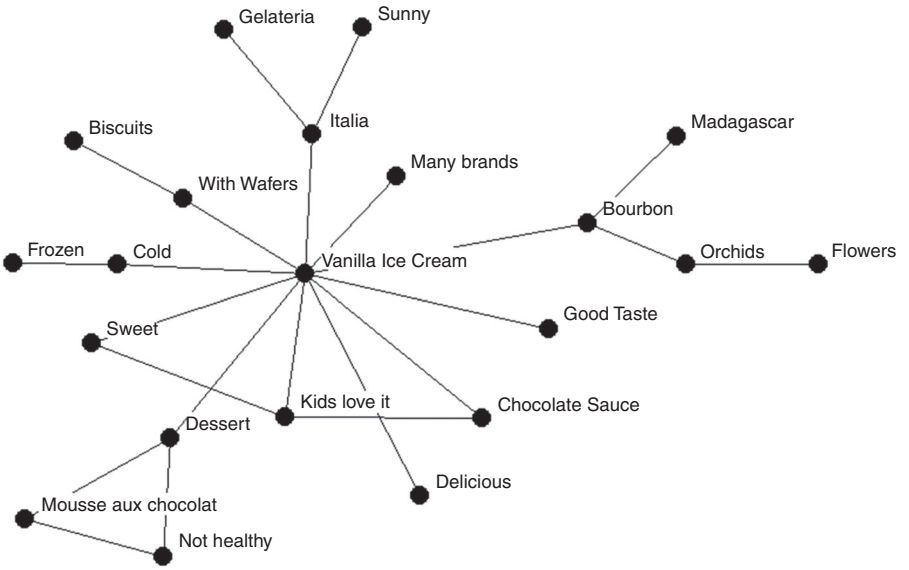

Figure 1. Example of an associative network of knowledge of vanilla ice cream

nodes symbolise the concepts. The links connecting the individual nodes stand for the type and strength of how associations are linked with each other (Cowley and Mitchell, 2003). Especially for marketers consumers' schemas are very important as they help to understand the underlying preconceptions consumers have regarding certain brands or products.

Based on Anderson (1983a) and Peter *et al.* (1999) there are different possibilities to activate product knowledge. Product knowledge can be activated by just seeing an object (e.g. when you see a pairs of running shoes you might think about a nice trail) but also a word or phrase given can activate product knowledge. The process of recalling information can be explicated through the spreading activation network model of memory (Collins and Loftus, 1975). This process happens without thinking (unintentionally) and inevitably (Anderson, 1983b). This model also explains the internal organisation of information in people's memory. As soon as people face decision making situations schemas are activated. As a consequence as soon as one node is activated this triggers a series of activation through the connection from the primary node to all other linked nodes. The activation which passes through to any other attached node is a direct consequence of the strengths of a node or concept (Collins and Loftus, 1975). For example somebody could see a nice advertisement of a certain beer brand and the brand name could then activate any knowledge or meanings related to that brand, e.g. fresh, cool, blonde and good taste. According to the model of spreading activation different facets of people's knowledge are aroused. As a consequence a certain choice will be made by the people.

In conjunction with this study the methodology of concept mapping has been used. This methodology is known as an associative elicitation technique to uncover the cognitive structures and thus semantic networks from international consumers regarding Bavarian food products. For interpreting the results measurements from network analysis serve as the tool to decide on the positions and importance of associations regarding Bavarian food products within the semantic network.

Material and methods

Concept mapping

Analysing and understanding consumers' knowledge structures has always been a key interest in many research fields especially in the field of marketing and brands (e.g. Russo and Johnson, 1980; Keller, 1993; Mitchell and Dacin, 1996; Lawson, 1998; John *et al.*, 2006) as it is essential particularly in the area of marketing to understand relationships of meanings and beliefs that consumers associate with a product (Webster and Morrison, 2004). There exist quite a number of different approaches to uncover and represent knowledge structures of consumers, e.g. in-depths or laddering interview (Holzmann and Wührer, 2000) we focus on the methodology of concept mapping (Joiner, 1998). Concept mapping is especially suited for a graphical representation of e.g. product associations (Zsambok, 1993). With this qualitative graphing process associations can be discovered, connections between these associations can be represented and the structure of these connections can be visualised (Bonato, 1990). Concept mapping originally was developed by Novak (1977) as a learning technique, while nowadays it is used for representing cognitive structures (Jonassen *et al.*, 1993). In this study concept mapping was chosen as it allows for broadly capturing beliefs regarding Bavarian food products, visualising these associations and finally relating them with each other. According to Russo and Johnson (1980) open ended tasks like concept mapping might deliver more salient product

associations (compared to closed questions) when consumers are asked to tell all things that come to mind when thinking about Bavarian food products. Also Park and Srinivasan (1994) recommend qualitative approaches such as concept mapping to measure perceptions of certain products or brands as in this study. This technique is intended to trigger just this particular knowledge structure of the associations stored in memory related to Bavarian food products.

The basic idea of concept mapping is that key ideas regarding a given concept are going to be represented as nodes which are then connected with each other via lines or arcs (pathways) to illustrate the relationships between the individual associations (Holley and Dansereau, 1984; Joiner, 1998). Based on Jonassen *et al.* (1993) concept mapping is a proper method of illustrating semantic/structural knowledge graphically. This study will use an adjusted concept mapping schema based on Joiner (1998) that he developed based on Lord *et al.* (1994).

Respondents were interviewed face to face individually. Each respondent received a sheet of paper with the key concept "Bavarian food products" and was asked to write down the concepts which came to his/her mind. They had to bring the concepts in relation with each other and built their own individual concept map/network. An example of a fictional completed concept map was provided to explicate the task. For avoiding confusion and misunderstandings interviewees got clear instructions at the beginning. Interviewees were also told that there is no right or wrong answer. Participants needed no longer than 10-15 minutes to create their own network. Interviewees did not have to value the concepts as in Joiner (1998) and Grebitus (2008).

Data analysis

For the analysis of collected information two separate approaches have been used. To analyse the amount of information the method of counting has been applied, while we are using network analysis to examine and interpret the organisation of the stored data.

Counting

Counting is a common (traditional) method to evaluate associative elicitation techniques (see also Teichert and Schöntag, 2010; Borgatti, 1998; Bonato, 1990). Counting allows getting a better idea of what kind of information is stored in consumers' memory regarding the main stimulus "Bavarian food products". Differences in the amount, variety and complexity of information can be discovered while comparing the results from counting from each country. It includes the total number of concepts (associations) mentioned by respondents after giving the key stimulus "Bavarian food products", the number of each unique association, the average number of concepts (associations) per respondent and the total number of links differentiated by first (direct links), second, third, fourth and fifth-plus level (order) of links (see also Comeau and Hiebert, 1991; Lord *et al.*, 1994; Joiner, 1998; John *et al.*, 2006; Grebitus, 2008).

Network analysis

To understand and interpret the networks we proceed with a numeric evaluation of the associations and the links between these associations by individual. To do so there are different measurements that can help to give insights into the different roles of each concept. To determine the importance and the location of a concept in a network the measurement of centrality will be used. The structure of the network will be analysed

by means of core and periphery analysis. The software programme UCINET 6 (Borgatti *et al.*, 2002) has been used for network analysis.

Core/periphery analysis

This analysis gives insight into the physical structure of a network. Nodes in the core structure are densely interrelated to each other ("a cohesive sub-graph") while nodes from the periphery are more loosely connected. Nodes from the periphery do not have any connections to each other and to the core itself (Borgatti and Everett, 1999). That is one reason why the nodes from the periphery are more vulnerable within the network compared to the core (Webster and Morrison, 2004). Figure 2 visualises the idea of the core/periphery structure of a network. In this example, nodes 1-4 belong to the core and nodes 5-10 to the periphery.

Centrality measurements

As mentioned earlier centrality measurements are used to identify the importance of a concept in relation to all the other concepts in a semantic network. Past literature on network centrality claimed that the degree of centrality is directly related with the degree of involvement one concept has in a network (Bavelas, 1950; Leavitt, 1951). According to the literature, centrality can also be compared with words like "popularity", "independence", "influence", "prominence" or "power" (Webster and Morrison, 2004). Based on Freeman (1979) there are three different centrality measurements. While degree centrality gives information about the overall activity in the network, betweenness centrality is an index number for the control in the network. Finally closeness centrality is an indicator of independence or efficiency (Freeman, 1979). These indices allow determining the most important concepts within the semantic network. These nodes are essential for marketing activities according to spreading activation theory.

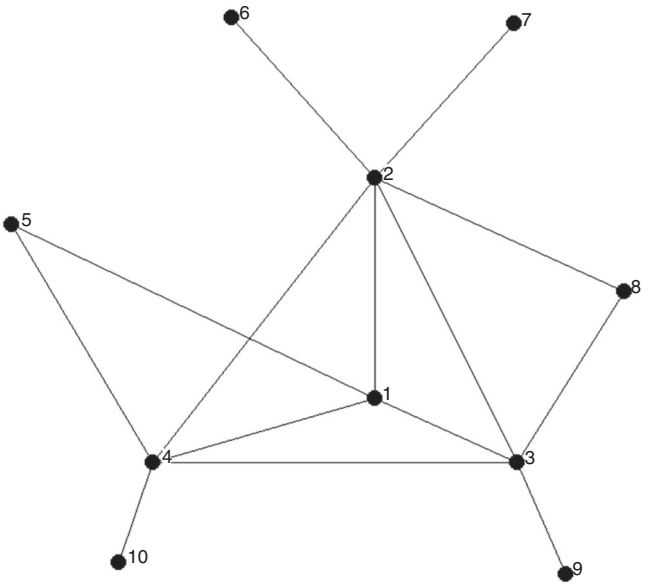

Figure 2.
Example network with core/periphery structure based on Borgatti and Everett (1999)

Degree centrality. One of the most frequently used measurements for centrality is degree centrality, C_D (Henderson *et al.*, 1998; Webster and Morrison, 2004). As mentioned earlier it indicates the activity or how popular a node is within the network. It gives the direct relation of that node to all the other associations in the network. It can be defined as:

$$C_D(p_k) = \sum_{i=1}^{n} a(p_i, p_k),$$

where n defines the number of associations in the network and $a(p_i,p_k) = 1$, if p_i and p_k are linked with each other; otherwise $a(p_i,p_k) = 0$ (Freeman, 1979; Henderson *et al.*, 1998).

Betweenness centrality. The second important measurement of centrality is the betweenness centrality, C_B. It can also be seen as indicator for control within the network as concepts with high betweenness centrality are mainly responsible for spreading activation within the network (Freeman, 1979; Holzmann and Wührer, 2000). Most essential about betweenness centrality is the role as a bridge or intermediary in the network. If we have a linking concept between two disconnected nodes, this concept can be considered as a bridge in the network (Wasserman and Faust, 1994). Betweenness centrality can formally be defined as:

$$C_B(p_k) = \sum_{i}^{n} \sum_{j}^{n} b_{ij}(p_k)$$

for all $(i < j) \neq k$, and where:

$$b_{ij}(p_k) = \frac{g_{ij}(p_k)}{g_{ij}},$$

where as g_{ij} defines the number of geodesic paths from node i to node j and $g_{ij}(p_k)$ stands for the amount of geodesic paths (shortest pathway(s) between two associations) from node i to node j that contain p_k. For this reason we can say that $b_{ij}(p_k)$ is the "probability that p_k falls on a randomly selected geodesic connecting i and j" (Henderson *et al.*, 1998).

Closeness centrality. The closeness centrality, C_c, is an index number which shows how closely one node is connected with all other nodes. Compared to degree centrality direct and indirect connections are considered. Quite often it is seen as a measure for independence (Freeman, 1979). Closeness centrality is measured by the distance between concepts. The closer one concept is to another one in the network the higher the closeness centrality (Wasserman and Faust, 1994). It also can be seen as the shortest path in a network that links two nodes (Knoke and Kuklinski, 1982). The equation of closeness centrality also defined as the "reciprocal of farness" by Iacobucci *et al.* (1996) is computed as:

$$C_C(p_k) = \left[\sum_{i=1}^{g} d(p_i, p_k) \right]^{(-1)},$$

where $d(p_i, p_k)$ is the amount of pathways "in the geodesic linking nodes i and k" (Henderson *et al.*, 1998).

Results and discussion

Consumer data was collected via face to face interviews in four different countries – Bulgaria, Romania, China and South Korea – between August 2012 and March 2013. Overall $n = 314$ randomly selected consumers have been interviewed throughout the different countries. In each country at least 60 consumers have been interviewed (see also Table I).

The survey took place at different commercial centres and food outlets. After the main concept "Bavarian food products" has been verbally presented, the respondents got as much time as they needed to finalise their individual concept map using the procedure explained before.

Socio-demographic data were collected as part of the survey (see Table I). The overall sample across the four countries ($n = 314$) consist to 60.0 per cent of women with an average age of 31.04 years (SD = 11.85). The average household size is 3.35 (SD = 1.18). Looking at education shows that 73.0 per cent of the sample have minimum a Bachelor's degree.

The average number of concepts elicited from each participant is 6.96 (SD = 5.75). However, the number of concepts given by the participants varies greatly from 1 to 43. For a better overview of the total as well as the average number of concepts per country see also Table II. The average number of concepts from the different countries ranges from 3.71 concepts per interviewee in China to 10.62 concepts per interviewee in Romania. The average number of distinct concepts varies from 1.63 (China) to 5.37 (Romania).

Another important insight from counting is the statistics regarding the level of links which is summarised in Table III.

	Socio-demographics	Mean	SD
Bulgaria (n = 63)			
	Age	36.62	12.78
	Gender (female %)	60.3	
	Household size	3.10	1.28
	Education (min. BSc %)	84.1	
Romania (n = 60)			
	Age	32.58	12.86
	Gender (female %)	56.7	
	Household size	2.36	0.98
	Education (min. BSc %)	65.0	
South Korea (n = 75)			
	Age	26.40	8.79
	Gender (female %)	53.3	
	Household size	4.20	0.89
	Education (min. BSc %)	53.4	
China (n = 116)			
	Age	30.18	11.29
	Gender (female %)	65.5	
	Household size	3.43	0.92
	Education (min. BSc %)	83.6	
Total (n = 314)			
	Age	31.04	11.85
	Gender (female %)	60.0	
	Household size	3.35	1.18
	Education (min. BSc %)	73.0	

Table I.
Descriptive statistics of the sample

The overall findings from the five different levels of links statistics for all four countries are that there are more first and second level links than third and higher level links for all four countries. The mean of all four countries of first level links is 3.95 and the mean of second level links is 2.59. For third, fourth and fifth-plus level links the mean is below one. The overview also shows that some interviewees came up with first level links only. This is reflected in that the minimum for second and higher level links is zero. South Korea shows more second level links than first level links which indicates that South Koreans have more indirect associations with Bavarian food

	BG[a] $n = 63$	RO[a] $n = 60$	KR[a] $n = 75$	CN[a] $n = 116$
Total no. of associations	392	637	715	430
Avg. no. of associations	6.22	10.62	9.53	3.71
No. of different associations	153	322	132	189
Avg. no. of different associations	2.43	5.37	1.76	1.63

Notes: [a]BG, Bulgaria; RO, Romania; KR, South Korea; CN, China. Average number of associations of all participants: 6.96 (SD = 5.75); number of associations diverges from 1 to 43

Table II.
Descriptive statistics of the associated concepts per country

	n	Mean	SD	Min.	Max.
Bulgaria					
1st level link	63	4.60	2.46	1	21
2nd level link	63	3.18	2.83	0	20
3rd level link	63	0.70	1.49	0	4
4th level link	63	0.21	0.79	0	2
5th plus level link	63	0.10	0.39	0	3
Romania					
1st level link	60	5.27	2.49	2	13
2nd level link	60	3.83	3.91	0	18
3rd level link	60	1.35	2.17	0	9
4th level link	60	0.52	1.60	0	11
5th plus level link	60	0.10	0.54	0	4
South Korea					
1st level link	75	3.76	1.72	1	8
2nd level link	75	4.21	2.75	0	13
3rd level link	75	1.43	1.79	0	10
4th level link	75	0.16	0.47	0	2
5th plus level link	75	0.13	0.74	0	5
China					
1st level link	116	3.04	2.94	1	21
2nd level link	116	0.59	2.01	0	20
3rd level link	116	0.07	0.43	0	4
4th level link	116	0.02	0.19	0	2
5th plus level link	116	0.03	0.28	0	3
Total					
1st level link	314	3.95	2.64	2	21
2nd level link	314	2.59	3.20	0	20
3rd level link	314	0.76	1.58	0	10
4th level link	314	0.19	0.84	0	11
5th plus level link	314	0.08	0.50	0	5

Table III.
Descriptive statistics of level of links

products than direct associations. Chinese people almost only have first level associations with Bavarian food products which means their semantic networks regarding this stimulus are less complex (see also Figure 3).

Table IV gives an overview of the most frequent associations that respondents relate to the main stimulus "Bavarian food products". The table shows for each country the top ten concepts which means that there are different amounts of nominations for each country. While for Bulgaria and Romania it means that the top ten concepts are the ones mentioned by at least 11 and 10 per cent of the participants, respectively, for South Korea it refers to the concepts mentioned by at least 16 per cent of the participants and for China the list includes the concepts mentioned by at least 3 per cent of the participants. The figures present the absolute values of mentioned concepts as well as the percentage of participants in parenthesis.

The results clearly show for all four countries that the top three concepts are almost the same. They are: (1) "beer", (2) "sausage"/"wurst"[1], (3) "Oktoberfest", (3) "soccer" and (3) "chocolate". While the top three associations are almost identical for the four countries seven of the ten show a greater heterogeneity. It should be noted that the concepts "cars" and also specific automobile brands, namely "BMW" and "VW (Volkswagen)", are amongst the top ten concepts even if the task was to create concept maps related to Bavarian food products. This should be kept in mind when interpreting the results. The same applies for the association "soccer". It also can be noted that for the European countries Bavarian food products are connected with "high quality", but also with "high price". Furthermore there are strong connections to "traditional costumes" and also to "festivals" especially the "Oktoberfest". For European respondents it was also important to stress the Bavarian character although the main stimulus was anyway Bavarian food products. This can been seen as for Romania we have at least five participants who mentioned "Bavaria" as such and for Bulgaria respondents find it important to mention explicitly "Bavarian bread" instead of bread only. "Bread" seems to be an important association when thinking about Bavarian food products, as it has been mentioned in all four countries amongst the top ten concepts.

After it has been shown which information is stored in international consumers' mind the focus now should be directed to how the information is stored. To get a better idea of all the relations between the individual concepts and associations, individual networks for each country are merged together to generate one overall network. The aggregated format is used for network analysis. As described earlier the most common and detailed methods for network analysis are the centrality measurements: degree, closeness and betweenness centrality. Looking first of all at degree centrality which indicates if a concept has high impact in the network we can see that for all four countries the main concept "Bavarian food products" has the highest degree centrality. It is followed by "beer" and "sausage", respectively, "wurst" for Bulgaria. For comparison see Table V.

For European countries the concept "Oktoberfest" has the fourth highest degree centrality while for South Korea it is "soccer" and for China it is "chocolate". In this context it is interesting to mention that "soccer" has the lowest degree centrality for China. As mentioned earlier concepts with a high degree centrality have the most direct connections to other concepts thus the highest power to activate many other associations within a semantic network. Following spreading activation network model, beside the main concept "Bavarian food products", "beer" and "sausage"/ "wurst" can be used as major stimulus for marketing activities for all four countries.

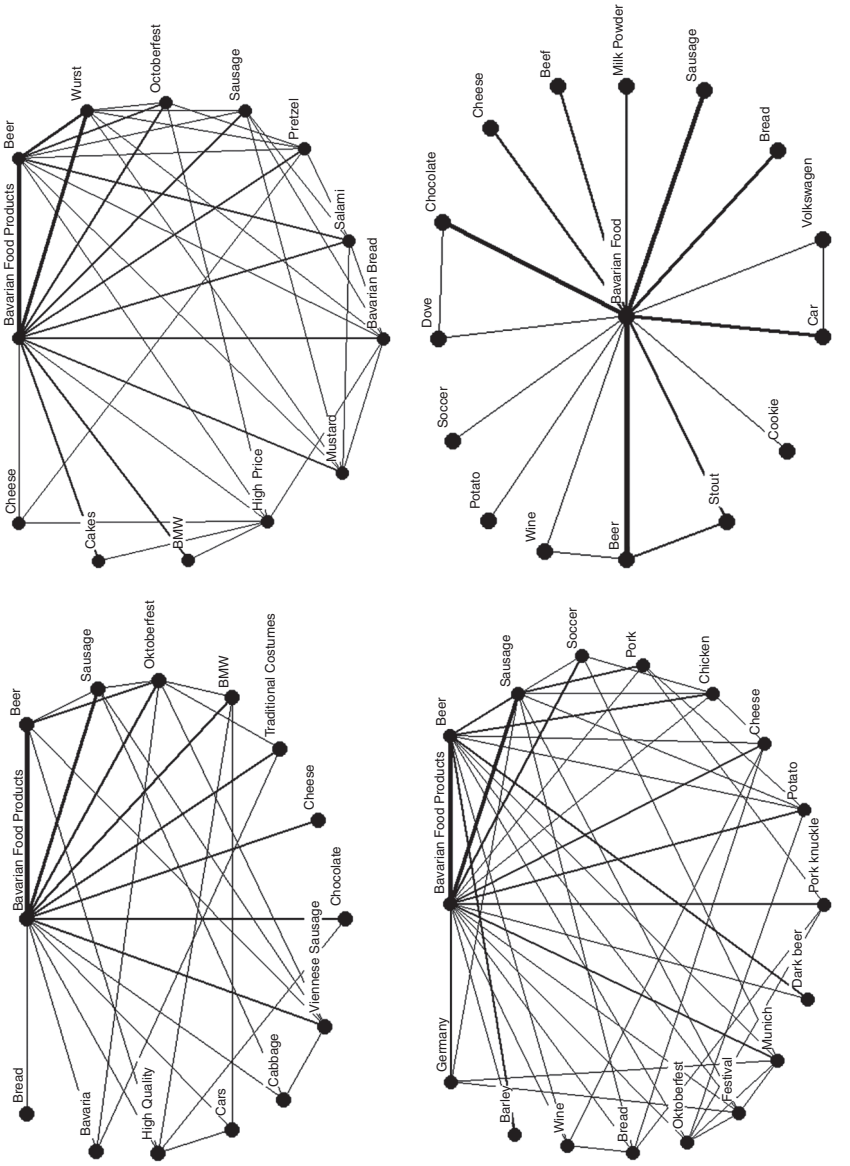

Figure 3.
Top ten networks of Romania, Bulgaria, South Korea and China (from top left to right down)

Table IV. Overview top ten associations with Bavarian food products

Bulgaria ($n = 63$)		Romania ($n = 60$)		South Korea ($n = 75$)		China ($n = 116$)	
Association	Abs. value/ (%)[a]	Association	Abs. value/ (%)[a]	Association	Abs. value/ (%)[a]	Association	Abs. value/ (%)[a]
Beer	48/(76)	Beer	49/(82)	Beer	65/(87)	Beer	43/(37)
Wurst[b]	31/(49)	Sausage	30/(50)	Sausage	61/(81)	Sausage	32/(28)
Oktoberfest	18/(29)	Oktoberfest	20/(33)	Soccer	22/(29)	Chocolate	30/(26)
Pretzel	16/(25)	Traditional costumes	12/(20)	Pork/ chicken	20/(27)	Car	19/(16)
Sausage	12/(19)	BMW	11/(18)	Cheese/ potato	18/(24)	Bread/ stout	17/(15)
Bavarian bread	11/(18)	Cheese	10/(17)	Pork knuckle	17/(23)	Milk powder	11/(10)
BMW	10/(16)	Viennese sausage	9/(15)	Dark beer/Munich/ Festival	15/(20)	Beef	9/(8)
Mustard	9/(14)	Cabbage/cars	8/(13)	Oktoberfest	14/(19)	Cheese	7/(7)
Cakes	8/(13)	High quality/ chocolate	7/(12)	Bread	13/(17)	VW[c]/potato/ cookie	5/(4)
Cheese/salami/high price	7/(11)	Bavaria/ bread	6/(10)	Wine/barley/Germany	12/(16)	Wine/dove/ soccer	4/(3)

Notes: [a]Percentage of the participants; [b]a specific kind of sausage and a popular term amongst Bulgarians; [c]volkswagen (VW) is not a typical Bavarian automobile brand but known as a German automobile brand

Concepts	Degree (C_D)	*n*Closeness (C_C)	*n*Betweenness (C_B)
Bulgaria (n = 63)			
Bavarian food prod.	149.00	100.00	33.84
Beer	89.00	*80.00*	*5.56*
Wurst	60.00	*70.59*	2.53
Oktoberfest	25.00	63.16	0.76
Sausage	23.00	66.67	0.25
Pretzel	22.00	66.67	*3.28*
Salami	21.00	66.67	1.14
Bavarian bread	20.00	*70.59*	2.15
Mustard	18.00	66.67	0.25
High price	15.00	*70.59*	*8.97*
BMW	11.00	54.55	0.00
Cakes	8.00	54.55	0.00
Cheese	7.00	57.14	0.38
Romania (n = 60)			
Bavarian food prod.	148.00	100.00	63.89
Beer	65.00	*61.91*	*1.71*
Sausage	35.00	*61.91*	0.86
Oktoberfest	31.00	*68.42*	*6.84*
BMW	15.00	59.10	1.07
Viennese sausage	13.00	*61.91*	0.86
Traditional costumes	12.00	56.52	0.00
Cars	11.00	56.52	0.00
High quality	10.00	*61.91*	*2.99*
Chocolate	8.00	54.17	0.00
Cabbage	8.00	56.52	0.00
Bavaria	7.00	56.52	0.00
Cheese	7.00	52.00	0.00
Bread	6.00	52.00	0.00
South Korea (n = 75)			
Bavarian food prod.	214.00	100.00	38.19
Beer	137.00	*84.21*	*18.82*
Sausage	81.00	*66.67*	*4.86*
Soccer	26.00	57.14	0.28
Oktoberfest	23.00	*61.54*	*2.01*
Chicken	23.00	59.26	0.76
Munich	23.00	*61.54*	1.04
Festival	22.00	*61.54*	0.63
Potato	21.00	59.26	0.76
Pork knuckle	21.00	57.14	0.97
Pork	21.00	57.14	0.56
Germany	19.00	59.26	0.21
Cheese	19.00	59.26	0.76
Dark beer	16.00	53.33	0.00
Bread	13.00	59.26	1.60
Barley	12.00	53.33	0.00
Wine	11.00	57.14	0.21
China (n = 116)			
Bavarian food prod.	193.00	100.00	95.71
Beer	53.00	*55.56*	*0.48*
Sausage	33.00	51.72	0.00

(*continued*)

Table V.
Centrality measures for the aggregated network

Concepts	Degree (C_D)	*n*Closeness (C_C)	*n*Betweenness (C_B)
Chocolate	33.00	*53.57*	0.00
Car	22.00	*53.57*	0.00
Bread	17.00	51.72	0.00
Stout	16.00	*53.57*	0.00
Milk powder	11.00	51.72	0.00
Beef	7.00	51.72	0.00
Cheese	7.00	51.72	0.00
Cookie	5.00	51.72	0.00
Wine	5.00	*53.57*	0.00
VW	5.00	*53.57*	0.00
Potato	4.00	51.72	0.00
Dove	4.00	*53.57*	0.00
Soccer	3.00	51.72	0.00

Table V.

Additionally "Oktoberfest" is a key driver for the European countries. Furthermore for Asian countries the associations "soccer" (South Korea) and "chocolate" (China) should be taken into considerations as they are also high in degree centrality. These two concepts should not be put into one context for both countries as "soccer" has a low degree centrality for China and "chocolate" is not mentioned amongst the top ten concepts in South Korea.

The closeness centrality is, as mentioned earlier, an index number which indicates how closely one node is connected with all other nodes. In comparison with degree centrality direct and indirect connections are considered. It can also be seen as a measure for independence as these nodes do not have to be activated by other nodes (Borgatti *et al.*, 2002; Hanneman, 2001; Wasserman and Faust, 1994). For all four countries the main concept "Bavarian food products" has the highest closeness centrality of $C_c = 100$. This means this concept is linked with all other concepts and not only linked to all other concepts but also the closest to all attributes in all four semantic networks. This can be determined by the fact that generally within the concept maps drawn by the respondents, the majority of the concepts were mostly elicited on the first level (for comparison see also Table III) and amongst the top ten concepts all concepts are linked to the main concept. The association "beer" has the second highest closeness centrality for Bulgaria, South Korea and China while for Romania the concept "Oktoberfest" has the second highest score for the closeness centrality. This means that these concepts are also quite independent from the flow of activation from the other concepts. Looking further into closeness centrality it can be noted that other attributes with high scores vary quite a lot from country to country. Just to name them for Bulgaria we do have "wurst", "Bavarian bread" and "high price" ($C_c = 70.59$), while for Romania associations with a closeness centrality of $C_c = 61.91$ are "beer", "sausage", "viennese sausage" and "high quality. The attributes which have the third highest score for South Korea are "Oktoberfest", "festival" and "Munich" ($C_c = 61.54$) and for China they are "chocolate", "Dove" and "wine" on one side but also "car", "VW" and "stout" ($C_c = 53.57$) on the other side. All these attributes mentioned before can play a key role in communication strategies as they are very fast in activating other attributes. As a consequence this means that communication elements for Bavaria should not only include the traditional (emotional) elements like beer (stout) and sausage (viennese sausage) for example in the context of the Oktoberfest or Munich (Profeta,

2008), but also pleasure (premium) elements like chocolate, wine or cars should play a key role.

Betweenness centrality describes the role of a node as a bridge or intermediary in the network. A concept which is between many other concepts has a high betweenness centrality and an important role in the network as it can connect conceivably isolated concepts with each other. "Bavarian food products" has the highest betweenness centrality for all four countries. For Bulgaria the association "high price" also has a high betweenness centrality ($C_B = 8.97$). As this could be interpreted more as a negative association marketers need to overcome this when creating communication strategies. As a consequence this also could mean that "high price" has a great impact on the purchase patterns as people might judge Bavarian food products as too expensive. Another important intermediary for Romania is the concept of the "Oktoberfest" ($C_B = 6.84$) and for South Korea the concept of "sausage" ($C_B = 4.86$). These two can also control, besides the main stimulus "Bavarian food products", the activation within their semantic networks. China is not really worth to mention as the only significant concept regarding betweenness centrality is the main stimulus "Bavarian food products". All other concepts for China except "beer" ($C_B = 0.48$) have betweenness centralities of $C_B = 0$ meaning that they are not situated between any pair of nodes. Any concept which has a betweenness centrality of $C_B = 0$ cannot be activated on its own but has to be activated by others. This is also very important for marketing activities (Grebitus and Bruhn, 2008) and it reflects again that for China we almost only have direct associations rather than second or third level links (see also Table III and Figure 3).

The next section concentrates on the core/periphery structure of the aggregated semantic network of the four different countries. The closer the concepts are to the centre the more impact they have and that is why they should be considered for marketing communication strategies. Looking at Table VI which gives an overview of the core/periphery members from all four countries, it is obvious that the core members are almost identical for all four countries. The concepts "Bavarian food products" and "beer" are identical for all four countries additionally we have "sausage"/"wurst" for Bulgaria, South Korea and China and finally China has a fourth core member namely "chocolate". Based on centrality measurements and on the core/periphery calculation it can be shown that concepts with high centrality values also are high in coreness meaning that they are the core members of the network. This double confirmation emphasises the key role of these concepts in the semantic network regarding Bavarian food products.

	Bulgaria	Romania	South Korea	China
Core members	Bavarian food products, beer, wurst	Bavarian food products, beer	Bavarian food products, beer, sausage	Bavarian food products, beer, sausage, chocolate
Periphery members	Pretzel, Bavarian bread, Oktoberfest, BMW, sausage, mustard, cakes, salami, cheese, high price	Sausage, Oktoberfest, traditional costumes, BMW, cheese, chocolate, viennese sausage, bread, cabbage, Bavaria, high quality, cars	Potato, cheese, pork knuckle, Munich, Germany, soccer, bread, wine, Oktoberfest, festival, chicken, pork, barley, dark beer	Car, bread, milk powder, cheese, beef, stout, cookie, potato, wine, soccer, VW, Dove

Table VI. Overview of the core/periphery members

Conclusion

The analyses show that within each national subsample a great variety of different semantic network structures occurs. Analysing the individual concept maps demonstrates the differences regarding cognitive structures of the respondents. While associations within one country show a great variety, overall results show that core concepts for European countries as well as for Asian countries are the lead products "beer" and "sausage"/"wurst". It also can be noted that for the European countries Bavarian products are connected with high quality, but also with high price. However, these associations are often pronounced in relation with car industry or technology in general, two concepts that are frequently mentioned in the concept maps given the strong image of certain Bavarian brands.

Network analysis shows that there are differences regarding complexity of the semantic networks. While the European countries and also South Korea have a much denser semantic network China shows more or less only first level links meaning direct relations to the main concept "Bavarian food products". This fits also into the results from counting where China shows the lowest number of associations followed by Bulgaria. What can be noted is that the associations which are mentioned by the Asian consumers are less divers compared to the European ones.

Overall the findings of the study provide empirical insights regarding the perception of Bavarian food products in an international context. The main associations such as "beer" and "sausages" are directly linked to food products and thus to the main concept "Bavarian food products". Furthermore there are strong connections to tradition which can be seen through the concepts "Oktoberfest", "traditional costumes" and "Bavaria" generally.

By borrowing from the high quality associated with Bavarian lead products one recommendation for export enterprises is that the main focus for the communication strategy in the future should be the variety of Bavarian food products. While emphasising the diversity, the higher price for the individual products may be accepted. Another insight from the survey is that Bavarian food is seen in the context of special traditional occasions such as the Oktoberfest or festivals in general. This aspect has to be taken into consideration in the future when developing new promotions and communication strategies for Bavarian food products. Looking back at the initial question if there are substantial differences throughout the four countries one comes to the conclusion that for the European countries one communication strategy can be chosen for a successful market penetration while for Asian countries there should be country specific elements that respond to the diverse needs.

Note

1. A specific kind of sausage and a popular term amongst Bulgarians.

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