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**Reverse flows as the sources for product/service innovation –
do companies from tourism industry differ?**

Abstract

In the case of product innovations companies use various sources of inventions and ideas. Probably every company deals – more or less – with some reverse flows managed by the activities of reverse logistics. Reverse flows – either tangible or intangible in the form of information - can be both an interesting as well as important source of ideas for innovation of product. Despite this belief there is not much known about the utilization of this potentiality in practice and the theme is neglected also in theory. In services and especially in tourism the knowledge gap is even bigger.

This paper examines various questions of the utilization of existing reverse flows as the sources for product/service innovation in the context of companies' innovative behaviour and reverse logistics management. Based on the empirical survey of 244 companies we have identified some major differences between two groups of companies (manufacturing and services in one group and tourism services in another one) related to the various sources for product (service) innovation which encompass reverse flows, as well. Frequency analysis, crosstabs, χ^2 , t-tests and Mann-Whitney U tests were applied to get answers to the basic research question if there are any differences between these two groups of companies when dealing with various types of reverse flows in their innovation behaviour.

Keywords: reverse flows, reverse logistics, sources for innovation, products, services

Introduction and theoretical review

Innovation management belongs to the critical processes that help companies to ensure the sustainable competitiveness – from the business as well as ecological point of view (Hunt & Morgan, 1995; Metelka & Farinelli, 2000; Nidumolu, Prahalad, & Rangaswami, 2009) and profitability (Geroski, Machin, & Van Reenen, 1993), business growth (Patterson, 1998), to increase or to retain market share (Banbury & Mitchell, 1995) and to keep customers loyal (Flint, 2006).

Innovation (in the entrepreneurial and business management framework sense) can be viewed as the process of developing something new which should be consciously managed, as something new itself (output of the foregoing innovation process) and as the process of diffusion and adopting something new (Calantone, Cavusgil, & Zhao, 2002.) that is mostly intentionally accomplished as well. Both processes comprise several individual sub-processes which number depends on various factors, among others size of companies, need and urgency of innovation effort, innovation capabilities and other resources. Size and resource slack, knowledge and values, preference and urgency or internal and external pressures belong to the most influencing factors that determine innovativeness (Gunday, Ulusoy, Kilic, & Alphan, 2008; Walsh, Lynch, & Harrington, 2010). The character of innovativeness and direction of innovation impact the nature of innovation policy of any process in company and consequent resource allocation (Weissenberger-Eibl & Teufel, 2011)

While this paper deals with tourism industry, one empirical evidence should be mentioned – tourism companies are smaller in general, many can be ranked to micro and small enterprises (Buhalis, 1996).

The main interest of this paper is concentrated on the introductory phase of innovation as the process of developing some new output, specifically output that represents the market offering of companies. This phase involves idea generation, the construct which in practice

can be approached differently either as managed and usually less or more formalized and organized process or like accidentally and fortuitously detected and noticed idea moved to the next stages of innovation processing.

Ideas for innovation emerge from various sources both from the internal and external environment of companies (Birkinshaw, Hamel, & Mol, 2008). In general, every resource which a company disposes with can serve as the source of inspiration for innovation. Besides resources in the form of tangible items, capabilities, knowledge and skills, experience and everyday practice of managers and employees, transactions and dealing with partners (especially but not merely suppliers and customers, universities, research organizations), competitors, news in medias, scientific and professional literature, fairs and exhibition, congresses, in-house R&D, bought-in R&D, collaborative R&D or transferred R&D etc. (Cooper & Kleinschmidt, 1986; Frenz & Ietto-Gillies, 2009; Varis & Littunen, 2010). Particularly in services front-line personnel has been identified as an important source of ideas for innovation since they can capture and transfer important information about the needs and patterns of consumption (or use) of the targeted customers within direct interaction (Sanchez-Hernandez & Miranda, 2011). This is parallel to the concept of lead users (Von Hippel, 1986) as the main source for product innovation, however not only external (and final) customers as users but anybody who uses some inputs for utilizing it for transformation processes (Von Hippel, 1991).

Reverse flows are flows of products, packaging, waste, materials, raw materials, in process inventory, components and related flow of information and money that are returned from any forward supply chain link (e.g., supply chain or channel member, customer) (De Brito, 2003; Quesada Fernández, 2003; Rogers & Tibben Lembke, 1999; Thierry, Salomon, Nunen, & Wassenhove, 1995). Reverse flows can emerge not only in the external environment to the company (most typically from the point of forward distribution or from

the point of customers) but also in the internal environment at any point turning some input to the previous step of value added or value creating processes. Also unsold products or materials and parts not used in the production processes and waste can enter the process of reverse flows. Tangible reverse flows can be divided into: a) production (raw material, parts, packaging surplus, quality-control returns, production leftovers/by-products, waste); b) distribution (product recalls, B2B commercial returns - e.g., unsold products, wrong deliveries, stock adjustments, functional returns – e.g., distribution items/carriers/packaging) and c) customer (B2C commercial returns like reimbursement and other guarantees, warranty returns, service returns - e.g., repairs, spare-parts, end-of-use returns, end-of-life returns, waste) and their character may be as new or used (Amini & Retzlaff-Roberts, 1999; De Brito, 2003; Fernández, 2005).

Reverse flows are produced from tangible resources in the case of tangible products and created with the utilization of knowledge, skills and capabilities in the case of intangible service or as a mix of both in those businesses where there is at least minimum of tangible inputs for particular value creation needed. This is the most typical case in the entrepreneurial reality irrespective of the industries or sectors. The reasons of their origin can be miscellaneous (see for instance De Brito, 2003 or Fernández, 2005); nevertheless almost all of them might be ranked into one umbrella cause. They were not needed and/or wanted. The question behind it is *why* and potential answers to this question may serve as the source of inspiration leading to innovation. Moreover, reverse flows often mean problem (Trebilcock, 2001), their existence is not intended and forward or value creation and value-added processes are designed with the absence of any goal to produce some reverse flows. Mollenkopf & Closs (2005) declared them “*as the unwanted step-child of supply chain management*” (p. 34). Intangible constituent of reverse flows can comprehend also many functional and emotional costs and benefits as well of energy cost (both for supply and demand side), if we treat reverse

flows as value flows. Complaints and also any other way of communication (formal and informal, e.g., employee to employee, employee to customer, customer to friends and public, etc.) (Thorburn, 2005) related to the evaluation of products/services and their quality and/or performance may contain much valuable information in a form of feedback for potential innovation (Hansemark & Albinsson, 2004; Saccani, Songini, & Gaiardelli, 2006; Soderlund, 1998; Tibben-Lembke, 2002).

Complaints and customer evaluation within word-of mouth function as a signal to product/service quality (Forbes, 2008) and offer space for understanding what might be wrong with not only direct measures of quality (functional attributes) but also with soft intangible dimension of perceived value, in tourism often related to experiences (Sanchez, Callarisa, Rodriguez, & Moliner, 2006). Since management and innovation management as a part of it is based on information, managers should understand how to manage what Wilson (1999) understands in his model of information - seeking behaviour distinguishes among four types of such behaviour: passive attention, passive search, active search and ongoing search and in his discussion to information retrieval process he pays attention also to the impact of individual cognitive space (among all for instance work task and interest) and organizational environment (e.g. strategy, goals, commitment and preferences, attitude). Another point of view is information-giving behaviour of concerned subjects. Theory in this area concentrates mostly on complaint behaviour of customers where the well-known phenomenon exists – only a part of customers file complaints with their suppliers, the rest share the experiences through other channels (Forbes, 2008), so called word of mouth (Soderlund, 1998). This reality is more intensively presented in B2C market, noticeably less in B2B market. The intensity and scope of complaints and word of mouth depends on the difference between expectations and reality, on the expected reaction of supplier, on the importance and value of purchase, on potential reward and perceived problems when not filing complaints and on other

consequences – known and/or perceived – of some pattern of such behaviour (Škapa, 2013). Using feedback from reverse flows is dependent also on the level of formalization of processes, specifically in transferring tacit knowledge into explicit one (Magnusson, 2003).

The boundary between the offering of manufacturing companies producing tangible products and service companies in many industries and sectors is fluid. Still more manufacturing companies enrich their product delivery with some services or incorporate the service dimension into the product attributes (servitization) and still more service companies try to materialize their offering (Mele, Colurcio, & Russo Spena, 2009). This is why it can be difficult to separate product and service innovation, particularly when having in mind offering. Some authors make no distinction for both (e.g. Hjalager, 2002 in the case of tourism services), some make distinction. In this paper both approaches are used.

According previous research that has examined similarities and differences between product and service innovation within new offering development there are three main research streams (Den Hertog, Rubalcaba, & Segers, 2008; Mele, Colurcio, & Russo Spena, 2009; Tether, 2004): First stream is termed *assimilation*, whose advocates believe there are no differences and the patterns of innovation behavior are same for manufacturing and services companies. The second stream described as *distinction* (or *demarcation*), stresses specificities of services, particularly intangibility, heterogeneity, inseparability, and perishability (IHIP) (Fitzimmons & Fitzimmons, 2000) that influence and make innovation management of services different from manufacturing with the focus on processes and people and their interaction as well as the active participation of customers in the service innovation processes. In service this process is more often an ad hoc innovation (Toivonen & Tuominen, 2009). Tether (2004), when characterizing this approach, mentioned one fact regarding the continuous adaptation of offering made by services companies to satisfy highly differentiated and constantly changing requirements of customers that is not so easy in manufacturing due to

usually more tangible, human and capital resource intensive and dependent development of innovation and higher complexity of innovation process where customer is often not final individual consumer but big enterprise (Sundbo, 1994). Third approach named *synthesis* points out the shared characteristics, common patterns but dissimilarities as well between both groups. One of the aim of our research is to contribute to the verification of all three approaches and to bring new knowledge about one very narrow part of innovation management in services, specifically in tourism. Nonetheless, our point of departure is primarily in the line of thinking expecting differences, i.e. with demarcation (distinction) approach.

Despite the fact that the volume of reverse flows is rapidly increasing (Krikke, 2001; Min, & Ko, 2008; Richey, Chen, Genchev, & Daugherty, 2005), theory devoted to the utilization of these flows as the inspiring source for any type of innovation is silent (Wadhwa & Madaan, 2009). Apart from this there is a lack of knowledge of the existence and management of reverse flows in services and except for some areas of green management (e.g., recycling of water or composting) the understanding of what specificities (if any) can be connected to the reverse flows in tourism, not to mention innovation based on these flows, is nearly absent. The aim of this paper is to investigate: a) if reverse flows serve as sources for product/service innovation; b) what types of reverse flows are utilized in the case of the positive answer to the first point and c) if there are any differences between companies from tourism and companies from other industries and sectors. Findings may enrich current knowledge and broaden understanding of new product and new service development of both manufacturing and tourism services companies. Such objective is in harmony with existing calls for further investigation in tourism and/or services in general (Sandén, 2007;) Paper is based on the empirical research among 244 companies and the above introduced three issues

are framed in the context of selected innovation and reverse logistics management areas as well of performance measures.

Based on the theoretical review several hypotheses were formulated:

Hypotheses (H) 1: tourism companies are more likely (in comparison to manufacturing) to use following source of innovation (both general and of reverse flows):

a) competitors - *reasoning*: the structure of tourism industry and the extent and the level of concentration of companies (with many of micro and small direct and indirect competitors) and especially the relative ease to copy competitors with some guarantee of customers-tested products (competitors offering) that are effortless to create with some adaptation (Cano, 2008);

b) specific position in company – *reasoning*: managers or even owners or front-line staff in services are very often those persons who bring new ideas what service should be innovate. It is the position of individual and not of special department and in micro and small companies specific position plays a part of role of new product/service designers or of R&D department (Alam, 2006);

c) anybody in company – *reasoning*: size of companies in tourism (Miles, 2008; Toivonen & Tuominen, 2011)

d) internal sources – *reasoning*: although tourism companies are highly market-focused, they have not enough human resource capacity to scan the market intensively as for instance in the form of partnership with research organizations or with universities and there is no need to cooperate on product/service innovation with some external partners. This is why own

employees together with managers generate the idea of what to innovate (Hjalager, 2010; Tether, 2004);

e) complaints collected and gathered by employees but not filed by customers officially – *reasoning*: the intangible part of services make reverse flows maybe to be perceived as less possible to return and/or to complain officially. Moreover what is important is the complex experience that customers – and most often final customers (i.e. individual persons) would like to return but such experience is complex after consumption and it can be difficult if not even impossible to complain directly. In some cases customers do not want to complain - they just want to let somebody know that something could be better or different (Stephens & Gwinner, 1998).

f) unsold products – *reasoning*: in tourism many products are perishable, they are not storable and demand has seasonal character therefore products/services in the offering have to be discarded, returned – if possible (for instance purchased lodging capacity) or companies lose money (de Brentani, 2001);

g) raw materials and ingredients – *reasoning*: particularly HORECA sector in tourism industry deals with this issue – due to the quality or perishability of such inputs – quality is less testable and perishability much higher in comparison to most of industries in manufacturing;

On the contrary, manufacturing companies are more likely (in comparison to tourism) to use following source of innovation (both general and of reverse flows):

h) specific department – *reasoning*: size of the companies and more complex character of innovation in many manufacturing industries (Djellal & Gallouj, 2001; Tether, 2004);

i) partners – *reasoning*: more complex character of innovation in many manufacturing industries which needs cooperation and know-how of competent people outside companies (Sundbo & Gallouj, 2000);

j) purchased products and spare parts – *reasoning*: manufacturing companies purchase products as the inputs for forward processing while tourism companies either just fill in their complex supply or they check purchased product in more detail (they are able to do it). Tourism companies usually do not use spare parts;

k) packaging – *reasoning*: in manufacturing packaging is often part of delivered product and at the same time product of own innovation processes when product designers have to develop packaging that would have some needed and expected functions. Tourism companies deal with packages only in limited way – they have to handle packaging but they have no possibility to make decisions on design;

For both groups we also hypothesize that there are no differences in utilization of customers and suppliers, for the filed complaints as the source of inspiration for product/service innovation. Customers should be one of the most important source of inspiration (if not the most) for every company regardless on industry. Suppliers might be evaluated in similar vein – they are often involved in the process of their products innovation and they are the primary source of functions and benefits on new products that their customers use. Referring to filed complaints contrary to some empirical evidence introduced in the text above we believe, that if the complaints are filed the behavior of companies in both groups will not differ – they have to deal with it and filed complaints clearly states what problem in product/service shall be solved – also through innovation.

In the next part of paper also other hypotheses are introduced, nevertheless they are not of primary interest for this paper and therefore they are presented separately.

Methodology of research

The basic research question for the research was to discover potential differences in types of sources for product/service innovation between two groups of companies – those that were classified as manufacturing and those classified as tourism (binary variable). The group of manufacturing companies includes also some services companies; nevertheless they represented specific services for B2B market linked closely to manufacturing activities. Respondents from services companies, which character can be concerned as similar to tourism, were excluded from the sample.

For research the survey was applied as the best method to collect data from relative big number of companies that corresponds with the character of research which is mixed descriptive-exploratory one. Data come from personal interviews with 244 managers on various positions of the same number of companies with their entrepreneurship activities based in the Czech Republic. Standardized questionnaire with several open-ended questions was used during the interviews. The questionnaire embraces also other issues from reverse flows and reverses logistics management but for the purpose of this paper only certain questions related to the research problem were analyzed.

Though the primary interest was to investigate reverse flows as the source for product/services innovation, questions – that have character of binary variable – comprise other types of sources of ideas for this kind of innovating activity. All of them were grouped into six separate categories (internal and external sources, complaints – officially filed by customers and complaints gathered by employees but not filed officially, waste and unsold products) with 20 types of individual sources in total. Category of complaints, unsold products and waste refers to reverse flows. For five categories that cover several variables also the summary variable was calculated. The term 'summary' might be erroneously

understood – it is binary variable which states if any from all those measures included in the individual category was or was not indicated by respondents.

For both groups of companies bivariate analysis of some contextual variables was calculated as well to check if there are any differences between the groups. The list of these variables is as follows:

- size of companies measured by the number of employees and rank into three categories: 1-small, 2-middle, 3-large;
- profitability of companies measured on the 7-points scale from 1-highly in loss to 7-highly in profit;
- reverse flows policy innovativeness measured on the 7-points scale where 1 is for very conservative and 7 for very innovative policy;
- reverse flows management importance perception measured on the 7-points scale from 1- absolutely not crucial to 7-absolutely necessary to manage;
- perception of reverse flows impact on profitability measured on the 7-points scale where 1 stands for very loss-making and 7 stands for very profitable;
- perception of the offering (product/service) innovation importance for competitiveness measured on the 5-points scale with 1 = innovation is existentially necessary and 5 = innovation is very marginal process, it is not necessary to innovate the product/service;
- frequency of product innovation measured on the 5-points scale from 1 - several times in a month; 2 – several times in a year; 3 – less than once in a year; 4 – less than once in three years and 5 - less than once in five years;

- evaluation of reverse flow management knowledge measured on the 7-points scale with 1 = distinctively high and 7 = distinctively low.

In this paper no analyses of probable effects of the above mentioned items are presented, nevertheless, there are several assumptions which will be tested in the future. For the case of this paper we hypothesize that:

Hypotheses (H) 2 – a) tourism companies are less profitable; b) of smaller size; c) their reverse flows policy is less innovative; d) their level of reverse flows management knowledge, e) perceived degree of reverse flows management importance, f) perceived degree of reverse flows impact on profitability and g) the frequency of product/service innovation is lower in comparison to manufacturing companies; on the contrary h) the degree of perception of the offering (product/service) innovation importance for competitiveness is higher with tourism companies in comparison to manufacturing companies.

To determine the statistical significance of the differences between manufacturing and tourism companies in the case of continuous variables, both parametric independent (t-tests) and non-parametric (Mann-Whitney U - tests) techniques were used since part of the population violates the assumption of normal population distribution of parametric tests. For categorical (binary) variables exploring types of sources a chi-square test for independence was conducted.

The collected data were statistically evaluated using SPSS statistical software version 20.0

Data Analysis and Results

Descriptive analysis of sample for a set of innovation management variables and sources of innovation

Answers of 244 respondents from the same number of companies entered into the statistical analysis. 74 (30,3%) are from various areas of tourism industry (travel agencies and

tour-operators, hospitality, transport), hereinafter also as “tourism” and 170 (69,7%) are from other industries, sectors and branches, hereinafter also as “other”. Majority of the sample - 161 (66,0%) is represented by the micro and small companies (analyzed together) with the number of employees below 50, 47 (19,3%) accounts for middle-sized companies (50-249 employees) and the rest 36 (14,8%) by large companies (250 and more employees). 190 (82,3%) of companies incorporate the target of reverse flows minimization or reduction into the process of new product/service development, whereas 41 (17,7%) companies do not follow such goal.

Bivariate analysis for a set of innovation management variables and sources of innovation

Table 1 presents the findings of bivariate analysis for a set of explored innovation and selected other management variables for the group of tourism companies and for the group of companies from other industries and sectors together. In the Table the differences of two-tailed independent t-test analysis are reported. Man-Whitney U test results (2-tailed) correspond with these findings and both tests show that there are statistically significant differences between both groups (two-tailed probability) and they confirm also expected predictions (one-tailed probability) stated in hypotheses. In the group of tourism more micro and small companies (Mean of size = 1,09) represent the sample while in the group of other more bigger companies are included (Mean of size = 1,66). Profitability of tourism companies is lower (Mean = 3,92) in comparison to other companies (Mean = 4,48). Tourism companies' reverse flows policy is less innovative (Mean = 3,44) than of other companies (Mean = 3,91) and tourism companies consider to manage reverse flows as less important (Mean = 4,43) against other companies (Mean = 4,92). This outcome likely correspond with the perceived impact of reverse flows on profitability – tourism companies reckon such impact lower (Mean = 4,27) than other companies. On the contrary respondents from tourism companies believe

that their level of knowledge of reverse flows management is higher (Mean = 3,81) when compared to the self-evaluation of other companies (Mean = 4,65) – in this question the scale measures the level of knowledge in opposite direction – from the highest to the lowest level. Tourism companies, despite they consider the importance of the product/service innovation as more important as other companies (Mean = 2,78 to Mean = 2,54), innovate less frequently (Mean = 2,59) than other companies (Mean = 3,03).

Table 1 Bivariate analysis of innovation and reverse flows management variables

variable	Group of companies	Mean	Sig. (2-tailed)	variable	Group of companies	Mean	Sig. (2-tailed)
size of companies (scale 1-3)	tourism	1,09	0,000*	profitability (scale 1-7)	tourism	3,92	0,000*
	other	1,66			other	4,48	
reverse flows policy innovative-ness (scale 1-7)	tourism	3,44	0,020*	reverse flows management importance perception (scale 1-7)	tourism	4,43	0,023*
	other	3,91			other	4,92	
perception of reverse flows impact on profitability (scale 1-7)	tourism	4,27	0,070	perception of the offering innovation importance (scale 1-5)	tourism	2,78	0,252
	other	4,61			other	2,54	
frequency of innovation (scale 1-5)	tourism	2,59	0,085	evaluation of reverse flow management knowledge (scale 1-7) °	tourism	3,81	0,003*
	other	3,03			other	4,65	

° the scale has opposite meaning –from more negative to more positive in comparison with the other variables

*statistically significant differences at 0,05 level

Table 2 reports the results of frequencies analysis related to the sources for product/service innovation connected with particular types of reverse flow. Relative frequencies are calculated without the cases with missing values.

As can be seen external sources are employed more often than internal ones. Customers in general are the most frequently stated source of inspiration (probably the great share is represented by filed and justified complaints of customers, selected by respondents from the more specific types of sources. Competitors belong to the often utilized type of inspiration followed by suppliers. Conscious collection of ideas from customers follows closely as well as the job of anybody and within the authority of specific position from the internal environment. These three types are interlinked together as the statistical analysis revealed.

Waste is not treated as the source of the inspiration for product/service innovation very frequently. Several open answers searching for few potential reasons point to the real impossibility to use some type of waste as the source but much often waste is perceived just simply as waste without any feedback value. Very rarely also special innovation teams exist in companies that would create ideas for innovation and also unsold products/services do inspire managers only seldom.

Table 2 Sources of innovation – frequency analysis

source of innovation	frequency (N)	frequency (%)	source of innovation	frequency (N)	frequency (%)
internal sources			external sources		
anybody	63	44,4	customers	166	68,3
specific position	62	43,7	competitors	74	52,1
specific department	24	16,9	suppliers	66	46,5
innovation teams	11	7,7	partners	42	29,6
sum of internal sources	117	82,4	sum of external sources	132	93,0
filed complaints by customers			collected or acquired complaints		
justified	84	33,4	collected consciously	64	45,1

not justified	31	12,7	acquired accidentally by employee	46	32,4
sum of answers	94	66,2	acquired accidentally from online appraisals	30	21,1
			sum of answers	130	72,5
waste			unsold products/services		
raw materials or ingredients	17	12,0	unsold products or services	16	11,3
material	13	9,2			
packaging	12	8,5			
purchased products	12	8,5			
produced products	8	5,6			
parts	6	4,2			
sum of waste	39	27,5			

Differences between both groups of companies in the case of the types of sources of product/service innovation are presented in Table 3. The results indicate that there is an association between some type of sources of product/service innovation and whether the companies that utilize such types of source are from tourism industry or are from other industries. The significant findings reflect the fact that in the case of internal sources (as the summarized answer) it is the group of tourism companies which uses it more frequently (92,9%) compared to the other (78,0%). To continue with the internal sources tourism companies employ more often anybody from the company (73,8% compared to 32,0%) as well as person at specific position (52,4% compared to 40,0%) in contrast to the other group and on the contrary the other group utilizes more often specific department (4,8% compared to 22,0%). With specific department, the frequency given with the responses of tourism companies, is very low (only 2 respondents) and therefore the results is rather demonstrative.

Another statistically significant difference was detected in the case of competitors as the external source of the ideas for innovation. Tourism companies are inspired more often (73,8% against 43,0%) by what their competitors do within product/service innovation.

Unlike the competitors partners seem to be considered as the source of inspiration more often by other companies, though the difference is not statistically significant when searching for association. Significance can be seen when predictions of 1-sided effect are verified.

No differences have been found in the instance of filed complaints by customers, either justified or without some legitimate reason. On the contrary to these findings statistically significant differences can be seen when complaints are not filed by customers but are collected by employees (and especially when discovered or found out more or less accidentally). The differences between the frequencies of answers are about twice as large or even more. Tourism companies gain the inspiration from such sources more often than companies from other industries (see Table 3).

Difference was revealed also when analyzing the issue of unsold products/services. More such cases are associated with the tourism companies (19,0% to 8,0%). This response and the result is again more illustrative – only 8 companies from both groups introduced such type of source.

Table 3 Sources of innovation - differences between tourism and other industries groups

source of innovation	frequency (%) tourism → other	Chi-square p value (2-tailed)	source of innovation	frequency (%) tourism → other	Chi-square p value (2-tailed)
internal sources			external sources		
anybody	73,8→32,0	0,012*	customers	71,6→66,9	0,463
specific position	52,4→40,0	0,000*	competitors	73,8→43,0	0,001*
specific department	4,8→22,0	0,034*	suppliers	47,6→46,0	0,860
innovation teams	9,5→7,0	0,608	partners	19,0→34,0	0,075
sum of internal sources	92,9→78,0	0,041*	sum of external sources	95,2→92,0	0,491
filed complaints by customers			collected or acquired complaints		
justified	57,1→60,0	0,752	collected consciously	57,1→24,0	0,061
not justified	19,0→23,0	0,603	acquired	52,4→24,0	0,001*

			accidentally by employee		
sum of answers	64,3→67,0	0,755	acquired accidentally from online appraisals	40,0→13,0	0,000*
			sum of answers	90,5→65,0	0,002*
waste			unsold products/services		
raw materials or ingredients	33,3→3,0	0,000*	unsold products or services	19,0→8,0	0,057
material	9,5→9,0	0,010*			
packaging	16,7→5,0	0,023*			
purchased products	2,4→11,0	0,092			
produced products	9,5→4,0	0,193			
parts	4,8→4,0	0,837			
sum of waste	45,2→20,0	0,002*			

*statistically significant differences at 0,05 level

Discussion, limitations, theoretical and managerial implications and conclusions

Results confirmed all hypotheses apart from one which expected that manufacturing companies are more likely to use packaging as the source of innovation. Our finding rejects it, although very small frequency of answers does not allow us to generalize this outcome. Finding of rather surprising character may be explained by several statements introduced in the open question. Packaging in HORECA sectors means lot of logistics problems for companies together with higher costs when dealing with returnable items. There was solution in the form of changing the offering from bottled soft drinks and supplies of vegetable, fruit, potatoes etc. from packaged form into packaging-free deliveries, for instance draft lemonades.

Confirmation of all other hypotheses points at one general conclusion – from the many aspects of innovation management at least in the case of sources of inspiration for product/service innovation there are distinct differences between manufacturing and tourism companies, although this claim must be considered with caution due to several limitations of research.

What makes both groups different (statistically significant) is also the reverse flows policy innovativeness and level of reverse flows management knowledge. These two issues need not to be directly connected to the differences in the sources of innovation – both are more relevant for process and managerial innovation. Here is the space for further analysis of data.

The biggest differences detected among the sources of inspiration are linked to the organizational matters, to the approach to competitors as the source for inspiration and to the complaints made by customers but not formally. This is one of reverse flows that is somehow neglected by manufacturing companies. It can be explained by the character of innovation process, by the size of companies and by relative bigger and more or less natural distance among customers and employees in manufacturing. But such finding can have also one important managerial implication which lies in the question of the real openness to customer behavior, or the other way around in myopia of manufacturing companies towards market and specifically towards customers and relative retreating within themselves. This is a challenge not only for empirical research but it might serve as theoretical implication to pay attention to the linkages of market orientation and innovation management within the frame of customer relationship management, marketing communication, customer behavior and satisfaction.

The findings can be reckoned as the springboard for reconceptualization of the understanding of reverse flows in services and to initiate discussion about the definition of reverse flows in services and specifically in tourism industry towards the emphasis of the role of information–as–feedback hidden in reverse flows not only for reverse logistics and reverse supply chain management but for innovation and quality management as well.

Both research and analysis has some limitations. First, in the analysis no differences among manufacturing, service and tourism service companies were investigated and the involvement of firms from other types of services – although carefully examined - can induce

some biases in results. The employment of only simple statistics does not enable to discover some other potential dissimilarities and different patterns between both groups of companies. We also did not explore all the types of idea sources for product/service innovation and our list – despite the existence of open answer – can be limited. As the limitation also the single respondents' perception can act – moreover not all respondents were experts in innovation management. Another limitation, which is not valid only for presented research, lies in the heterogeneity of service and of tourism service industry that makes it difficult to analyze and after to generalize any findings (Hortelano & Gongález-Moreno, 2007).

Against the existence of number of studies dedicated to the innovation of tourism services (Nagy, 2012) there are still many not well investigated and not well developed areas of the whole range of tourism services innovation issues (Hjalager, 2010). There is a lack both of empirical studies comparing service (and tourism within) and manufacturing companies regarding importance of specific business functions (e.g. innovation management, logistics and reverse logistics, customer relationship management and quality management etc.) and their linkages in product/service development (Radas, 2003) and theoretical research that would develop knowledge in this issue. Better understanding of utilization of reverse flows for service innovation can help fill some of ten research gaps uncovered by Hjalager (2010), namely consumer driven innovation, driving performance and innovation and economic performance among others and call for some research themes formulated by Mele, Colurcio & Russo Spena (2009), specifically the questions of integration of new (for companies) sources of value creation where also some types of reverse flows belong and deeper understanding how companies in tourism services sense and respond to various reverse flows and how they learn from them not only for new product/service innovation .

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