

Article

The Analysis of Mutual Relations and Dependencies of Intellectual Capital Components in Polish Enterprises in the Context of Sustainability Goals

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Abstract: Intellectual capital (IC) has been an important element of business management for some time. Understanding the role of IC and consciously incorporating it into organisational and management processes is one of the key aspects of building unique competitive advantages in the context of sustainable development. The basic goal of the research was to determine which IC components are given greater importance by the management staff of selected Polish enterprises when shaping their operating strategy and which elements are the object of greater concern during everyday functioning. A statistical analysis of the survey results obtained was carried out, allowing for the characterisation of both the phenomena and trends in the entire surveyed population and taking into account the division criteria related to the size of enterprises and the specificity of their activities. The basic research instrument consisted of a questionnaire. This study covered the territory of southern Poland. The results showed that there are certain elements of IC that managers focus on in particular, and there are differences in the approach that is related to the selected criteria of analysis. This study adds to the existing knowledge of the key elements of strategy for companies managing strategic capital in the context of sustainable development.

Keywords: intellectual capital; human capital; structural capital; relational capital; sustainable intellectual capital



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1. Introduction

According to the directive of 16 December 2022 on corporate reporting in the field of sustainable development (CSRD), certain large entities and small- and medium-sized listed companies will have to present information on environmental, social, and human rights and corporate governance issues in their business report. This is another clear step towards transforming enterprises in line with the principles of sustainable development. In order to meet formal requirements (and informal requirements expressed by contractors or society), enterprises must constantly modify their methods of operation in order to minimise their negative impact on the natural environment and optimise their use of resources. In this context, intangible resources become particularly important. As research [1] indicates, the use of these resources is usually cheaper than material resources, which allows for better sustainable results. In this context, many works emphasise that the approach to sustainable development in a modern knowledge-based economy is based on IC [1–3]. This capital is knowledge regarding the resources and potential of the enterprise and its environment which, when properly used, contributes to the optimisation of the enterprise's operation, better adaptation to the needs of the environment, and construction of relationships with customers based on loyalty. The observed great interest in IC (expressed, for example, in the large number of publications on this subject [1,2,4–7]) is not accidental but rather a response to market trends. Research conducted by Caputo et al. [8] clearly indicates that IC is perceived as a source of increased organisational effectiveness and stakeholder trust. At

the same time, Zhang and Wang [9] found a positive correlation between higher efficiency of IC use and increasing the sustainable development of enterprises as well as increasing investor morale. Meanwhile, research by Srisathan et al. [10] showed that IC contributes to the development of a strategic sustainable culture supporting the sustainable development of the enterprise. The impact of IC on sustainable results is therefore generally confirmed and supported by research results. However, a significant problem related to the use of IC is its complex structure. Even taking into account only the most commonly used division of intellectual capital into three basic components (human capital—HC; structural capital—SC; and relational capital—RC [11–16]), the number and nature of potential connections and dependencies between these components is very large. Additionally, the matter is complicated by the fact that the components of intellectual capital are broad concepts, and within them, many other subcomponents can be specified, often with a significant impact on the functioning of the company and its position in the environment. This complex, multi-layered structure of intellectual capital contributes to difficulties in understanding the relationships between its components and, therefore, to difficulties in IC management. Meanwhile, the effective use of the potential accumulated within IC for sustainable development purposes requires the fullest possible understanding of its specificity and complexity. This area—due to its strong dependence on the specificity of enterprise activities—has not yet been sufficiently researched and characterised. This inspired the authors to conduct research aimed at determining the priorities used by management staff in the context of IC components. The basic goal of the research was to determine which IC components are given greater importance by the management staff of Polish manufacturing and service enterprises when shaping their operating strategies and which elements are the subject of greater concern during everyday functioning. As part of their research, the authors characterised the impact of the size of enterprises and the specificity of their activities on the priorities assigned to IC components. The conducted research contributes to the source literature not only by attempting to determine the most important components of IC within the strategy of Polish enterprises but also by defining their mutual relations and potential dependencies. To ensure the greatest possible reliability of the obtained results, the research was conducted in the form of questionnaire interviews with representatives of the top management of individual enterprises. The research sample consisted of selected enterprises located in the southern part of Poland, mainly in the Silesian and Małopolskie voivodeships. The analysis of the literature showed that there are no publications that attempt to characterise in more detail the strategic priorities regarding IC in Polish enterprises.

The primary goal of the conducted research was to fill the identified knowledge gap regarding the impact of the size of enterprises and the specific nature of their activities on the nature of activities undertaken by the management of these enterprises in the areas of IC management. Available studies mainly focus on examining the relationship between the company's effectiveness and IC as a whole, or on selected elements of IC. The results of research focusing on the relationships between specific elements of IC and the size and specificity of enterprises' activities are useful from both a practical and theoretical point of view. They enable enterprise management staff to obtain knowledge of what activities, to what extent and in what nature, are most important for enterprises of a similar scale and specificity of activity. From a theoretical point of view, the results of such research, after expanding and increasing the diversity of the research sample, may become the basis for modelling the IC structure in a way that ensures its fullest possible adaptation to a specific variant of activity.

The article consists of five main parts. Section 2 presents the characteristics of sustainable intellectual capital, its components, and also selected relationships that exist between the activities of given companies in these areas and the effects of their actions. Section 3 presents the research tool and the characteristics of the research sample. Section 4 includes the results of the conducted research, including a statistical analysis. These results are discussed in Section 5. Section 6 of the article consists of a summary.

2. Literature Review

The role of intangible resources in today's market is highly significant, and their importance for building market advantages is undeniable [17]. Their characteristic feature is that they add value to the organisation, even despite them not being included in traditional corporate accounting documents [18]. This is because, among other reasons, intangible resources are cheaper and support activities concerning sustainability—particularly in companies possessing limited resources [1]. In a knowledge-based economy, ensuring continuous development of an enterprise is only possible through effectively using intangible resources [19]. It should be emphasised that the ways of using resources vary by company [20] and thus result in various outcomes [21,22]. Knowledge concerning the possessed resources and how to potentially use them is crucial to succeed in today's market. It contributes to increasing the possibility of creating new, qualitatively better products, more fully adapted to the needs of the market and, as a result, increasing the profitability of the business [21]. In this context, a company's knowledge and skills—which are mainly the product of its HC [23]—are at the heart of enterprises and are key resources for creating competitiveness [24]. Taking into consideration issues related to sustainability, these elements (knowledge and skills) contribute to increasing the use of intellectual capital [25]. It also plays a significant role in building market positioning and image in relation to the growing environmental awareness of customers. As shown by research results, IC significantly influences the sustainable performance of an organisation [7]. In this context, it is also important that an increase in the effective use of IC can occur as a result of the simultaneous application of the concept of corporate social responsibility (CSR) by enterprises, allowing them to emphasise the commitment to issues important for the society [26]. CSR, constituting not so much an obligation of an enterprise but rather a business strategy [27], contributes significantly to improving an enterprise's competitive position [28].

2.1. Intellectual Capital and Its Components

IC in the contemporary economy becomes the most valuable resource of enterprises [29], which—despite being based largely on intangible resources—has a significant impact on the economic health of an enterprise [30,31] and the scale of its revenues and profits [32,33], as well as its ability to build or maintain a competitive advantage in general [2]. The results of a number of studies indicate that IC has a significant impact on the market success of companies [34,35] and increases the efficiency [36] by contributing to an increased ability to respond to market problems and risks [37], especially within the framework of the global virtual economy [38,39]. Globalisation, technological innovation, and the variable conditions in which enterprises operate, which are a consequence of natural market developments but also phenomena of a sudden and unpredictable nature, have an impact on the increasing recognition of activities aimed at the formation and development of intellectual capital, which are necessary for every company [40]. This is due, *inter alia*, to the fact that the innovative capacity of enterprises—determining its ability to actively create or adapt to market conditions—is closely linked to their ability to take advantage of the components of IC [29]. Moreover, due to the fact that IC—according to the resource concept—is rare and unique [1], the market advantages created as a result of using it are likely to be unique [41] and difficult for competitors to copy [42]. It should be emphasised that the scope of the impact of IC can be much broader and extend beyond the boundaries of companies by supporting, for example, social cultural change towards a commitment to sustainability [2].

The article uses the approach according to which IC constitutes knowledge [43], both concerning the surroundings and resources of an enterprise [44]; these are so-called soft elements that make up an enterprise and that constitute a substitute for physical capital, the use of which contributes to building and developing competitive advantage and increasing profitability [45], creating and improving products [46], acquiring new customers, and building brand loyalty [47]. It should be emphasised that the concept of IC is being con-

stantly developed and expanded. A manifestation of this process consists of the emergence of the concept of sustainable intellectual capital (SIC) [48], which integrates intellectual capital—as well as the activities involved in creating and developing it—with environmental concerns. SIC is defined as intangible resources, capabilities, skills, and knowledge linked to environmental protection activities. This applies both to the organisational level, manifested in the manner in which a business is operated and the type of used technologies and materials, but also to the individual level of employees, as reflected in their attitudes, level of awareness in the context of sustainable development, or degree of involvement in activities of an environmental nature [17]. This research adopts an approach to intellectual capital that takes into account sustainable development.

The most common division points to three components of intellectual capital: human capital (HC), structural capital (SC), and relational capital (RC) [11–16,49], and this approach is used in this article. However, other points of view concerning this issue can be found in the literature, according to which the components include:

- Human and structural capital [18];
- Human and social capital [11];
- Human, structural, and customer capital [50];
- Human, structural, relational, and social capital [51];
- Human, structural, relational, and innovative capital [52];
- Human, structural, relational, innovative, and process capital [53].

In the context of SIC, three basic components of IC are indicated: sustainable human capital (SHC), sustainable structural capital (SSC), and sustainable relational capital (SRC) [54]. Building SIC constitutes part of an enterprise's green strategy being focused on effectively implementing its environmental strategy as a result of expanding environmental knowledge. This, in turn, allows for a more efficient implementation of eco-innovations, opening up opportunities to enter new markets, and diversification leading to increased market power [55].

2.2. Human Capital

Due to its subjective nature, unique creativity, and ability to influence its environment, HC is considered to be the most essential component of IC [56–58]. As indicated by the research results, among all IC components, HC is the main contributor to improving business performance [59], having the greatest impact on the increase in efficiency [60]. HC has a significant impact on sustainable growth [1,61]. HC constitutes the most complex factor for building competitive advantage and the fundamental resource for creating corporate value [62]. Investments in the development of HC constitute investments in the future economic value of a company [63] and are carried out through processes related to education, training, and individual development paths contributing to the acquisition of new or deepening of already existing skills, knowledge, or social abilities [64]. In addition, the existing mechanisms should enable and encourage employees to disseminate knowledge [6]. People with broader and better-developed competencies achieve better results, and a company's efforts that are aimed at developing employee talent contribute to higher levels of employee engagement and motivation [65]. The development of HC should also take into account aspects such as the ability to build and develop interpersonal relationships through, for example, a properly shaped and perpetuated organisational culture [6], which should be reflected in an increase in trust, job satisfaction, or the effectiveness of information exchange [65]. HC is supported by SC and RC [66]. The article uses the HC approach in the context of sustainable development (SHC), according to which it constitutes the knowledge, skills [67], experience, and creativity [68], allowing organisations to overcome environmental problems and allowing ecological innovations to be implemented [69], leading to an increase in the efficiency of an enterprise's operations [70] and contributing to the uniqueness of the implemented solutions [71]. SHC can stimulate significant green innovation, and its higher level translates into a higher probability of developing and implementing sustainable innovations [72].

The literature indicates many components of HC. The elements most frequently mentioned in terms of their importance to the overall HC value are:

- Knowledge [64,67,73];
- Personal [67] and social skills [64] and interpersonal relations [6];
- Health [74,75];
- Competence [75–77];
- Experience [68,73];
- Level of motivation [65,78];
- Commitment [65,70] and values [79];
- Moral and biological depreciation [80];
- Innovation [69,72] and creativity [68,71,81];
- Psychological characteristics [65].

2.3. Structural Capital

One of the biggest problems in terms of HC is its close connection to specific people who, having their own will, goals, and ambitions, can change jobs, which contributes to a given enterprise losing some of its capabilities [82]. SC can be defined as a company's ability to transform the ideas and innovations created by its human resources into more tangible assets that can be used at any time [83] and remain intact, even after employees leave the company [18]. On the one hand, it constitutes the result of actions taken by an enterprise to create, acquire, disseminate, and archive knowledge from both internal (employees) and external (customers, suppliers) sources. On the other hand, it itself provides a proper environment to share knowledge and generate innovative solutions quickly and efficiently [84]. SC includes procedures, patents [64], organisational strategies [85], information systems [86], administrative processes [87], and databases [88] that allow human capital to function productively and efficiently [23] in accordance with an enterprise's strategic objectives [89] and that allow the enterprise to ensure high quality and reduce operating costs [90], as well as make optimal use of its potential [91]. SC includes aspects related to properly designing the working environment, affecting people's physical and mental health [74] as well as their well-being [6], and the formation of behaviours focused on sustainable development [72]. The article uses the HC approach in the context of sustainable development (SSC), according to which it represents organisational resources related to environmental protection and activities of an innovative nature [92] that help companies achieve higher productivity [93]. It allows for the specification of supporting infrastructure related to environmental protection or sustainable development strategies [94]. As indicated by research results, SSC is positively related with improved sustainable business performance. Computerisation—constituting a significant aspect of structural capital—supports knowledge-sharing processes in sustainable organisations as well as promoting organisational learning. It also supports the processes of integrating new solutions with existing knowledge [74] and allows for the expansion of internal and external networks [41], which contributes to the productivity of companies [42].

The literature indicates many components of SC. The elements most frequently mentioned in terms of their importance to the overall SC value are:

- Quality and reach of information systems [65,86];
- Company reputation [41];
- Level of computerisation [74,86];
- Organisational concept [85,90,93,94];
- Ability to acquire, disseminate, and develop knowledge [74,84];
- Intellectual property rights [91,95,96];
- Databases [95] and documentation [88];
- Procedures [64];
- Administrative processes [87,90];
- Management methods and styles [23,72,74,85].

2.4. Relational Capital

RC is the sum of an enterprise's direct and indirect relationships with the market [97] and contributes to increasing the value of the company [98] as well as building or strengthening the competitive advantage of an enterprise [99]. RC constitutes a manifestation of competitive and social intelligence [74] and arises as a result of creating, maintaining, and promoting high quality [100]; and an enterprise's interactions [101] with entities from its surroundings (customers, suppliers, other entities) [31,102], which is based on existing trust, norms, and commitment [103] to take advantage of the knowledge and experience of others in its own development [104]. It should be emphasised that a higher level of relationship increases the chances of acquiring more valuable knowledge resources [105], and frequent interactions with partners can act positively to strengthen this interaction and increase the resource stream [72]. RC is an important tool for building an enterprise's reputation as a result of a better understanding of the needs of its counterparties and, as a result, later meeting those needs more fully, which in turn should be reflected in higher prices or margins [94]. The article uses the HC approach in the context of sustainable development (SRC), according to which it clearly emphasises environmental aspects in contacts with entities from an enterprise's surrounding, leading to increased opportunities of building competitive advantages [92]. Increasing the emphasis on environmentally friendly products in many cases contributes to increased customer loyalty and satisfaction which, in the long term, can lead to an improved image of an enterprise as well as an increase in the number and importance of relationships [94]. In addition, SRC can help a company learn from its partners about its weaknesses and opportunities concerning sustainability [6], as well as how to overcome problems, through the mutual exchange of information and expertise.

The literature indicates many components of RC. The elements most frequently mentioned in terms of their importance to the overall RC value are:

- External communication systems [72,92];
- Strength of a company's brand or its products [92,96];
- Relationships with major customers [74,101,104];
- Customer loyalty [106,107];
- Efficiency of distribution channels [101];
- Social capital [108];
- Norms of cooperation [103,109];
- Trust [103,106];
- Consumer satisfaction [100,110];
- Stakeholder relations [101,104].

2.5. Research Questions and Hypotheses

As indicated earlier, the results of the research available in the literature confirm that the potential impact of IC on the company's operating results, in the context of sustainable development, is very large and covers a wide range [111,112]. IC and its components contribute to very high productivity growth, particularly in technologically advanced [113] and capital-intensive enterprises [59]. Research has shown that IC is a strategic resource that increases the value, performance, and competitiveness of an organisation [114]. Taking into consideration the aspects related to sustainability within the SIC concept has an impact on all IC components on supply chain performance [115]. Some research results indicate that using SC increases the market advantage several times over the traditional approach based on material resources [116]. As research indicates, the components of IC can be effectively used to improve the functioning of enterprises and thus increase their value [117–119]. It has also been observed that there is a correlation between the level of IC and the innovation potential as a result of the increase in dynamic capabilities of enterprises [120]. Li et al. indicated that IC is a key asset for companies seeking to improve innovation (i.e., increase efficiency and maintain market dominance) [44]. According to Hsu and Fang, a company with greater IC has greater innovation capabilities and performance than an organisation

with less IC [121], especially in the context of green innovation [72]. IC also impacts better project management and implementation [122]. The development of IC has an impact on improving the flow of information exchange within enterprises [123] as well as between the company and those in its environment.

3. Materials and Methods

Taking into account the results of existing research and the identified gap in the area of characterising the priority of IC components in Polish enterprises, this paper attempts to answer the following research questions:

- Which IC components are the most important for the studied group of enterprises?
- Does the specificity of enterprises' activities influence the specificity of activities undertaken within the IC framework?
- Which IC components have the highest number of correlations? Are they of great importance in their area?
- Are the IC components correlated with their area and/or with other areas?

These research questions, taking into account the current state of knowledge in the field, led to the following hypotheses:

H1. *The scope of activities undertaken by enterprises within IC depends on the specificity of their business.*

H2. *The size of an enterprise influences the priorities it uses within the IC components.*

H3. *The components of human capital have the greatest impact on the specificity of an enterprise's activities within IC.*

The basic research tool used to collect information and verify the presented hypotheses was a survey questionnaire. The worksheet consisted of 30 questions divided into three sections corresponding to the components of intellectual capital: human capital (HC), structural capital (SC), and relational capital (RC). The list of studied elements was established on the basis of an in-depth review of the literature (Sections 2.2–2.4), allowing us to determine the basic key factors from the point of view of effectively creating, developing, and using individual IC components.

In the field of HC, respondents assessed the following 10 elements (they determined the importance of these elements from the point of view of the strategy used in the company):

- (HC1) Knowledge;
- (HC2) Personal and social skills and interpersonal relations;
- (HC3) Health;
- (HC4) Competence;
- (HC5) Experience;
- (HC6) Level of motivation;
- (HC7) Commitment and values;
- (HC8) Moral and biological depreciation;
- (HC9) Innovation and creativity;
- (HC10) Psychological characteristics.

In terms of SC, the significance of the following elements was analysed:

- (SC1) Quality and reach of information systems;
- (SC2) Company reputation;
- (SC3) Level of computerisation;
- (SC4) Organisational concept;
- (SC5) Ability to acquire, disseminate, and develop knowledge;
- (SC6) Intellectual property rights;

- (SC7) Databases and documentation;
- (SC8) Procedures;
- (SC9) Administrative processes;
- (SC10) Management methods and styles.

In the field of RC, the survey studied the significance of the following elements:

- (RC1) External communication systems;
- (RC2) Strength of a company's brand or its products;
- (RC3) Relationships with major customers;
- (RC4) Customer loyalty;
- (RC5) Efficiency of distribution channels;
- (RC6) Social capital;
- (RC7) Norms of cooperation;
- (RC8) Trust;
- (RC9) Consumer satisfaction;
- (RC10) Stakeholder relations.

The basic goal of the research was to determine the degree of importance of individual IC components in the strategic activities of enterprises. The significance of individual elements was determined by representatives of management using a Likert scale (1—low significance; 5—factor of key significance).

The choice of the research sample was purposive. The surveys were sent out in electronic form to 200 companies who, after initial contact, agreed to participate in the survey. In these companies, the answers were provided each time by a representative of the company's top management. In the submitted questionnaire, each of the 30 elements subject to analysis had a short description, allowing the person completing the survey to better understand the assessed issue (Appendix A: Table A1). Data were collected between May and December 2022. The survey covered the area of the southern part of Poland (mainly the Silesian and Malopolskie voivodeships). The basic information concerning the study group is presented in Table 1.

Table 1. Characteristics of the test sample.

Characteristics	Category	Quantity	Percentage
Size	Small	50	25%
	Medium	90	45%
	Big	60	30%
Type	Service	80	40%
	incl.: Small	20	10%
	Medium	40	20%
	Big	20	10%
	Production	120	60%
	incl.: Small	30	15%
	Medium	50	25%
	Big	40	20%

This article uses the following principles of the division of enterprises according to their size (in accordance with EU Commission Regulation (EC) 800/2008):

- Small enterprise (up to 50 employees and annual turnover of up to EUR 10 million);
- Medium enterprise (up to 250 employees and annual turnover of up to EUR 43 million);
- Large enterprise (over 250 employees and annual turnover over EUR 43 million).

Among the studied enterprises, 45% were medium-sized enterprises, 30% were large enterprises, and 25% were small enterprises. It should be added that 60% of the studied enterprises were manufacturing enterprises, while 40% were service enterprises.

Among manufacturing enterprises, the largest share was held by enterprises related to the broadly understood metal industry (28%), automotive industry (25%) and household appliance industry (19%). Most of them involved serial or mass production (89%), and some small- and medium-sized enterprises involved unit production (11%). The processes conducted in this group of enterprises were mainly composed of a machining and assembly nature (94%) and to a much lesser extent processing (6%). In the group of service enterprises, the most numerous groups represented were: repair and assembly enterprises (23%), transport enterprises (20%), and warehousing enterprises (16%). In total, in the group of small enterprises, there were no enterprises employing less than 10 people, the median was 17 people). The majority (65%) of medium-sized enterprises declared employment at the level of 75–150 people, and large enterprises declared 300–350 people employed (in almost 60% of enterprises).

The conducted Cronbach's alpha test provided a satisfactory result of 0.85.

4. Results

4.1. Analysis of the Impact of the Size and Specificity of Enterprises' Activities on the Scope of Activities They Undertake within the IC Framework

In accordance with the hypotheses, it was assumed that the specificity of the processes undertaken by enterprises depend on its size and the specificity of the activities carried out by them. In order to verify hypotheses H1 and H2, the following activities were carried out:

- The obtained test results were subjected to statistical analysis, determining average values for individual tested elements (Figures 1 and 2; Appendix A: Table A2);
- A one-way analysis of variance (ANOVA) test was used to examine the differences in the size of enterprises and the specificity of their activities;
- The obtained average values were tested with the U significance test, with the assumptions $H_0: \mu = \mu_0$, $H_1: \mu > \mu_0$, where μ = base mean and μ_0 = compared mean. The significance level was set at 0.05. The results of the analyses are presented in Figures 3 and 4.

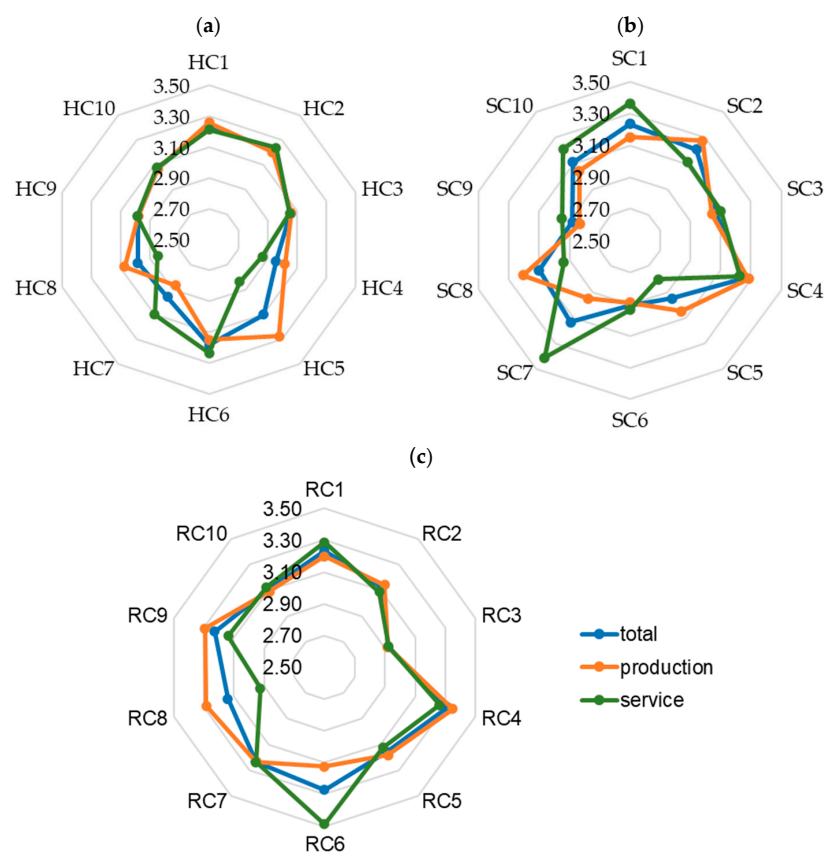


Figure 1. Radar charts of averages: human capital (a), structural capital (b), relational capital (c).

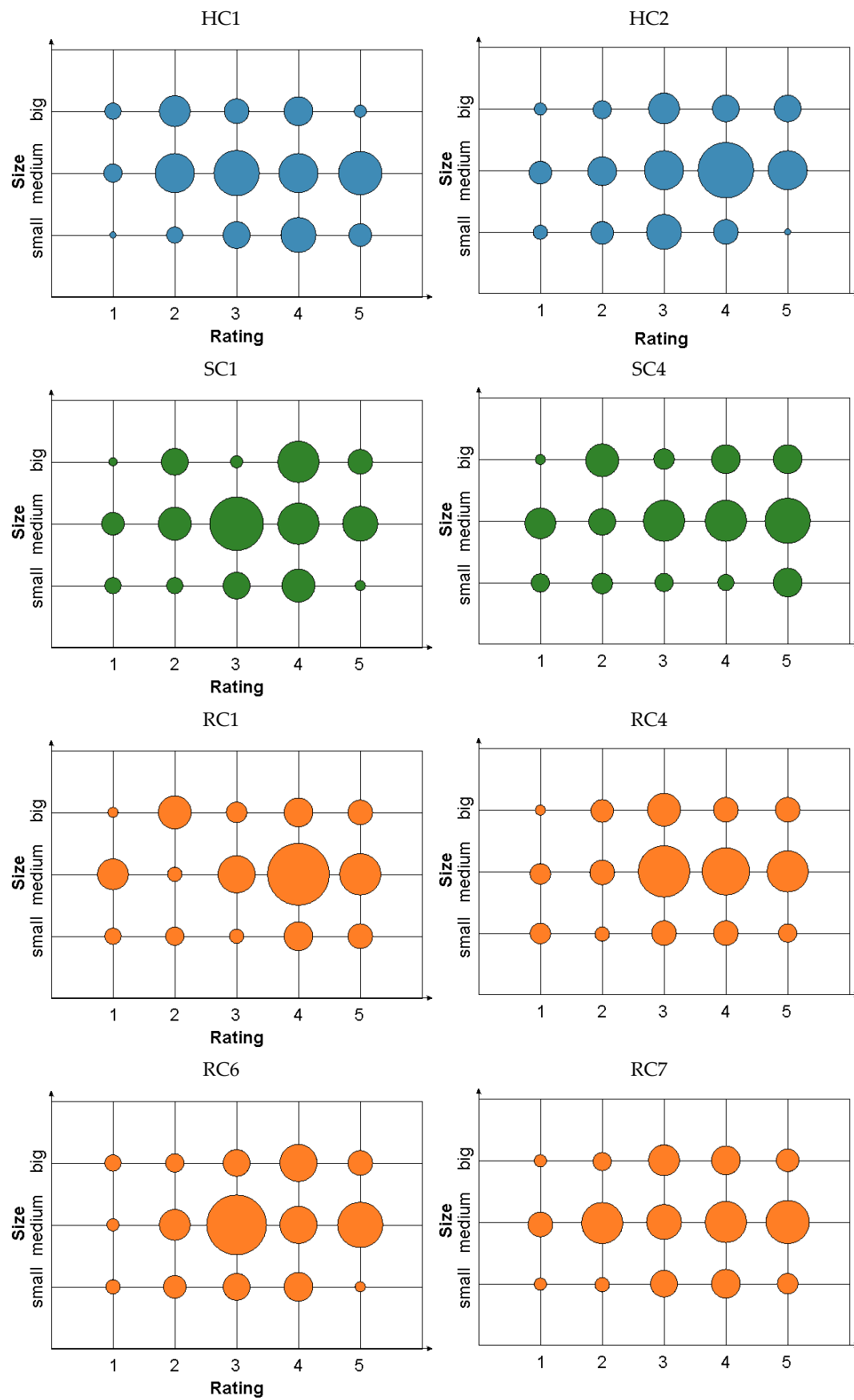


Figure 2. Distribution of responses within selected analytical criteria.

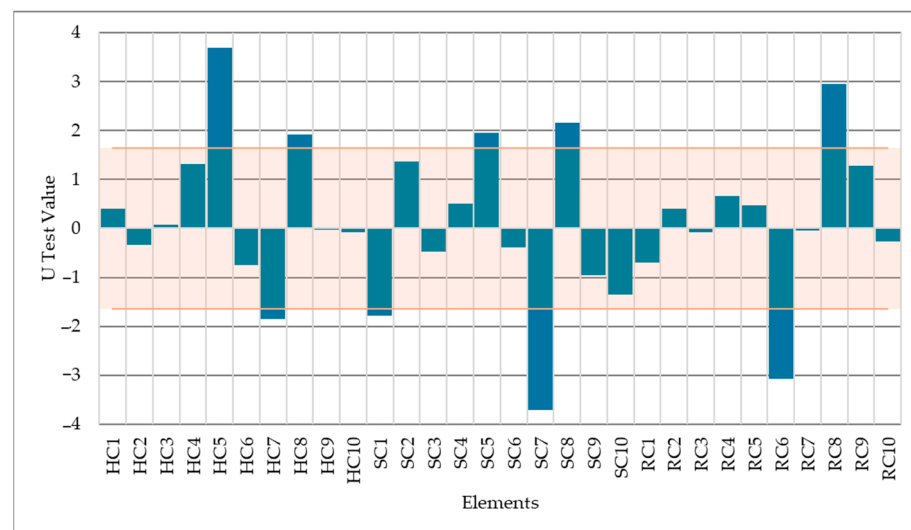


Figure 3. U test values for the comparison of average responses for production and service enterprises (with areas of rejection of the null hypotheses marked).

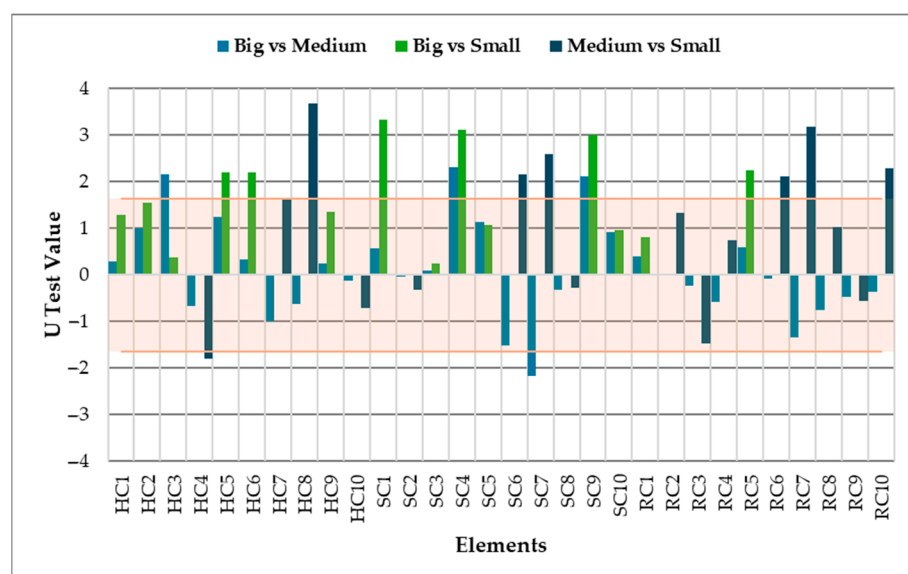


Figure 4. U test values comparing the average responses for large-, small-, and medium-sized enterprises (with areas of rejection of the null hypotheses marked).

The data presented in Table A2 allow us to conclude that enterprises, depending on the size and specificity of their business, apply different priorities within their operational strategy. For example, the element (HC10) comprising psychological characteristics in the group of production enterprises was rated the highest by small enterprises, while in the group of service enterprises, the greatest importance was attached to this element by large enterprises. A large difference in the ratings can also be seen, for example, in relation to the element (SC4) organisational concept. Large enterprises, regardless of the type of activity, rated the importance of this element to be much higher than other groups of enterprises.

Differences in assessing individual criteria can be clearly seen in Figure 1, which presents the average values for individual questions in the groups: total, production, and service. The shapes of the charts for individual data categories differ from each other, often quite significantly, clearly emphasising the different approaches between production and service companies.

Based on the data contained in Table A2 and Figure 1, it can be concluded that the highest average values were found for the following criteria: knowledge—3.32; personal and social skills, interpersonal relations—3.35; quality and reach of information channels—3.42; organisational concept—3.57; external communication systems—3.30; customer loyalty—3.37; social capital—3.34; and cooperation norms—3.39.

Some of the identified differences in assessment are not surprising and are rather consistent with expectations. The requirements related to interpersonal skills, cooperation norms, and the quality of information channels will be greater in large- and medium-sized enterprises. A large number of employees forces a conscious and planned implementation of cooperation standards and, more broadly, organisational culture, which creates a good basis for building good relationships and exchanging knowledge and experience. At the same time, longer and more complex information channels require their good design and the provision of appropriate tools for quick and trouble-free communication. In small enterprises, which often employ several or a dozen people, such issues are in the background from the point of view of organisational management, because in many cases, people have almost constant and direct contact. What should be considered more surprising are the differences related to the importance of customer loyalty or external communication systems, which should be of high importance in every enterprise, regardless of its size or the specificity of its business.

The distributions of responses for these criteria—taking into consideration the size of the enterprises—are presented in Figure 2.

To understand the effect of variables simultaneously, ANOVA tests were performed. The results showed that the size of enterprises affected the mean values of answers ($F = 20.062$, $p = 1.52 \times 10^{-10}$). The same situation was observed for the specificity of their activities ($F = 19.963$, $p = 7.32 \times 10^{-8}$). In order to identify more detailed differences between the studied groups of companies, the U test of significance was carried out, with the assumptions $H_0: \mu = \mu_0$, $H_1: \mu > \mu_0$, where μ = baseline mean and μ_0 = comparison mean. Each time, a rejection area was defined $[1.64, \infty)$, setting the significance level at 0.05. Based on the obtained results, the conclusions are presented in Figures 3 and 4.

The results obtained indicate that in manufacturing companies, greater emphasis is placed on employees having appropriate experience (HC5—the U test value was 3.70) and knowledge (SC5—1.95), i.e., elements that influence the quality of processes and products and the economic result. At the same time, the health of employees and their general physical condition (HC8—1.92) are of great importance, determining their actual ability to participate in production processes, in many cases requiring dexterity or strength. In manufacturing companies, greater emphasis is also placed on the existence of procedures ensuring the repeatability of processes and results (SC8—2.16) and trust (RC8—2.95). For service enterprises, elements related to the quality of IT systems (SC1—1.79) and databases (SC7—3.71) were more important, affecting the efficiency and speed of services provided, as was commitment (HC7—1.86), reflected in the acquisition and clients and maintenance of lasting relationships with them. Social capital was also crucial (RC6—3.07).

Taking into account the size of enterprises, it should be stated that:

- In the group of large enterprises, statistically significant higher results were found for the following elements: HC3—health; HC4—competence; SC9—administrative processes, compared with medium-sized enterprises; HC6—level of motivation; SC1—quality and reach of information systems; SC4—organisational concept; SC9—administrative processes; and RC5—efficiency of distribution channels, compared with small enterprises;
- For medium-sized enterprises, statistically significant higher average values were found for the following elements: SC7—databases and documentation, compared with large enterprises; SC6—intellectual property rights; SC7—databases and documentation; RC6—social capital; RC7—norms of cooperation; and RC10—stakeholder relations, in relation to small enterprises;

- For small enterprises, statistically significant higher values were obtained only in one case: element HC4—competence, in relation to medium-sized enterprises.

The presented results clearly indicate the existence of differences in the way of assessing individual elements, both depending on the size of the enterprise and the specificity of its operations.

This indicates that the scope of activities undertaken by enterprises within IC depends on the specificity of their business, which allows for the confirmation of hypothesis H1. At the same time, the size of the enterprise affects the priorities it uses within the IC components, which confirms hypothesis H2.

4.2. The Analysis of the Impact of Human Capital Components on the Specificity of Enterprise Activities within IC

The study of mutual correlations between the individually analysed IC components was carried out in three stages. In the first stage, the entire dataset was analysed. In the second and third stages, the group of production enterprises and the group of service enterprises were examined, respectively. This allowed us to obtain more data that could be used to verify hypothesis H3.

4.2.1. The Analysis of Correlation of the Entire Study Population

The results for each criterion were subjected to a correlation analysis with the use of Pearson's contingency coefficient at a detail level of $\alpha = 0.05$. Table 2 presents a summary of the correlation coefficient values.

The obtained results allow us to conclude that the highest number of correlations occurs in the group of elements related to HC (109) (Figure 5). It should be mentioned, however, that a slightly smaller number of correlations occur in the group of elements related to SC (101). At the same time, in the group of elements related to SC, a larger number of correlations with higher values were found (82 correlations above 0.4, including 9 above 0.5). In the group of elements related to HC, 79 and 9 correlations of this type were found, respectively. The lowest number of correlations was found in the group of elements related to RC (76), and the most correlations in this group occurred with elements related to HC (30 correlations).

Figure 6 presents the distribution of the correlation index values for the individual analytical criteria. Most correlations (with a value exceeding 0.3) were found for the following five criteria: (SC4) organisational concept (number of correlations—19), (HC2) personal and social skills and interpersonal relations (18), (HC1) knowledge, (HC6) motivation level, and (SC2) company reputation (17 each) (the distribution of correlation index values for these analytical criteria is presented in Figure 7). Mutual correlations were found between all of these elements. The strongest correlations were determined for the relationship of:

- (HC1) Knowledge with (SC2) company reputation (0.50) and (SC4) organisational concept (0.51),
- (HC6) Level of motivation with (SC2) company reputation (0.54),
- (SC2) Company reputation with (SC4) organisational concept (0.54).

In the case of all five criteria with the highest number of correlations, there were statistically significant correlations with:

- (HC3) Concern for employee health (strongest with (SC2) company reputation—0.51);
- (HC10) Including aspects related to the correct combination of employees in terms of psychological characteristics in the strategy (strongest correlations were determined with (HC1) knowledge—0.42; and (SC2) company reputation—0.43);
- (RC5) Measures to ensure the efficiency of distribution channels (particularly strong correlations with (HC1) knowledge—0.52; and (SC4) organisational concept—0.51).

Table 2. Summary of correlation coefficient values (the values of correlation coefficients above 0.3 are marked in blue, and the values of correlation coefficients above 0.5 are marked in orange).

	HC1	HC2	HC3	HC4	HC5	HC6	HC7	HC8	HC9	HC10	SC1	SC2	SC3	SC4	SC5	SC6	SC7	SC8	SC9	SC10	RC1	RC2	RC3	RC4	RC5	RC6	RC7	RC8	RC9	RC10	
HC1																															
HC2																															
HC3																															
HC4																															
HC5																															
HC6																															
HC7																															
HC8																															
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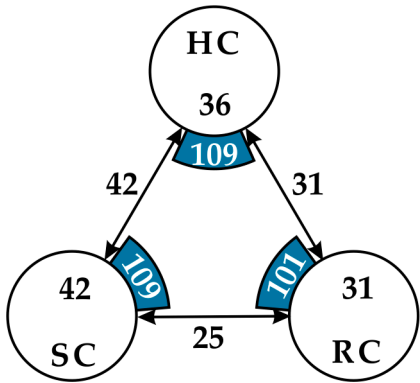


Figure 5. Number of correlations within individual IC groups and between elements from different IC groups.

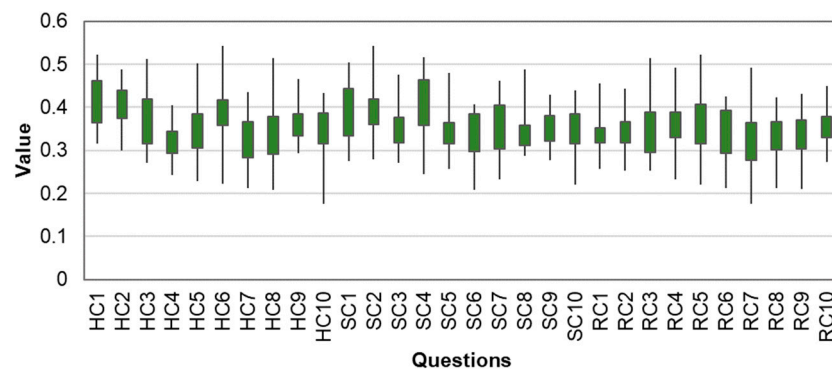


Figure 6. Distribution of correlation index values for individual analytical criteria.

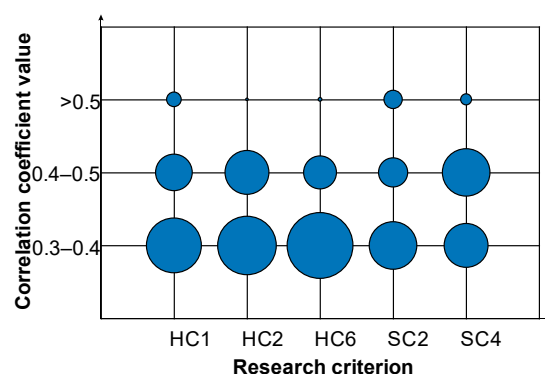


Figure 7. Distribution of correlation index values for selected analytical criteria.

The studied elements with the lowest number of correlations were (SC5) the ability to acquire, disseminate, and develop knowledge (three), (HC4) competencies, and (RC2) the strength of the enterprise's brand or its products (in both cases, four), as well as (SC8) procedures and (RC1) external communication systems (five correlations for both).

In the case of the four studied criteria, a significant difference was observed between the highest and lowest correlation index values; these were as follows:

- (HC6) Level of motivation with (SC2) company reputation correlation at an index value of 0.54 and at the same time with a (RC7) norms of cooperation at a value of 0.2 (especially in the latter case, the results are surprising and indicate the existence of a certain contradiction, because the level of motivation largely depends on the norms of cooperation and the general atmosphere in the company);
- (HC8) Moral and biological depreciation with (RC3) relations with major customers—0.51; and at the same time, correlation index values of 0.2–0.22 with (HC5) experience (a low correlation between biological depreciation and experience may indicate that companies use a personnel strategy based on the sieve method, although confirmation of this thesis would require additional research; in general, it seems that the relationship between these elements should be more clear);
- (RC5) The efficiency of distribution channels correlation at an index value of more than 0.5 with criteria such as (HC1) knowledge or (SC4) organisational concept; and, at the same time, correlation index values of below 0.25 for: (HC4) competencies and (SC10) management methods and styles (high values of correlation indicators with knowledge and organisational concept are quite obvious; these elements significantly affect the quality and efficiency of distribution systems);
- (RC7) Norms of cooperation had the highest correlation value for relations with (RC4) customer loyalty at 0.49 and, at the same time, very low index values for (HC10) psychological characteristics—0.175; (HC4) competencies—0.25; and (HC6) level of motivation—0.22.

4.2.2. The Analysis of Correlation in a Group of Manufacturing Enterprises

The results obtained in the group of manufacturing enterprises allow for the conclusion that the largest number of correlations occurs in the group of elements related to HC (47) (Figure 8). This number mainly consists of correlations within this group (21) and correlations with SC elements (20). By far the smallest number of correlations was identified in the RC group (only 16).

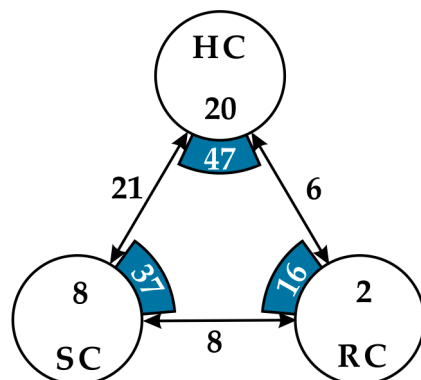


Figure 8. Number of correlations within individual IC groups and between elements from equal IC groups—manufacturing companies.

Figure 9 presents the distribution of correlation index values for the individual analytical criteria in the group of manufacturing enterprises. The highest correlations in the group of manufacturing enterprises (with a value exceeding 0.3) were determined for the following criteria: (HC1) knowledge, (SC2) company reputation, (SC4) organisational concept (eight each in all cases); and (HC2) personal and social skills and interpersonal relations, (HC5) experience, and (SC3) level of computerisation (seven each) (the distribution of the correlation index values for these analytical criteria is presented in Figure 10).

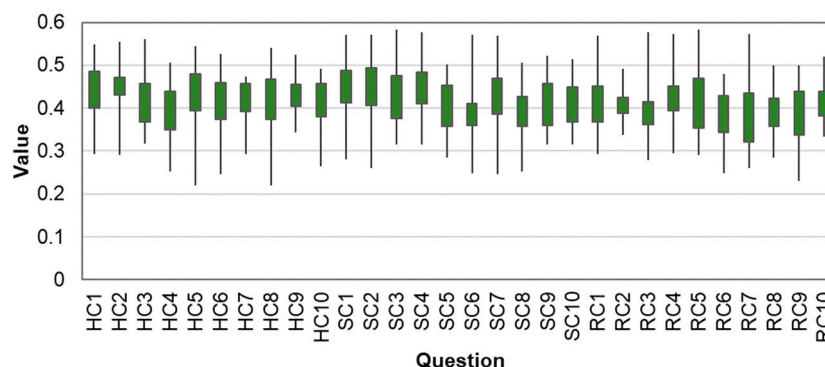


Figure 9. Distribution of correlation index values for individual analytical criteria in a group of manufacturing companies.

The strongest correlations were found in the relationship of:

- (SC3) Level of computerisation with (RC4) customer loyalty (0.58);
- (SC4) Organisational concept with (RC3) relations with major customers (0.58);
- (SC2) Company reputation with (RC4) customer loyalty (0.57);
- (SC6) Intellectual property rights with (RC5) the efficiency of distribution channels (0.57).

The studied elements in reference to which no statistically significant correlations were identified were: (HC7) commitment and values, (SC1) quality and reach of information systems, (SC9) administrative processes, (RC1) external communication systems, (RC2) the

strength of the company's brand or its products, (RC6) social capital, (RC7) collaborative norms, and (RC10) stakeholder relations.

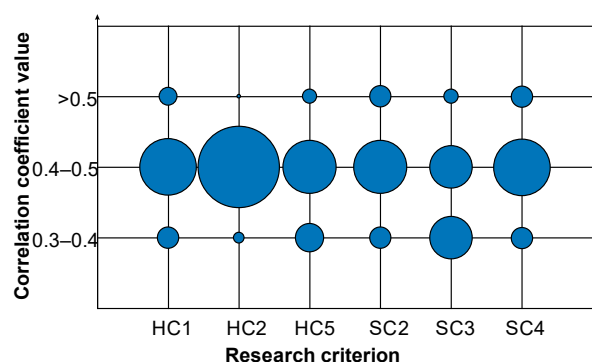


Figure 10. Distribution of correlation index values for selected analytical criteria in a group of manufacturing companies.

4.2.3. The Analysis of Correlation in a Group of Service Enterprises

The results obtained in the group of service enterprises allow for the conclusion that the highest number of correlations occurs in the group of elements related to RC (43) (Figure 11). In turn, the smallest number of correlations was found for the group of elements related to SC (25 correlations).

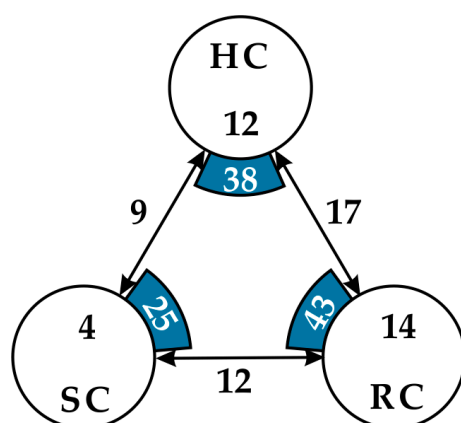


Figure 11. Number of correlations within individual IC groups and between elements from equal IC groups—service enterprises.

Figure 12 presents the distribution of the correlation index values for the individual analytical criteria in the group of service enterprises. Most correlations in the group of service enterprises (with a value exceeding 0.3) were determined for the following criteria: (HC1) knowledge (13); (HC6) motivation level (9); (SC4) organisational concept and (RC6) social capital (both 8); as well as (RC9) customer satisfaction (7) (the distribution of the correlation index values for these analytical criteria is presented in Figure 13).

The strongest correlations were found in the case of the relationships between:

- (HC6) Motivation level and (SC4) organisational concept (0.68), (HC2) personal and social skills and interpersonal relations (0.67), (SC2) company reputation (0.65), and (RC6) social capital (0.65);
- (RC5) Efficiency of distribution channels with (RC8) trust (0.67);
- (SC2) Company reputation with (SC4) organisational concept (0.65).

The studied elements for which no statistically significant correlations were identified were: (HC4) competence, (HC7) commitment and values, (HC8) moral and biological

depreciation, (SC6) intellectual property rights, (SC7) databases and documentation, and (SC8) procedures.

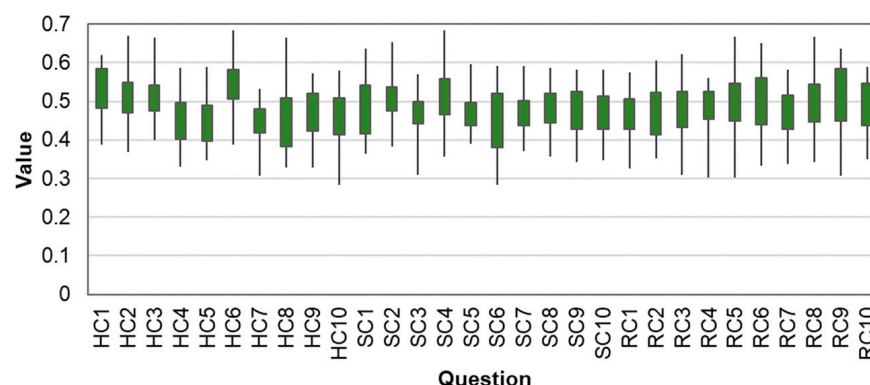


Figure 12. Distribution of correlation index values for individual analytical criteria in a group of service enterprises.

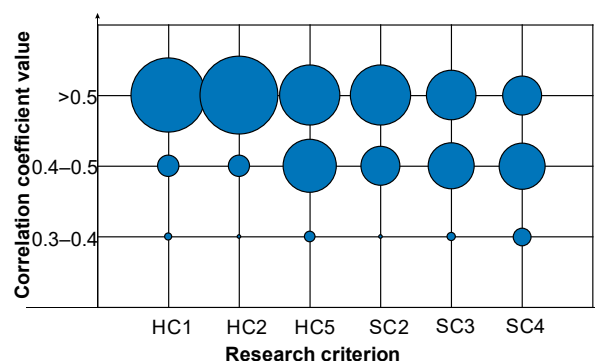


Figure 13. Distribution of correlation index values for selected analytical criteria in a group of service enterprises.

Summarising all of the analyses performed in this part of the research, it should be stated that the results obtained allow for the conclusion that the most correlations occurred in the group of elements related to HC (109 correlations). At the same time, as many as 73 correlations concern elements from groups related to SC and RC. However, very similar values were obtained simultaneously for the group of elements related to SC (101 correlations in total and 68 correlations with elements from other groups). The element showing the strongest correlations was (SC2) the company's reputation. Very similar results were obtained for (SC4) organisational concept. The only element from the HC group for which a similar number of strong correlations was found was (HC1) knowledge.

The results obtained did not allow for the confirmation of hypothesis H3 (the components of human capital have the greatest impact on the specificity of the company's activities within IC).

5. Discussion

IC constitutes an element that is difficult to be characterised in detail. Its intangible nature, its incompletely specified scope, and the resulting analytical problems have an impact on the apparent discrepancies in its interpretation and measurement in the literature. It is very difficult to characterise the exact impact of intellectual capital on corporate performance. It is also difficult to precisely determine the cause-and-effect relations. Therefore, it is impossible to point to specific equations and formulas that would make it possible to carry out an exact determination of what actions will have a specific effect. Many factors remain strictly dependent on the specifics of the industry, the enterprise's

strategic competencies, its knowledge resources, and the used organisational and management methods. The nature of the environment, its susceptibility to intangible factors, or the public expectation of specific actions also have significant impacts. Contemporary trends associated with increased concern for the environmental aspect and rational use of resources and regarding sustainability in general are increasingly forcing companies to adapt to these new environmental conditions. Proper management of IC, having an impact on every aspect of the operations of enterprises, constitutes an essential element of this new corporate approach and, to a large extent, influences the effectiveness of sustainability efforts [7,9,10,25,111,112].

The conducted research allows us to conclude that, in general, the management staff of the surveyed enterprises are aware (although the degree of this awareness varies) of the importance and potential of IC. This is consistent with the results of studies by other authors conducted in other countries and for other industries [2,17,30–39]. This indicates that the concept of IC is already rooted in managers' awareness and is increasingly appreciated.

The conducted research allowed us to state that the analysed enterprises of the elements considered in the study pay particular attention to three main areas:

1. Firstly, aspects related to knowledge and the dissemination of knowledge (high mean ratings for these factors). This clearly indicates a high level of awareness among managers in the area of modern management. Knowledge—which is an intangible resource—at the same time currently constitutes the primary determinant of success in most industries [21,24]. Gaining knowledge, either by acquiring it from the environment or producing it independently, has an impact on the way in which resources are allocated, the type of used resources, and the type and quality of built market advantages, thus significantly determining a company's market success. At the same time, it is crucial in this aspect that knowledge is properly distributed within the company, that it is archived, and that it is as independent as possible from the functioning of specific people in the enterprise (which is not entirely possible due to the existence of expert knowledge closely linked to the professional experience of specific individuals);
2. The second area of focus for the studied enterprises is related to their organisational arrangements. Research by other authors confirms that there are certain relationships between the organisational concept, IC, and operational efficiency of enterprises [17]. The obtained results confirm these relationships and at the same time expand and specify this aspect by including the impact of the organisational concept on improving the knowledge exchange process;
3. The third area of the studied enterprises' increased focus relates to building, maintaining, and developing relationships with customers and those from their general surroundings. According to research by other authors, IC management has a significant impact on creating and improving products [46], acquiring new customers, and building brand loyalty [47]. The conducted research allowed us to demonstrate that beyond the elements identified by other authors, companies strongly emphasise the significance of developing appropriate cooperation norms, building social capital, and establishing efficient external communication systems. These measures—combined with a proper market offer—are expected to increase customer loyalty and reduce their susceptibility to competitors.

The conducted research allowed us, first of all, to verify the hypotheses put forward in the paper. The truth of two hypotheses H1, H2 was proven.

The analyses were carried out on the responses to determine the importance of individual IC components. An analysis of averages was used for the entire group of respondents and divided them depending on the size and specificity of the enterprises' operations. The means in individual groups were also compared using the U significance test. The analysis results presented in this paper indicate the existence of significant differences in the way of assessing individual IC components in individual groups of enterprises. Differences existed both depending on the size of the enterprise and the specificity of its operations.

According to the research results of other authors, HC is the element of IC with the greatest impact on productivity growth and sustainable development [1,60–63]. Taking into account the results presented in the paper, it should be stated that it is not possible to confirm hypotheses H3.

To analyse the influence of factors on the specificity of the company's activities, a correlation analysis between individual IC component factors was used. The existence of dependencies between factors in individual areas and between them has been demonstrated. The in-depth analysis was also carried out depending on the specificity of the enterprises' operations. It should be emphasised, however, that this hypothesis could not be clearly confirmed. The correlation analysis carried out as part of the research allowed us to identify interesting trends occurring in the activities of the studied enterprises. Enterprises that placed a strong emphasis on the shaping and development of knowledge resources at the same time, as part of their strategy, indicated the significance of activities in favour of proper corporate reputation and searched for the most effective organisational solution. Therefore, in the studied group, these factors are perceived as related, which is consistent with the results obtained by other authors [94,100–104]. An enterprise's reputation depends on the knowledge resources, enabling it to efficiently take advantage of its potential, and the organisational structure is designed to make it as easy as possible for employees to function while being closely related to the enterprise's strategic goals and organisational culture. Also of key importance in this aspect—according to the obtained results—are: a properly constructed, effective system of motivating employees, directing them towards activities that are crucial from the company's point of view; the level of health of employees (both in physical and mental terms) affecting the well-being of employees, enabling the possibility to really take advantage of their potential; consciously building groups of employees based on combining them in terms of their personality traits and possessed competencies, resulting in effectively implementing the entrusted tasks using a synergistic effect.

As the available results indicate, the specificity of the company's operations, its size, as well as the type and amount of resources have a significant impact on the specificity of the approach to IC [20–22]. As research results available in the literature indicate, the elements of IC on which enterprises place great emphasis are primarily as follows: the development of knowledge and competencies of employees, creating conditions for expanding interpersonal relations, developing creativity and cooperation, creating an appropriate organisational culture, and building IT solutions [6,65–72,86]. IC increases the efficiency and competitiveness of organisations, has a positive impact on the functioning of supply chains, contributes to the development of the innovative potential of enterprises, and improves the flow of information within the organisation [111–123]. The research allowed us to identify some differences in the approach to IC management in manufacturing and service companies. The factors having the strongest impact on the overall management of intellectual capital in the group of manufacturing enterprises were knowledge; company reputation; organisational concept; personal and social skills and interpersonal relations; experience; and level of computerisation. Meanwhile, in the group of service enterprises, in addition to knowledge and organisational concept, the factors with the highest number of correlations were the level of motivation, social capital, efficiency of distribution channels, and customer satisfaction. It should be regarded as unexpected that there was a very low number or no correlations for the following studied criteria: in the group of manufacturing enterprises: commitment and values, corporate brand strength, and social capital; and in the group of service enterprises: commitment and values, moral and biological depreciation, databases and documentation. These issues require analysis in more detail over the course of another study and with a different research group in order to determine whether this is a general or group-specific phenomenon. According to the authors, in this case, such results were rather influenced by the specifics of the research group.

6. Conclusions

The primary objective of the research was to characterise the basic priorities of the studied enterprises in the field of shaping and developing a sustainable IC. Based on the results of the conducted survey, an attempt was made to determine the most relevant elements within the strategies of the enterprises, their interrelationships, and potential dependencies. The research has shown that—within the group of studied enterprises—there are certain elements within HC, SC, and RC that managers focus on more. This especially concerns elements such as knowledge, personal and social skills and interpersonal relations, the quality and reach of information channels, organisational concept, external communication systems, customer loyalty, social capital, and norms of cooperation.

It was observed that there are differences in the approach between manufacturing and service enterprises due to the specificity of the processes they carry out. The size of the enterprise also had a significant impact on the specificity of the activities undertaken by companies in the context of IC. It was also shown that there were significant correlations between selected elements, which translated into the existence of certain patterns of behaviour.

This study expands the available knowledge concerning the key strategic elements of enterprises managing IC. It allows us to identify elements of particular significance and acquire a better understanding of the relationships and dependencies between the various components of IC.

Like any study, this study also has certain limitations. The main limitation results from the size of the sample and the territorial limitation. The research sample consisted of selected enterprises located in the southern part of Poland, mainly in the Silesian and Malopolskie voivodeships, which may have some influence on the obtained results. Moreover, the research results were analysed without going into detail into the industries represented by the surveyed companies, which may also be important for the distribution of responses. The type of industry was not included in the study. Additionally, the limited size of the research sample (200 enterprises) may also affect the obtained results.

The limitations of the presented research results suggest some possibilities for the authors regarding future research. The territorial limitations indicate the possibility of conducting research on a larger territory on a larger group of enterprises located, for example, in countries of the entire European Union or a significant part thereof, which would allow us to identify a larger number of dependencies and correlations and link them with the state of the economy of a given country. The possibility of using in-depth analysis related to the type of industry in which companies work may also indicate interesting trends related to the answers. Moreover, taking into account this type of data on a larger research sample and in a larger area would allow for the deepening of the statements and conclusions drawn and probably identify additional phenomena and trends.

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Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Table A1. Characteristics of the elements subjected to the test.

Elements	Characteristics
(HC1) knowledge	Knowledge is the totality of knowledge and skills used by individuals to solve problems. It includes both theoretical and practical elements.
(HC2) personal and social skills and interpersonal relations	Personal skills are qualities and abilities primarily centred on an employee's self-awareness, self-management, and self-expression. These skills pertain to how a person understands and regulates their emotions and behaviours. Social skills are a set of behaviours that allow you to interact and relate to others in an effective and rewarding way. These are competencies that can be learned, strengthened, and developed through practice. Social skills are associated with the ease of making and maintaining positive friendships, both in private and professional life. Interpersonal skills are the abilities that facilitate effective communication, collaboration, and interaction with others.
(HC3) health	A state of complete physical, mental, and social well-being.
(HC4) competence	Competencies are a set of skills, knowledge, personality traits, and attitudes that allow us to effectively perform specific tasks or achieve specific goals. They can be acquired through experience, education, or training. They are a combination of three attributes: knowledge, skills, and attitude.
(HC5) experience	Experience gained during employment, performing other paid work, or running a business, which also includes completed internships, current internships, and volunteering. All knowledge and skills are acquired through observation and personal experiences.
(HC6) level of motivation	Motivation to work is an internal state of readiness to take up and perform professional duties. It is the result of many different factors, both internal (age, self-esteem, life satisfaction, employee experience) and external (working conditions in the company).
(HC7) commitment and values	Commitment is the level of enthusiasm an employee has towards the tasks assigned to them at a workplace. The value of human capital lies in its ability to innovate, enhance productivity, and drive organisational success.
(HC8) moral and biological depreciation	Moral depreciation refers to the decline in the value of an asset due to changes in social norms, technological advancements, or shifts in perception. Biological depreciation pertains to the reduction in the value of living organisms or biological assets over time.
(HC9) innovation and creativity	Innovation is the process of turning a new concept into commercial success or widespread use. Creativity is the act of turning new and imaginative ideas into reality.
(HC10) psychological characteristics	Psychological traits are constant, individual-specific, generalised tendencies to specific behaviours, emotions, and judgments. It is a unique structure of traits that motivates the behaviour of an individual. Here is a list of examples of character/personality traits: communicativeness, responsibility, honesty, punctuality, willingness to help others, and sensitivity.
(SC1) quality and reach of information systems	A quality information system (QIS) is an integrated set of activities that provides timely, accurate, relevant, comprehensive, and reliable information about the quality of products or services produced by organisations.
(SC2) company reputation	A company's reputation is the overall assessment that a company earns in the eyes of its stakeholders based on its activities, values, and communication. It is a key part of a company's success, influencing the decisions of customers, employees, investors, and business partners. Reputation comes from the quality of products or services, communication with customers, business ethics, brand image, and employee experience.
(SC3) level of computerisation	It describes how computing activities are performed on the computer and shows all the elements used at the different levels of the system.
(SC4) organisational concept	Organising refers to the procedure of aligning the activities in a certain order. It includes designing the roles and directing the people towards the accomplishment of goals.
(SC5) ability to acquire, disseminate, and develop knowledge	Knowledge acquisition refers to the process of acquiring, assimilating, and integrating new knowledge and information. To disseminate information or knowledge means to distribute it so that it reaches many people or organisations. Knowledge development is an integrated set of activities aimed at the appropriate shaping of knowledge resources. Knowledge development should focus on both the general knowledge in the company and its components.
(SC6) intellectual property rights	A set of intangible assets that are owned by a company or individual. It is legally protected from outside use or implementation without consent. Intellectual property means manifestations of the creativity of the mind having a material form. These can be trademarks, industrial designs, utility models, and inventions, as well as various types of works.

Table A1. Cont.

Elements	Characteristics
(SC7) databases and documentation	A database is an electronically stored, systematic collection of data. Documentation consists of documents that provide proof or evidence of something or are a record of something.
(SC8) procedures	A method for completing something, with steps and instructions for each aspect of the task.
(SC9) administrative processes	All formal and informal rulemaking and adjudication of conflicting claims not performed by the legislatures or the courts.
(SC10) management methods and styles	Management methods represent specific types of management, the way things are in the organisation, the resources, and the processes managed. A management style describes the methods a person uses to manage their employees or team.
(RC1) external communication systems	External communication is the transfer or exchange of information between a company and external entities such as customers, businesses, suppliers, partners, investors, government agencies, and law enforcement. A customer's feedback is also external communication.
(RC2) strength of a company's brand or its products	The efficacy of a brand's performance on intangible measures, relative to its competitors.
(RC3) relationships with major customers	Major customer relationships are often a critical source of a supplier's revenue and can be the best opportunity for growth. These important relationships are typically complex, involving multiple products and services, numerous global locations, and frequent interactions across numerous stakeholders.
(RC4) customer loyalty	Customer loyalty is an ongoing positive relationship between a customer and a business. It is what drives repeat purchases and prompts existing customers to choose your company over a competitor offering similar benefits.
(RC5) efficiency of distribution channels	Distribution reflects how well you deliver your products or services to your customers. It measures the ratio of output to input in your distribution process, such as the cost, time, quality, and customer satisfaction.
(RC6) social capital	Social capital is a set of shared values or resources that allows individuals to work together in a group to effectively achieve a common purpose. Social capital means capital whose value is based on mutual social relations and the trust of individuals, who can achieve more benefits thanks to it.
(RC7) norms of cooperation	Standards of cooperation are rules that govern the behaviour of participants in the logistics chain. These include issues such as respect, honesty, communication, punctuality, and cooperation with others. Following these norms helps to maintain positive relationships and efficiency.
(RC8) trust	Trust is the certainty that we can count on someone, that someone will not act against us and will cooperate with us in certain areas. Trust in business makes cooperating companies more involved in the tasks they perform and more involved in the pursuit of their goals.
(RC9) consumer satisfaction	A general principle of customer service. It measures a customer's perception of the quality and utility of a product or service.
(RC10) stakeholder relations	Professional connections businesses form with people or groups who have an interest in their activities and decisions.

Table A2. Summary of average response values for each group of enterprises.

Criteria	Production			Service			Overall		
	Small	Medium	Big	Small	Medium	Big	Small	Medium	Big
HC1	3.13	3.30	3.30	3.05	3.23	3.35	3.10	3.27	3.32
HC2	3.03	3.14	3.40	3.20	3.25	3.25	3.10	3.19	3.35
HC3	3.10	2.94	3.18	3.25	2.83	3.30	3.16	2.89	3.22
HC4	3.03	2.98	3.05	3.30	2.60	2.95	3.14	2.81	3.02
HC5	3.20	3.22	3.40	2.70	2.85	2.95	3.00	3.06	3.25
HC6	2.90	3.24	3.23	3.00	3.25	3.45	2.94	3.24	3.30
HC7	2.77	2.96	2.83	2.90	3.20	3.10	2.82	3.07	2.92
HC8	3.07	3.16	2.98	2.75	2.88	2.90	2.94	3.03	2.95
HC9	3.00	2.86	3.13	2.55	3.23	2.95	2.82	3.02	3.07
HC10	3.10	3.08	3.03	3.20	2.90	3.30	3.14	3.00	3.12

Table A2. Cont.

Criteria	Production			Service			Overall		
	Small	Medium	Big	Small	Medium	Big	Small	Medium	Big
SC1	2.80	3.26	3.28	2.95	3.40	3.70	2.86	3.32	3.42
SC2	3.37	3.24	3.25	3.05	3.10	3.20	3.24	3.18	3.23
SC3	2.97	3.04	3.10	3.15	3.10	3.05	3.04	3.07	3.08
SC4	3.13	3.14	3.58	2.90	3.23	3.55	3.04	3.18	3.57
SC5	3.03	3.08	3.03	2.70	2.65	3.20	2.90	2.89	3.08
SC6	2.63	2.98	2.98	2.90	3.15	2.55	2.74	3.06	2.83
SC7	2.73	3.06	2.98	3.30	3.63	3.10	2.96	3.31	3.02
SC8	3.17	3.34	3.08	3.10	2.78	3.10	3.14	3.09	3.08
SC9	2.40	2.94	3.03	3.05	2.65	3.45	2.66	2.81	3.17
SC10	2.90	2.90	3.33	3.30	3.28	3.00	3.06	3.07	3.22
RC1	2.97	3.22	3.35	3.45	3.25	3.20	3.16	3.23	3.30
RC2	3.00	3.22	3.15	2.95	3.10	3.20	2.98	3.17	3.17
RC3	3.03	2.82	2.95	3.10	2.73	3.15	3.06	2.78	3.02
RC4	3.30	3.34	3.40	3.20	3.40	3.05	3.26	3.37	3.28
RC5	2.93	3.30	3.23	2.90	3.08	3.45	2.92	3.20	3.30
RC6	2.83	3.22	3.23	3.40	3.50	3.55	3.06	3.34	3.33
RC7	2.93	3.36	3.30	3.05	3.43	3.05	2.98	3.39	3.22
RC8	3.17	3.40	3.23	2.90	2.98	2.85	3.06	3.21	3.10
RC9	3.50	3.30	3.13	3.00	3.08	3.40	3.30	3.20	3.22
RC10	2.77	3.12	3.30	3.05	3.30	2.85	2.88	3.20	3.15

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