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VALUE ADDED OF INTELLECTUAL CAPITAL IN BANKS AND THE HYSTERESIS EFFECT

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Abstract: The aim of this paper is to contribute to the identification, illustration and description of patterns in the Value Added Intellectual Capital for banks in the long term. The study is part of the discussion on contemporary measures of organisational success and sources of value creation. Based on the subject literature, it is hypothesised that intellectual capital creates added value with some delay due to the operation of various external stimuli (e.g. financial market turbulence, economic slowdown), which may be explained in a logically coherent way using the hysteresis effect. The analysis covers empirical material obtained during broader research on a sample of banks listed on the Warsaw Stock Exchange in the years 2007-2017. As results of the study show, over the last decade, banks have evidently recorded the creation of added value in connection with the held intellectual capital resources. Its growth should, however, be interpreted with a large degree of caution. The occurrence of turbulence on the financial markets in the years 2007-2009 was not without impact on the results obtained.

Keywords: value added, hysteresis effect, intellectual capital.

1. Introduction

Scholarly interest in the topic of intellectual capital valuation is justified by numerous scientific publications. This particular resource is represented as a still relevant and timely issue, albeit one that requires further investigation, particularly as regards improving its measurement and management methods. The review of subject literature carried out indicates that the vehicle for organisational added value is primarily their appropriately managed intellectual capital. The unabated significance of intellectual capital is shown for instance in the first attempts to use previously proposed methods of its quantification to predict organisation bankruptcy (Bejar, 2008). Researchers test to what extent the inclusion of intellectual capital performance in bankruptcy prediction models improves their predictive ability (Cenciarelli, & Allegrini, 2018). On the other hand, as Housel and Nelson (2005) show, intellectual capital resources do not guarantee immediate profit. Some authors (including those with practical economic experience)

note that the "basket" of measured human capital (more broadly: intellectual capital) parameters should cover a period starting at least a year earlier than the period of the business data; investigating relationships and correlation between such sets of data may then be particularly interesting (Rząsa, 2013). A key issue is using the obtained information to improve management processes for such capital, through which a state, structure and flows of this capital could be achieved that will enable the organisation to meet goals of strategic significance (Sienkiewicz, 2018). The patterns observed in this respect may be useful to various groups of stakeholders.

Due to the complexity and specific natures of different organisations, the object of interest in this study is banks. The problems currently facing banks are a great challenge and, at the same time, an excellent field for academic observation and pursuit of constructive standards, also in the area of intellectual capital management. At the moment, creation of added value in the area of the banking services and products they offer requires not only changes in the time and place they are offered, but also changes as to their qualities. These qualities originate in, among others, intellectual capital and the added value it generates. Potential clients assess banks and banking products offered there through the lens of proffered services, which are a product of the knowledge, skills, qualifications and experience of the personnel employed there.

First, an attempt was made to broaden the way that the concept of added value of intellectual capital is defined, with the definition of intellectual capital as the point of departure. Next, based on the subject literature, it was hypothesised that intellectual capital creates added value with some delay due to the operation of various external stimuli (e.g. financial market turbulence, economic slowdown), which may be explained in a logically coherent way using the hysteresis effect.

2. Review of the subject literature – the nature of intellectual capital and the hysteresis effect

A particular role in defining intellectual capital was played by Stewart and Edvinsson. The former argued that the activity of every organisation depends on skills, managerial competencies, information on consumers, competitors and suppliers, and experience held. Accordingly, these elements jointly constitute intellectual capital that is specific to an organisation and contributes to its success (Stewart, 2003). Meanwhile, according to Edvinsson, intellectual capital is primarily knowledge and experience, technologies and relationships with customers, but also professional skills that determine an organisation's competitive advantage (Edvinsson, and Malone, 2001).

The basic problem related to the issue of intellectual capital is the lack of a uniform, standardised definition of the concept. The definitions of intellectual capital present in the literature usually explain the term through:

- distinguishing its constituents; e.g., the abovementioned Edvinsson and Malone (2001) build the concept by distinguishing human and structural capital, while Sullivan (2000) considers the components of intellectual capital to be human capital, intellectual assets and intellectual property,
- indicating its typical features; e.g., according to Stewart (2003), intellectual capital is primarily a non-monetary asset, while Roos et al. (Roos, Pike, & Fernström, 2012) emphasise that it is "a non-monetary and non-physical resource completely or partly controlled by the organisation and contributing to its growth",
- underlining its business significance for every organisation and its importance for growth (Stewart, & Ruckdeschel, 1998).

The presented list is not a classification of methods, and some of the proposals may be treated as partly similar. Scholars often distinguish components and features of intellectual capital, and, at the same time, underline its connections to business.

When analysing the internal structure of intellectual capital in the selected concepts, it may be noted that other takes on intellectual capital are a more or less expanded derivative of the model proposed by Edvinsson and Malone. The similarity lies mainly in locating the components of intellectual capital within three categories: people (human capital), inside the enterprise and what is outside (structural, relational capital).

Many studies emphasize the role of intellectual capital in value creation. Brennan and Connel indicate that such capital is the deciding factor for success or failure of an enterprise (2000, p. 3). Roos and Roos underline its capacity for generating knowledge (1997, p. 416), and in his later research Stewart underlines its capacity for introducing innovation, creating new products and services, and improving processes (2003, p. 13). Rogowski and Panfil (2015, p. 76) consider that a component of intellectual capital, "human capital is the creator of the value of the modern enterprise".

Regardless of different determinants and circumstances, the definitions cited above emphasise the main assumptions of intellectual capital and may form a starting point for further discussion.

Not only is it hard to operationalize the term 'intellectual capital', but, correspondingly, so is the issue of its value. Following Sienkiewicz (2018, p. 37), it is assumed that the literature review carried out allows two principal approaches to be distinguished to defining value with respect to intellectual capital:

- value of intellectual capital – representing the definition of value in the narrow sense from the economic perspective, where the value of the capital itself is analysed; Interestingly, theoreticians and practitioners in this area of knowledge are

simultaneously discussing whether the value of intellectual capital is a category that can be interpreted objectively (Kosiń, 2018).

– added value of intellectual capital – representing the definition of value in the broad sense from the economic perspective, which underlines the capacity to generate value for the organisation (and not the value of the capital itself). This is the topic area that is the starting point for further analysis and has particular cognitive significance from the perspective of the discussion undertaken.

Added value has different definitions, usually referring to microeconomics. In Samuelson and Nordhaus's (2004) approach, added value is the difference between cost (factors input) and effect (factors at the output). As Kozera-Kowalska states (2017), interest in added value increases in the knowledge-based economy. The works of authors such as Bontis and Girardi (2000), Brooking (2001), Sullivan and Sveiby are thought to have key significance for the topic of intellectual capital. The leading factor in defining the category of intellectual capital is underlining its active involvement in creating added value. Moreover, Armstrong and Baron (2008, p. 22) have noticed that "the added value that people can contribute to an organization is emphasized by human capital theory". The concept of added value of intellectual capital emphasises that any investments in employees made by the management allow a satisfying level of return on investment to be obtained (Armstrong, & Baron, 2012, p. 22). This is understood as the difference in organisational value at the start and at the end of the investment process. In the concept of added value of human (more broadly: intellectual) capital, persons contributing it to the organisation are treated as assets, and investment in their development determines achievement of profit (Hoffman, 2007, p. 271). Many scholars have indicated the extremely broad potential and real impact of such capital on the organisation, particularly in the perspective of added value generation. Its creative potential and adaptive capabilities are underlined, among others, by Marcinkowska (2007) and Brennan and Connel (2000). Bank management has also noticed its role in value creation. Bank reports and mission statements particularly emphasise the profound role of knowledge and experience. This constitutes human capital. Of course, activity with respect to intellectual or human capital management indicated as undertaken in reports by management is declarative. However, building bank value based on qualified personnel is an increasingly common provision figuring in bank mission statements and supplementary reports to financial statements.

Previous research on intellectual capital in banks has had both theoretical and empirical dimensions. The authors verify views and definitions presented in the literature and popularise knowledge on the possibilities of effective use of such capital. That which is mainly analysed are the efficiency of intellectual capital and its impact on profitability of banks listed on world stock exchanges (Silvia, & Maftukhah, 2018), intellectual capital accounting and reporting practices (Belal, Mazumder, & Ali, 2018) and knowledge management in the post-banking system (Campanella, Derhy, & Gangi, 2019).

From the point of view of science and practice, resolving the question as to what extent intellectual capital impacts the creation of a bank's added value, is particularly important. At a time of increasing knowledge-intensiveness of the banking sector, providing an answer to such a question offers a broad field for interdisciplinary research. Simultaneously, based on the review of literature carried out, it seems justified to ask whether and to what extent added value created by intellectual capital is dependent on external (market, economic) factors. The hysteresis concept seems a promising analytical tool in this regard.

Despite over twenty years of research, as in the case of the intellectual capital concept, no coherent concept of the hysteresis effect has yet been developed. The phenomenon was discovered by Alfred Ewing in 1890, and then concerned physical phenomena. Over time, the term was also borrowed by social sciences. The term "hysteresis" comes from the Greek and means "what comes later or after something", and in the natural sciences, hysteresis means the dependence of a system on a previous state (Giegel, 2013). As Iwasiewicz (2009, p. 109) writes: "we encounter this phenomenon when we establish that the status of an observed object does not depend only on the current external conditions (controlled and uncontrolled), but also on the state of the object in previous periods".

The theory of hysteresis was developed, among others, by Blanchard and Summers (1986), Carlin and Soskice (2015), and Layard, Nickell and Jackman. Previously, comparatively little attention was paid to it, particularly in Polish economic literature. Interest in the phenomenon in economic analysis intensified in the 1980s, primarily because of studies then undertaken on the causes of growing and persistent unemployment.

The hysteresis effect became the subject of theoretical and empirical analyses, particularly in literature on labour market functioning, where, according to Arendt (2006, p. 26), it is understood as:

- dependence on the path followed (dependence on the path that the studied system follows towards equilibrium),
- permanent effects of transitory actions, where the system stays on the path that it entered due to external effects, even in a situation where operation of those stimuli has ceased.

In other words, hysteresis may be understood as a delay in the reaction of a studied object (or the relationship between phenomena or objects) to a change in external conditions (Iwasiewicz, 2009).

An organization (particularly a bank) cannot be changed from day to day according to the needs of the moment. It is necessary to take many limitations (for example legal) into account. Its social, material and human subsystems in particular are characterised by a given degree of inertia. Thus the hysteresis phenomenon may turn out to be useful in explaining the patterns of behaviour of various kinds of economic systems in changing external conditions. Especially patterns observed with respect to the extent to which the hysteresis effect modifies the capacity of intellectual capital to create added value at different points of the economic cycle provide space for further scientific discussion. This is the subject talked of in the next part of the paper.

The condition for detecting the hysteresis effect was undertaking a quantitative analysis of added value generated by intellectual capital in banks.

3. Research method

Added value in the analysed banks was established using the VAIC coefficient. Its author (Pulic, 2000) considers that added value in an organisation is created by capital employed (physical and financial) and intellectual capital (human and structural). There is extensive Polish and international literature presenting studies on the efficiency of capital in organisations from different sectors and on its capacity to create added value using VAIC. As indicated earlier, added value is a multidimensional concept. Due to the abundance of discussions on creating added value, it has been narrowed down for purposes of further analysis to an approach to a concept of added value that is in accordance with VAIC. According to the method's assumptions, it is added value that is an objective measure of an organisations' success and reflects its capacity to create value in the future (Jarugowa, Fijałkowska, 2002). The higher the VAIC coefficient, the more advantageous the organisation's situation and the greater its capacity to create value. The proposed VAIC method is a simple business indicator. It is an answer to the practitioner's need to identify the impact of non-material assets on organisation results (Pulic, 2000). Furthermore, it can be applied via the use of standard financial reports, hence it has gained approval in both business and in academic circles (Firer, and Williams, 2003; Kunasz, 2006).

The procedure for calculating VAIC is presented in Figure 1. Of note, the indicator itself has been used by the author to carry out the study. The source of empirical data was bank annual financial statements. These data are retrospective, objective and verifiable. The time frame of the study covers the years 2007-2017. The ten-year study period was designed to observe trends in the area of added value creation by intellectual capital. The relatively long period under analysis made it necessary to eliminate from the study banks for which complete data for the whole analysed period could not be obtained. Alior Bank S.A. is an example, as its stock exchange debut was in December 2012. The study includes BZ WBK, which was rebranded in 2018 (now Santander Bank Polska).

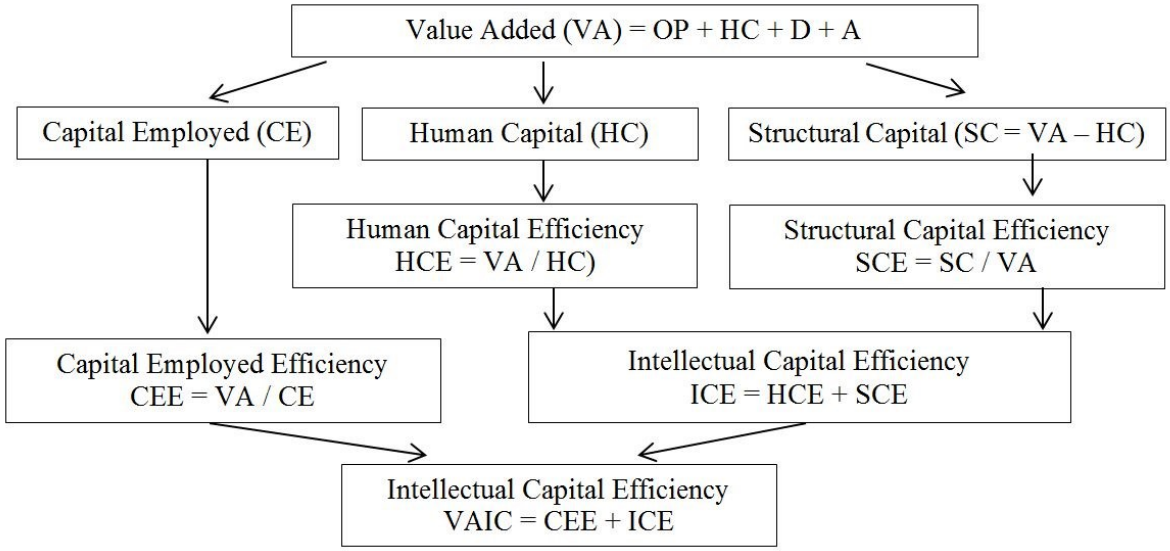

Figure 1. Calculation steps for VAIC method. Own study based on Pulic (2000), OP – company operating profit, HC – personnel costs consisting of salaries and social costs, D – write-downs in company's long-term and current assets, A – depreciations in company assets.

4. Results

It should be kept in mind that changes in general economic parameters and changes in the banking sector influenced how added value of intellectual capital changes. This is visible in Figure 2, which illustrates shifts in the VAIC of individual banks listed on the Warsaw Stock Exchange over a period that was a time of instability. Herein, changes in the economic cycle had influence upon the efficiency of using held assets. Thus, the changing external conditions contributed to a growth in the complexity of decision processes in banks. As a result, financial market turbulence necessitated identification and quantification, taking into account a division into tangible and intangible assets participating in added value creation.

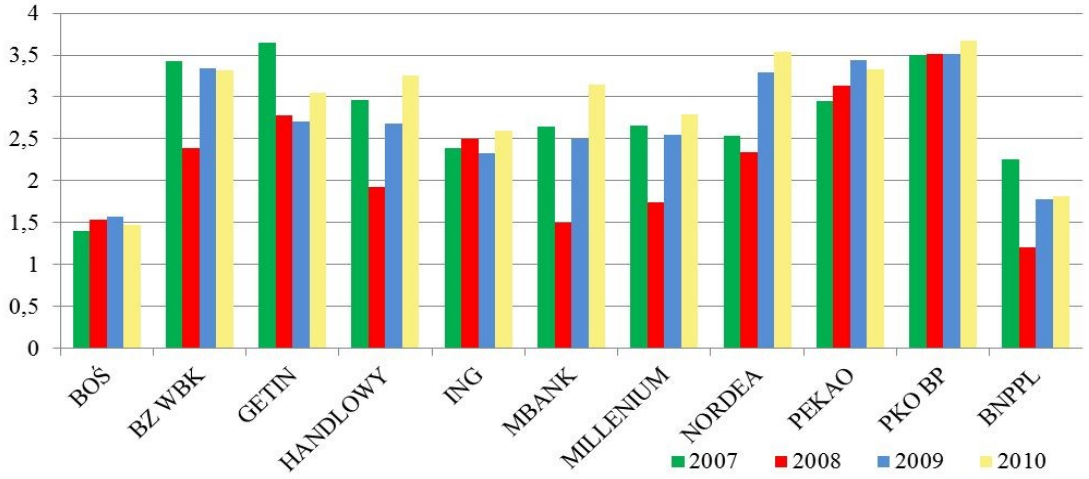

Figure 2. VAIC of studied banks in the years 2007-2010, own compilation based on www.gpw.pl database.

In 2007, Getin was the leader in terms of VAIC. Bearing in mind this bank's problems in the years 2016-2018, this is a situation that requires further investigation. A VAIC at the level of 3.64 means that every 100 monetary units of intellectual capital employed generated 364 monetary units of added value. In 2008, the value of the coefficient in question was the highest for PKO BP (3.5) and Pekao (3.14). The lowest values of the coefficient were recorded in 2008 and 2009. In 2008, BNP Paribas (1.20), mBank (1.49) and BOŚ (1.54) had the lowest values. In 2009, meanwhile, the lowest values were noted for BOŚ (1.57) and BNP Paribas (1.77). The greatest fall in VAIC in 2008 compared to 2007 occurred for mBank (40%) and BNP Paribas (32%).

When observing changes in VAIC in subsequent years (Figure 3), it may be noted that in 2012, Pekao was the leader in terms of this coefficient. Its value of 3.94 means that every 100 monetary units of intellectual capital employed generated 394 monetary units of added value.

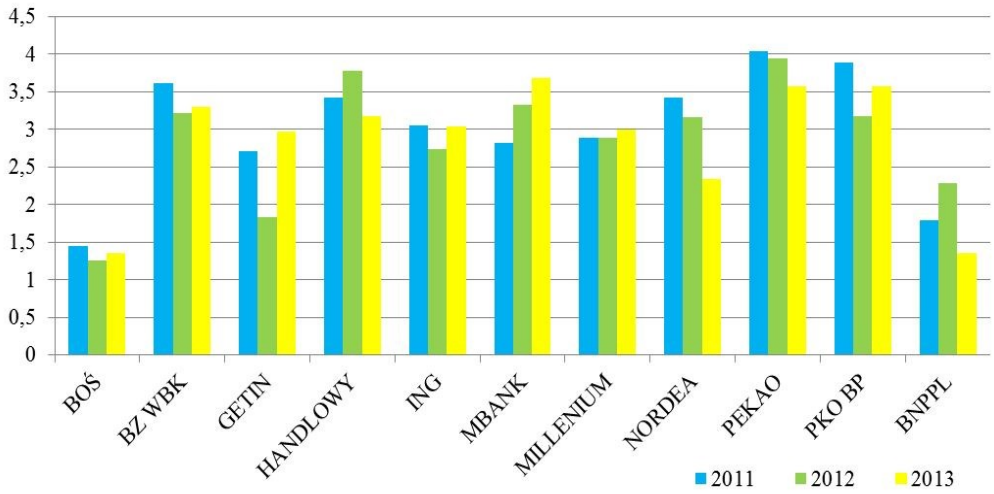

Figure 3. VAIC of studied banks in the years 2011-2013, own compilation based on www.gpw.pl database.

Figure 4 compares VAIC for selected banks over the whole ten-year period under analysis, i.e. the years 2007-2017. Supplementary to this, the level of its components, i.e. VAHU and VASC, is also presented. A downturn in VAIC of selected banks is particularly visible in 2008. It may be assumed that this is the result of events on global financial markets (the crash that began in 2007). Over the analysed decade, human capital played a significant part in creating added value in banks, which is indicated by the high parameters of VAHU.

It is hard to unequivocally, however, indicate whether as a result of external conditions on the financial markets, the VAIC and VAHU values were characterised by a mechanism of hysteresis effect-related relationships.

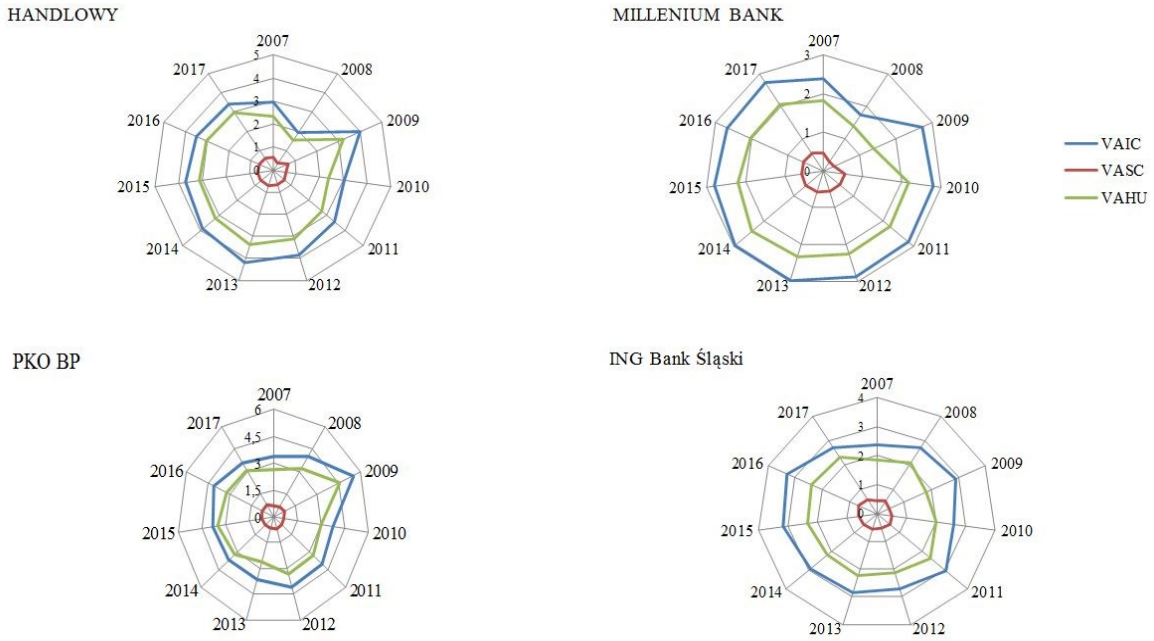

Figure 4. VAIC, VASC and VAHU of studied banks in the years 2007-2017, Own compilation based on www.gpw.pl database.

5. Discussion

The empirical studies carried out confirm the position presented in the subject literature that organisational (including bank) standing is determined by the human capital resources it holds. It is this component of intellectual capital in particular that contributes to building added value in banks. The period of economic slowdown or crisis is a special period in which its utility is verified.

The analysis of the empirical material collected and the results of the estimates carried out allowed two categories of conclusions to be drawn. The first group includes empirical conclusions concerning the identified capacity of intellectual capital to create added value at

different points of the economic cycle. In the second group are conclusions of a methodological nature, related to the verification of the utility of the hysteresis effect.

Application of the VAIC method has made it possible to diagnose and assess the efficiency of intellectual capital use in banks. Study results indicate that the recognition in the literature of intellectual capital as a factor that creates value is justified. In particular, human capital is a carrier of value. The study results obtained lead to the conclusion that such capital creates value irrespective of economic fluctuations. Further conclusions require a more detailed research process. This is because changing external conditions contribute to an increase in the complexity of this process.

The studies conducted have confirmed that the added value creation process did occur in the investigated banks over the years 2007-2017. However, they did not provide sufficient proof to confirm the assumption that there is a delay in the impact of intellectual capital on the level of added value created. It is therefore impossible to unequivocally state that the hysteresis effect occurred. The estimates carried out undoubtedly indicate that changes in general economic parameters and changes in the banking sector influenced how added value of intellectual capital changed (fall in 2008). However, conclusive identification of the hysteresis effect would require improvements and algorithmisation.

An in-depth study of internal and external determinants for each of the banks is undoubtedly necessary in order to potentially permit an understanding of differences in the results obtained. As regards the studies carried out, it has become particularly important to eliminate the restrictions, indicated and broadly discussed in the literature (Smuda-Kocoń, 2019), that are linked to application of VAIC. The study could doubtless be expanded to include in-depth interviews in order to obtain opinions on the approach to intellectual capital management in individual banks, defining the key needs of banks with respect to measuring intellectual capital and collecting additional information allowing the obtained results to be interpreted.

6. Summary

The conducted study was intended to indicate that the held intellectual capital assets participate in processes of added value creation in banks. Due to the complexity of the considerations raised, it is hard to regard the conclusions drawn as exhaustive.

In the modern world where there are no permanent rules, there is also no universal recipe that guarantees success. In practice, this means that the usefulness of recognised approaches has to be reviewed. Periods of financial market turbulence seem to be a particularly accurate verification means. This is when redundancies, restructuring and labour cost reductions occur. All this, taking into account the specific structure of intellectual capital extensively presented in the subject literature, may reduce its value and limit its capacity for creating added value.

On the other hand, however, intellectual capital resources should become a factor allowing success to be achieved, and in economic slowdowns they should guarantee stability, e.g. of the banking system. The studies conducted confirmed that the added value creation process did occur in the investigated banks over the years 2007-2017, mainly thanks to human capital. However, they did not provide sufficient proof to confirm the assumption of a delay in the impact of intellectual capital on the level of added value created. It is hard to unequivocally indicate whether as a result of external conditions on the financial markets, the values of VAIC and VAHU were characterised by a mechanism of hysteresis effect-related relationships. Identifying the cause and consequence relationship between the created added value and the economic performance of the analysed banks remains a challenge for further research.

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