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HOW TO MEASURE TENANTS' SATISFACTION IN SCIENCE AND TECHNOLOGY PARKS? A CASE STUDY OF OFFICE RENTAL SERVICES IN POLISH STP

Abstract: Creativity and the capacity to implement innovative solutions is widely acknowledged as a competitive advantage for businesses, cities or even regions. Theoretically the role of science and technology parks (STP) should be pivotal in establishing such an advantage. One of the main services provided by STPs, which allows them to fulfil their goals, is rental of office spaces. Competition in office rental services grew in the biggest cities in Poland; therefore an important issue becomes the quality of the services provided and the satisfaction of STPs' customers. High quality office space can be certified according to the ISO 9001 standard, to obtain which it is necessary to carry out customer satisfaction surveys. The use of a Customer Satisfaction Index (CSI) allows the specification of customers' needs and their satisfaction with services provided or products purchased. The author presents the concept of CSI and shows the practical application of it using the example of office space rental services provided by one of the Polish technology parks.

Keywords: science and technology park, STPs, satisfaction, loyalty, CSI method.

JEL Classification: O39.

POMIAR SATYSFAKCJI NAJEMCÓW PARKÓW NAUKOWO-TECHNOLOGICZNYCH NA PRZYKŁADZIE USŁUG WYNAJMU POWIERZCHNI BIUROWEJ POLSKIEGO PARKU NAUKOWO-TECHNOLOGICZNEGO

Streszczenie: Zdolność do kreowania i wdrażania innowacji przyczynia się do tworzenia przewagi konkurencyjnej przedsiębiorstw, miast i całych regionów. W teorii dużą rolę w rozwoju innowacji odgrywają parki naukowo-technologiczne, które są uważane za najbardziej zaawansowaną i kompleksową formę instytucjonalną w obszarze gospodarki opartej na wiedzy. Podstawową usługą oferowaną przez nie jest wynajem powierzchni biurowej. W związku z rosnącą konkurencją na tym rynku w największych miastach Polski istotną kwestią jest jakość wynajmowanej powierzchni oraz satysfakcja klientów parków naukowo-technologicznych. Jakość powierzchni może być potwierdzona poprzez uzyskanie certyfikatu ISO 9001. Certyfikacja wymaga przeprowadzania regularnych badań satysfakcji klientów, a narzędziem wspierającym ten proces może być wskaźnik satysfakcji klienta (ang. *Customer Satisfaction Index*, CSI). Autor prezentuje koncepcję oraz metodykę badania satysfakcji klientów z wykorzystaniem powyższego narzędzia na przykładzie wynajmu powierzchni biurowej w jednym z polskich parków naukowo-technologicznych.

Introduction

Creativity and the capacity to implement innovative solutions are widely acknowledged as a competitive advantage for businesses, cities or even regions. Theoretically the role of the science and technology parks (STP) should be pivotal in establishing such an advantage. The parks are the most advanced and complete knowledge economy institutions [Felsenstein 1994; Asheim and Coenen 2005; Löfsten and Lindelöf 2005; Matusiak and Bąkowski 2008; Puślecki 2010].

The official definition of a science park is provided by the International Association of Science Parks and Areas of Innovation. A Science Park is an organization managed by specialised professionals whose main aim is to increase the wealth of its community by promoting the culture of innovation and competitiveness of its associated businesses and knowledge based institutions. To enable the achievement of these goals a Science Park manages the flow of knowledge and technology amongst universities, R&D institutions, companies and markets. It facilitates the creation and growth of innovation-based companies through incubation and spin-off processes and provides other value-added services together with high quality space

and facilities [IASP 2012]. Crucial in this definition is the provision of high quality office and laboratory space, as well as facilities because these attract potential tenants and help to keep existing customers.

After review of the literature it can be stated that not many of the science and technology parks in Poland assess tenant satisfaction. According to the data obtained from technology parks and incubators in 2014 the level of satisfaction of its clients is monitored only by 41% of incubators and 48% the science and technology parks studied [Mażewska, Osiadacz, and Tórz 2014]. However this situation has been noticed by the Polish Agency for Enterprise Development (pl. Polska Agencja Rozwoju Przedsiębiorczości, PARP) which has announced a tender to carry out customer satisfaction surveys in Polish science and technology parks. Customer satisfaction surveys are also necessary for the carrying out of the certification of service quality in accordance with the ISO 9001 standard. If the company wants to be certified it must meet certain requirements defined by the standard. From the customers' point of view and their satisfaction, the most important point of the ISO 9001 strategy is point number 8 [ISO 2013]. It refers to measurement, analysis and improvement. It does not impose a way of monitoring customer satisfaction but notes that such research must be conducted. Such research allows the control of the quality of products and services, and if needed, gives the possibility to react to the decline of quality or satisfaction. The author presents the concept of a Customer Satisfaction Index (CSI) and shows the practical application of it at one of the Polish technology parks which conducted certification on the ISO 9001 Quality Management System. The CSI method was introduced in this technology park in 2011 and from then on was conducted year by year, which is crucial to evaluate progress or decline in the satisfaction of customers. The main goal of this article is to show that the Customer Satisfaction Index is a useful tool to evaluate customer satisfaction in technology parks.

1. Science and technology parks – services provided

The Stanford Research Park, established in 1951 at Stanford University, is considered the first technology park ever. The number of similar organizations grew notably in 1980's and 1990's. It is estimated that some 700 technology parks operate worldwide these days with half of them established in the 21st century [IASP 2012].

The parks founded towards the end of the 20th century were intended as the stimuli for reindustrialisation, regional growth and tenant synergy

platforms [Castells and Hall 1994]. However no information seems to be available in literature that would explicitly capture the economic significance of the technology parks. Whilst some authors prove that the parks provide excellent opportunities for incubating innovations [Colombo and Delmastro 2002; Sutherland 2005; Lalkaka 2003], many question the purpose of the parks [Massey, Quintas, and Wield 1992; Bakouros, Mardas, and Varsakelis 2002; Hansson, Husted, and Vestegaard 2005].

The first science and technology park in Poland – Poznań Science and Technology Park (Poznański Park Naukowo-Technologiczny, PPNT) – was established in 1995. The number of parks would not then grow significantly until 2004, the year of the country's EU accession. From then on funds became available which resulted in a number of new park projects.

Public or private entities can establish technology parks. Public-private partnership has become an increasingly frequent formula in creating parks in the EU Member States [Pelle, Bober, and Lis 2010]. Monitoring the performance of technology parks is not easy due to the variety of the legal forms and financing schemes in the parks. It is normal for a park that is public-funded that the generation of profit is not its chief target. However for private parks to achieve their statutory objectives, including enhancing entrepreneurship and knowledge transfer, it is a prerequisite to generate profit. The aims of the parks can be of a purely economic character. To evaluate these ROE and ROI measures could be used. There are also social, relational and research-oriented aims and here managers could study the number of patents, staff quality and satisfaction of tenants, which is the subject of this article. Many organizations and government institutions created their own definition of a science and technology park, Science Park or technology park. Regardless of the definition used, park initiatives have certain common characteristics mentioned by Almeida, Santos, and Silva [2009], which are listed in Table 1.

In most definitions [IASP 2012; UKSPA 2013; AURP 2013; UNESCO 2013] there are also similar tasks which are to be found in science and technology parks which were gathered by the Polish Agency for Enterprise Development:

- incubating start-ups,
- provision of business services,
- rental of office, production and laboratory space,
- research services,
- services in the field of technology transfer,
- management of investment areas,
- education and training.

Table 1. Synthesis of the most important features regarding the concept of science parks

Criteria	Features
Goal	Enhancing knowledge transfer from universities to the companies
Infrastructure	High quality, low building construction ratio, coupled with a wide range of business support services
Links	University or an adequate scale R&D centre must be formally committed to collaborate with the science park and firms (commonly universities should have an important role in the science park's management)
Access	Restricted to knowledge intensive activities, with possible sector preferences

Source: [Almeida, Santos, and Silva 2009].

The above mentioned objectives are reflected in the services provided by science and technology parks International Association of Science Parks and Areas of Innovation (IASP) periodically carried out a survey amongst its members, which is designed to study the current situation of STPs. Recent research has been carried out in 2012 on a sample of 119 parks in 38 countries, including Poland. Data were collected using an on-line questionnaire, which consisted of 58 questions (54 closed questions, 4 open-ended questions) divided into 9 sections. One of these questions concerned services provided by scientific and technological parks and the results are shown in Table 2.

Table 2. Science and technology park services

Services	Percentage of parks which provide certain service
Meeting rooms	94.1
Auditorium/Conference room	92.4
Networking (internal)	86.6
Cafeteria	85.7
Networking (external)	83.2
Assistance with other venture/seed capital funds	80.7
Business development/Support services	79.8
Management support services (consultancy etc.)	76.5
Catering	73.1
Security surveillance (24 h)	71.4

Table 2 – cont.

Services	Percentage of parks which provide certain service
Electronic security systems in common areas	69.7
Training courses	68.9
IP consultancy, Patent attorneys	68.1
Public transportation	65.5
Accounting, legal and related services	63.9
Lab facilities/Lab equipment for rent	63.9
Event planning	60.5
Public/investor relations	59.7
Marketing and promotions	58.0
Video-conference room	56.3
Bank office/Banking services	49.6
Sports' facilities	46.2
Residents' development	42.0
Secretarial services	41.2
Assistance with corporate relocation	36.1
Own venture or seed capital funds	31.9
Kindergarten	27.7
Medical services	26.9
Golf facilities	23.5
Hotel	23.5
Shops, mall	21.0
Travel agency	18.5
Residential area (houses, apartments)	17.6
Other	5.8

Source: [IASP 2012].

As can be seen a lot of services refer to the rental of office and laboratory spaces, meeting or conference rooms. For managers it is crucial therefore to maintain customer satisfaction that they do not want to change the service provider. This aspect is important because of growing competition, both in terms of new technology and science parks, as well as standard office buildings. The best example is the city of Poznań, where already five institutions of this type exist. The question is how to measure the satisfaction and how to retain existing customers?

2. Satisfaction measurement methods – the CSI concept

Philip Kotler defines satisfaction as a pleasure or disappointment resulting from the comparison of the product (or a result of its actions) with expectations. If the product does not meet expectations the customer is dissatisfied. If the product meets expectations the customer is satisfied. If the product exceeds expectations the customer is highly satisfied or delighted [Kotler 2005]. Spring and MacKenzie [1996] have prepared their own model in which they considered satisfaction as a result of the client's needs, expectations and experiences with the product after using the product. Just as in the previous definition two crucial issues can be found: needs and expectations. Both components have a significant impact on the level of satisfaction.

The importance of satisfaction grew with the development of various marketing concepts. The best example of the growing importance of satisfaction is the comparison of two concepts: the sales concept and the marketing concept which emerged in the mid-1950s [Kotler 2005]. For the first time companies focused on customers and their needs whilst creating products and services. That was the moment when satisfaction started to gain importance. In the sales concept starting point was the company, the purpose was the products and the result was profit through increased sales. In the case of the marketing concept the starting point was the market, the purpose was to meet the customers' needs and the result was profit through customer satisfaction.

Kotler raises the arguments of marketing specialists who argue the use of the concept of marketing. They are as follows:

- the assets of a company have little value without customers,
- the crucial task for companies is to attract and retain customers,
- companies gain customers through a better, more competitive offer,
- the role of marketing is to create a better offer and deliver satisfaction to customers,
- customer satisfaction affects the activities of various departments of the company,
- Marketing needs a readiness to cooperate in providing customer satisfaction from other departments.

Many theories of management in recent years such as: Business-Reengineering, Kaizen, Lean Management or Total-Quality-Management put customer satisfaction as a central factor in the success of the company. The effectiveness is related to the fact that companies first put for-

ward their company's strategy and its customer satisfaction. Such a solution avoids unnecessary investment in maintaining the quality of factors that do not have relevance to a particular group of consumers. It seems that somehow the universal regularity should be that companies orient their activities according to the needs, wishes and visions of their clients [Pawłowska and Strychalska-Rudzewicz 2005]. Customer satisfaction built through quality of products and services is also reflected in the Quality Management System named ISO 9001. Certification of office space rental service was the reason why the technology park studied decided to analyse customer's satisfaction.

When carrying out customer satisfaction surveys it is important to answer the question, what will be the best indicator in this particular case, for example, in the case of rental of office space? There are many methods of investigating the level of customer satisfaction. There are both quantitative and qualitative methods [Waśkowski 2002; Szymanski and Henard 2001]. The most commonly used are:

- analysis of sales,
- analysis of the loss of customers,
- analysis of complaints,
- Mystery shopper test.

Very useful are also models developed by specialized organizations dealing with quality and satisfaction research. The Table 3 lists the most common indicators used to assess satisfaction.

Table 3. The main indicators of customer satisfaction evaluation

Indicator	Indicator characteristic
Customer Satisfaction Index (CSI)	Allows the analysis of customer satisfaction in terms of each relevant characteristic of customer satisfaction and total product/service. Measures the expectations of customers and their satisfaction. Uses a weighting system for the assessment of attributes (criteria)
American Customer Satisfaction Index (ASCI)	The American satisfaction index was first published in 1994. It is a macro-level indicator which measures consumer satisfaction with the quality of the products and services they use, both domestic and imported
Customer Relationship Management (CRM)	Strategy where the main objective is to build long-term, positive relationships with customers. Its basis is the correct definition of customer value, customer value creation, reaching out to selected customers, shaping their expectations, providing customers with the expected value

Source: [EMAR 2008].

In Europe the most commonly used measure is Customer Satisfaction Index [Hill and Alexander 2003]. The most important feature of this indicator is that it measures both the importance of the individual components that affect satisfaction as well as the level of satisfaction. The CSI indicator was also used to test the technology park studied. The CSI research consists of an exploratory and a diagnostic phase.

The exploratory phase was carried out to identify the attributes of customer satisfaction. Taking into account the fact that office rental service is not too complex it was easy to identify key factors that affect customer satisfaction. For this purpose interviews were conducted with people from the administration of the technology park, which is responsible for lease. In addition an interview was conducted with the person from technology park management team, who was also an academic researcher, who deals with the issue of customer loyalty and brand building. After the initial determination of measures the author carried out a pilot trial with three tenants of the chosen STP. This made it possible to construct the final questionnaire and on this basis the characteristics to which customers pay greatest attention were defined. They were:

- speed of solving reported cases,
- transparency of received invoices,
- the quality of the office space leased,
- technical equipment of offices,
- cleaning service,
- the presence of the reception in the office building,
- the presence of a bistro in the office building.

The second step was to conduct a survey amongst the tenants of the chosen technology park, which in accordance to the concept of Customer Satisfaction Index allowed assessment of the validity of individual attributes for customers; 39 questionnaires were distributed and 32 were collected back.

In the diagnostic phase measurement of customer satisfaction with the abovementioned services was carried out. For this purpose a questionnaire was used which combined with the results of the exploratory phase allowed the identification of a Customer Satisfaction Index.

A survey of the validity of the individual elements consisted of two parts. The first concerned determining how important for respondents are the elements associated with running a business in the park and the other concerned issues of renting space. In the first part tenants were asked to answer 5 closed and in the second part 6 closed questions. In the construc-

tion of the questionnaire the 7-step Likert scale was used [Sagan 2003]. Number 1 was assigned to the statement “in general invalid” whilst 7 means “very important”.

The second survey was divided into three sections:

- lease,
- technical equipment and service,
- administration.

The survey consisted of 16 questions, of which 14 were closed and 2 were open-ended questions. Again most of the questions in the Likert scale were used. This time, however, the value of 1 was assigned to the statement “strongly dissatisfied” and the number 7 “definitely satisfied”. Open-ended questions related to the functioning of the suggestions related to the administration department.

Based on the surveys a CSI was calculated which allowed the creation of a diagram showing which parts need improvement and which meet customer expectations.

3. Research results – example of a technology park

In order to fully assess the level of satisfaction the average rate of validity with average rate of satisfaction must be compared. The analysis was conducted with seven pre-defined attributes which are presented in Table 4 below. The survey of validity allowed the assessment of the average importance. To determine the weight, the average importance of each attribute was divided by the sum of the average ratings of importance. The weighted score is the product of the average satisfaction and the specific weight of each attribute. A satisfaction index for the studied attributes was also calculated, which represents the Customer Satisfaction Index. It would reach 100% with a weighted average 7 (due to the use of 7-point Likert scale).

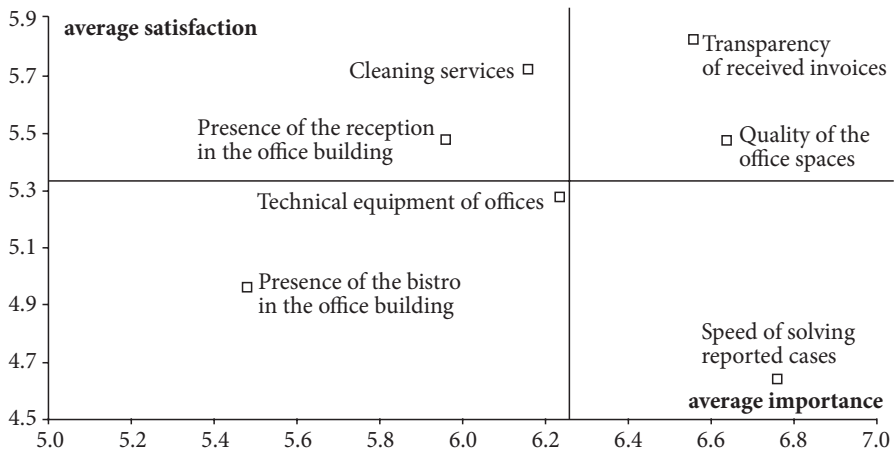
As can be seen from the summary (Table 4) the overall satisfaction rate is 76.35% which is a high score. It can therefore be concluded that the seven attributes that have the greatest importance to customers satisfy them in 76% of the cases. Unfortunately for management in the year 2012 CSI was 80.00% and in 2011 84.85% so a decreasing trend can be observed [Staszaków 2013].

The diagram specifies a group of factors that need to be improved as well as those that bring significant benefits to the STP. It takes into account the evaluation of the validity on the horizontal axis, and the assessment

Table 4. Average validity and customer satisfaction

Attribute	Average importance	Weight (%)	Average satisfaction	Weighted score
Speed of solving reported cases	6.76	15.43	4.65	0.72
Quality of the office spaces	6.64	15.16	5.48	0.83
Technical equipment of offices	6.24	14.25	5.28	0.75
Transparency of received invoices	6.56	14.98	5.83	0.87
Cleaning services	6.16	14.06	5.72	0.80
Presence of the reception in the office building	5.96	13.61	5.48	0.75
Presence of the bistro in the office building	5.48	12.51	4.96	0.62
Weighted average				5.34
Customer Satisfaction Index (%)				76.35

Source: own research.

**Figure 1. Diagram importance-satisfaction**

Source: Own research

of satisfaction on the vertical axis. Lines which divide scheme are average ratings of importance and satisfaction of all appropriate previously selected factors.

According to the methodology of CSI managers of the STP selected should first focus on the elements that are located in the right lower quarter – the speed of reported problem solving. Those are elements where the level of importance significantly exceeded the level of satisfaction.

It is recommended to consider elements in the lower left quarter as they are of below average satisfaction, but at the same time have less validity than the average. In this case these are the technical equipment of the offices and the presence of a bistro in the office building.

The top half concerns aspects that exceed the average level of satisfaction. The left upper quarter relates to items that are not as important to customers as they are fully satisfied by the company's offer. These services are cleaning and presence of a reception in an office building.

The right upper quarter are factors where the rate should be maintained at the current level as these are the elements of high importance for the customer and which are also highly rated in terms of satisfaction. These are the transparency of invoices received and the quality of office spaces.

Conclusions

An increasing awareness of customers, both in the B2B and B2C market requires a greater commitment and positive attitude to the needs of customers from companies. It is cheaper to keep a customer than to acquire a new one. Monitoring customer satisfaction allows the retention of customers and to obtain new ones, and it is advisable for any business or industry. Customer Satisfaction Index can be used by managers of STPs or specialized agencies (such as the Polish Agency for Enterprise Development), not only to assess customer satisfaction with the lease of office spaces but also other key services offered by the parks. The author assessed only office space rental services because it was a subject of certification in the chosen STP. Lease is one of the key services that allow the development of companies within the park, their cooperation, networking and new product development, which in turn, has an impact on the achievement of other objectives of science and technology parks – an increase in the welfare of society, creating new jobs, transfer of knowledge and technology [Wach 2005]. Regular satisfaction surveys are also required by the ISO 9001 Quality Management System. The article has demonstrated that a Customer Satisfaction Index is a tool that easily allows the identification of the most important characteristics of a product or service, as well as evaluating the characteristics of satisfaction surveys. The graphical presentation of the results clearly shows which elements should be improved, and which should be maintained at the current level. Customer Satisfaction Index is a versatile tool that can be used in both the B2B and B2C markets. Regardless

of whether managers use the Customer Satisfaction Index method, or any other measure, research should be carried out regularly to see if managers could improve weaknesses in their firms' offer.

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