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Mapping the Areas of Research on Intellectual Capital Throughout a Period of Dynamic Environmental Changes

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Abstract

Theoretical background: Intellectual capital is perceived as a global economy driving factor. Many researchers highlight that it is an ingredient improving the functional gear of almost any organisation. Some voices have simultaneously appeared in scientific discussions claiming that the concept of intellectual capital management may not be fully applicable, either in conditions of economic downturn or during turbulent changes. A whole spectrum of external factors then come to the floor, affecting the situation of a company, while the periods of economic perturbations discourage investments in human resources and hamper HR initiatives. Therefore, in these changing economic conditions, a question arises about the rationale for and the directions of the development on the research on intellectual capital, and the concept itself undergoes a practical verification of suitability and usefulness. This is a particularly interesting field of research because the transformations, which take place in the environment of enterprises, create specific expectations, which should be met within the framework of ongoing research projects on the intellectual capital.
Purpose of the article: The aim of this article is to identify the dominant topical trends and networks of research directions in the subject of intellectual capital and their changes over time. The study attempts to illustrate these changes.

Research methods: Having employed the text mining method, nearly 5,000 scientific articles on intellectual capital were analysed. Consequently, this extensive literature review enabled mapping of the network of links among the research directions in this area.
Main findings: The results of the study have provided a fairly deep insight into the trends in the research on intellectual capital over the years. The results also reflect the vastness of the subject and the scope of the issues addressed over the past and present years. The interest in the concept of intellectual capital management continues and the dynamics of changes in the environment of the modern enterprise is not at all insignificant. The clusters, identified in the research on intellectual capital, have been opening new theoretical, pragmatic and methodological horizons. The analysis, carried out within the study network, confirmed the multifaceted nature of the network of research directions in the area of intellectual capital. In addition, the new research trends, which have been emerging in this area, clearly respond both to the dynamic changes in the business environment and to the doubts about the scale of activities, undertaken with regard to the intellectual capital management. Thus, in this situation, the periods of crisis and instability appear, on the one hand, as a serious threat to the issue of intellectual capital management, while on the other, they can be perceived as an opportunity to renew the existing management concepts.

Introduction

Intellectual capital is perceived as a priority resource and a global economy driving factor. Many researchers highlight that it is an ingredient improving the functional gear of almost any organisation and creating the added value. Among others, the subject was analysed by Edvinsson and Malone (1997), Sveiby (1997), Pulić (2000), Bontis and Ciambotti (2018), or Dumay and Guthrie (2019). On the other hand, the approach, based on exposing the role of intellectual capital, has come under criticism. The broad discussion in this area, often conducted in a mode of polemics, sharpens the arguments, in particular, under the conditions of environmental instability. Following the experience of the recent years, the periods of crisis, caused by pandemics or by the destabilisation of financial markets, pose serious theoretical challenges to many areas of science, also prompting the importance of intellectual capital to be verified. In the face of growing tensions and pressure, the question about the legitimacy of this concept development emerges again. This is a particularly interesting field of research because the transformations, which take place in the environment of enterprises, create specific expectations, which should be met within the framework of ongoing research projects on the intellectual capital in the future.

In a period of destabilisation, a whole spectrum of external factors, originating from the changing environment, falls on the company, affecting its tangible and intangible situation. Research results show that the crisis discourages investment in human resources and hampers HR initiatives (Austen et al., 2021). Under these economic conditions, it would be appropriate to reconsider whether intellectual capital continues to fulfil its role, the importance of which has been emphasised and highlighted in the literature to date.

The aim of this article was to identify the dominant topical trends and networks of research directions in the subject of intellectual capital and their changes over time. The questions, such as: "If and to what extent the environmental variability affects

the changes in the areas and trends of research on intellectual capital?" and "Have the contextual conditions (including the period of the pandemic and the economic crisis) been influencing the degree of intensification of the research, carried out so far in a given field?" reflect the sense of the research problem undertaken in this paper. At the same time, it is a question about the future of the research on intellectual capital, hitherto broadly perceived as the source of organisational success.

Conducting the research on intellectual capital requires the embedding of the analysed issues into the background of existing scientific approaches and research perspectives. The following section, therefore, synthesises the to-date theoretical findings, regarding definitions and research trends.

Literature review

Literature studies indicate that only some of business activity outcomes can be attributed to tangible assets or to financial capital outlays. It is the stock of intangible intellectual capital that is of strategic character and supports the market potential of a company, as emphasised, among others, by Stewart (1997). The issue of intellectual capital has originated from economic and business practice. The main reason for which the intellectual capital was perceived was the emerging difference between the market value and the book value of a company.

The literature (Harrison & Sullivan, 2000) indicates that the first attempt to define intellectual capital was made in 1995, indicating then that "the intellectual capital, in order to be a value driver for a company, shall require continuous creation and expansion of organisational knowledge". Edvinsson and Malone (1997, p. 45) point out that "the intellectual capital is a sum of human capital (consisting of the employees' knowledge and skills) and structural capital (comprising the elements that support the employees' productivity, i.e. software packages, databases and patents)". Whereas, according to Roos and collaborators, intellectual capital can be defined as "a non-monetary and non-tangible resource, controlled in whole or in part by an organisation, that contributes to the development and increase of its goodwill" (Roos et al., 2005, p. 19). Many researchers equate intellectual capital with the knowledge that is useful to a business organisation (Stewart, 1997).

In 1987, Itami introduced the concept of "invisible resources". He used to note differences in the financial performance of Japanese companies and looked for the rationale for those differences. To this day, many authors freely and interchangeably use the terms of "intellectual capital", "intangible assets" or "invisible resources".

The definitions, which may be found in the world literature, explain the issue of intellectual capital by a distinction of its particular components, indicating its typical features (the intangible character) or emphasising its business dimension and its importance in creating the goodwill of an organisation. In spite of the multifaceted research, none of the quoted definitions have been well established, thus, discrepancies

of a conceptual-definitional character have been piling up, which, consequently, does not facilitate its operationalisation, either.

There are many attempts in the literature to decompose the issue of intellectual capital. The model, developed at Skandia, a Swedish insurance company, remains among the best known approaches. This concept, developed by Edvinsson and Malone, indicates the following two essential components of intellectual capital: human capital and structural capital. Structural capital encompasses development capital and process capital.

The authors emphasise that the value of a company, created on the basis of intellectual capital, is the result of interactions among its components. The synergy effect, observed among the various components of intellectual capital, is a commonly raised issue. It is furthermore emphasised that all the components are equally important and interdependent. However, various researchers have proposed or are proposing either a narrower or a broader framing of the concept. This has resulted in the development of different approaches to the components that, in the views of those researchers, make up the intellectual capital of any organisation.

While analysing the internal structure of intellectual capital in selected concepts, it can be seen that other approaches to intellectual capital resemble more or less developed derivatives of the model proposed by Edvinsson and Malone (1997). The similarity lies mainly in locating the components of intellectual capital in the area of the following three categories: the human resources, the inside of the company and its outside environment.

As with the definition of the concept of intellectual capital itself, there is a lack of unambiguity and/or coherence among the various approaches to its components. The theoretical debate, apart from its attempts to find out a single, universally accepted definition and decomposition of intellectual capital, revolves around disputes about whether intellectual capital is a micro or macroeconomic category. The lack of an unambiguous definition of intellectual capital is, among other things, a consequence of the adoption of different levels of empirical analysis (the individual, the company, the region, the country).

As a result of the scientific research undertaken in contemporary literature on the subject, one can also distinguish many trends, dimensions or perspectives of considerations on the issue of intellectual capital. Their complexity and multidimensionality is demonstrated in Figure 1. Intellectual capital cannot be reduced to a single dimension, as its nature is truly multidimensional. Knowledge in this area is rather complex, demanding a holistic approach. Undertaken research projects on intellectual capital involve not only theoretical experts from the fields of management science, economics or finances, but also those from the areas of psychology and social sciences. On the one hand, such an interdisciplinary view is essential for the development of a concept, while on the other, the increasingly turbulent business environment places intellectual capital at a crossroads (Marr & Chatzkel, 2004).

First, the issue of intellectual capital has been developed, among other things, on the basis of the fundamental assumptions, characteristic of the universal and situational

perspectives. In the situational approach, the use of an intellectual capital management concept or of a method for its quantification shall depend on the unique characteristics of the situation or the specific features of the object under study.

Secondly, the works that employ intellectual capital research methods, use either quantitative or qualitative modes of analysis. The quantitative approach is targeted at the search for general laws and statistical relationships. By contrast, the qualitative approach is both interpretative and descriptive in its nature.

Third, Fazlagić (2013) distinguishes between positive and negative manifestations of intellectual capital in an organisation. The examples of positive intellectual capital include, among others, the competences that are unique on the labour market, learning-oriented organisational culture or positive emotions evoked by a given brand. While nepotism, in-house conflicts among employees, negative brand connotations and the bad reputation of the organisation are the manifestations of negative intellectual capital. In addition, it seems important to recognise that political, economic or cultural conditions also determine the functionality of various manifestations of intellectual capital.

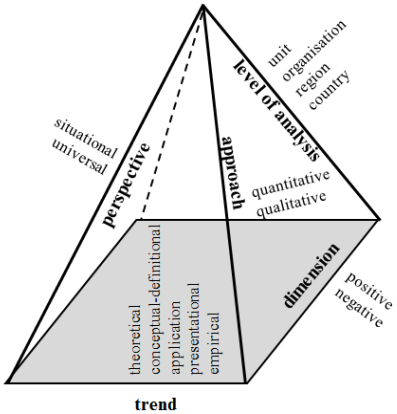

Figure 1. Multidimensionality in the research on intellectual capital

Source: Author's own study.

Fourth, Mouritsen (2006) juxtaposes the ostensive and performative approaches to the research intellectual capital. This is another dimension that makes the research on the nature of intellectual capital characterised by a high degree of complexity.

Fifth, Kaufmann and Schneider (2004) and Kasiewicz and Rogowski (2006) point out the existence of the following five trends: theoretical, conceptual-definitional, applied, presentational and empirical. The first trend focuses on the rationale behind the researchers' continuing interest in the issue of intellectual capital and in the role it plays in organisations. The conceptual and definitional trend covers a search for definitions, while the research within its framework clarifies the basic concepts and diagnoses the components of intellectual capital (human, structural, relational and social capital, as well as trust capital). The application trend originated from the

experience of business practice and the demand for tools and methods to be used in the valuation of intellectual capital for the purposes of decision-making processes at the company (Mouritsen, 2003, pp. 18–30). The research, carried out within this trend, focuses on the empirical verification of intellectual capital measures and on an analysis of the correlations between intellectual capital and the economic performance of enterprises (Dumay & Garanina, 2013). The presentation trend addresses the issue of intellectual capital reporting and its disclosure for internal and external stakeholders. The last trend involves the empirical verification of intellectual capital theories, diagnosing the causal relationships among various constructs.

Even without delving into deeper analysis of the approaches to intellectual capital and their dimensions proposed in the subject literature, it is clear that intellectual capital management is a complicated topic. It should be noted that many more dimensions may be cited. Only some of them are included in Figure 1, but the list remains open.

Many authors consider three dimensions of intellectual capital (Sveiby, 1997; Edvinsson & Malone, 1997; Roos et al., 2005; Bontis & Ciambotti, 2018): human capital, structural capital and relational capital. Brooking (1996) suggests that intellectual capital is comprised of four types of assets: market assets, intellectual property assets, human-centered assets and infrastructure assets.

If, apart from the above-mentioned dimensions, trends and levels of analysis, we consider the industry context or the decomposition of intellectual capital, it may turn out that intellectual capital researchers face serious challenges that shall determine the final shape of this concept (Martin-de Castro et al., 2019). Moreover, the dynamic transformation of the environment has imposed the need to look at the company and its intellectual capital from a new perspective (Ferreira et al., 2021). They have shown that, despite the need to support research by earlier possessed findings, there is also a need to verify the already accepted theoretical statements and assumptions in different operating conditions. In emergency situations, long-term planning is replaced by the need to respond to the current situations and circumstances. Such an orientation to the short-term responding policy is not, however, compatible with the idea of investment in intellectual capital.

At the same time, it should be borne in mind that the actions, which are undertaken in the field of intellectual capital management, even when all these dimensions of analysis are considered, will always be late in relation to changes in the environment. This degree of a specific entanglement and of the overlapping uncertainties may eventually lead to a shift away from the idea of intellectual capital management. Some voices have simultaneously appeared in scientific discussions that the concept of intellectual capital management may not be fully applicable, either in conditions of economic downturn or during turbulent changes (Chaminade & Catasus, 2007; Marr & Chatzkel, 2004, pp. 224–229).

Hence, the research challenge undertaken may provide valuable information. The results of the research may affect the content of the answer to the general question of whether the issue of intellectual capital is just a "fashion in management", whose

value, in the face of the crisis and destabilisation of markets, is decreasing or, on the contrary – the high and negative dynamics of changes in the environment further emphasises the need to notice and value it. The economic crisis of 2008 and the COVID pandemic of 2020 were the crucial events that proved to be radical tests for the concept of management. It is, therefore, worth making an effort to diagnose to what extent the existing contextual conditions influence the existing theoretical findings, a possible change in research trends and the development of intellectual capital research in general.

A review of the literature indicates that researchers have taken up the challenge of synthesising the existing studies on the topic of intellectual capital (Belluci et al., 2020), using either bibliometric analysis or mapping. However, the situational context has been broadly overlooked.

The results of our own research, as presented in this article, try to cover a broader research perspective and, importantly, emphasise to what extent the phenomenon of the concept of intellectual capital remains resilient to all the kinds of shocks and turbulence. One dimension of this specific "resilience" is the enduring popularity of the issue as a research topic, both in stable and turbulent periods.

Research methods

The study process had a two-stage course. First, in order to realise the research objectives, a bibliometric review and a thorough analysis were carried out, being focused on the realisation of informative functions. A bibliometric analysis enabled Klincewicz and collaborators (2012) to deepen the current state of knowledge, learn about previous achievements in a given research area, identify knowledge gaps and the areas, characterised by relatively high research saturation, and obtain quantitative, structured, objectivised and easily verifiable research results. Bibliometric analyses are useful for issues with a certain degree of maturity (Vogel & Güttel, 2013, p. 426), and such is the concept of intellectual capital management, which already has a thirty-year history.

The first focus was on a quantitative analysis of publications over time, which enabled us to assess the overall scientific productivity, taking into account the years of critical importance. Whereas a co-word analysis and a co-classifications analysis made it possible to identify research trends in a given area (Teixeira & Sequeira, 2009).

The co-word analysis, employed for the purpose of this study, is, in general, based on cases of the co-occurrence of specific words at the level of titles, keyword lists and abstracts. The theoretical roots of this technique go back to the achievements of the French linguistic and lexicographic research (Courtial, 1994, pp. 251–260).

The analysis was carried out using text processing methods. A map of co-occurring concepts and concept groups was created, using the VoSviewer (Visualizing Scientific Landscapes) tool. This software package enables work on text files, containing descriptions of bibliographic records exposed from Web of Science (WoS)

or Scopus databases. The tool is widely used in social and medical sciences (Yu et al., 2020) and in accounting (Andrikopoulos & Kostaris, 2017).

The process of selecting scientific studies/reports was carried out by means of the electronic bibliographic and abstract database WoS – see Table 1. In a first step, records were identified on the basis of pre-set criteria. Articles in scientific journals were selected that contained the following phrases: "intellectual capital", "intangible resources", "intellectual capital management".

A preliminary analysis of the selected documents revealed a number of shortcomings, as their authors had not always described the issue, using the precise term of "intellectual capital". Many terms in the literature are used interchangeably. Therefore, the applied Histcite program had the capacity to select those articles which, although they did not contain the phrase "intellectual capital" in the title, abstract or keywords, they had frequently been cited by publications included in the local database. That deliberate procedure enabled us to add further 25 publications (keywords: knowledge, added value, value creation).

In a subsequent step, the resulting set of studies was narrowed down by taking into account the following scientific disciplines: management, economics and business (Records excluded = 7,228). The collection was reduced by "meeting abstract", "proceedings paper" and "correction note", resulting in a final sample size of 4,983 papers and reports. The data were eventually exported, generating a text file. That file became the basis to develop linkage maps in the VoSviewer program and for a subsequent analysis of extracted clusters.

Table 1. The process of source data selection from the Web of Science database

<table>
<tr><td colspan="3">Identification</td></tr>
<tr><td colspan="2">Records identified through the WoS database search (N = 13,430)</td><td>Additional records identified through other sources (N = 25)</td></tr>
<tr><td colspan="3">⇩</td></tr>
<tr><td colspan="3">Screening</td></tr>
<tr><td rowspan="3">Records screened (N = 13,455)</td><td colspan="2">Records excluded (N = 8,472)</td></tr>
<tr><td>Narrowing</td><td>Management, Economics, Business</td></tr>
<tr><td>Reduction</td><td>Meeting abstract, proceedings paper, correction, note</td></tr>
<tr><td colspan="3">⇩</td></tr>
<tr><td colspan="3">Included</td></tr>
<tr><td colspan="3">Studies included in quantitative/qualitative synthesis (meta-analysis) (N = 4,983)</td></tr>
</table>

Source: Author's own study based on (Moher et al., 2009).

The bibliometric analysis, which was quantitative in nature, was the first stage of the study and the baseline for the further qualitative assessment of the content of the group of articles. The leader in terms of the number of publications in this field in the WoS database is the *Journal of Intellectual Capital*, which has a 5-year impact factor of 8.065, indicating a relatively high rate of impact of articles published on

its pages. The qualitative study involved an analysis of the contents of the articles published in that journal and their organisation, taking into account the previously identified dimensions, perspectives and levels of intellectual capital analysis.

Results

An analysis of the number of publications and their distribution over time makes it possible to determine the phase of the research field development. The concept of intellectual capital is not new in the economics and management literature. What is more, the data, presented in Figure 1, confirm the ever-growing interest in the issue of intellectual capital. We observe a geometric increase in the number of publications on this topic, which is a proof of its enduring popularity. It is interesting to note that the growth in the number of academic studies took place even during the years when the momentous role of intellectual capital was partly questioned. The upward trend in the number of publications, seen in Figure 2, indicates that the research field under consideration is still relevant and in the development process.

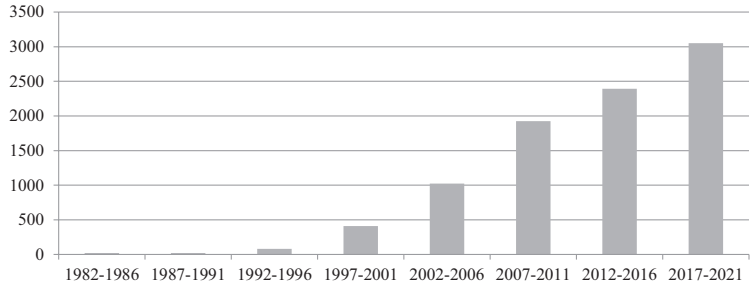

Figure 2. The number of publications in the area of intellectual capital indexed in the WoS database

Source: Author's own study.

Analogous to the way the results were presented in the work of Markoulli and collaborators (2017), maps were created, showing the co-occurrence of concepts and the networks of relationships among them. As shown in Figure 3, the VoSviewer program has extracted five clusters of phrases. The colour version of the map distinguishes clusters, coloured in yellow, red, purple, green and blue, respectively. It may be assumed that in the five sub-areas that had emerged there was a concentration of research problems on intellectual capital.

It became possible to determine the relationships among the objects in space and to establish the affiliation of particular phrases to a specific set. Finally, the clustering algorithm searches for the strongest correlations among phrases (nodes), organising them into coherent sets, representing terminological vocabularies and designating structure and thematic identities in the scientific area under study.

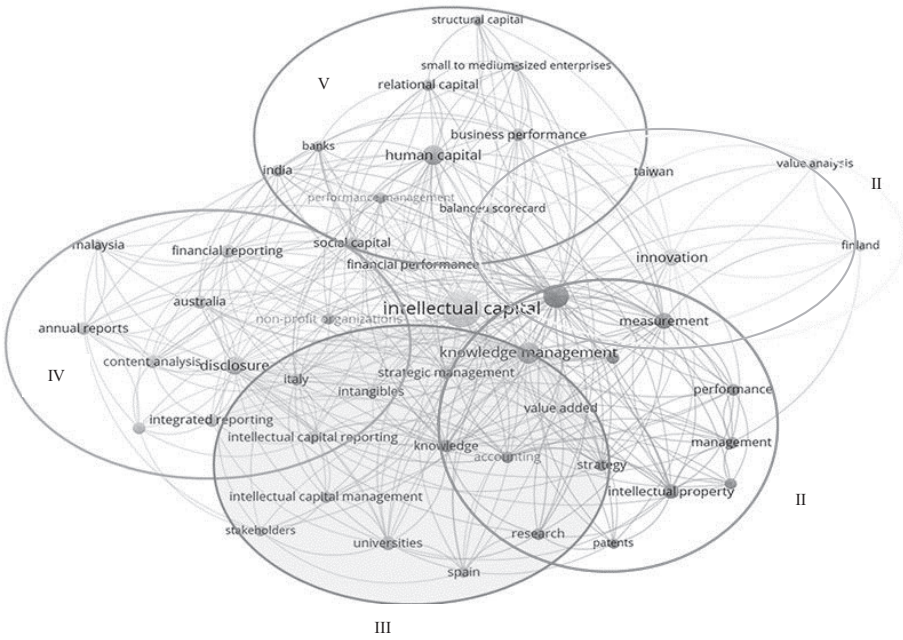

Figure 3. The identified thematic clusters in the research on intellectual capital

Source: Author's own study.

According to Figure 3, Cluster I – "yellow" – groups the concepts that link the issue of intellectual capital to the issue of innovation. In this area, the research concerns companies mainly from Finland and Taiwan. A performed analysis of clusters indicates that the concepts in this cluster are separated by a relatively large taxonomic distance. This is the cluster with the greatest dispersion. The second dominant area of issues within this cluster are the methods of intellectual capital valuation, using structural equation modelling and least square approximately. The cluster refers to a broad view of intellectual capital. The concept of intangible assets emerges in connection with competition and decision making.

Cluster II – "red". The research, linking the issue of intellectual capital with the protection of intellectual property rights, is concentrated within this cluster. A closer look at the fragments of the resulting map indicates that this sub-area also includes such concepts as corporate social responsibility, green intellectual capital (Ghosh & Haque, 2022) or knowledge economy.

Cluster III – "purple" – brings together the issues of strategic and stakeholder management, addressing the issue of the strategic management of intellectual capital in research institutions and in the public sector. In this sub-area, the research concerns mainly Italy and Spain.

Cluster IV – "green" – brings together the issues of intellectual capital reporting. This research sub-area also includes phrases, indicating studies of intellectual capital

disclosures in financial statements. The object of scientific interest (due to the phrases identified) in this cluster is corporate governance. A focus is also evident on annual reporting and on the banking sector.

Cluster V – "blue" – concentrated on the structure of intellectual capital and on the separation among human, social or relational capital. The objects of research within this thematic cluster were small to medium enterprises. The phrase "absorptive capacity" or "customer capital" appears in the analysed dataset.

The key phrases, grouped in Clusters I, II and III, represent classic research areas in intellectual capital. The results of the study show that knowledge management remains a theme correlated with intellectual capital in almost every cluster. The co-occurrence of the words helped confirm that the concept of intellectual capital management was most often analysed through the lens of corporate performance. Eventually, the maps presented were constructed from the co-occurrence relationships of 117 terms (Table 2).

Table 2. Conceptual contents of the identified thematic clusters

Cluster I "yellow"	Cluster II "red"	Cluster III "purple"	Cluster IV "green"	Cluster V "blue"
commerce	accounting	big data	agency theory	absorptive capacity
competition	artificial intelligence	higher education	annual reports	customer capital
decision making	China	institution	banking	human
developing countries	competitiveness	measurement	banks	human capital
Industry 4.0	corporate social responsibility	public sector	content analysis	organizational
innovations	economic growth	Spain	corporate governance	organizational capital
intangible assets	employment	stakeholders	corporate performance	organizational learning
integrated circuits	entrepreneurship	strategic management	disclosure	performance
knowledge acquisition	green intellectual capital	universities	efficiency	relational capital
least square	higher education	university	financial performance	social capital
approximately	intellectual property	value creation	firm value	structural capital
personnel	knowledge economy		human capital efficiency	
regional planning	knowledge sharing		India	
societies	knowledge transfer		Indonesia	
structural equations modelling	literature review		integrated reporting	
surveys	management		Malaysia	
trust	small and medium-size entrepreneurship		market value	
value analysis	stakeholder		performance	
	sustainability		productivity	
	sustainable development		profitability	
			regression analysis	
			VAIC – Value Added Capital Coefficient	
			voluntary disclosure	

Source: Author's own study.

The size of points on the maps corresponds to the number of occurrences (i.e. popularity) of a given concept in the analysed publications, while the distance between the points indicates the frequency of co-occurrences of given phrases, i.e. the so-called collocations within the analysed publications. Such visualisation makes it possible to indicate those areas where the network of connections is the densest.

The analysis carried out has identified the progress in the area of research on intellectual capital. A map of trends in the research on intellectual capital is shown in Figure 4 and detailed phrases are included in Table 3.

The map of trends reflects the wide scope of the issues addressed over the years. The chronological outline presented indicates that the interest in the concept of intellectual capital management still continues and the dynamics of changes in the environment of a contemporary enterprise is not at all insignificant, but the changes are evolutionary rather than revolutionary.

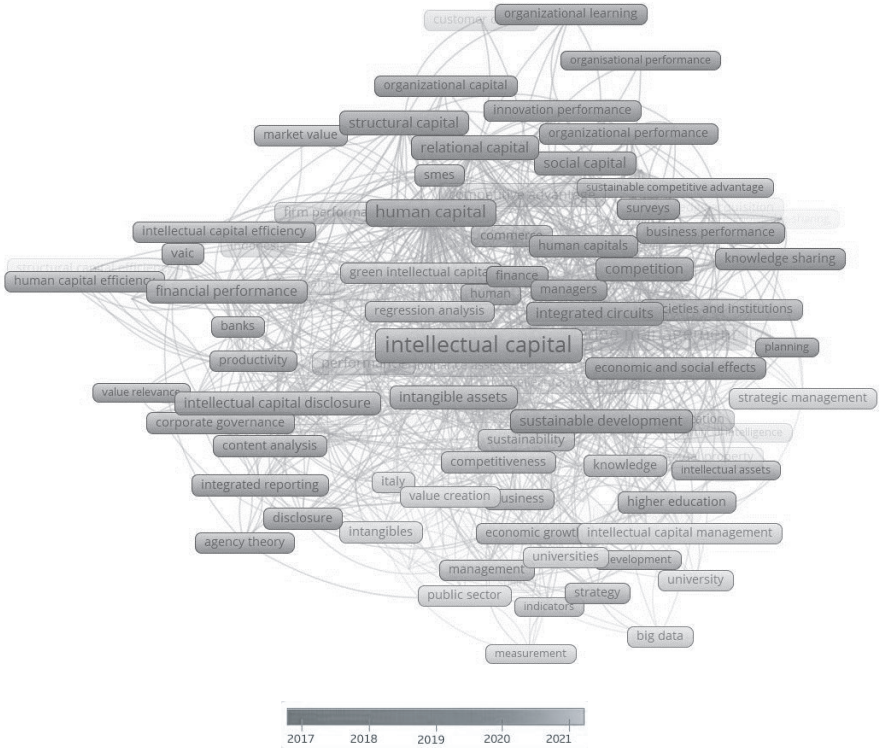

Figure 4. A map of trends in the studies on intellectual capital during the years 2017–2021

Source: Author's own study.

In attempting to identify the changes, a shift in the research methods was observed, including, among other things, survey measurements and literature reviews to more contextual methods (interviews, causal modelling). And so, still back in 2017, the dominant phrase was literature review or survey research, whereas in 2019, the focus in terms of research methods used underwent a distinct shift. The incidence of the phrases "regression analysis" or "structural equation modelling", which emerged in 2021, allows us to conclude that there is an unwavering commitment in publications to improving methods of measuring intellectual capital and seeking new solutions. The use of structural equation modelling enables the identification of relationships among directly unobservable variables. The multidisciplinary nature of intellectual capital management means that the area is characterised by a broad multiplicity of research methods and approaches used and that these methods have been evolving over time.

Over time, the data analysis methods have undergone a shift away from classification and division towards deeper analysis and the search for explanations of complex relationships. Interestingly enough, until recently some dominance of research studies were observed at corporations, meanwhile our present study has revealed a cluster with a clear non-market focus and the phrase of "non-profit" identified in 2021 (Table 3).

Table 3. Phrases identified in studies on intellectual capital – a temporal approach

2017	2018	2019	2020	2021
agency theory annual report artificial intelligence big data case study competition education human capital intangibles knowledge-based system knowledge sharing measurement strategic management strategy voluntary disclosure	accounting competitive advantage higher education institution structural capital	customer capital knowledge acquisition market value personnel profitability surveys trust university	corporate governance cybersecurity decision making financial performance firm performance firm value human capital efficiency innovation integrated circuits integrated reporting intellectual property performance research and development structural capital efficiency sustainability	green intellectual capital Industry 4.0 regression analysis information technology investment literature review non-profit public sector stakeholder sustainability

Source: Author's own study.

In addition, new research trends are discernible. The phrases, emerging in 2021, included the so-called green capital or cybersecurity in connection with the issue of intellectual capital management. It is also noticeable that the attention of research-

ers has shifted from the broadly defined knowledge management and the strategic management of intangible resources towards the comprehensive management of individual components of intellectual capital, i.e. relational, social or customer capital. These are the phrases that were identified between the years 2018 and 2020.

The effects of intellectual capital mapping provide a baseline body of knowledge for a further in-depth analysis. In the second phase, the research became detailed and enhanced with a qualitative dimension. An analysis was carried out on the contents of articles published in the *Journal of Intellectual Capital*. The choice of the Journal was supported by the fact that it is a leader in terms of publications in the area of intellectual capital management.

The qualitative study involved an analysis of the contents of the articles published in that journal and their organisation, taking into account the previously identified dimensions, perspectives and levels of intellectual capital analysis.

As shown in Table 4, the research issues, addressed in the *Journal of Intellectual Capital*, remain in line with the previously identified global trends. This has been clearly evident in the choice of research methods over the years. Importantly, the authors of the studies focus on the positive manifestations of intellectual capital. On the other hand, its negative dimension at an enterprise is an identified knowledge gap that should be filled this way or another.

Table 4. The structure of the papers published in the *Journal of Intellectual Capital*

Year of publication	Number of papers	Research method			Perspective		Dimension	
		quantitative	qualitative	mixed	universal	situational	positive	negative
2007	38	12	24	2	23	15	38	0
2008	34	6	25	3	19	15	33	1
2009	35	6	27	2	20	15	35	0
2010	30	8	22	0	7	23	30	0
2011	29	10	17	2	16	13	28	1
2012	28	11	16	1	11	17	27	1
2013	33	12	21	0	18	15	30	3
2014	28	14	13	1	10	18	28	0
2015	33	17	13	3	15	18	30	3
2016	34	17	15	2	11	23	34	0
2017	38	8	24	6	22	16	38	0
2018	42	10	27	5	19	23	46	0
2019	43	27	14	2	28	15	43	2
2020	88	41	40	7	37	51	99	2
2021	66	33	30	3	33	30	65	1

Source: Author's own study.

The growing number of publications in the Journal and the previously identified trends in intellectual capital research demonstrate that it is impossible to question the role of intellectual capital, the importance of which has been recognised in numerous works by economists and managers. Each time, however, it must be borne in mind

that the constructs, developed for identifying intellectual capital, are deeply embedded in the conditions in which they were created. The development of the concept of intellectual capital management is also becoming a response to the changing external conditions.

Discussion

The bibliometric approach allows for a cross-sectional and in-depth visualisation of the structure of the subject under study, scientific areas and themes, while taking into account changes over time. Recognising its enormous potential, Zupic and Čater (2015) predict that bibliometrics, alongside traditional static literature reviews and meta-analyses, will become the third most popular method for synthesising existing research.

However, the bibliometric analysis used is not without certain limitations. They have two sources. On the one hand, the algorithm, used by a tool like the VoSviewer program, is adapted to identify only the English language. As a consequence, a part of the scientific output, including that of Poland, has been ignored in bibliometric analyses. Failure to support research in native languages means that the publications of many journals are not visible in the WoS database and are consequently excluded from analyses.

It may, therefore, be justified to subject the resources of the Google Scholar database to a bibliometric analysis which, according to Mingers and Liptakis (2010, pp. 613–625), has a higher coverage rate of publications of different types, especially in the social sciences. In case of the Google Scholar database, however, there is a problem of transparency and reliability of the analysed data. From a methodological point of view, one might be tempted to carry out a similar analysis using another bibliometric indicator, such as the number of downloads of an article from a database.

At the same time, one should keep in mind that the information visualised in the maps in the bibliometric analysis is not an imposed direction of development but rather a source of knowledge that comprehensively captures the to-date interests of researchers. The key aspect of mapping is the continuous updating of the data shown on the maps. This is an essential condition for the usefulness of the maps over the long term. Visualising and mapping of invisible intellectual capital can be a source of research challenges, both in national and international space.

Conclusions

Despite the multifaceted studies of intellectual capital, there is still much ambiguity and even controversy surrounding this issue. Attempts have been undertaken to come up with a uniform definition. There is an ongoing discussion on the applicability of the methods, used for its measurement, and the issue of intellectual capital and

its impact on business performance is the subject of research by many practitioners and theorists in this field of knowledge.

The research in the field of intellectual capital continues to evolve. This field of knowledge has moved from a focus on knowledge management in organisations, on the valuation and searching for the value of intellectual capital in accounting books to a focus on the issues of creating and maintaining intellectual capital at non-profit organisations or in the public sector, using the green intellectual capital.

The analysis conducted indicates that it is the contextual conditions that influence the focus of research problems on intellectual capital. A variety of factors contribute to a high degree of dynamism in the formulation of concepts, which makes it an extremely interesting and multidimensional field of research. The factor that influences the variety of proposed approaches, is the variability of the organisation's environment. However, the reported changes in trends, which are present in scientific studies, are evolutionary rather than revolutionary.

The article identifies the most promising areas of research where new developments are likely to emerge in the coming years. The presented maps of knowledge draw a framework for further research work on intellectual capital. The juxtaposition of the results of the bibliometric analysis and of the analysis of the number of publications undeniably indicates the continued relevance of the research field. The conclusions formulated enable the main objective to be fulfilled. At the same time, they contribute to identifying opportunities and constraints for the future.

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