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Can Elements of Intellectual Capital Improve Business Sustainability?—The Perspective of Managers of SMEs in Poland

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Abstract: Many organizations choose business sustainability to meet environmental, social, and financial demands to ensure responsible and long-term success. In order to achieve this, enterprises have to fully and optimally apply their resources. Intellectual capital is one of their most important resources creating market value and reinforcing sustainable competitive advantages. The main goal of the paper is to indicate which elements of the intellectual capital of small and medium-sized enterprises in Poland have the greatest impact on their sustainable development in the opinions of managers. The study took into account 1041 economic entities. Managers of small and medium enterprises operating in Poland have been asked to assess the elements of intellectual capital. The paper utilizes a new approach to the importance assessment of the impact of each characteristic on business sustainability. It is based on intuitionistic fuzzy sets. The proposed method is especially useful when variables are measured on an ordinal scale. In accordance with the classical theory of measurement, it does not allow the majority of arithmetic calculations to be performed. Based on the results of the research it has been determined that the most important factors are those which constitute human capital. Moreover, the observation has been made that there is a high degree of coherence of opinions expressed by managers of small and medium enterprises. The results of the research can be applied by both managers of enterprises in managing intellectual capital and employees of companies, by increasing their awareness of the topic of the influence of intellectual capital on business sustainability.

Keywords: sustainable development; business sustainability; intellectual capital; human capital; structural capital; relational capital; intuitionistic fuzzy sets

1. Introduction

Business sustainability is a strategy that integrates social, economic, and environmental principles into the business model. Sustainable enterprises prioritize and apply environmental principles and socially responsible behavior in all business decisions and incorporate it into their business strategy. In a broader context, social, environmental and economic demands are considered to be the three pillars of sustainable development. Business sustainability is desired not only for ethical and moral reasons but is also dictated by historical necessity. In the globalization age and increasing competition, enterprises cannot underestimate the importance of social and environmental aspects, which should

be equal in terms of priorities to financial aspects. Meeting economic, social and environmental goals can bring a number of benefits and increase competitiveness [1,2].

Intellectual capital is one of the most valuable resources of an enterprise, which enables its sustainable development. It is comprised of human capital, structural capital and relational capital.

The main goal of the paper is to indicate which elements of the intellectual capital of small and medium-sized enterprises in Poland have the greatest impact on their sustainable development in the opinions of managers. The analysis utilizes the results of a study on managing intellectual capital by enterprises in Poland. The research was conducted in May, 2019. The research was realized through the CATI (computer-assisted telephone interviewing) and CAWI (computer-assisted web interviewing) methods in a representative group of 1041 enterprises operating in Poland (employing at least 10 employees) with an assumed level of trust of 0.95 and an estimation error of 3%. It was based on a proportional selection of enterprises based on voivodeships and their size measured by the number of employees. The assumed structure of the test group also took into account the differentiation of enterprises based on their type of activity (the number of interviews conducted was proportional to the participation of enterprises in different PKD sections (Polish Classification of Activities)).

In the field of empirical studies, a survey research was held. The interviews were conducted with representatives of the management level of the enterprises. In the field of data analysis, basic descriptive statistics were used, box plots diagrams were presented and intuitionistic fuzzy sets were applied. For the correlation analysis, the classical chi-squared test of independence was utilized, with an assumed level of significance of $p = 0.05$. For computation, R software was used. The paper provides the result of the current research focuses on the intellectual capital of small and medium-sized enterprises (SMEs) in Poland in the context of sustainable development. It assesses managers' awareness of the nature of intellectual capital and estimates the significance of individual components in building business sustainability. Previous research focused on the intellectual capital of SMEs in Poland did not refer to the context of sustainable development. They indicated the relationships between intellectual capital and competitive advantage and firms' performance.

The main contribution of the study to an extant knowledge is to capture and understand the links between intellectual capital and business sustainability as well as to indicate which elements of intellectual capital are crucial for making small and medium-sized enterprises more sustainable. Increase understanding of the role of the intellectual capital to improve business sustainability also has cognitive value for the practitioners. The results of the study can be a starting point to improve the SMEs sector in Poland and meet the demands of business sustainability in terms of the intellectual capital of these enterprises. In the microscale, it can help managers to improve the efficiency and effectiveness of intellectual capital management. The research presented in the study has a wide territorial scope. The previous research studies carried out in the SMEs sector in Poland were based on the test group of entities located only in one or a few of 16 Polish regions called voivodeships. This research covers small and medium-sized enterprises from all of the Polish regions.

The article consists of five sections. Section 2, theoretical background, is divided into two subsections. The first one is intellectual capital and business sustainability. In this subsection, major definitions—sustainable development, business sustainability, and intellectual capital—are outlined. In this section, some characteristics and statistical data of SMEs sector in Poland are presented. The specific problems of business sustainability in the context of small and medium enterprises were listed. The second part of section two is a literature review in the field of intellectual capital and its influence on business sustainability. Based on the results of the listed studies, two hypotheses were proposed. Section 3 covers materials and methods. It presents the methodology of the research used in the study. The next section is results, where the empirical results were presented in the tables and figures. The last section is the discussion. It discussed the findings of the study. It also covers some recommendations for future research.

2. Theoretical Background

2.1. Intellectual Capital and Business Sustainability

Sustainable development is one of the most important global challenges that we face today. It also constitutes one of the three priorities of the European Union's (EU's) Europe 2020 strategy and the worldwide Agenda 2030 (The 2030 Agenda for Sustainable Development and the SDGs), which has been agreed upon by 193 United Nations (UN) member states and is set to be implemented by 2030. One of the seventeen goals of sustainable development, which has been adopted in the 2030 Agenda, is sustainable production and consumption. The obligation of balancing the three spheres of development—social, economic and environmental—in accordance with the rule of generational equality, i.e., without compromising the ability to meet the needs of future generations, is therefore also the responsibility of enterprises (manufacturers and service providers) and consumers. The realization of all seventeen goals of the 2030 Agenda is aimed at directing the world towards the path of sustainable development, contributing to protecting our planet and long-term improvement in the quality of life of all of its inhabitants.

When realizing the strategy of sustainable development and moving towards their business goals, enterprises must be aware of the complexity of the conditions, in which they operate and the influence, which they have on society and the environment. The concept of sustainable development requires enterprises to search for and implement methods and tools of management, which allow for the inclusion and integration of not only economic, but also social and environmental development goals. Pursuing a balance between three spheres of activity: economic, environmental and social, requires organizations to adapt to the requirements and conditions resulting from their surroundings and expectations of stakeholders. Additionally, it creates opportunities for reinforcing their market position and bargaining power in relation to their business partners and the ability to develop, due to improvements and innovations of a product-, process- and operation-oriented character [3] among other things. Moreover, enterprises implementing the concept of sustainable development have the chance of improving their image, improving financial results and increasing their competitive advantage [4,5].

The concept of sustainable development of enterprises (business sustainability) can be understood as a practical implementation of goals and rules of the concept of sustainable development on a microeconomic level. An enterprise adhering to the philosophy of sustainable development will fully implements social and environmental goals in its economic activity and in its interactions with stakeholders [6,7]. A sustainable enterprise can, therefore, be understood as an economic unit, which manages all aspects of its activity—financial, social and environmental in a way, which enables it to process it and is profitable in the long-term. The economic perspective of the sustainable development of an enterprise denotes the ability to create value and improve financial results. The social perspective of a sustainable enterprise denotes achieving business goals in a manner compatible with ethical standards, which go beyond the minimal requirements defined by law, and while creating value for stakeholders. The environmental perspective refers to an active implementation of ecological aspects in the business strategy of an enterprise. All three spheres of the activity of an enterprise—financial, social and environmental—are of a complex character, comingle and influence each other [8].

The implementation of the concept of sustainable development in enterprises, beyond the necessity to comply with laws and regulations, is a result, on the one hand, of increasing awareness of managers, and on the other hand, increasing awareness of consumers. An enterprise is being increasingly more perceived as a socio-economic system, the goals of which should integrate three components, namely: economic gain, the people associated with the company and care for the green dimension of the conducted activities. Positive changes in the functioning of enterprises are also stimulated by consumers themselves, who are characterized by increasing awareness of the environment and openly communicate their expectations to enterprises, when it comes do their products and services. The spread of pro-society and pro-ecology attitudes is therefore important for both sides of the equation—producers

and consumers. Entrepreneurs should ensure that their employees are aware of the fact that their work—as well as their products and services—have an impact on the natural environment and local community. In companies, in which employees do not understand the nature of pro-ecological and pro-societal activities, such actions can lead to a lack of acceptance and misunderstandings. Therefore, it is vital to develop their awareness and knowledge in this area through meetings, training or conducting other activities aimed at spreading these attitudes. Of equal significance is dialogue and maintaining proper relations between the enterprise and stakeholders [1,2].

In the literature on the subject, the majority of attention is devoted to the concept of business sustainability in the context of large enterprises, which individually have a significant influence on the environment and the local community. In the case of small and medium enterprises, the individual environmental footprint and influence of the society is relatively insignificant, whereas the impact of the sector collectively is significant. In practice, even the smallest company produces waste, uses cleaning agents, electricity, water and natural gas. The researchers of the topic have noted three key barriers to the implementation of the concept of sustainable development in small and medium enterprises [9–12]:

- ignoring the importance of the individual impact of the enterprise on the environment;
- a lack of expert knowledge or insufficient knowledge of the topics related to solving environmental problems;
- costs and low profitability of investments aimed at limiting activities harmful to the environment.

In contrast to the managers of large enterprises, managers of small and medium enterprises do not want to take on responsibility for the impact of their activity on the environment and society. They perceive this impact as less significant, for instance when it comes to the utilization of resources, when compared to the ecological footprint of large enterprises. They also do not build strong strategic relations with the local community. The detailed and unambiguous determination of other barriers, i.e., a lack of knowledge, costs and low profitability of pro-environmental investments is burdensome due to a different operating environment of SMEs. These enterprises are different when it comes to their size and sector of activity, as well as organizational culture and management systems. Differences can also be observed with regards to the particular problems that enterprises have to deal with (for instance, significantly higher costs of implementing green investments in the production and manufacturing sectors) [13].

Research Agency “ARC Market and Opinion” and Responsible Business Forum in Poland were asking Poles about global challenges towards sustainable development. Respondents considered that the most urgent tasks for business are: transition to renewable energy sources (27%), reduction of greenhouse gas emissions (16%) and taken pro-ecological actions (12%). The latest edition of the Responsible Business Forum publication, entitled “Responsible Business in Poland 2018. Good practices”, confirmed that more and more companies in Poland implement and carry out Corporate Social Responsibility (CSR) activities. The Report includes 1549 practices (826 new and 723 long-term ones) reported by 229 companies (60 of them are small or medium-sized enterprises). The authors of the report note to it is quite optimistic to see that SMEs are increasingly more active and willing to share their sustainable practices with the market and the society. The largest number of good practices concerns social engagement, development of the local community and relationship with stakeholders. More and more employers are taking practices concerning the workplace, especially with young people to enable them to strike a work-life balance, support activities undertook to combat stress, take care of well-being and mental health of employees [14].

It can be stated with great certainty that small and medium enterprises are the driving force of the Polish economy. Their number and potential can be one of the sources of economic development [15–17]. The number of such enterprises in Poland, including micro-companies is continuously increasing. In 2017, there were 2.08 million SMEs in Poland. Between 2008–2017, except for years 2009 and 2011 when the economy notably slowed down, more companies were created than dissolved. In the structure of the enterprises in the year 2017, the share of the services sector was (52.3%), construction (13.6%),

industry (10.1%) and trade (24.0%). According to statistical data, in the year 2017, just over two out of three companies survived the first year of their activity in Poland. Between 2008 and 2017 the number of SMEs in the European Union 28 member states (EU-28) increased by 13.8%. The number of newborn SMEs markedly exceeds the actual increase in the SMEs population. It is because of the high mortality rate of SMEs, especially among young enterprises [15].

Since 2008 there has been an observable increase in the share of SMEs in Poland in creating the GDP. The largest share—of almost 50% in creating the gross domestic product (GDP)—is attributed to small and medium enterprises [15].

The data for 2017 indicates that 3.96 million people (or 57.5%) were employed in SMEs. In terms of sectors, the largest ones were services (37%), industry (30.6%), sales (23.2%) and construction (9.1%). Over the period 2008 to 2017 employment in SMEs in the EU-28 increased by 2.5% [15].

According to the latest statistical data, in the last decade, there has been an observable reduction in the innovation activity of enterprises in Poland. The industry sector and services constitute the largest share of innovative companies [15].

The SMEs in Poland spent a relatively small part of their budget on research and development (R&D) activity. In the period 2008–2017, R&D expenditures have been increasing in ratio to the GDP [15].

In 2017 there has been an improvement in the fundamental economic indicators measuring the financial condition of enterprises. Compared with 2016, SMEs in Poland reached higher income (increase by 8.2%), higher production (increase by 11.2%) and higher added-value (increase by 10.8%). The highest growth has been observed among small enterprises. There has also been an increase in average productivity. For comparison over the period 2008 to 2017, gross value added generated by EU-28 SMEs increased cumulatively by 14.3% [15].

The SMEs in Poland are more sensitive to economic fluctuations than the large ones. During the economic growth, small and medium-sized firms grow faster than the economy as a whole. During the recession, especially decreasing domestic demand, the SMEs are most affected and fared worse than the whole economy. The SME sector, not only in Poland but in general, is seen to be the backbone of the entire economy. Therefore, supporting the SME sector and their efforts towards business sustainability is crucial for the economy as a whole [15]. Besides, small and medium-sized companies seem to have a leading role in achieving some of Sustainable Development Goals (for example, goal 8—promote inclusive and sustainable economic growth, employment and decent work for all).

The SME sector in Poland, defined as companies with 10–249 employees, is smaller than in other EU's members' states. The total number of small and medium-sized enterprises in Poland is high (the sixth place in the EU), but the amount per head of population is the lowest in the European Union countries (only 1.9 firms per 1000 citizens, while in the Czech Republic is a 3.5 and, in Germany 4.6). Some definitions of SMEs also includes micro-firms, which are often self-employed people. This group of entities varies significantly from small and medium-sized companies with regard to the scale and nature of their activities. It is mainly in the case of their owners. They often have neither the ambition nor the ability to increase the scale of their operations. Thus, the owners of micro-firms focus on local-scale action. These firms grow relatively more slowly than other ones. Besides, self-employed people often have a high-level aversion of risk, management knowledge lacks, and skills gaps. They are often set up business only for tax optimization. This phenomenon is a substantial barrier to do business in Poland [16]. Based on previous research from SMEs in Poland, conducted by Sokołowska [18] it can be stated that managers of micro-enterprises do not base their activities on formalized strategies. They focus on current operations, and their decisions are based more on intuition rather than the strategic vision of the enterprise. The following arguments led us to the decision that micro-enterprises should be excluded from our study. Nowadays small and medium-sized enterprises are facing the challenges require of the knowledge-based economy. One of the most valuable resources, which ensures sustainable development of the company and allows a competitive advantage to be achieved, is intellectual capital. The concept of intellectual capital has appeared in scientific discourse in the

second half of the 1960s. Since then there has been an observable increase in interest in this area of research, both amongst theoreticians and management practitioners.

In the literature on this topic, intellectual capital is defined as [19–25]:

- the intellectual material: knowledge, information, intellectual property, and experience that has been formalized, captured, and used to create wealth by producing higher-valued assets;
- unfinanced capital, which reflects the hidden gap between the company's market value and the company's book value, i.e., the sum of hidden assets, which have not been accounted for in the company's balance sheets;
- the collective amount of knowledge, skills, competences and experience of individual employees and their team members, required for the development of an organization and achieving competitive advantage—includes both the knowledge of employees and what is remains after they leave;
- invention and the ability to create innovative solutions, which will determine the success or failure of the organization;
- the most important source for sustainable competitive advantages;
- the firm-specific resources that are difficult—if not impossible—to imitate;
- the sum of all intangible assets of expertise, experience and competences inside and outside the organization.

Different categorizations of intellectual capital can be found in the literature on this topic. Most support is given to a division of intellectual capital into three subsets: human capital, structural capital and relational capital [20,26–35]. This categorization was also adopted in this article.

Human capital is a combination of the knowledge and skills of employees. It takes into account the total value of investments in the employee's training and competence. It is the tacit knowledge embedded in the minds of the employees, which they will take with them when they leave. Thus, it can only be rented, not owned, by the company. It consists of knowledge, competence, skills, talents, intellectual agility, creativity and innovativeness of individuals and collective [21,27,36].

Structural capital can be regarded as the organizational routines of the business. It covers all the non-human storehouses of knowledge stored in procedures, policies, cultures, structures, systems, databases and programs, which support productivity and enable the organization to create the value. This knowledge belongs to and remains in the company, even when employees have left. Structural capital is an intangible asset that can be traded, reproduced and shared within the firms. Certain structural capital elements can be legally protected and become intellectual property rights, legally owned by the firm under the separate title [21,27,36–38].

Relational capital covers all the external connections of the company with various stakeholders. It is broadly defined as the knowledge embedded in relationships with customers, suppliers, investors and others. It comprises that part of human and structural capital involved with the company's relations with stakeholders and the perceptions that they hold about the company. Relational capital is also defined as all knowledge flows generated from outside to inside and vice-versa. In other words, relational capital is the potential of an enterprise associated with non-material market assets (e.g., reputation and the image of a company, the loyalty of clients, the satisfaction of clients, license agreements, concessions and marketing strategies) [27,36,38,39].

2.2. Literature Review

In the literature on the topic, several scientific publications can be found, which focus on the scope of identification, measurement and intellectual capital management. In global literature, several publications are devoted to studying the impact of intellectual capital on market value, performance and competitive advantages of firms. However, still, not many publications connect intellectual capital with business sustainability. The following paper focuses on these relationships. The authors of publications [4,18,39–50] engage in research in the scope of intellectual capital, green

intellectual capital and green innovation as well as their influence on the competitive advantage of firms and business sustainability.

Chen et al. [39] investigated the influence of green innovation on the competitive advantages of companies. The most important findings from conducted research are positive correlations between green products and green process innovation (e.g., energy-saving technologies, pollution-prevention technologies, waste recycling, green product design and environmental management) and competitive advantages of firms. In the study written by Chen [40], a new construct—green intellectual capital has been proposed and defined. It consists of green human capital, green structural capital and green relational capital. Chen proved that all elements of green intellectual capital, especially green relational capital, have a positive effect on the competitive advantages of firms. The research was conducted in the information and electronics sectors and based on small, medium and large-sized enterprises in Taiwan. The role of green intellectual capital and its influence on the competitive advantages of small and medium firms were significantly less than those of large ones. Moreover, Chen's research confirms that it is worth for companies to invest many resources and efforts in green intellectual capital. It brings the following benefits for companies. They can adjust their activity to the restrictive requirements and norms of environmental protection and they can meet the needs and increasing expectations of clients towards products and services supplied to them. Omar et al. [4] explored the relationships between green intellectual capital and business sustainability. The authors based on the assumption proposed by Chen [40], who stated that the positive influence of intellectual capital on competitive advantages of firms required aspects of green. In the study, survey research was used. The study's respondents were managers of small and medium-sized enterprises active in the production sector in Malaysia. A questionnaire with 22 issues related to green intellectual capital and 22 issues related to business sustainability was used to conduct the research. In the questionnaire distributed to respondents via the Internet, a seven-point Likert scale was used. Based on this study, a model was proposed, which showed how green intellectual capital effects on business sustainability. This model operated on three independent variables (H1-green human capital, H2-green structural capital and H3-green relational capital), with business sustainability defined as a dependent variable. The research focused on the impact of green intellectual capital on business sustainability has also been presented in the study [41], written by Yusoff et al. The research was carried out in the case of small and medium enterprises active in Malaysia. The main findings are significant positive correlations between green structural capital, green relational capital and business sustainability. There is no evidence that green human capital positively affects business sustainability. The authors of the study also stated that green intellectual capital contributes to small and medium enterprises shifting their production to cleaner solutions. A study based on a sample of small and medium enterprises in Malaysia was also conducted by Akhtar et al. [42]. In the study, survey research was used. The respondents were key companies' informants (e.g., managers, owners). The main findings of the study conclude that intellectual capital is one of the most important factors to achieve business sustainability of SMEs. Mukherjee and Sen [43] examined the role of intellectual capital and its elements on business sustainability. The research was held in non-financial companies in India. The study also aimed at finding the element of intellectual capital, which has the greatest impact on the sustainable development of firms. Based on the conducted research, the authors have determined that intellectual capital catalyzes for corporate sustainable growth in India. There is no evidence for significant linkage between human capital and corporate sustainable growth. In the study conducted by García de Leaniz and Rodríguez del Bosque [44], the main goal is to investigate the role of business sustainability in shaping the reputation of companies. The research was held in the hospitality sector of the Spanish tourism industry. The survey research was used. The respondents were consumers. The main conclusion of the research is that economic, social and environmental dimensions of business sustainability have a positive direct effect on corporate reputation, which is one of the most important elements of relational capital. Xu and Wang [45] found evidence that there are linkages between intellectual capital and business sustainability in the long-term perspective. The research was held in manufacturing companies active

in Korea. The indicator-based approach (objective data) was used. The main conclusion of the research is that intellectual capital has a positive impact on business sustainability. The element with the greatest effect on business sustainability is relational capital.

Massaro et al. and Dal Mas [46,47] explored the relationships between intellectual capital and business sustainability. In these studies, a perceptual measure based on practitioners' perspectives was used. The results confirm that intellectual capital and sustainability affect each other. Wasiluk [48] focused on how firms mobilize their intellectual capital towards more sustainable practices. The research was held in the Australian property and construction sector and the survey research was used. The respondents were senior management. The main conclusions are that each category of intellectual capital is essential for corporate sustainability and supporting organizational change to a more ecological, sustainable and socially equitable enterprise. The research on intellectual capital of enterprises in Poland has been, *inter alia*, conducted by Sokołowska, Bombiak, Rzempala and Rzempala [18,49,50]. Sokołowska [18] empirically verified intellectual capital on a sample of micro and small-sized enterprises located in one of sixteen Polish regions. The main conclusion is that the most important source of enterprises' success is relational capital, especially the image of the company. Bombiak [49] investigated the role of intellectual capital on competitive advantages of small, medium and large-sized companies located in eastern Poland. The survey research was used. The respondents were managers. The most important finding from this research is the significant positive impact of human capital on the competitiveness of the company. Rzempala and Rzempala [50] analyzed the awareness of managers in the scope of intellectual capital. According to the results, it can be stated that intellectual capital has a positive impact on the value of the enterprise. The strongest influence is exerted by human capital, followed by relational capital. Most of the listed studies are research works based on perceptual measures e.g., [4,46,47]. The authors of these studies used survey research, which collected data through questionnaires dedicated mainly to knowledgeable individuals in the field of intellectual capital (especially decision-makers). Thus, the most common approach presented in the analyzed research studies was the managers' perceptions and opinions e.g., [49,50]. Rarely stakeholders' opinions, for example, customers were examined [44]. Some of the studies used the indicator-based approach (objective data) e.g., [43,45]. The research was conducted in all sizes and all types of companies, but mostly in high-knowledge and high-technology sectors (e.g., manufacturing, ICT or finance). There are three types of research studies. The first group analyzes the intellectual capital and its influence on competitive advantages or business sustainability. The second one investigates the relationships between specific capital (human, structural or relational) and competitive advantages or business sustainability. The last one examines the role of individual elements (e.g., the reputation of the company) of intellectual capital from competitiveness perspective or sustainable development of firms. Based on the literature review it cannot be unequivocally stated, which of its elements have the greatest impact on business sustainability. The findings of all analyzed studies, based on different approaches, have some limitations, contradictory and needs further investigation. As such, based on the discussed research, it can be stated that:

- intellectual capital has a significant positive impact on the competitiveness of an enterprise and on business sustainability [4,39,40,42–47];
- human capital has a significantly positive impact on the sustainable development of enterprises [48–50];
- structural capital has a significantly positive impact on the sustainable development of enterprises [41,48];
- relational capital has a significantly positive impact on the sustainable development of enterprises [18,41,44,48];
- there is a correlation between the sustainable development of an enterprise and the image of a company, which is one of the elements of relational capital [44];
- the impact of the elements of intellectual capital on the sustainable development of enterprises varies, depending on their size [40,42].

Taking into account the above-mentioned conclusions, two research hypotheses have been proposed. The first one assumes that all categories and elements of intellectual capital have an equal impact on the business sustainability of small and medium enterprises. The second hypothesis assumes that the size of the enterprise does not differentiate the indications of respondents from the two groups, i.e., managers of small and medium enterprises.

3. Materials and Methods

3.1. Fuzzy Sets

Two-valued logic has been reviewed several times. It has been argued that between actual statements, there are “almost true sentences” and “almost false sentences”. Observations have also been made of sentences that are “more true than false” and ones that are “more false than true”. It has also been indicated that there are “conceivable sentences”, i.e., sentences that are equally true as their negation. The first formally-proposed solution to this problem was a many-valued logic. Simultaneously with the development of the theory of the many-valued logic, the concept of a linguistic variable was pursued, i.e., one that is capable of holding values of words or sentences of the natural language. It has been underlined that there is a lack of precision in the information described by linguistic variables. An important element of the conceptualization was determining the proper formal model for the linguistic variable. Constructing such a model would allow for a precise determination of the imprecise concept of the linguistic variable. This, in turn, would allow for a mathematical deduction procedure to be conducted in order to broaden our knowledge of the applications of the linguistic variable [51]. An accepted model that was applied was the concept of a fuzzy set proposed by Zadeh [52].

The fuzzy sets theory is a generalization of the classical set theory. The generalization builds on the classical variant, in which elements either are or are not a part of a given set, whereas with fuzzy sets it is possible for an element to be included only partially.

Definition 1. The fuzzy set A in the space of $X = \{x\}$ designated as $A \subseteq X$ is defined as a set of pairs $A = \{\mu_A(x), x\} \forall x \in X$, where $\mu_A : X \rightarrow [0, 1]$ is a function of its level of membership in a fuzzy set A , which designates the level of membership of every element $x \in X$ in a fuzzy set A .

In social sciences, fuzzy sets have been utilized, among other things, to measure poverty, quality of life, well-being, the quality of products and services, in market share predictions as well as consumer preferences in human resources management [53,54].

In the scope of intellectual capital research, fuzzy sets find their application primarily in the area of measurement of intellectual capital itself, which can, for instance, be observed in the following papers: [55–66].

3.2. Intuitionistic Fuzzy Sets

Intuitionistic fuzzy sets are an extension of the fuzzy set theory and have been proposed by Atanassov [67]. The author has waved Zadeh’s fuzzy set assumption, which states that the level of non-membership of element $x \in X$ in set A is equal to the difference $(1 - \mu_{A'}(x))$.

Definition 2. The intuitionistic fuzzy set A' in space X is defined as [67]:

$$A' = \{\langle x, \mu_{A'}(x), \nu_{A'}(x) \rangle | x \in X\}, \quad (1)$$

where functions:

$$\mu_{A'} : X \rightarrow [0 - 1], \quad (2)$$

and:

$$v_{A'} : X \rightarrow [0 - 1], \quad (3)$$

respectively determine the level of membership and non-membership in set A' where for each $x \in X$:

$$0 \leq \mu_{A'}(x) + v_{A'}(x) \leq 1. \quad (4)$$

Assumption (4) allows for the existence of a so-called uncertainty level, which expresses a lack of knowledge of the levels of membership and non-membership of the element $x \in X$ in the intuitionistic fuzzy set A' .

Definition 3. The level of uncertainty of whether element $x \in X$ is a member of the intuitionistic fuzzy set A' is defined by the following formula:

$$\pi_{A'}(x) = 1 - \mu_{A'}(x) - v_{A'}(x), \quad (5)$$

Definition 4. The normalized Euclidean distance between two intuitionistic fuzzy sets A' and B' is expressed by the following formula [68]:

$$d(A', B') = \sqrt{\frac{1}{2} \sum_{i=1}^n (\mu_{A'}(x_i) - \mu_{B'}(x_i))^2 + (v_{A'}(x_i) - v_{B'}(x_i))^2 + (\pi_{A'}(x_i) - \pi_{B'}(x_i))^2}. \quad (6)$$

3.3. The Ranking Method of the Importance of the Characteristics Described by Intuitionistic Fuzzy Sets

The importance evaluation of the influence of characteristics of certain socio-economic phenomena is an important area of explorational research in the field of social sciences. If the measurement results are obtained from estimation scales, then there is a limited scope of statistical and econometric methods, which allow a character analysis to be conducted, the values of which are expressed in the form of characters or word categories. A relatively new approach in the analysis of the results of these types of measuring socio-economic phenomena, is utilizing fuzzy scales or transforming the results of the measurement into fuzzy sets, thus creating so-called fuzzy conversion scales. In brief, both approaches are based on presenting each point of the estimation scale via a fuzzy set. This area is chiefly dominated by triangular and trapezoidal fuzzy sets, which are a particular case of fuzzy sets. The difference between a fuzzy scale and a fuzzy conversion scale. In the case of the former, the respondent indicates their evaluation in the form of a fuzzy set. In the case of the latter, the respondent utilizes classical estimation scales, which at the stage of analysis of measurement results are transformed by the researcher into fuzzy sets.

The transformation of estimation scale points into fuzzy sets is most often arbitral and subjective. Therefore, for the purpose of analyzing the measurement results of the importance of characteristics—which utilize estimation scales—in the following paper it has been proposed to utilize intuitionistic fuzzy sets. They are based on a different class of fuzzy sets and do not require an arbitral selection of the kind of fuzzy sets. The proposed method is based on the paper by Szmidt and Kacprzyk [69], which proposes the method of ranking alternatives described by intuitionistic fuzzy sets. The proposed method is an innovatory solution, as it comprises intuitionistic fuzzy sets and elements of multivariate statistics, which allow for objects to be organized in the case of a lack of precision in the opinions of respondents. Additionally, it aids the process of organization, by taking into account the element of uncertainty, introduced by respondents through selecting categories such as “I have no opinion” or “difficult to say”. In order to present the proposed approach, a scheme in Figure 1 has been prepared as well as a description of each of the stages of the proposed method.

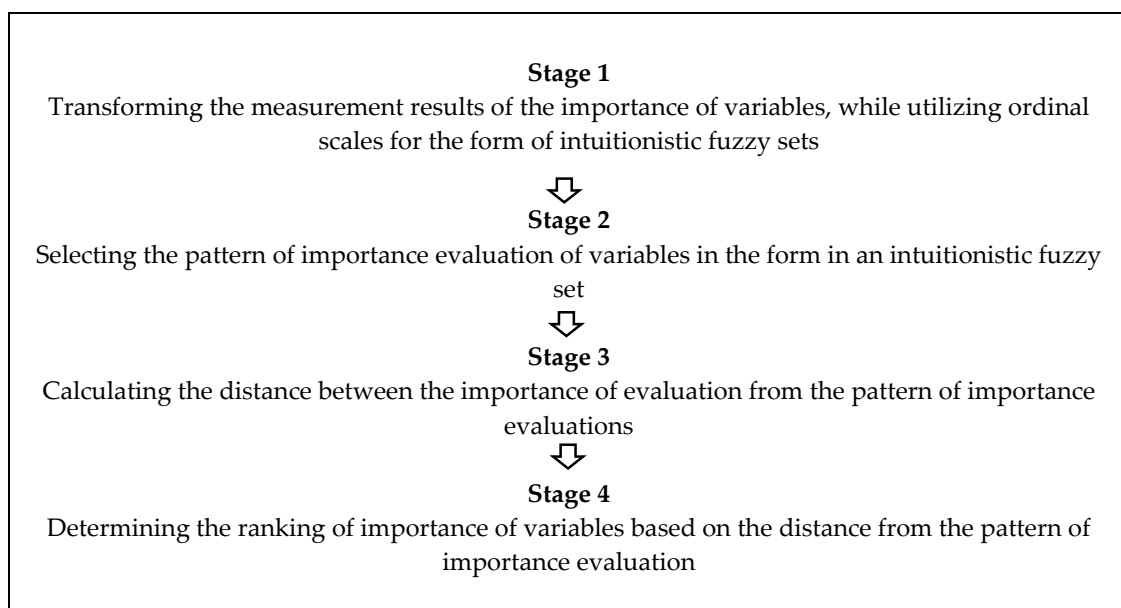


Figure 1. A diagram of the ranking method of the importance of the variables described by intuitionistic fuzzy sets. Source: own elaboration.

Stage 1. Let $X = \{X_1, \dots, X_m\}$ be a collection of variables for which it is necessary to set the ranking of importance of the influence on the phenomenon Y (e.g., quality of life, employee satisfaction, human capital). The importance of each of these variables is evaluated via an ordinal measurement scale consisting of k points in the form of word categories (e.g., extremely irrelevant, extremely relevant etc.). The designation x_{ij} refers to the i -th category of variable X_j while $i = (1, \dots, u, l, \dots, k)$. Categories from 1 to u will designate negative expressions, whereas other categories will designate positive expressions. It is also assumed that the respondent can skip the important evaluation of a given variable and/or has the ability to give an answer beyond the measurement scale through answering “difficult to say”, “I have no opinion”. Each evaluation variable is evaluated by N respondents where $(n = 1, \dots, N)$.

The designation A' is given to an intuitionistic fuzzy set of characteristics significantly impacting phenomenon Y . The transformation of variables X_j into the form of intuitionistic fuzzy set A'_j , according to the above assumptions, requires the determination of $\mu_{A'}(X_j)$, $\nu_{A'}(X_j)$ and $\pi_{A'}(X_j)$. Formally the level of membership and non-membership is obtained by solving the following equations:

$$\mu_{A'}(X_j) = \frac{\sum_{i=l}^k n_i}{N}, \quad (7)$$

$$\nu_{A'}(X_j) = \frac{\sum_{i=i}^u n_i}{N}. \quad (8)$$

The level of uncertainty $\pi_{A'}(X_j)$ of the membership variable X_j in the intuitionistic fuzzy set A'_j will be the sum of the number of non-answers and/or the number of neutral answers. Formally its value is obtained in accordance with definition 3, through solving the following equation:

$$\pi_{A'}(X_j) = 1 - \mu_{A'}(X_j) - \nu_{A'}(X_j). \quad (9)$$

Stage 2. The pattern of the importance of the influence on phenomenon Y is set as an intuitionistic fuzzy set A'_p . Since the pattern assumes that for a given variable all respondents will consistently indicate category k in their evaluation, it will typically only be a fictional pattern (it is not impossible

that a concrete characteristic will be the pattern, however the probability of this will rather decreases with a large number of respondents). The formal character of the pattern of importance A'_p for the set of variable X shall be expressed as follows:

$$A'_p(X) = \{\mu = 1, \nu = 0, \pi = 0\}. \quad (10)$$

Stage 3. The proposed method assumes that the results of the evaluation of the importance of each of the variables of intuitionistic fuzzy sets will be compared to the result of the best agreed upon pattern of importance presented in stage 2. For comparison, the Euclidean distance for intuitionistic fuzzy sets, which in accordance with the designations proposed in this method, will be as follows:

$$d(A'_p, A'_j) = \sqrt{\frac{1}{2} \sum_{i=1}^n (\mu_{A'}(X_j) - \mu_{B'}(X_j))^2 + (\nu_{A'}(X_j) - \nu_{B'}(X_j))^2 + (\pi_{A'}(X_j) - \pi_{B'}(X_j))^2}. \quad (11)$$

Stage 4. Having obtained the estimated distances in stage 3, between the importance evaluation of each characteristic and the pattern of importance, it is possible to determine the importance ranking of the influence on phenomenon Y , in accordance with the rule stating that the lower distance from the pattern of importance, the higher the position of the variables in the importance ranking.

4. Results

The structure of the research sample was created based on data from the Central Statistical Office dated January 2019. The structure of the research sample is presented in Table 1.

Table 1. The structure of the research sample.

Economic Activity	Enterprise Size		
	Small	Medium	Total
	N = 890	N = 151	N = 1041
Agriculture, forestry and fishing (section A)	2.47%	3.97%	2.69%
Manufacturing (section C)	12.70%	20.53%	13.83%
Wholesale and retail trade; repair of motor vehicles and motorcycles (section G)	39.33%	31.79%	38.23%
Transportation and storage (section H)	10.11%	10.60%	10.18%
Accommodation and food service activities (section I)	5.84%	2.65%	5.38%
Information and communication (section J, divisions 61–63)	5.28%	4.64%	5.19%
Financial and insurance activities (section K)	3.93%	7.95%	4.51%
Professional, scientific and technical activities (section M)	17.53%	14.57%	17.10%
Administrative and support service activities (section N, divisions 78–79)	0.90%	1.32%	0.96%
Arts, entertainment and recreation (section R, division 93)	1.91%	1.99%	1.92%

Source: own elaboration.

The scope of the analysis consists of 24 elements of intellectual capital, which have been grouped into 3 categories: human capital, structural capital and relational capital. Each of the elements, along with its symbol designation, has been presented in Tables 2–4.

The importance assessments of the impact of intellectual capital on the sustainable development of enterprises have been conducted through ordinal measurement scale with 4 levels: “definitely insignificant”, “insignificant”, “significant”, “very significant”. Additionally, managers had the option of responding outside of the adopted scale by answering: “difficult to say”. The share of responses for

each option in the importance assessment scale for each of the elements of intellectual capital has been presented in Tables 5–10.

Table 2. Elements of intellectual capital.

Symbol	Human Capital Elements
H1	Employee knowledge
H2	Employee skills
H3	Creativity and innovativeness of employees
H4	Employee motivation
H5	Employee experience
H6	Employee reliability
H7	Employee honesty
H8	Ability to work in a team
H9	Ability and willingness of employees to share knowledge and information
H10	Employee satisfaction
H11	Employee involvement
H12	Employee well-being
H13	Employee health

Source: own elaboration.

Table 3. Elements of structural capital.

Symbol	Structural Capital Elements
S1	Technical infrastructure
S2	Information resources/systems and databases
S3	Intellectual property (patents, licenses, trademarks)
S4	Organizational culture
S5	Processes and management methods

Source: own elaboration.

Table 4. Elements of relational capital.

Symbol	Relational Capital Elements
R1	Customer loyalty and satisfaction
R2	Customer participation in creating products/services
R3	Investor relations
R4	Relations with science and research units
R5	Relations with suppliers
R6	Reputation and image of the enterprise on the market

Source: own elaboration.

Based on the information contained in Tables 5–10, the results have been transformed into intuitionistic fuzzy sets in accordance with the method presented in chapter 3.3. The results of the transformation have been presented in Table 11.

Table 5. The number of responses of managers of small enterprises in assessing the importance of elements of human capital.

Symbol	Definitely Insignificant	Insignificant	Significant	Very Significant	Difficult to Say
H1	7	33	299	519	32
H2	7	15	283	567	18
H3	10	58	382	373	67
H4	6	16	396	437	35
H5	5	30	396	393	66
H6	5	7	288	577	13
H7	6	3	258	610	13
H8	3	31	443	355	58
H9	4	37	461	331	57
H10	6	16	439	387	42
H11	3	9	389	470	19
H12	3	32	464	317	74
H13	8	17	376	456	33

Source: own elaboration.

Table 6. The number of responses of managers of medium enterprises in assessing the importance of elements of human capital.

Symbol	Definitely Insignificant	Insignificant	Significant	Very Significant	Difficult to Say
H1	0	4	51	90	6
H2	0	3	51	95	2
H3	0	12	59	63	17
H4	0	1	70	71	9
H5	0	9	75	54	13
H6	0	0	63	85	3
H7	0	0	52	95	4
H8	0	7	71	64	9
H9	0	6	78	49	18
H10	0	1	85	58	7
H11	0	0	76	68	7
H12	0	7	81	50	13
H13	0	3	78	65	5

Source: own elaboration.

Table 7. The number of responses of managers of small enterprises in assessing the importance of elements of structural capital.

Symbol	Definitely Insignificant	Insignificant	Significant	Very Significant	Difficult to Say
S1	9	56	480	274	71
S2	10	109	409	279	83
S3	43	210	338	168	131
S4	7	53	527	226	77
S5	10	62	473	264	81

Source: own elaboration.

Table 8. The number of responses of managers of medium enterprises in assessing the importance of elements of structural capital.

Symbol	Definitely Insignificant	Insignificant	Significant	Very Significant	Difficult to Say
S1	0	6	82	55	8
S2	0	16	72	54	9
S3	3	36	55	37	20
S4	0	9	77	50	15
S5	0	9	82	51	9

Source: own elaboration.

Table 9. The number of responses of managers of small enterprises in assessing the importance of elements of relational capital.

Symbol	Definitely Insignificant	Insignificant	Significant	Very Significant	Difficult to Say
R1	6	6	300	551	27
R2	34	180	348	179	149
R3	69	171	313	242	95
R4	136	315	224	72	143
R5	25	56	412	359	38
R6	7	6	245	616	16

Source: own elaboration.

Table 10. The number of responses of managers of medium enterprises in assessing the importance of elements of relational capital.

Symbol	Definitely Insignificant	Insignificant	Significant	Very Significant	Difficult to Say
R1	1	4	54	86	6
R2	2	27	61	38	23
R3	9	22	53	52	15
R4	16	47	43	23	22
R5	0	14	66	59	12
R6	0	1	43	102	5

Source: own elaboration.

The second stage of the proposed method assumes determining the coordinates of the pattern of the importance assessment of the characteristics in the form of intuitionistic fuzzy sets. It is worth noting that the importance assessment has been carried out on a 4-point ordinal scale. Therefore, the pattern of importance of the influence of a given element of intellectual capital on the sustainable development of enterprises will assume that all managers indicated the 4th option, namely “very significant”. It can, therefore, be shown that after utilizing the proposed transformation (see stage 1) the formal form of the pattern can be denoted for small and medium enterprises, respectively, in the following way:

$$A'_p(X) = \{\mu = 1, \nu = 0, \pi = 0\}. \quad (12)$$

Having obtained the determined patterns, the Euclidean distance has been calculated between each of the elements of assessment for intellectual capital and the importance pattern. Calculating this distance was the basis for developing the ranking of importance of elements in accordance with the rule that the closer a given element is to the pattern of importance, the greater its position in the ranking of importance. The results have been presented in Table 12.

Table 11. The results of the importance assessment of the influence of elements of intellectual capital on the sustainable development of enterprises in the form of intuitionistic fuzzy sets.

Symbol	Small			Medium		
	$\mu(X_j)$	$\nu(X_j)$	$\pi(X_j)$	$\mu(X_j)$	$\nu(X_j)$	$\pi(X_j)$
Human capital						
H1	0.919	0.045	0.036	0.934	0.026	0.040
H2	0.955	0.025	0.020	0.967	0.020	0.013
H3	0.848	0.076	0.075	0.808	0.079	0.113
H4	0.936	0.025	0.039	0.934	0.007	0.060
H5	0.887	0.039	0.074	0.854	0.060	0.086
H6	0.972	0.013	0.015	0.980	0.000	0.020
H7	0.975	0.010	0.015	0.974	0.000	0.026
H8	0.897	0.038	0.065	0.894	0.046	0.060
H9	0.890	0.046	0.064	0.841	0.040	0.119
H10	0.928	0.025	0.047	0.947	0.007	0.046
H11	0.965	0.013	0.021	0.954	0.000	0.046
H12	0.878	0.039	0.083	0.868	0.046	0.086
H13	0.935	0.028	0.037	0.947	0.020	0.033
Structural capital						
S1	0.847	0.073	0.080	0.907	0.040	0.053
S2	0.773	0.134	0.093	0.834	0.106	0.060
S3	0.569	0.284	0.147	0.609	0.258	0.132
S4	0.846	0.067	0.087	0.841	0.060	0.099
S5	0.828	0.081	0.091	0.881	0.060	0.060
Relational capital						
R1	0.956	0.013	0.030	0.927	0.033	0.040
R2	0.592	0.240	0.167	0.656	0.192	0.152
R3	0.624	0.270	0.107	0.695	0.205	0.099
R4	0.333	0.507	0.161	0.437	0.417	0.146
R5	0.866	0.091	0.043	0.828	0.093	0.079
R6	0.967	0.015	0.018	0.960	0.007	0.033

Source: own elaboration.

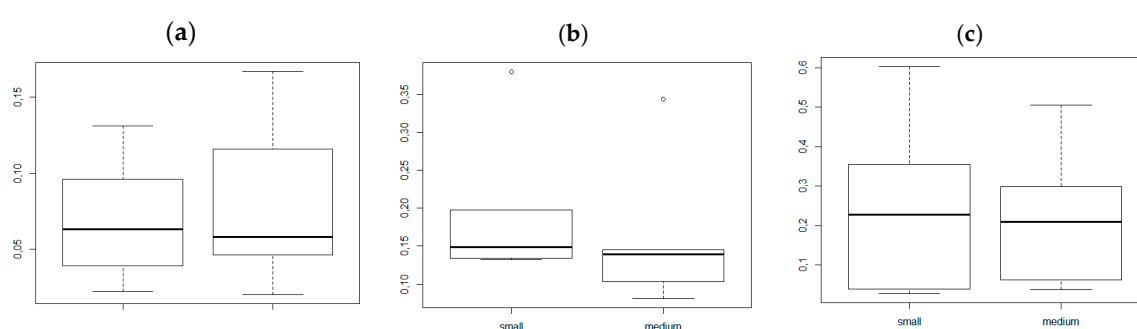
Based on the obtained results, the first of the proposed hypotheses should be rejected. It can be stated that each of the elements of intellectual capital do not have an equal impact on the business sustainability of small and medium enterprises. It can be clearly observed, for instance, in elements H7 and R4, where the difference in distance from the pattern of importance was equal to 0.581 (for small enterprises). For comparison, the difference in the distances between H7 and H6 was only 0.002.

For the purpose of verifying the second research hypothesis, both the position of each element in the obtained rankings and the distances of elements from the pattern of importance can be taken into account. In the first case, the analysis of the positions of each of the elements of intellectual capital in the obtained importance rankings allows us to observe a significant consistency in the responses of managers of small and medium enterprises. This has been confirmed by Kendall's tau-b statistic. The value $\tau_b = 0.775$ indicates a relatively high statistical significance of the dependence between the obtained rankings (at a level of significance of 0.05). Such a result suggests that there is no basis for rejecting the second hypothesis. It means that the size of the enterprise does not have an impact on the importance assessment of the intellectual capital elements. In the second case, the distance analysis between the elements of intellectual capital and the pattern of importance was made easier by presenting the obtained results of the analysis in the form of three box diagrams, respectively, for human capital, structural capital and relational capital. The box diagrams have been presented in Figure 2.

Table 12. The ranking of importance of the influence of elements of intellectual capital on the sustainable development of enterprises.

Elements of Intellectual Capital	Small		Medium	
	Distance	Rank	Distance	Rank
H1–Employee knowledge	0.070	10	0.058	8
H2–Employee skills	0.039	6	0.029	3
H3–Creativity and innovativeness of employees	0.131	16	0.167	20
H4–Employee motivation	0.056	7	0.063	9
H5–Employee experience	0.100	13	0.127	15
H6–Employee reliability	0.024	2	0.020	1
H7–Employee honesty	0.022	1	0.026	2
H8–Ability to work in a team	0.091	11	0.092	12
H9–Ability and willingness of employees to share knowledge and information	0.096	12	0.143	17
H10–Employee satisfaction	0.063	9	0.050	7
H11–Employee involvement	0.030	4	0.046	5
H12–Employee well-being	0.108	14	0.116	14
H13–Employee health	0.057	8	0.046	6
S1–Technical infrastructure	0.132	17	0.081	11
S2–Information resources/systems and databases	0.198	20	0.145	18
S3–Intellectual property (patents, licenses, trademarks)	0.380	23	0.344	23
S4–Organizational culture	0.134	18	0.139	16
S5–Processes and management methods	0.149	19	0.103	13
R1–Customer loyalty and satisfaction	0.039	5	0.063	10
R2–Customer participation in creating products/services	0.355	22	0.299	22
R3–Investor relations	0.336	21	0.269	21
R4–Relations with science and research units	0.603	24	0.506	24
R5–Relations with suppliers	0.118	15	0.149	19
R6–Reputation and image of the enterprise on the market	0.028	3	0.037	4

Source: own elaboration.

**Figure 2.** Box-plots for components of intellectual capital. * (a) human capital, (b) structural capital, (c) relational capital. Source: own elaboration.

An analysis of the box diagrams reveals that representatives of both small and medium enterprises similarly assessed the importance of the impact of the elements of human capital on the sustainable development of enterprises. A slightly greater scope of variation has been observed in the case of assessments made by representatives of medium-sized enterprises.

In the case of structural capital, the area of variation of importance assessments was the lowest, which is suggested by a larger compatibility in the opinion of managers of both small and medium enterprises. It can be also observed that in the case of medium enterprises the distances from the

importance pattern are smaller, which suggests that managers of medium enterprises attach greater importance to elements to structural capital than managers of small enterprises.

The results of the importance assessment for the elements of relational capital are worth noting in particular. In this case, the distances from the importance pattern are definitely greater, which indicates that the assessments of importance of the influence of elements of relational capital on the sustainable development of enterprises are relatively lower than in the case of other elements. Comparing the obtained results with the two groups of enterprises in question, it can be observed that there is insignificantly greater consistency of opinions among representatives of medium-sized enterprises.

5. Discussion

The paper presents the extent of the influence of each of the elements of intellectual capital on the sustainable development of SMEs in Poland from the perspective of the managers of these companies. The research indicates that according to managers of small enterprises, the most important for the sustainable development of enterprises are employee honesty, employee reliability, reputation and the image of the enterprise on the market. Worth mentioning are also employee involvement, customer loyalty, and satisfaction. Thus, eight out of ten key factors influencing the sustainable development of small enterprises are elements of human capital. The results, therefore, definitely show that out of the three elements of intellectual capital, it is human capital that has the greatest influence on the sustainable development of small companies. The first of the proposed hypotheses should be rejected—it states that all elements of intellectual capital have an equal impact on the business sustainability of small and medium enterprises. Similar results can be observed in studies [48–50]. In the context of the survey results, it is surprising that, in the opinion of managers, employee satisfaction and employee well-being are not high-rank factors. It is most remarkable because many small and medium-sized enterprises in Poland have problems in finding workers.

Managers have attached the least importance to elements of relational capital, including relations with science and research units, customer participation in creating products/services and investor relations. It is worth noting in particular that among the group of managers of small and medium enterprises there is a high degree of similarity in their answers. It could, therefore, be assumed that managers of medium enterprises share the opinions of their colleagues, i.e., managers of small firms. It can be clearly observed a significant consistency in the responses of managers of small and medium enterprises. Thus, there is no basis for rejecting the second hypothesis. It states that the size of the enterprise does not have an impact on the indication of managers when it comes to the importance assessment of individual elements of intellectual capital on the sustainable development of enterprises.

Among the differences observed in the responses, it is worth noting employee skills, which are mostly appreciated by managers of medium enterprises (the third most common indication). Furthermore, a lower degree of importance was attached to customer loyalty and satisfaction (tenth most common indication, i.e., five places lower in the ranking when compared with answers given by managers of small companies). It can be stated that small enterprises, more than the medium-sized companies, care for the client. In the competitive market, they want to fulfill the customers' wishes and try to meet customers' expectations. Due to the limited scale of operations, small enterprises, more than medium-sized companies, care for good relations with stakeholders. Their contacts with customers and suppliers are often more open and personal than in the case of medium-sized companies.

The results of the research conducted for this paper suggest that human capital is the most important element of intellectual capital. It is worth remembering that the value of an enterprise is also created based on the two other elements of intellectual capital, namely structural and relational capital. Furthermore, for the sustainable development of enterprises, an important aspect is the co-existence and influence of all of the elements of intellectual capital. The knowledge about which elements of intellectual capital have the greatest impact on the sustainable development of enterprises makes it possible to better understand the existing relations between intellectual capital and business sustainability. This knowledge can be utilized in formulating the strategy of the enterprise, while

identifying the resources of an enterprise, which have a particular significance and should be developed, created and obtained, in the case of missing assets. The results of the research can be utilized primarily by managers, which can apply it in the process of managing intellectual capital, in monitoring the effects of business efforts, in allocating financial resources in non-material assets in shaping the systems for motivating employees and salary systems. Employees can utilize this information to determine their role and position in the company and build their value and connection with it. Moreover, the awareness of managers and employees is increasing in the scope of their role in shaping the sustainable development of enterprises, which can have an impact on the change of organizational culture as well as increase innovativeness and creativity. The paper presents the extent of the influence of each of the elements of intellectual capital on the sustainable development of enterprises from the perspective of the managers of these companies.

Analyzing the results of all of the studies mentioned in the paper, it is worth to notice that the structure and importance of the elements of intellectual capital can be as diversified as the diversification of the enterprises in question. Each of them conducts its activity based on different resources in frames of other conditions. Enterprises can differ based not only on their size but also on the structure of their employment, the profile of the activity they conduct, the variety of products (and services) they offer and their relations with stakeholders (including relations with suppliers and clients). It is therefore difficult to unequivocally refer to and interpret, the results of a specific study with the results of other researchers. Furthermore, there is a limited number of studies that focus on the influence of intellectual capital on the sustainable development of enterprises—in contrast with studies assessing the influence of each of the elements of intellectual capital on the value of the company and its performance indicators. To summarize, it is worth observing once again that the strength of intellectual capital and its influence on the sustainable development of enterprises stems from the connection and its respective relations with its sub-elements.

The SMEs sector in Poland could be more sustainable and engaging more socially and environmentally responsible practices. The level of consideration of environmental or social issues in the current activity of SMEs is relatively low [4]. In recent years in Poland, we can observe a growing awareness of managers and consumers, but there is still a lot to do. Polish consumers have increasing expectations of the products and services offered to them as well as increasing expectations of employers in the context of working place. Small and medium-sized enterprises in Poland should build and follow a business philosophy based on balancing financial, social and environmental considerations. It means that SMEs in Poland should to “seek strategies that simultaneously create economic value and integrate concerns for the human communities in which they operate and the ecosystems where they have an impact” [12]. Ionescu [70] concludes that to become sustainable, an enterprise must be led by managers with strategic vision and also possess human resources with multiple skills and a higher level knowledge, a flexible management system, material and financial resources, advanced technologies, as well as an organizational culture oriented to change. The sustainable enterprise is creating extended periods of efficiency and multidimensional performance, validated by market and society. It is crucial, essential and can give benefits for all—each enterprise and its stakeholders. Besides, public opinion is no longer satisfied with corporations that focus solely on short-term profit maximization. People want corporations to consider broad human needs [71]. These general requirements are also adequate for SMEs in Poland.

In terms of directions for future research, it is worth taking into account other factors that differentiate the answers of the respondents. It is also worth asking managers about:

- what barriers they see when it comes to implementing the concept of intellectual capital and business sustainability;
- how they perceive the level of sustainable development at their firm and how do they understand and assess the assumptions and applications of the implementation of the concept of business sustainability on its own.

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