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## Effectiveness University-Based Special Purpose Entities in the Context of Stakeholder Relationship Management Including Value Creation for Stakeholders

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### **Abstract:**

**Purpose:** The purpose of this article is to explore the importance of managing relationships with stakeholders of university-based special purpose entities, taking into account the creation of expected values for them, in improving the effectiveness of these entities.

**Design/Methodology/Approach:** The quantitative research results using a questionnaire survey conducted among managers of university-based special purpose entities in Poland are presented. The data obtained by means of a survey questionnaire were subjected to statistical analysis using non-parametric methods. This made it possible to verify the hypothesis and carry out inference.

**Findings:** Based on the collected research material and the analyses carried out, it was proven that stakeholder relationship management, taking into account value creation for stakeholders, is positively related to the effectiveness of university-based special purpose entities. University-based special purpose entities characterised by distinctive effectiveness are aware of the impact of their key stakeholders on the activities of the SPE, try to know the expectations of different stakeholders towards the SPE, take into account the consequences of not meeting the expectations of different stakeholders, and contact researchers more often.

**Practical Implications:** The article attempts to clarify the untapped potential of SPEs for the commercialisation of research results, which should interest not only SPE managers, but also representatives of the authorities of scientific entities setting up SPEs. Developing a set of effectiveness measures will facilitate decision-making regarding the creation or retention of university-based special purpose entities by indicating their role in the innovation ecosystem and identifying their contribution to the university's development and collaboration with the business community. Adequate measures will allow managers of university-based special purpose entities to demonstrate to their superiors the effects of their work and help them better manage their relationship with the university.

**Originality/Value:** The article fills a research gap in the effectiveness of university-based special purpose entities, particularly concerning the management of stakeholder relations and the creation of expected value for them.

**Keywords:** University-based special purpose entities (SPE), stakeholders theory, commercialization of research results.

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## 1. Introduction

Commercialisation of research results is an important process for increasing the level of innovation at regional and national levels (Bengoa *et al.*, 2021), as it demonstrates cooperation between science and business. Despite annual progress, Poland ranks last in innovation rankings against European countries, e.g., The Global Innovation Index (2024), European Innovation Scoreboard (2024). The intensity of the links between science and business seems to be necessary to narrow the gap in this aspect and become a country with a competitive and innovative economy (Act of 9 November, 2017; Act of 20 July, 2018).

In highly innovative countries, structures responsible for technology transfer and commercialisation of research results have already been established and improved since the 1980s (Radło *et al.*, 2020; Jefferson *et al.*, 2017). Such entities include, for example, the Office of Technology Licensing at Stanford University (<https://otl.stanford.edu/>) or Oxford University Innovation at Oxford University (<https://innovation.ox.ac.uk/>), which manage the intellectual property assets of the university by which they were created.

In Poland, since 2011, it has been possible for universities and research institutes to create special purpose entities (SPEs) to commercialise research results, in particular, to create and acquire shares in academic companies (spin-offs). Following the good practices of the United States or the United Kingdom, these companies have gained organisational and legal independence from their parent university.

These solutions were intended to positively impact both the quantity and quality of cooperation between academia and business. However, this is not the case. Previous research (NIK, 2018; NCBiR, 2016) and own observations show that SPEs have great potential for commercialisation, but face many barriers to dynamic development. One of the problems cited is the difficulty in shaping relationships

with stakeholders or measuring performance in the context of stakeholder value creation.

The SPE is a kind of link between the scientist-creator and the entrepreneur, which obliges it to find its way in the business environment, but also to understand the conditions of the scientific environment perfectly. The literature, within the framework of stakeholder theory, emphasises the need to consciously create value for a wide range of stakeholders and shape relationships with the environment (Freeman *et al.*, 2020; Tantalo and Priem 2016).

Taking into account the specificity of the functioning of SPEs, their untapped potential, the scarcity of research on the management of SPEs (Mikiewicz, 2018; Kardas, 2016; Szulczewska-Remi, 2016) and the assumptions of stakeholder theory in the context of the creation of expected values, the following research question was defined, what is the importance of the management of relations with SPEs' stakeholders taking into account the creation of desired values for them in improving the efficiency of the functioning of these companies?

It was hypothesised that stakeholder relationship management with consideration of value creation for stakeholders has a positive relationship with the effectiveness of SPEs. The paper presents quantitative research results using a survey of 2022 SPE managers in Poland.

## **2. Literature Review**

### **2.1 University-Based Special Purpose Entities as a Tool for Commercialisation**

Article 149 of the Act on Higher Education and Science (Act of 20 July, 2018) allows universities to establish capital companies called university-based special purpose entities (SPEs) to take up or acquire shares in companies established to commercialise research results.

In this way, the legislator has reserved the possibility of carrying out indirect commercialisation processes (academic entrepreneurship) to specially established SPEs. The transfer of indirect commercialisation tools to universities is part of a broader global trend related to the increased emphasis on the commercialisation of scientific results through academic entrepreneurship, for which Technology Transfer Offices in various organisational forms are organised (Jevnaker and Misganaw, 2022).

The statutory changes introduced in 2018 have resulted in a rapid increase in the number of universities, colleges and research institutes establishing SPEs, while those that established their companies earlier are adapting their SPE agreements to meet the requirements of the current law.

In 2014, on a grass-roots initiative, the Agreement Special Purpose Entities (PSC) (<https://www.psc.pl/>) was established to integrate the efforts of the Polish scientific community for more effective indirect commercialisation and cooperation with business. Currently, the PSC associates 34 SPEs; these are not all the SPEs established in Poland, but certainly all those active in technology transfer.

As the importance of SPEs increased, the first scientific studies on the subject began to appear. Although the Act modelled the assumptions concerning SPEs on the Anglo-Saxon technology transfer model, the co-existence of two organisational forms of technology transfer at universities should be considered in the Polish specificity. The basic units dealing with cooperation with business are still technology transfer centres (CTTs), established in most cases as organisational units within the university structure (Konopka-Cupiał, 2020).

In parallel, universities have the right to establish Academic Business Incubators to promote academic entrepreneurship conducted by research staff and students, but not necessarily aimed at technology transfer and commercialisation of research results. Together, these entities form an ecosystem of innovation and entrepreneurship, crucial for the emergence and development of spin-offs (Cerver-Romero, Mohedano-Suanes, and Pardo-del-Val, 2022, p. 672; Odei and Novak, 2023).

Both types of entities have a much longer tradition of functioning, with the consequence that they are better recognised as subjects of management and evaluation. SPEs are still undiscovered in this respect, and significant discussions are taking place around SPEs in the legal, financial and governance areas. The peculiarities of SPEs, which universities may solely own, introduce some turbulence into these entities.

The manager of an SPE, if he or she comes from a business background, clashes with the bureaucratic reality of universities, if he or she comes from an academic background, it is more difficult for him or her to establish relations with the business community. The perception of SPEs as business units imposes numerous administrative responsibilities and the lack of stable funding hinders staff development. The list of challenges is not closed and concerns some other areas, such as communication with stakeholders from science and business or the possibility of participating in grant programmes at regional and central levels (Szarek, 2023).

The critical tasks of SPEs include indirect commercialisation through the creation and development of spin-offs. However, SPEs may, in parallel, conduct direct commercialisation in the form of licensing or selling intellectual property rights created as a result of research work carried out at universities, making research results available to business entities on other terms, and conducting their own research and implementation projects financed from their own funds or external sources (Spyra and Stanislawska-Kloc, 2019).

In this way, they complement the offer of universities in terms of cooperation with business. However, considering the dominant function of SPEs, i.e., establishing and supporting the development of spin-offs, SPEs influence the development of academic entrepreneurship, the growth of innovation in the economy and the intensification of cooperation with the socio-business environment. Spin-offs, in turn, are a tool to support processes of commercialisation of scientific results, especially in the development phase, when financing of further work by the university or obtaining funds by the university from external sources - private or public - becomes impossible.

This is because the funding of RandD work has been largely redirected to economic entities, which are precisely the spin-offs. A second dimension of commercialisation through spin-offs should also be taken into account: the co-owners of these companies are the creators-scientists who can continue to work on the development of their ideas-innovations, enhancing both their scientific and business competence (Cantner *et al.*, 2024). This supports the development of scientific staff and strengthens cooperation with business (Li, Yang, and Cai, 2022).

The learning process is supported by business actors interacting with scientists, enabling the complementarity of knowledge necessary to run the spin-off. Critical in this context is the analysis of the distance between actors in the system and its impact on the innovation and sustainability of the project, what Öberg and Grundström call actor-type distance (Öberg and Grundstrom, 2024).

The conditions described above conclude that the hopes placed in SPEs in the Polish innovation ecosystem have been achieved. However, HEIs are still discussing the advisability and rationality of setting up new SPEs and measuring the effectiveness of those already in place.

## **2.2 Effectiveness University-Based Special Purpose Entities**

Various definitions of effectiveness and ways of measuring it can be observed in the literature. This is due to the multidimensionality and wide range of meanings (mainly by semantics) of the concept of effectiveness (Bielski, 2001). This thesis adopts an approach to efficiency equated with effectiveness, and therefore from the perspective of strategy implementation and set goals (Waśniewski, 2018; Skrzypek, 2002).

This is consistent with the stakeholder concept, as the organisation sets goals in response to stakeholder expectations. Each stakeholder then assesses the organisation's effectiveness based on individual criteria (Bratnicki and Kulikowska-Pawlak, 2013), which are derived from the extent to which their expectations are met by the organisation (Langrafe *et al.*, 2020).

In the literature to date, the effectiveness of the SPE has not been clearly defined. There are also no standard measures for the commercialisation process, which makes it all the more difficult to assess the effectiveness of SPE. Measuring the effectiveness of the SPE should be linked to the objectives of commercialisation of research results and, more broadly, to the process of technology transfer from university to industry. In line with the SPE's purposeful nature, the domain of its activities is indirect commercialisation, so the primary measures should be oriented towards the quantity and quality of activities related to the creation and maintenance of spin-offs.

The National Centre for Research and Development (NCBiR, 2016) proposes the following performance measures for SPEs:

- the value of the technologies at the SPE's disposal,
- the number of spin-offs created in which the SPE has a stake,
  - the number of spin-offs with an external shareholder,
  - the number of spin-offs self-financing their activities,
- the number of pre-existing spin-offs in which the SPE has transferred shares,
- the number of spin-offs liquidated/suspended,
- the number of active spin-offs (demonstrating activity in the form of costs/income from activities),
- the number of established spin-offs that generated revenue in a given year,
- amount of revenue (dividends) from spin-offs in which the SPE has an interest,
- the number of spin-offs established with the participation of an external investor,
- amount of private funds involved in spin-offs through the SPE,
- the number and value of licences (licence agreements) sold,
- amount of revenue from the sale of licences,
- amount of revenue from research (e.g. consultancy, expertise),
- ability to self-finance activities (advantage of revenues over costs),
- the number of meetings held with scientists of the home unit,
- the percentage of researchers from the home unit that marketed their invention
- the number of meetings held with business representatives,
- the number and value of signed contracts with business representatives.

The above measures, in addition to indirect commercialisation, also include the measurement of results concerning the effectiveness of the SPE in terms of direct commercialisation and, above all, testify to the activity of the SPE in the area of cooperation between science and business.

In addition, The National Centre for Research and Development (NCBiR, 2016) also defines measures for assessing the SPE's potential for commercialisation, dividing

them into a set of metrics characterising the SPE's organisational condition (e.g. competence of the SPE's staff, access to the technological resources of the parent entity and their potential for commercialisation) and a set of metrics indicating the potential for RandD collaboration (number of projects carried out in collaboration with other entities, number of meetings with potential partners). An interesting group of measures are those relating to the relationship of the SPE with the parent entity (which established the SPE) and scientists from that entity (e.g. value of financial support from the parent entity, value of financial obligations to the parent entity e.g. for renting premises, level of interest of scientists in the activities of the SPE).

From the point of view of the home unit, the effectiveness of the SPE can be measured by the implementation and fulfilment of the third mission of the university. This is because the SPE fosters the development of academic entrepreneurship and the practical use of research results. On the other hand, it is academic entrepreneurship that is crucial in the creation of spin offs, as the greater the research activity of the university, the greater the number of technologies to be exploited and implemented in the market (Corsi and Prencipe, 2016).

From the point of view of the owner, the effectiveness of SPE can be measured through the prism of implementing and fulfilling the third mission of the university. SPE favors the development of academic entrepreneurship and the practical use of research results. On the other hand, academic entrepreneurship is of key importance in creating spin-off companies, because the greater the scope of the university's research activities and activity in this area, the greater the number of technologies to be used and implemented on the market. (Corsi and Prencipe, 2016).

PSC-affiliated companies have established 241 spin-offs to date. The SPEs have raised over PLN 110 million from investors for this purpose and the spin-offs have secured a further PLN 160 million from research grants. In addition, the activities of SPEs mean that several hundred commissioned research are carried out annually for companies and public administration units (<https://www.psc.pl/>).

The importance of the SPEs associated with the PSC for the Polish innovation ecosystem may also be evidenced by the fact that the founding universities employ more than 42,000 scientists and educate more than 400,000 students. The statistics presented in the summary clearly indicate the exceptional potential of SPEs in Poland in shaping an effective innovation ecosystem, especially since the dynamic development of this activity may have occurred relatively recently.

### **2.3 Stakeholder Theory as a Tool for Creating Expected Stakeholder Value**

The stakeholder perspective is based on the assumption that an organisation serves a range of stakeholders who influence and/or are influenced by the organisation (Freeman, 1984), and therefore the goal of the organisation is to create value for

different stakeholder groups (Hall *et al.*, 2015) Among other things, the development of an organisation depends on creating expected value for a wide range of stakeholders (Tantalo and Priem, 2016; Clarkson, 1995).

Due to limited resources (tangible and intangible), managers need a selective approach to meeting stakeholder expectations (Aluchna *et al.*, 2022; Agle *et al.*, 1999), in which they identify key stakeholders and for them the delivery of expected value is a priority task (Mitchell *et al.*, 2011). Key stakeholders will be those entities or groups that are essential to the survival of the organisation and have the greatest impact on the organisation (on the objectives pursued by the organisation) (Tantalo, Priem, 2016; Mitchell *et al.*, 1997).

The basis for building relationships with stakeholders is mutual expectations (Austen and Czakon, 2012). Therefore, an organisation should seek to know the expectations of its stakeholders and consider the consequences of not meeting these expectations (Vidal *et al.*, 2016). This is particularly useful in setting priorities and key stakeholders for the further development of the organisation.

Stakeholder relationship management, in relation to stakeholder theory, is about managerial decision-making regarding the identification of key stakeholders and their expectations and, consequently, the appropriate allocation of resources and the conscious shaping of stakeholder relationships aimed at delivering desired stakeholder value (Langrafe *et al.*, 2020; Freeman, 2017; Vidal *et al.*, 2015).

Appropriate resource allocation involves recognising and incorporating stakeholders' expectations, particularly key stakeholders, into the organisation's activities. Conversely, the conscious shaping of stakeholder relationships should include an ongoing dialogue with stakeholders. This makes it possible to update the expectations of different stakeholders (expectations change over time) and obtain feedback on the value delivered (Langrafe *et al.*, 2020). The manager's activity should aim to provide the desired value as much as possible in line with stakeholder expectations (Freeman, 2017).

### **3. Research Methodology**

The survey subjects are SPEs (universities and research institutes) operating in 2022 in Poland. There is no publicly available register of SPEs, so for the purposes of the study, a database of SPEs was independently created, where 43 entities were identified. This number was adjusted for SPEs in liquidation and SPEs not showing activity. Ultimately, 33 SPEs were invited to the survey, of which 21 completed survey questionnaires were received (64%).

The following research question was posed: what is the importance of stakeholder value management of SPEs in improving the efficiency of these companies? A

hypothesis was defined: stakeholder relationship management with a focus on value creation for stakeholders has a positive relationship with the effectiveness of SPEs.

Literature studies and an examination of secondary documents concerning SPEs preceded the results of the quantitative study presented in this paper. The financial and content reports of the SPEs from 2019-2021, made available by the Minister of Justice in Poland, were analysed. The quantitative study was a census in which managers from all actively operating SPEs in 2022 Poland were invited to complete a questionnaire. The survey questionnaire was available and completed on paper (PAPI) and online (CAWI).

The questionnaire included open-ended (3 questions) and closed-ended (6 questions) questions and a metric. In the close-ended questions, a cafeteria of answers was used, allowing the respondent to add his or her own answer, which was not included in the proposed list. The second type of close-ended questions was based on a rating scale.

The results obtained were statistically analysed using the non-parametric Mann-Whitney U test. This test is appropriate for the analysis of qualitative or ordinal variables and groups of small size (Rabiej, 2012). Its purpose is to compare two independent groups with each other. In this way, SPEs characterised by distinctive effectiveness are compared with those whose effectiveness is at a lower level.

Then, conclusions were made based on the collected survey material and the statistical analysis carried out. The survey made it possible to identify the key stakeholders of the SPE, the expectations placed on the SPE by the stakeholders, and the managers' approach to take into account the stakeholders' expectations in their decisions. In this paper, due to the volume limitations of the article, an excerpt of the survey results is presented.

#### **4. Research Results**

The identification of key stakeholders of the SPE took place in two ways. Firstly, in the form of a closed-ended question, respondents rated the impact of each stakeholder on the operation of the SPE on a scale from 1 (no impact) to 5 (very high impact).

The proposed list consisted of 13 entities (defined based on literature studies and secondary documents on SPEs). Respondents were allowed to add their suggestions, which none of the respondents used. Table 1 shows each stakeholder's impact on the SPE's operation.

Secondly, respondents identified key stakeholders within the open question of the survey questionnaire, which, according to the results, include: entrepreneurs, companies and business partners (17 indications), parent unit authorities (16

indications) and researchers (11 indications). About the remaining responses, the above three accounted for 77% of the indications. Employees of the SPE were only mentioned twice as key stakeholders, which may be due to the fact that nearly half of the respondents do not employ employees (contract of employment).

**Table 1.** *Impact of stakeholders on the SPE*

| Stakeholders                                          | average | dominant |
|-------------------------------------------------------|---------|----------|
| Employees of the SPE                                  | 4,25    | 5        |
| Entrepreneurs, companies, business partners           | 3,90    | 4        |
| Researchers                                           | 3,71    | 5        |
| University authorities (senate, rector)               | 3,57    | 5        |
| Regional grant-giving institutions                    | 3,14    | 4        |
| Technology transfer centre from the parent university | 3,05    | 3        |
| National grant-giving institutions                    | 3,05    | 3        |
| Other SPE, PSC                                        | 2,81    | 3        |
| Supervisory board SPE                                 | 2,74    | 3        |
| Investors, investment funds                           | 2,48    | 2        |
| Local community                                       | 2,11    | 1        |
| Media                                                 | 2,10    | 2        |
| Controlling government institutions                   | 1,95    | 2        |

**Source:** Own study.

Respondents on a five-point scale (yes, rather yes, hard to say, rather no, no) rated the statements: (1) I take into account the consequences of not meeting the expectations of the different stakeholders, (2) I try to find out the expectations of the different stakeholders towards the SPE. 81% of respondents try to get to know the expectations of their stakeholders (38% 'yes', 43% 'rather yes'), and 91% (29% 'yes', 62% 'rather yes') of respondents declare that they take into account the consequences of not meeting the expectations of the different actors.

Based on data from the SPE effectiveness questionnaire (from the metric) and data from the SPEs' financial statements, an SPE effectiveness index was created, consisting of the following items:

- average ROA from 2019-2021,
- average asset turnover value from 2019-2021,
- number of spin-offs created between 2019 and 2021,
- number of researchers with whom the SPE collaborated between 2019 and 2021,
- number of companies with which the SPE collaborated between 2019 and 2021,
- number of ongoing grants between 2019 and 2021.

These measures show, on the one hand, the financial effectiveness of the SPE (ROA, asset turnover) and, on the other hand, the effectiveness of the commercialisation

activities undertaken (number of spin-offs and grants, collaborating researchers and companies). Considering the values of the above six performance indicators, the SPEs were ranked within each of them. The results of the ranking of all indicators were then summed up to form the SPE effectiveness index in this study (SPE effectiveness).

To confirm or falsify the hypothesis adopted in the study, the respondents - SPEs in terms of effectiveness index were divided into two groups: distinctive and others. The division into two groups was determined at the point of the average SPE effectiveness index, 71.33. The first group - distinctive, has 11 SPEs (values above the average SPE effectiveness index), while the second group - others - has 10 SPEs (values below the average SPE effectiveness index). Table 2 shows the effectiveness division of the SPEs used.

**Table 2.** Classification of surveyed SPEs into two groups in terms of effectiveness index

| Respondent | SPE effectiveness index | Distinctive /others |
|------------|-------------------------|---------------------|
| 10SC       | 111                     | distinctive         |
| 6SC        | 96                      | distinctive         |
| 4SC        | 93                      | distinctive         |
| 13SC       | 92                      | distinctive         |
| 17SC       | 92                      | distinctive         |
| 15SC       | 88                      | distinctive         |
| 20SC       | 86                      | distinctive         |
| 5SC        | 83                      | distinctive         |
| 11SC       | 80                      | distinctive         |
| 19SC       | 79                      | distinctive         |
| 12SC       | 78                      | distinctive         |
| 9SC        | 69                      | others              |
| 16SC       | 69                      | others              |
| 14SC       | 68                      | others              |
| 7SC        | 66                      | others              |
| 1SC        | 50                      | others              |
| 18SC       | 50                      | others              |
| 8SC        | 48                      | others              |
| 21SC       | 47                      | others              |
| 3SC        | 31                      | others              |
| 2SC        | 22                      | others              |

**Source:** Own study.

Using the Mann-Whitney U test, statistically significant (for a confidence level of 0.1) differences occurring between the classified groups: distinctive and other SPEs were examined. The statistics presented in Table 3 demonstrate that the group of distinctive SPEs in the effectiveness index is characterised by:

- greater efforts to know the expectations of different stakeholders concerning the SPEs ( $p=0.03$ ),
- greater attention to the consequences of not meeting the expectations of different stakeholders ( $p=0.013$ ),
- greater frequency of contact with researchers ( $p=0.115$ ),
- greater awareness of the influence of key stakeholders on SPE activities ( $p=0.085$ ).

**Table 3.** Mann-Whitney U test

| Variable                                                                                           | Sum. rang   | Sum. rang | U    | Z     | p     | Z     | p     | N  | N  | 2*1s. |
|----------------------------------------------------------------------------------------------------|-------------|-----------|------|-------|-------|-------|-------|----|----|-------|
|                                                                                                    | distinctive | others    |      |       |       |       |       |    |    |       |
| I try to know the expectations of the different stakeholders concerning the SPE                    | 152         | 79        | 24   | 2,148 | 0,032 | 2,315 | 0,021 | 11 | 10 | 0,03  |
| I take into account the consequences of not meeting the expectations of the different stakeholders | 156         | 75        | 20   | 2,429 | 0,015 | 2,824 | 0,005 | 11 | 10 | 0,013 |
| Frequency of contact with researchers*                                                             | 144         | 87        | 32   | 1,584 | 0,113 | 1,752 | 0,08  | 11 | 10 | 0,115 |
| Median influence of key stakeholders                                                               | 145,5       | 85,5      | 30,5 | 1,69  | 0,091 | 1,768 | 0,077 | 11 | 10 | 0,085 |

**Note:** \* The survey questionnaire included a question on the frequency of contact with individual stakeholders. The statistical analysis did not show a statistical difference between the two groups of SPEs within the variables frequency of contact with entrepreneurs and frequency of contact with the parent unit authorities.

**Source:** Own study.

Differences between the distinctive SPEs and the others were verified based on the number of affirmative answers concerning consideration and knowledge of stakeholder expectations (Table 4). On a five-point scale - yes, rather yes, hard to say, rather no, no - only 'yes' answers were taken into account, on the assumption, in line with the hypothesis adopted, that SPEs characterised by higher effectiveness would more often manifest their firmness in answers to questions on the

consideration of stakeholders' expectations in the SPE's activities or awareness of individual stakeholders' expectations of the SPE.

The statement 'in the SPE's activities I take into account the expectations of key stakeholders' was more often confirmed than 'in the SPE's activities I take into account the expectations of all stakeholders' in both the group of distinctive SPEs and other SPEs, but in the first one, the percentage of affirmative answers was higher and amounted for the statements 64% (against 40% in other SPEs), 27% (against 10% in other SPEs), respectively.

A greater difference can be seen in the assertion 'I know the expectations of the different stakeholders concerning the SPE' - 45% of the distinctive SPEs agreed with this statement, with only 10% of the others. In contrast, the difference is far greater with the statement 'I try to know the expectations of the different stakeholders concerning the SPE' - 64% of the distinctive SPEs and 10% of the other SPEs answered in the affirmative. This confirms the statistical differences from using the Mann-Whitney U-test with this statement and the statement 'I take into account the consequences of not meeting the expectations of the different stakeholders'. In this case, 55% of the distinctive SPEs agreed with this statement and not a single SPE from the other group.

**Table 4.** Differences in affirmative attitudes among distinctive and other SPEs about the effectiveness index

| Statements                                                                                           | Percentage of affirmative responses |            |
|------------------------------------------------------------------------------------------------------|-------------------------------------|------------|
|                                                                                                      | distinctive SPEs                    | other SPEs |
| 'In the SPE's activities I take into account the expectations of all stakeholders'                   | 27%                                 | 10%        |
| 'In the SPE's activities I take into account the expectations of key stakeholders'                   | 64%                                 | 40%        |
| 'I know the expectations of the different stakeholders concerning the SPE'                           | 45%                                 | 10%        |
| 'I try to know the expectations of the different stakeholders concerning the SPE'                    | 64%                                 | 10%        |
| 'I take into account the consequences of not meeting the expectations of the different stakeholders' | 55%                                 | 0%         |

**Source:** Own study.

## 5. Discussion and Conclusions

According to the hypothesis, stakeholder relationship management, including value creation for stakeholders, is positively related to the effectiveness of the SPE. The variable 'stakeholder relationship management including value creation for stakeholders' manifests itself through, among other things:

- identifying stakeholders and their expectations,
- analysing expectations in terms of the consequences of not meeting them,
- taking expectations into account in activities undertaken,
- providing desired (based on expectations) values to stakeholders.

The effectiveness of the SPE, in turn, understood as firstly, the ability to achieve its stated objectives and, secondly, the ability to deliver the desired values to stakeholders and meet their expectations to the fullest extent possible (the degree to which stakeholders' expectations are met) is manifested in the SPE's effectiveness index.

Based on the empirical research carried out, it was proven that:

- SPEs characterised by distinctive effectiveness are aware of the influence of their key stakeholders on the activities of the SPE,
- SPEs characterised by distinctive effectiveness try to know the expectations of their different stakeholders with regard to the SPE,
- SPEs characterised by distinctive effectiveness take stakeholders' expectations into account in their activities,
- SPEs characterised by distinctive effectiveness consider the consequences of failing to meet the expectations of different stakeholders,
- SPEs characterised by distinctive effectiveness are more likely to contact with researchers.

SPEs, being the link between academia and business, are in the middle of the commercialisation process. The large diversity of SPE stakeholders necessitates a strategic approach to stakeholder relationship management. The success of the commercialisation process depends mainly on the relationships with key stakeholders:

- researchers who provide products for commercialisation and want to develop academic entrepreneurship,
- entrepreneurs who are interested in implementing research results and cooperating with the scientific community,
- the authorities of the scientific unit that establishes the SPE and gives it access to the intellectual property of university employees, and sometimes also supports it financially in its commercialisation activities.

The conscious shaping of relationships ensures the expected values for the different stakeholders, which influences the effectiveness of the SPE and, thus, the commercialisation activities it undertakes.

SPEs are a difficult research subject for several reasons. First, there is no publicly available data or public register of SPEs to verify their actual number. Secondly,

there are high dynamics in the creation and liquidation of SPEs and among those in management positions of SPEs. Thirdly, they represent a small population, so any quantitative research and statistical analysis will be based on non-parametric methods.

As part of a survey, the results presented were based on declarative ticking of answers by SPE managers. Managers do not necessarily know or correctly interpret the expectations and influence of individual stakeholders on the organisation (Wood, Mitchell, Agle, Bryan, 2021). Further research on the effectiveness of SPEs in the context of stakeholder value creation should be complemented by qualitative research.

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