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THE IMPORTANCE OF BENCHMARKING IN THE INNOVATIVE ACTIVITIES OF TOURISM ENTERPRISES: THE CASE STUDY OF LOT S.A. POLISH AIRLINES*

Abstract: The aim of this article is to identify the importance of benchmarking as a source of innovation in the activities of tourism enterprises through the case study of LOT S.A. Polish Airlines. To expand, the objective was to identify the departments within the company which used benchmarking as a stimulus to create a new or improve an existing offer. The subject was an airline belonging to Star Alliance and 27 employees from selected departments. The study used questionnaires and, with managers of selected departments only, open standardized interviews. Statistical inference methods, including a chi-square test, were applied to analyse the data. Although the introduction of benchmarking in the company's structure allows for a quick escape route from a cycle of limitation in the company's own culture and standard behaviour (and the acquisition of knowledge during the process gives rise to new and innovative ideas) the importance of this method in innovative activities did not result in any practical application. A lack of knowledge about benchmarking was noticeable, and an identification of this method with a simple competitive analysis resulted in failures in business activity as well as a lack of creativity in its application.

Keywords: benchmarking, innovation, tourism enterprise, airline.

1. INTRODUCTION

Despite ongoing adaptation processes (both quantitative and qualitative), since 1989 the tourism economy has not yet reach its full maturity. In comparison with the economies of more developed countries, there is lower labour productivity and a lower level of innovation in tourism enterprises. Moreover, the simple factors of economic development quickly exhaust their potential and continuing growth requires innovation (PORTER, KETELS & DELGADO 2007). Therefore the key to success is the ability and speed of adaptation and innovation, as well as the ability to manage change (BEDNARCZYK & NAJDA-JANOSZKA 2014).

Innovation in tourism enterprises depends on many internal and external factors. Internal factors (BRATNICKI & STRUŻYNA 2001, BRACKENBURY 2004) include a company's participation in knowledge transfer, quality of management, willingness to change, the ability to cooperate with components in a value chain, as well as the perception of the role of innovation in building a sustainable competitive advantage. External factors comprise knowledge resources, expenditure on R&D, and the level of cooperation between business

and academic sectors. Generally, it can be said that there must be new knowledge and information about the expectations of the environment to create an idea for a new product or process (JANUSZEWSKA & NAWROCKA 2015).

Therefore, in the face of ongoing processes of modernization and a levelling of the competitive gap in the Polish economy, it is worth paying attention to some management methods such as benchmarking and its role in the process of collecting valuable knowledge and creating innovation. Market knowledge gained from benchmarking, collected and developed within the organization, facilitates the creation and implementation of innovation. On the other hand, reproducibility and systematic analysis of benchmarking fosters an innovative culture.

The use of information originating from other companies and confronting their own effectiveness measured by productivity, quality and experience, with the results of such companies and organizations which can be considered a model, defines the concept of benchmarking (KARLÖF & ÖSTBLOM 1995, GABRUSE-

WICZ, KAMELA-SOWIŃSKA & POETSCHKE 1998, SUSZYŃSKI 2003, LISIECKA 2004). Benchmarking is a method that inspires and stimulates search patterns to quickly learn from others and to create new standards of benefits (GARVIN 1993, SIMATUPANG & SRIDHARAN 2003) and provides a basis for the development of a learning organization.

In the first part of the study, based on a literature review, the importance of benchmarking in the innovative activity of tourism enterprises the decision to use the method is the first and most important step towards positive change. In view of the scope of the study, reference is made to a selected airline and its activities, and aimed at increasing innovation of goods and tourism services on board its aircraft as a result of the implementation of benchmarking. Moreover, discussion of the concept of innovation contributes to this because it is often a consequence of the application of the method. Another part of the study presents the methodology and results indicating the scope of benchmarking in improving innovation in enterprises in the tourism economy. Implications for academic and business practice are also considered.

2. BENCHMARKING AND INNOVATIVE ACTIVITIES IN A COMPANY: THEORETICAL BACKGROUND

Expertise and current information are two of the most valuable resources of modern companies. They are also the two factors which create innovation and ensure the efficiency and accuracy of benchmarking methodology.

A ubiquitous desire to raise awareness about new development possibilities for products and processes very often contributes to initiating innovative activities. The essence of innovation¹ is indicated by the effort of an organization to launch new products or applications. Innovation also means the implementation of a new marketing or organizational method² which re-defines its way of working or the company's relations with its environment, in this context, it is a tool of competitive advantage (MARCISZEWSKA 2014). An excellent example of such action, which is also a manifestation of 'brave innovation', is the adoption of benchmarking in a company's structure.

The history of benchmarking³ (also known as innovative adaptation) goes back to the origins of mankind. For thousands of years people have been trying the good ideas of others, and adapting them to their own needs and conditions.⁴ The origins of this creative adaptation can be traced in ancient Egypt and Greece (BOGAN & ENGLISH 2006). The benchmarking process provided people with inspiration at many important

moments, and often initiated remarkable insights and breakthrough ideas. Ch.E. BOGAN & M.J. ENGLISH define benchmarking as a process of constant search for best practices which, when adapted and implemented in a particular organization, can result in excellent performance. They emphasize that in benchmarking emphasis needs to be put on continuity and the comprehensiveness of efforts to identify best operational practices, which after implementation will help produce excellent results (BOGAN & ENGLISH 2006). A similar definition is provided by A.G. Kamande who sees benchmarking as a systematic and continuous process of searching, measuring and implementing the best solutions. In this the most important economic processes in a given organization are compared with those of world leaders, with the intention of obtaining information in order to use or adapt the best solution, thus allowing an improvement in the performance of the organization in terms of its products, services and processes to the level obtained by the model organisation (KAMANDE 1997). J. Czekaj adds that benchmarking is a method that allows the best results to be achieved by learning from others (CZEKAJ 1995). Therefore, benchmarking preceded by a self-examination is one of the pillars of a learning organization (MICZYŃSKA-KOWALSKA 2005) because it precedes the phase of inventing new solutions (BRILMAN 2002, KOWALCZYK 2003).

In a company, benchmarking is used most often in the area of product development. Above all, it pursues an imitation strategy for products⁵ (HAFFER 1997). The possibility of using benchmarking in developing innovative solutions is determined, to a large extent, both by the industry and the level of the development of the company which is the subject of comparative analysis.

In contrast, the concept of innovation is very popular among researchers, thus there are a lot of definitions in the literature. *Innovatis* as a Latin term means renewal, creating something new (WAWRZYŃIAK 1999). Innovation is an introduction of new products to the production or improvement of existing products, the introduction of a new or improved production technology, an application of a new method of sale or purchase, or (...) changes in the organization of production (SCHUMPETER 1960, STACHOWICZ-STANUSCH 2001). Some researchers also analyse innovation as the activity of an organization which is focused on guiding and stimulating the creativity of its employees, as well as in substantive terms, denoting a product or service that is the result of this activity. Others define it as any thought, behaviour or thing which is new i.e. qualitatively different from that existing (GRUDZEWSKI & HAJDUK 2000).

There are different approaches to classifying innovation. In this paper the claim of A.M. HJALAGER (2010)

was accepted concerning the five types of innovation in tourism: product innovation (service), process innovation, innovation in management, marketing innovation and institutional innovation. In this context it should be mentioned that due to the nature of service activities, including tourism, in the literature of the economics of services and the economics of tourism some proposals for the classification of innovation can be found which better capture the diversity of the service sector. It is worth mentioning the two most frequently cited classifications of service innovation offered by von Hertog. In the first classification he distinguishes innovation, which has its source in entities in the manufacturing sector (supplier-dominated innovation), innovation which has its source inside the company (innovation within services), innovation initiated by customers (client-led innovation), innovation assisted by other service entities (innovation through services), and innovation caused by a radical change in the environment (paradigmatic innovation). The second classification includes a new concept of service, a new level of cooperation with customers, a new system of service delivery and new technology (as cited in RAPACZ & JAREMEN 2015).

Some academic work dedicated to innovation concerns production activities while services are rarely the object of research. Not without significance is the fact that almost every service means a significantly different process of value creation, and thus it seems difficult to develop an overall coherent concept of innovation for service activities. In the case of the tourism industry, which has an exceptionally large internal diversification of services, findings presented in academic research into innovation in tourism companies is insufficient and significantly fragmented (BEDNARCZYK & NAJDA-JANOSZKA 2014). This is disadvantageous because the innovation of tourism companies plays a key role in achieving their sustainable competitive advantage. Globalization places pressure to increase the innovative activities of tourism companies not only for their survival but further growth and development (BEDNARCZYK & NAJDA-JANOSZKA 2014).

Another important issue is the fact that innovation in tourism companies is necessary for consumers, as well as their participation. Successful companies will be able to co-create their expected values with customers, and shape the tourism product together (BEDNARCZYK & NAJDA-JANOSZKA 2014).

The most commonly introduced innovation in tourism is product innovation. Product innovation is defined as the launch of a product whose technological features or purpose significantly differ from products manufactured previously or whose features have been greatly improved while, at the same time, it can provide the consumer with objectively new or

increased benefits (WISZNIEWSKI 1999). They contribute, to a large extent, to the decisions of customers (tourists) about their purchase. This kind of innovation can be created on the basis of new knowledge or technology, and can possibly be based on new ways of using previously known technology (OECD 2005). In tourism enterprises, innovation is a continuous process and a constant element in a company's systems of planning and decision-making. Innovation is just another factor of production/services for these companies (BEDNARCZYK & NAJDA-JANOSZKA 2014).

Such a broad interpretation of the concept of innovation fits perfectly with the methodological assumptions of benchmarking and allows the use of its capabilities in every area of the company. This is achieved mainly by the huge generic capacity of the method, and the continuous process of learning and acquiring knowledge and information, so valuable for innovative activities in a company and inextricably linked to the method of benchmarking. Benchmarking also allows for a quick break out of the circle of the limitations of a culture and standards of behaviour. While learning from the best experience of others, our own progress and development are accelerated, entering a higher level, and without losing time on gradual change and further training.

In airline companies, which have such a high summary innovation index, benchmarking is utilitarian, and tends to continuously track and analyze market trends, at the same time shaping the ability to acquire and process knowledge that others have developed. However, it is worth noting that benchmarking is not a method of searching for a single innovation which will temporarily improve a company. Its philosophy presupposes continuous learning from others who are better, and thus improving the organization and optimizing its operations based on original and innovative solutions.

3. THE METHODOLOGY AND RESULTS OF THE RESEARCH

The research methodology includes methods for data collection, analysis, compilation and interpretation of results (KOSTERA 2003) for the years 2010-14.

The subject was LOT Polish Airlines belonging to Star Alliance, and the scope of the study included the benchmarking measures and practices of its selected departments and their cooperation with other subjects in the process of benchmarking. This choice, which was made in a purposeful way, had been preceded by a detailed analysis of the structure and activities of the individual airline departments, and led to seven departments being used for the research.

Tab. 1. The departments and the number of employees examined

Department		No. of employees		Percentage	
Alliances and International Cooperation	International Cooperation	4	10	15.0	37
Sales		6		22.0	
Marketing Communication	Marketing and Product	4	10	15.0	37
Product and Customer Service Skills		6		22.0	
Cabin Crew	Air Staff	2	7	7.5	26
Selection and Staff Development		3		11.0	
Ground Handling		2		7.5	

Source: own research.

The following table (Table 1) specifies the names of departments and the number of employees.⁶ But because of the credibility of further comparisons and also because of the similarity of certain tasks and scopes of activities, there is a division of the seven departments into three basic groups according to the scheme specified in the table.

The creation of a group comprising 27 people, which was the result of a purposeful research sample,⁷ was conditioned by several factors, unfortunately not completely dependent on the author. First of all, the people had to work in the above-mentioned departments and use benchmarking in activities aimed at improving the quality of transport and tourism services. Second, some of the departments were not very large which resulted in few questionnaires, and thirdly, for completely incomprehensible reasons, in some departments the managers or directors decided on the number of questionnaires their personnel would fill in. The positive aspect of the whole process is that it enabled the author to carry out comprehensive and detailed research which often had an idiographic approach.⁸

Due to a varying range of duties and responsibilities in the process of benchmarking and also for the research, it was essential to divide the LOT employees surveyed into two groups including staff (59%) and managers (41%).

The research used questionnaires. The factor of occupational group membership was considered in the creation of questionnaires and surveys, thus two slightly different sets of questions were created. Both kinds of survey included questions for those staff whose responsibilities included cooperation within Star Alliance. Whereas in relation to the issue being discussed, questions asked included reasons for the use of benchmarking (the introduction of new technological solutions), areas of application of benchmarking, the type of benchmarking used, as well as the reasons for the choice of a benchmarking partner, what barriers and problems arose in the implementation of benchmarking, and if, in the framework of the alliance membership, the benefits of the application included product innovation or something else.

The research of a qualitative nature was to demonstrate how the application of benchmarking by airline staff translated into innovative offers and improvement of the quality of tourism services provided on board their aircraft. Tourism services included shipping, accommodation and leisure, catering, cultural and entertainment, information, counselling and mediation.

An analysis of, for instance, reviews in a department is presented in figures and percentages of answers to selected questions in the compared groups (these are the so-called contingency tables or cross tabulation tables). Statistical inference methods (i.e. statistical tests⁹) were used in order to assess to what extent differences in responses between the two groups reflect a certain regularity prevailing in the whole target population, and to what extent this may only be an issue of random difference. A chi-square test for independence was applied to the analysis of contingency tables.¹⁰

In a company such as the airline, the importance of activities aimed at innovation is not only a measure of success but, above all, a necessity resulting from the specifics of the industry. In addition, the type of innovation determines the nature of the product offered, which in aviation may take the form of in-kind (here: technical) or service (non-technical). However, it should be borne in mind that service activity requires a different approach because service innovation is the result of the process of change implemented in services. It is characterized by immateriality, the involvement of the human factor, the high influence of external and human factors, and non-uniformity of the process of providing the service (KRUPPER 2001).

To determine the importance of benchmarking in innovative activity, at the beginning it is worth mentioning that the introduction of new solutions was ranked seventh, with 37% of responses, among the motives for its use by the employees surveyed. The utilisation of 13 types of benchmarking was also of little use.¹¹

The choice of those areas which used benchmarking in the airline was influenced mainly by the service nature of the business, as well as the specifics of the

departments surveyed. The test results are shown in Figure 1. All the managers who were interviewed confirmed that they are constantly trying to introduce something new in their offer and they follow the changes that the market dictates. For this purpose they use benchmarking which, as a method, is very popular among the employees surveyed because all of them declared using it for this purpose.¹²

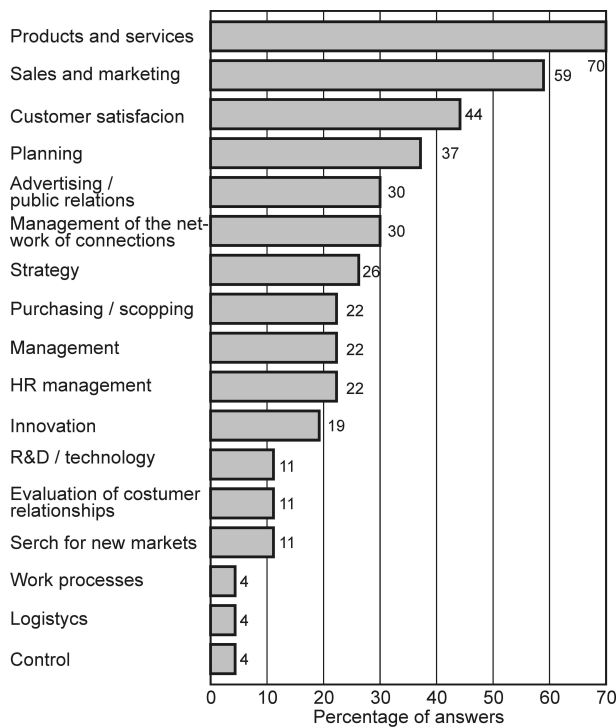


Fig. 1. Areas of application of benchmarking in the surveyed airline departments

*) The sum does not need to be 100% because any number of variants of answers could be indicated
Source: own research

Although there are more new applications of benchmarking in such areas design and the implementation of new solutions (product performance and its value perceived by the customer) (RYCHLEWSKI 1998), strongly related areas on innovation (19%) and R&D¹³ and technology (11%), are relatively low in the hierarchy. This is despite being so essential for the operation of air transport and, indirectly, the quality of services. This condition is a result of the identification of benchmarking, primarily, with competitive analysis and a standard comparison, not with the processes of continuous education and learning which are the sources of groundbreaking ideas and discoveries, and which provide added value to the method. As previously mentioned, competitive analysis, which is popular in the researched activities of PLL LOT and confused with a benchmarking analysis of the competition, means at most that the company is constantly in

the same place as the competition and not necessarily the model competition. It is desirable however that the result of the utilisation of benchmarking is a strategy of innovative leadership.

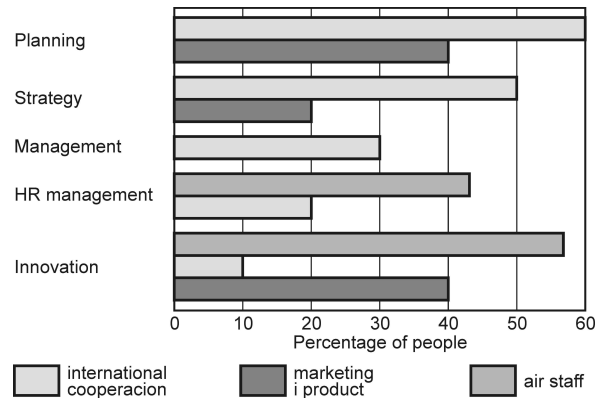


Fig. 2. Areas of application of benchmarking taking into account differences between the surveyed airline departments
Source: own research

Analyses of the areas of application of benchmarking were made taking into account the division into departments. In order to better illustrate the dissonance between the departments surveyed, Figure 2 shows the percentage indicated only for those categories which are characterized by statistically significant relationships or a figure similar to one.

An analysis using the chi-square test showed that innovation is statistically dependent ($p = 0.0769$). The area of innovation (40%) is the domain of the Marketing and Product Department, hence the assumption that benchmarking in these areas should primarily translate into a more favourable image of the airline and qualitative technological change of the product. The method was mainly used to seek out gastronomic products to be offered on board the aeroplanes, construction and appearance (aesthetics) of aircraft seats, and audio equipment. In turn, under the Alliance, benchmarking was applied mainly to the standards of onboard products (i.e. alcohol), rules of conduct for disabled and obese passengers, in-flight passenger announcements in more than two languages, and a mobile check-in.

Unfortunately this was only confined to an imitation and competitive product analysis. New products on a global scale, the so-called absolute or breakthrough innovation, were not found in the researched benchmarking activities. Only new products for this company, but already implemented in other companies, so-called duplicated innovations can be considered (STAWASZ 1999). The employees themselves often admitted that their lack of knowledge of benchmarking significantly prevented them from fully exploiting the opportunities this method offered.

The application of benchmarking in relation to innovation or organisation processes was not identified, despite the fact that the scope of tasks in the departments surveyed justified such action. In recent years both product and process innovation is the real picture of competitiveness.¹⁴ Indeed, the market leaders are those companies that can introduce a good product or service more rapidly than others and, therefore, achieve the expected return on capital. In a company such as an airline that aspect seems obvious, let alone because of the safety of passengers and increasing competition.

The reasons for these abandonings and irregularities should be seen in the lack of substantive knowledge about benchmarking among employees. Self-assessment of knowledge made by the staff only confirms this, for 19% (five) graded themselves as 'fail', more than half (15 – 56%) graded themselves as 'satisfactory', and only seven (26%), that is every fourth respondent, rated their level of knowledge as 'good'. This level of knowledge translates into a lack of correctness in application, therefore informal benchmarking is often used – by 89%, or 24 out of 27 employees surveyed. Only three (11%) reported more frequent use of formal benchmarking. This data is extremely important as in the implementation of innovation based on the methodology of benchmarking in service companies, including airlines (see GIERCZAK 2014, GIERCZAK-KORZENIOWSKA 2016), it is important to recognize the determinants of innovation. One of them, the main one, is the staff, whose skills, knowledge, commitment and openness to change, facilitate implementation within the organization. K. Gadomska-Lila proposes to capture innovative activities at every stage of the process of human resources (GADOMSKA-LILA 2011) in order to create a team and a system in which the level of innovation culture will create a real chance to become a leader in the industry.

It should be noted that the intensity of a company's innovative activity determines the choice of a particular type of benchmarking. The use of functional benchmarking is such an example which aims at looking for opportunities to improve a function carried out by the company mainly (but not exclusively) outside its own sector. Table 2 presents the subject of comparisons and analyses used by airline staff in the context of functional benchmarking.¹⁵

As can be seen from the table, R&D remains unchanged, a matter which is not discussed in the benchmarking analyses conducted by the airline staff, although this concerns an airline which is a part of one of the most innovative and developing industries.

It should be noted that functional benchmarking requires the most creativity and creative thinking, as it is also reflected in the openness of the managers or

owners to innovative ideas.¹⁶ It is very time-consuming and its effects can be achieved only after many years. It is associated with difficulties in finding the right partner and with the implementation of this form of benchmarking. For the company's solutions of a completely different character and profile must be adapted to its own conditions, needs and opportunities. The author encountered only one example of such an activity where a benchmark was a company outside the airline i.e. a travel agency. However, the comparison of certain functions and processes was of an informal nature.

Tab. 2. The type of benchmarking or the subject for comparison used in the context of functional benchmarking by airline staff

Type of benchmarking or the subject for comparison used in the context of functional benchmarking	No.	Percentage ¹⁾
Project	6	40
Logistics solutions	6	40
Marketing and sales	6	40
HR	5	33
Financial	2	13
Investment	1	7
R&D activities	0	0
Production activities	0	0

¹⁾ The sum does not need to be 100% because any number of variants of answers could be indicated.

Source: own research.

It is worth mentioning that the implementation of benchmarking in the context of membership in strategic alliances is an ideal solution to meet the difficulties related to the acquisition of knowledge from others, as well as the possibilities of cooperation in R&D. And here a perfect example of the implementation of this concept is a strategic alliance limited to joint management of R&D and production. These are formed by companies which intend to achieve economies of scale in the production of a component or to implement a stage in the production process. Therefore, it is worth emphasizing that in the implementation of innovative and technologically advanced projects a positive relationship and cooperation is extremely important, especially in the sphere of work which requires the involvement of enormous financial resources and expertise.

4. SUMMARY

Management methods including benchmarking have their share in the effort to create an innovative offer and original solutions. Although in Poland its practical utilisation differs significantly from Western Europe, it

is becoming more widely used in solving problems, setting goals, improving operations and innovation¹⁷. And even when the results of the actions taken are different from the initial assumptions and expectations, the mere fact of making a decision to implement benchmarking is a manifestation of innovative activities, because as J. BANK (1997) has said 'it is better to aim at perfection and miss than to aim at imperfection and hit.'

The results of the research conducted in the airline demonstrate a negligible use of benchmarking in the innovative activity of the company. Despite the opportunities offered by membership of one of the three major strategic alliances and the needs dictated by the nature of the industry (including rapid development, high technology, security), the lack of initiatives in the use of the method in the area of innovation and R&D are noticeable. The changes that were introduced to its offer are mainly the result of imitation and duplicated innovation, or imitation of innovation. It is difficult to consider such activities as creative and imaginative, even when the product (service) enjoys great popularity and reputation among its customers. This is an obvious connection with the state of knowledge declared by the employees surveyed and a lack of awareness that the basis of benchmarking is continuous learning and knowledge acquisition. On the positive side is the fact that benchmarking is implemented in the company's structure.

The results and conclusions presented relate to the highly specific airline industry, and because of its specificity they can contribute only to a limited extent to general conclusions. Furthermore, the time when the author conducted the research into PLL LOT, especially in the final stage, was full of many unfavourable events for the company. The airline struggled with very serious financial problems and the ordered and subsequently imported B787 Dreamliner aircraft caused technical problems. This found its reflection in a deterioration in the quality of services and the growing dissatisfaction of passengers. This already tarnished image was worsened by bad media publicity caused by the airline requesting financial support from the government. Therefore, all these and many other factors led to changes in the organizational structure of the company, which consequently resulted in redundancies, closure of some of its departments (or changes to their names), and the replacement of a number of management positions, including the President of LOT Polish Airlines.

ENDNOTES

* JEL classification codes: B21, D04, D21, D83, L23, L91, L93, O31, O32.

¹ According to the *Oslo Manual* (2005), an innovation is understood as the introduction of new or significantly improved solutions for a product (merchandise or service), process, marketing or organization within a company. Therefore, the essence of innovation is the implementation of a novelty, and in the case of a new product (merchandise or service), the implementation means its market offering. The implementation of a new process, new marketing methods or a new organization consists in their application in the current functioning of the company.

² An organisational innovation is the implementation of a new organisational method in the company's business activities (MARCISZEWSKA 2014).

³ Benchmarking roots lie in geodesy, where a benchmark was a sign made on a rock, wall or building. It served as a reference point when determining the location or height above sea level in measuring topography or ocean tides. A benchmark is also a reference point for comparisons, something that serves as the norm.

⁴ Benchmarking examples in: CH.E. BOGAN, M.J. ENGLISH (2006), CH.E. BOGAN, D. CALLAHAN (2001), E. CZYŻ-GWIAZDA (2006), M. KOSIŃSKI (2004).

⁵ It is estimated that imitation absorbs about 65% of the cost of product innovation of the pioneer, and the average time of its launch accounts for only 70% of the time needed for the development of a pioneering innovation.

⁶ Please note that the department name and the number of 'researched' employees refer to the period when survey questionnaires were distributed. This is an important issue because during a nearly 4-year partnership with the airline the names of the departments were changed along with the number of their employees, as well as the whole company structure, along with the President.

⁷ The conscious selection of statistical units, which take into account certain criteria, to be covered by research. The purposeful selection of a sample is desirable, for example, in each case when the effectiveness of specific leadership and decision-making interactions is tested.

⁸ It means conducting in-depth field research on a small sample of people. Each case is described almost separately, and the researcher tries to understand the reasons for the observed differences and similarities.

⁹ Statistical tests are used to assess whether the dependencies observed in the sample are the result of more general regularities prevailing in the whole population or just a random result. The result of a statistical test is the so called probability value (p), the low values of which indicate statistical significance of the considered relationship. Most often the following interpretation is used:

- $p \geq 0.05$ indicates no grounds to reject the null hypothesis, meaning that the tested difference, dependence, effect is not statistically significant
- $p < 0.05$ indicates a statistically significant relationship (marked with *),
- $p < 0.01$ indicates a highly significant dependence (**),
- $p < 0.001$ indicates a highly statistically significant relationship (***)

Some authors recommend adopting a more liberal criterion for recognition of the given result as statistically significant, by replacing the condition $p < 0.05$ provided: $p < 0.10$. This approach appears to be justified in the case of a small sample size, when obtaining a statistically significant result is relatively less likely (more about the idea of statistical hypothesis testing: SOKOŁOWSKI 2010, FRANCUZ & MACKIEWICZ 2007).

¹⁰ A chi-square test for independence is the most popular statistical test used to study the relationship between the two

traits measured on a nominal scale. It tests a null hypothesis that the variant occurrence of one feature is not dependent on the variant adopted for the other (the features are independent). The alternative hypothesis assumes that the characteristics are inter-related. A low p value allows a null hypothesis to be rejected and concludes the existence of dependence in the entire population between the two contemplated traits. Detailed calculation procedures can be found in many statistical books (see ACZEL 2000, STANISZ 2001).

¹¹ The type of benchmarking used: competitive (78%), product (63%), performance (63%), functional (56%), process (48%), marketing (41%), internal (37%), procedural (22%), organizational (22%), strategic (15%), project (11%), overall (7%), relational (4%).

¹² The questionnaire included questions about methods and concepts of management used by the employees and the answers included outsourcing 56%, quality management 41%, knowledge management 30%, strategic management 26%, participatory management and lean management 11%, time-based management 4%. An analysis of other questions in the survey which were related to the sources of innovative activities also indicated competitive analysis and contacts within Star Alliance.

¹³ R&D activities are one of the cornerstones of the success of the company and while looking for benchmarking partners for comparison in R&D activities attention should focus primarily on companies operating in the same sector or companies that are cooperators or could be potential cooperators. Interestingly they may be associated with a concept of benchgrafting which is the penultimate step in the use of benchmarking in R&D activities of the company. It serves as a presentation of the important role of the use of radical change as a result of the use of benchmarking.

¹⁴ For example, British Airways has compared how much time different airlines need for unloading and reloading a Boeing 747. The required information was that a Japanese airline takes 40 minutes, to get the BA crew to improve their outcome of 3 hours (WRIGHT & RACE 2004, HOLLINS & SHINKINS 2009). Among LCC another often comparable aspect is the so called block hour.

¹⁵ The analysis applies only to those people who previously declared the use of this type of benchmarking.

¹⁶ Sometimes finding a solution seems simple, but this process can be complicated and costly.

¹⁷ Owing to benchmarking several companies have achieved a significant increase in innovation (BOXWELL JR 1994, PAVITT 2005, TIDD, BESSANT, PAVITT 2005).

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Article received:
21 October 2016
Accepted:
9 December 2016