

**Summary**  
**of Professional Accomplishments**

**Anna Stronczek**

Department of Enterprise Management  
Faculty of Management  
AGH University of Science and Technology in Krakow

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## 1. Name and Surname

Anna Agata Stroncsek

ORCID: 0000-0001-9343-936X

ResearcherID: ABE-6382-2021

PBN: 5e70923a878c28a04739209f

## 2. Diplomas, degrees conferred in specific areas of science

### University diplomas

2002	<p>PhD in economics in the field of management sciences. An academic degree awarded by a resolution of the Faculty of Management Council of the AGH University of Science and Technology in Krakow on January 16, 2002 on the basis of a doctoral dissertation entitled: Method of assessing the effectiveness of the restructured enterprise.</p> <p>The doctoral dissertation was awarded by Rector of the AGH University of Science and Technology in Krakow.</p> <p>Promoter: professor Wiktor Krawczyk  Reviewers: professor Maria Nowicka-Skowron  professor Ryszard Borowiecki</p> <p>Diploma no: 3775</p>
2000/2001	Didactic improvement course for Assistants
1994	<p>Master of Science in Management and Marketing, a 5-year Master's degree with a very good result obtained at the Faculty of Management of the AGH University of Science and Technology in Krakow on June 15, 1994 on the basis of a master's thesis entitled: Economic and legal aspects of leasing and the possibility of its use.</p> <p>Diploma no: WZ/952/94</p>

### Other diplomas and certificates

after doctoral dissertation:

2019	Training: Non-financial reporting in the perspective of sustainable development. Accountants Association in Poland, District Branch in Krakow.
2017	First-level Tutor School course. Collegium Wratislaviense (64 h).

2015	Workshops: World-class educational activities in the application of global financial reporting standards at Polish universities and educational institutions. Accountants Association in Poland, Warsaw.
1998	Course "European standards for the Evaluation of Raw Materials Projects and Investments", 30.11-4.12.1998. Centre for Continuing Education, Imperial College, London.
1996	A course for candidates for chief accountants. Accountants Association in Poland. District Branch in Krakow.

### 3. Information on previous employment in research institutions

1.10.2002 – till now	<i>assistant professor (research and didactic activity)</i> Department of Enterprise Management <sup>1</sup> Faculty of Management AGH University of Science and Technology in Krakow
1.10.1994- 30.09.2002	<i>teaching assistant (research and didactic activity)</i> Department of Financial Management Faculty of Management AGH University of Science and Technology in Krakow
1999-2011	<i>assistant profesor (research and didactic activity)</i> School of Management and Banking in Krakow (WSZiB)
2005-2007	<i>lecturer</i> Pedagogical University of Krakow
2005-2006	<i>lecturer</i> High School of Economics in Krakow
1999-2001	<i>lecturer</i> Cracow School of Business in Krakow
1997-2000	<i>lecturer</i> Vocational Training Center in Krakow

<sup>1</sup> Due to the organizational changes that took place at the Faculty of Management of AGH, despite many years of work in one team, I was formally employed in sequence in the Department of Economics and Financial Management, Department of Financial Management, Department of Economics, Finance and Environmental Protection, Department of Enterprise Management

#### 4. Description of the achievements, set out in art. 219 para 1 point 2 of the Act

##### 4.1. Title of scientific paper

*Lean management accounting in Polish manufacturing companies*

##### 4.2. Author, publishing year, publishing house, editorial reviewers

Autor:	Anna Stronczonek
Publishing year:	2022
Publishing house:	AGH Publishing house
Editorial reviewers:	professor Edward Nowak associate professor Bogusława Bek-Gaik
ISBN:	978-83-66727-81-6

##### 4.3. Presentation of the scientific purpose of the monograph, the content of chapters and the achieved results

###### 4.3.1. Reason behind undertaking the research issue

The management concepts implemented by enterprises cannot function effectively without proper performance measurement techniques. In order to make the right operational or strategic decisions, it is necessary to know exactly the costs in all possible dimensions and conditions, as well as their dependence on specific factors, both internal and external. This level of knowledge of costs can only be achieved on the basis of an efficiently organized accounting system (in particular, the management accounting system). At the same time, lean management implementers can see the potential of this concept in identifying and eliminating waste. However, the effects of these activities are not directly translated into information provided by traditional accounting systems. In the past, researchers dealing with the issues of lean management have repeatedly raised the issue of the need to modify accounting methods and tools in companies implementing lean principles, justifying it with the need for consistency between the applied cost management systems and accounting principles, and the implemented strategy (these are, among others: Maskell, 2000 ; Fiume, 2002; Kennedy, Brewer, 2005; Ahakchi et al. 2012). Also E. Zarzycka takes notice that "positive and long-term effects are a consequence of (...) covering with implementation all elements of the enterprise management system, not only the production part" (Zarzycka, 2011, p. 48). Therefore, changes in the philosophy of business management towards lean management have become the basis for redefining the goals and tasks of management accounting. Its techniques, tools and concepts have changed, both in theoretical and practical terms (Szychta, 2007). This adaptation is expressed either by adapting existing solutions or by creating solutions and practices not used so far. These dependencies can be summarized by quoting the opinion of A. Kamela-Sowińska: "Original, modern solutions and ideas are currently one of the most important, highest-valued components of an economic entity's resources, and therefore there is no doubt that accounting

solutions should be a derivative of changes taking place in the real world” (Kamela-Sowińska, 2014).

Bakar and Majid (1999) see the possibility of creating organizational value in the proper use of information, building a logical sequence: selected information will allow managers to improve decisions, which in turn lead to increased value for the customer and ultimately to greater value created for shareholders. This logic is coherent with the conceptual elements of lean management. Accepting the legitimacy of the above reasoning is tantamount to accepting that the conceptualization of lean accounting requires setting a framework with a specific structure, assumptions and goals, aimed at providing the stakeholders of the organization with reliable information about the company's achievements for value creation. At the same time, accounting practices cannot be viewed or shaped in isolation from changes in the way production is approached. The development of the concept of lean accounting is the result of adapting accounting information systems to the principles of lean management.

The in-depth literature studies carried out by the author of the monograph have shown that the current scientific literature presents many studies devoted to individual practices of lean management accounting. Usually, however, these studies focus on the determinants of implementing individual practices and the impact of their implementations on the results of enterprises, while there is no comprehensive reference to the methodology of implementing lean management accounting.

The review of the literature and its critical analysis allowed to identify gaps in the area of the discussed issues:

- Theoretical gap - results from the lack of clarity in the understanding of the concept of lean management accounting and additionally the lack of a clear separation and emphasis on the importance of accounting in this area, with a simultaneous poor understanding of the conditions for its application.
- Empirical gap - the issue of lean management accounting related to its implementation and operation in enterprises has not been sufficiently researched (especially in Poland). At the same time, there is a lack of studies and observations on the use of lean management accounting practices and their impact on the results of enterprises in Poland.
- Methodical gap - shown by the lack of a comprehensive methodology for the implementation of lean management accounting in enterprises in relation to the level of implementation of the lean management concept.

#### **4.3.2. Objectives, hypotheses and research methods**

Identifying the gaps formed the basis for formulating the main goal and specific goals of the work. The main purpose of the epistemological research of the monograph is to recognize and define the existing dependencies between the degree of implementation of lean management (taking into account the elements forming this concept) and the lean management accounting practices adopted by the company.

Lean management accounting is an integral part of the lean management initiative, so its practices cannot be analysed in isolation from changes in production and the management system. Therefore, the research objective of the work is to indicate the conditions for the implementation and range of use of practices identified as methods and tools of lean

management accounting in Polish manufacturing companies, and then to indicate the priorities that guide companies implementing lean management accounting practices.

Specific objectives supporting the implementation of such presented objectives are:

- 1) determining the factors conditioning the implementation of lean management in the enterprise;
- 2) indication of specific areas of information demand accompanying the implementation of the lean management concept;
- 3) determining the conditions for the functioning of management accounting in the context of the implementation of lean management;
- 4) systematizing the definitions related to lean accounting;
- 5) identifying the most important practices of lean management accounting as an information base for the enterprise implementing lean management;
- 6) identifying the key issues related to cost accounting connected to lean management accounting;
- 7) identifying a model approach to developing a measurement system in the area of lean management accounting;
- 8) examining how the implementation of the lean management concept translates into the implementation of lean management accounting practices;
- 9) examining whether the implementation of lean management accounting practices has an impact on the company's performance;
- 10) determining what factors impact the effective implementation of lean management accounting;
- 11) identification of barriers to the transformation of management accounting towards lean management accounting.

Recognition of the theoretical basis as well as the definition of the research objective was the starting point for the formulation of five research hypotheses. According to the first (H1), the scope of application of lean management accounting practices is determined by the implementation of the principles of the lean management concept in a manufacturing company. According to the second hypothesis (H2), the implementation of lean management accounting practices is positively related to the size of the manufacturing company. The next two assume that (H3) there is a positive dependence between Lean Management practices and the performance of manufacturing companies, and (H4) there is a positive dependence between Lean Management Accounting practices implemented and the performance of manufacturing companies. The last hypothesis is the assumption that (H5) it is possible to indicate set of practices used within lean management accounting in the surveyed manufacturing companies.

The main hypotheses H1, H3 and H4 have been split into detailed research hypotheses. The split of the main hypothesis (H1) was formulated as follows:

- (H1a): There is a positive dependence between supplier relations and lean management accounting.
- (H1b): There is a positive dependence between customer relations and lean management accounting.
- (H1c): There is a positive dependence between “pull” and “flow” processes and lean management accounting.

(H1d): There is a positive dependence between TPM maintenance and lean management accounting.

(H1e): There is a positive dependence between employee involvement and lean management accounting.

The main hypothesis (H3) was split into detailed hypotheses:

H3a): There is a positive dependence between lean management practices and operational performance.

(H3b): There is a positive dependence between lean management practices and financial performance.

(H3c): There is a positive dependence between lean management practices and market outcomes.

With regard to hypothesis (H4), splitted hypthoseses were verified:

(H4a): There is a positive dependence between the implementation of lean management accounting practices and operational performance.

(H4b): There is a positive dependence between the implementation of lean management accounting practices and financial performance.

(H4c): There is a positive dependence between the implementation of lean management accounting practices and market performance.

The considerations and research carried out in the monograph result from the existing gaps identified in the area of the discussed research issues. Filling theoretical gap was achieved by clarifying the understanding of the concept of lean management accounting and emphasizing the importance of accounting in the area of implementing the concept of lean management, as well as recognizing the conditions for its using. Filling the empirical gap - consisted of examining the implementation advancement status of lean management accounting in manufacturing companies in Poland, as well as verifying the impact of these practices on the results of enterprises. Compensation of the methodological gap is a proposal of a model for the implementation of lean management accounting in enterprises in relation to the level of implementation of the lean management concept.

**The cognitive results** of the study are presented through the achievement of the main objective and detailed objectives, **scientific results** as verification of the research hypotheses set out in the introduction. The main epistemological objective was achieved in stages, which was possible thanks to the implementation of individual sub-goals in subsequent chapters of the study:

- identification of constitutive factors for the implementation of lean enterprise management (chapter 1);
- indication of specific areas of demand for information accompanying the implementation of the lean management concept against the background of exposed conditions for the functioning of management accounting in the context of the implementation of lean management (chapter 2);
- systematization of the definitions related to lean accounting (chapter 2);
- identification and presentation of the most important practices of lean management accounting: cost accounting related with lean management accounting, a model approach



to developing a measurement system in the area of lean management accounting, lean practices identified with inter-organizational cooperation (chapter 3);

- examination of the way the implementation of the lean management conception influences to the implementation of lean management accounting practices and what dependances shape the connections between lean management, lean management accounting and enterprise performance (chapter 4).

Due to the lack of observations relating to the dependence between enterprises operating in accordance with the concept of lean management and the implementation of lean accounting principles, the research undertaken as part of the monograph has exploratory nature. Their main objective was to create a synthetic snapshot of the phenomenon under study, to indicate the main regularities and dependences between research objects and to formulate conclusions in this field. The research was conducted from the perspective of the theory of situational conditions, and the source of data for their implementation were surveys carried out in companies implementing lean management.

In order to achieve the set objective of the study, various research methods were used:

- in the field of preliminary research - methods: literature analysis, deduction and inductive reasoning. The conducted literature studies using the method of analysis and criticism of the literature (Czakon, 2015) included monographs, articles in national and foreign journals, as well as papers from international and national conferences by access to the university's full-text database of the AGH University of Science and Technology in Krakow (Emerald, ScienceDirect (Elsevier), Scopus, SpringerLink, Web of Science, Wiley Online Library and others),
- in order to collect data - standardized survey research,
- in order to process data - in-depth statistical analysis and inductive reasoning,
- data verification.

The research data was obtained by conducting standardized surveys among manufacturing companies. The collected data was statistically analyzed using the following methods:

- In order to characterize the general view of the studied sample, the percentage distributions of the categories of metric answers (included in parts 1 and 2 of the questionnaire) were used. Such distributions were also used in further analyzes and compilations.
- In the area of analysis of the properties of measurement methods, the measurement reliability analysis using the Cronbach's alpha coefficient was used as the basic method for testing the properties of measurement scales (the study was of a confirmatory nature). The reliability analysis was supplemented with the following indicators: Cronbach's alpha based on standardized items, Lambda 4 - Guttman's half-division coefficient and the composite reliability coefficient.
- To verify the hypotheses: the method of structural equations, Spearman's rank correlation, the method of exploratory factor analysis.

Due to the relatively large size of the research sample, the operationalization and methods of measuring variables as well as the analytical methods used, these studies present the quantitative trend in management sciences (Dyduch, 2011), and at the same time fit into the nomothetic research approach (Niemczyk, 2011).

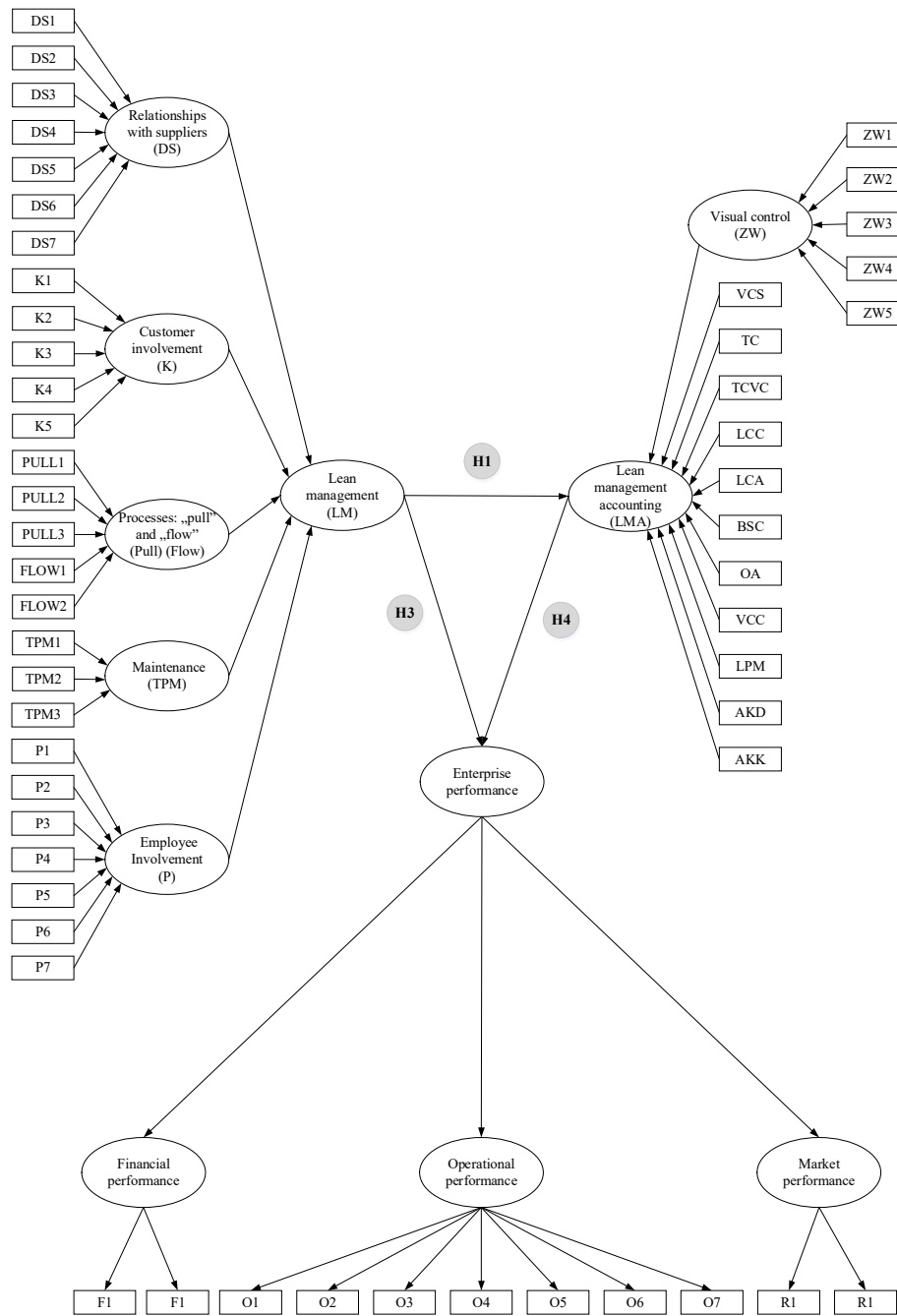
In order to increase the accuracy and reliability of the answers, the respondents were presented with the purpose of the research and the basic substantive concepts appearing in the questionnaire were discussed. The respondents answered the questions according to their knowledge, which makes the research declarative.

The construction of the research tool resulted from the set objectives and hypotheses. The questionnaire consisted of several parts. The first two were aimed at identifying general characteristics of the surveyed units and respondents.

The next part showed the level of implementation of lean management in the surveyed companies. The operationalization for the lean management construct was based on existing literature and previous research. Using the method of reconstruction and interpretation of the literature on the subject, a general catalog of descriptors relating to the concept of lean management was selected. The discussed construct is multidimensional and latent in nature. Lean is modeled as a second-order structure representing complementarity among the first-order factors: relationships with suppliers and customers, pull and flow processes, employee empowerment and TPM maintenance. In this research area, the modified lean measurement scales developed by R. Shah and P. T. Ward (2007) were used. The fourth part of the research tool diagnosed the level of implementation of lean management accounting in the surveyed organizations, identifying the status of popularization of implementations of tools characteristic for lean management accounting. In addition, the respondents commented on the statements aimed at identifying the barriers to the transformation of management accounting towards lean. The fifth part is the respondents' assessment of the impact of the implementation of the concept of lean management and lean management accounting methods on the results of the surveyed entities. The impact of lean on results is determined by market, financial and operational measures, as proposed by Büyüközkan et al. (2015).

The questionnaire was pre-tested and assessed by two practitioners familiar with the concept of lean management, three experts who are management researchers, and an academic statistician specializing in research in various areas of management. These people were asked to test the questionnaire and identify unclear items and suggest changes. The collected comments and suggestions as well as the conducted pilot studies allowed for the verification and improvement of the research tool. The actual study covered 128 enterprises.

Based on the results of theoretical exploration and assumptions made about the dependence between the latent variables of lean management (LM), lean management accounting (LMA) and company performance (market, operational and financial), a higher-order structural model was created (Figure 1), which was verified to confirm the hypotheses.



**Figure 1. Research model of the determinants of lean management accounting methods**

Prepared by: own research

### 4.3.3. Structure of a monograph

The structure of the publication was realased to achieving the goals and verifying the truthfulness of the hypotheses. The publication consists of an introduction, four chapters solving the problem under study and summary with the results of the work and outline the perspective of further research, and two appendices. Each of the following chapters is oriented towards the achievement of sub-goals and is a logical consequence of the problems presented in the preceding chapters. Lean management and lean accounting focuses on three key areas - clients, processes and people. Individual chapters emphasize these areas.

The perspective of the theoretical foundations of lean management is discussed in the **first chapter**. The selection of issues in this part of the work was made taking into account that the final shape of the company's management accounting system depends both on the adopted management concept, the parties interested in information obtained from this system, as well as the organizational culture and individual behavior of members of a given organization.

Firstly, the terminological dilemmas related to the concept of leanness were discussed and the concept of lean management was elaborated with its tool framework outlined. Later in this chapter, the implementation of lean management practices is outlined in relation to change management. Lean management emphasizes the aspect of leadership, empowerment of the executive level and participatory management. The introduction of the lean management concept involves far-reaching changes affecting employees.

There is expected a lot of engagement from employees, with an emphasis on teamwork, open solving and creative problem solving and personal initiative. The creativity and knowledge of employees significantly contribute to the successful implementation of lean. The increase of independence and personal responsibility is compensated by a decrease in orders and supervision by superiors. Successful changes towards lean require an appropriate organizational culture that will provide employees with orientation, trust, identification, motivation and safety. The first chapter also indicates the theory of stakeholders and the coherent theory of value with it as antecedents of lean management of the enterprise.

**The second chapter** presents the role of accounting in relation to the concept of lean management. The considerations focus on indicating the information needs of a lean enterprise, widely considering the low usefulness of information based on standard costs and the allocation of indirect costs with the use of settlement keys as methods that do not reflect the lean management philosophy. A bibliometric analysis was also carried out on the basis of the Web of Science Core Collection in the field of publications on lean accounting, which revealed the range of interest in the studied area. A critical review of the definitions and terms of lean accounting published in the scientific literature was presented, which indicated their multiplicity and diversity and at the same time allowed to set the direction for further considerations. The following sections of the chapter explore the role of lean management accounting in the context of innovation, in a dual approach: showing it as a result of innovation in management accounting and at the same time as a source of knowledge about innovation and a tool to support innovation.

**Chapter three** indicates the process approach as a constitutive quantity of lean management accounting. Afterwards there was outlined a framework for the cost accounting system and performance measurement concepts appropriate to lean management accounting that reflects the needs of lean enterprises. The practices identified with lean management accounting in the above-mentioned areas were characterized. Since the relations between the enterprise and its external stakeholders play a fundamental role in lean management, as well as, lean management accounting practices cannot be considered in isolation from the wider organizational contexts in which they occur, this part of the paper also presents lean methods that can be implemented within the framework of inter-organizational management accounting.

The **fourth chapter** includes empirical research aimed at achieving the research goal and verification of the hypotheses. First, the theory of situational conditions is presented as a perspective of the conducted research and used methodology: the purpose and scope of the research, the structure of the research tool and the research sample are described. Then the results of the research are presented.

At the end of the publication, the most important conclusions from the research and considerations were presented, with the emphasis on possible areas of further use of the results of the author's scientific research. The limitations of the research were identified and presented and the prospect of further research on the subject was outlined.

#### **4.3.4. Achieved results**

On the basis of the conducted research, it was confirmed that in the case of the companies participating in the research:

- the level of implementation of lean management practices affects the selection and level/scope of use of lean management accounting practices,
- the implementation of lean management accounting methods is positively related to the size of enterprises,
- there is a correlation between the level of implementation of lean management practices and the operational results of manufacturing companies,
- there is no correlation between the level of implementation of lean management practices and the financial and market performance of production companies,
- there is a correlation between the implemented lean management accounting practices and the operational results of manufacturing companies,
- there is a dependence between the implemented lean management accounting practices and the financial and market performance of manufacturing companies,
- it is possible to set the priorities that companies follow when implementing lean management accounting methods and tools by distinguishing packages of practices,
- the transformation of management accounting towards lean management accounting encounters many barriers in the surveyed companies.

The results of empirical verification of the hypotheses placed in the model under study are presented in Table 1.

**Table 1. Results of testing research hypothesis**

	Subject	Research result
H1	The scope of use of lean management accounting practices is determined by the implementation of the principles of the lean management concept in a manufacturing company	Confirmed
H1a	There is a positive dependence between supplier relationships and lean management accounting.	Confirmed
H1b	There is a positive dependence between customer relations and lean management accounting.	Confirmed
H1c	There is a positive dependence between pull and flow processes and lean management accounting.	Confirmed

H1d	There is a positive dependence between TPM maintenance and lean management accounting.	Confirmed
H1e	There is a positive dependence between employee engagement and lean management accounting.	Confirmed
H2	The implementation of lean management accounting practices is positively related to the size of the manufacturing enterprise.	Unconfirmed
H3	There is a positive dependence between lean management practices and the performance of manufacturing companies.	Partially confirmed
H3a	There is a positive dependence between lean management practices and operational outcomes.	Confirmed
H3b	There is a positive dependence between lean management practices and financial performance.	Unconfirmed
H3c	There is a positive dependence between lean management practices and market outcomes.	Unconfirmed
H4	There is a positive dependence between the lean management accounting practices implemented and the performance of manufacturing companies.	Partially confirmed
H4a	There is a positive dependence between the implementation of lean management accounting practices and operational performance.	Confirmed
H4b	There is a positive dependence between the implementation of lean management accounting practices and financial performance.	Confirmed
H4c	There is a positive dependence between the implementation of lean management accounting practices and market performance.	Confirmed
H5	It is possible to indicate packages of practices used within lean management accounting in the surveyed production companies.	Confirmed

Source: own research

The conducted research also allowed to determine how the factors conditioning the effective implementation of lean management accounting are perceived by the respondents and to identify changes observed under the influence of lean implementation in the surveyed companies.

The surveyed companies start implementing lean management, first by introducing changes in the areas that carry out operational activities (basic and auxiliary). Simultaneously, the introduction of lean management principles affected the practices of financial and accounting departments (methods and tools used) to a much lesser extent. At the same time, the vast majority of respondents are not convinced that effective implementation of lean requires changes in the area of financial accounting. This area is usually identified with legislative restrictions resulting from reporting obligations, and thus as a "conservative" and "resistant to changes" area. The introduction of lean management principles has significantly changed the way the financial and accounting departments operate (leaning the processes of these departments). This confirms that in the surveyed companies, lean goes beyond operational processes. A noticeable discrepancy between management accounting practices and the operational area was confirmed by 42.97% of the respondents.

Majority of the respondents agreed with the statement that the information needs of a lean environment are completely different from the information needs of a traditional organization.

They also confirmed that effective lean implementation needs changes in the area of management accounting to support the process of lean transformation. At the same time, only 30.47% of the respondents were convinced that financial and accounting departments provide great support for the implementation of lean in the surveyed companies.

The respondents agreed that the measures of performance in the surveyed company are simple, easy to understand and apply. Therefore, it should be concluded that there is no problem with the lack of knowledge or competence in the studied area. Only 37.5% agreed with the opinion that the performance measures in the surveyed enterprise mostly consist of non-financial indicators. The view common in the literature on the preference for non-financial measures in lean enterprises was not confirmed by the surveyed enterprises. Unfortunately, only in a few cases (4.69%) the operational measures introduced as part of the lean implementation replaced the previously used ones. On the other hand, 71.09% of respondents agree or strongly agree that operational measures were introduced as a result of lean implementation function in parallel to the previously used ones. This is confirmed by the view of the problem of the distinctiveness of practices implemented in two areas of the surveyed enterprises presented in the literature: operational (management) and financial and accounting (accounting/controlling).

Most of the respondents perceived financial reports prepared by financial and accounting departments as directed at the needs of management. The research also shows that management retains insight into the measures (mainly financial) monitored so far. The operational measurement introduced for the needs of lean is an extension of the existing information system, primarily with operational information addressed to the needs of employees and lower-level managers. The research shows a picture of enterprises with a divergent approach to measurement, which operates in organizations partly in parallel, selectively combining through organizational compromises.

The research also attempts to diagnose barriers in the transformation of management accounting towards lean. The factor identified as the greatest obstacle to the adoption of lean accounting principles is the reluctance to change. Similarly, poor communication between operational, financial and accounting areas was perceived. None of the respondents strongly denied the existence of a duality between these areas of the surveyed enterprises.

42.97% of the surveyed enterprises indicated dependence on the parent company as a barrier. It should be noted that 75.8% of the surveyed entities operate within the capital group, while 43.8% declared that they had a separate management accounting / controlling system. There is a certain inconsistency on this field, apart from 32% of enterprises which, being in the capital group, have a common management accounting / controlling system (justified indication of dependencies), this barrier was also indicated by units independently creating solutions in the area of management accounting.

The inertia of management, which is noticeable in the surveyed companies, is also a serious problem. However, the majority of the respondents do not see a problem with the implementation of lean accounting in the shortage of accounting staff. Likewise, the lack of adequate computing resources (software) does not appear to be a factor in the implementation of lean management accounting.

The indications for the factor "Lack of knowledge and competences of the department responsible for management accounting" are very interesting - most of the respondents

disagreed or strongly disagreed with this opinion. On the other hand, the respondents notice a barrier in the necessity to meet statutory requirements.

The conducted research confirms the findings of the literature on the subject, which shows a positive dependence between the adoption of lean management practices and the both results financial and operational, of the enterprise. The research also showed that there is a dependence between the level of implementation of lean practices and the level of implementation of lean management accounting practices. It is the level of implementation of lean management in the surveyed companies that forces the introduction of lean management accounting methods, because it is difficult to introduce changes when their effect cannot be measured.

The research covers various priorities for lean management accounting practices, the distribution of different patterns of their implementation in the surveyed companies and significant situational factors determining these organizational behaviors. The obtained results confirm previous research, i.e. entities introducing lean management start from production and then transfer lean practices to other areas, including the accounting department. The priority in selecting and implementing individual lean management accounting practices is systemic lean management support in operational areas by providing relevant information. This means that the priority is those practices that will result in operational measures related to quality, productivity, time (production, delivery etc.). The practices of lean management accounting in the surveyed production companies are hybrid solutions - complementing the solutions traditionally used.

Limitations of the research should be kept in mind, during the interpretation of its results. Firstly, even though proposed model is relatively complex in terms of the number of considered situational factors, it is incomplete, because undoubtedly there are other significant factors that were not included in the tested model. The limitation for the conducted research is the fact that only one respondent from each enterprise answered the questionnaire. As a result, it is not known whether the views of the respondent are shared by other members of the organization. Moreover, bias resulting from the function performed, years of service or the scope of the acquired knowledge cannot be ruled out. In order to eliminate such distortions, the questionnaire includes a question verifying lean awareness, as well as supporting questions regarding the position occupied in the organization (function, internship, department). At the same time, the study was cross-sectional, which does not allow for a causal inference. The obtained results may also be burdened with a systematic error, because the answers to exogenous and endogenous variables were indicated by the same respondent. It is important that the selection of the sample is not random, because the respondents represented only those companies which implemented the concept of lean management.

The monograph proposes directions for further research, which should first of all include determining the scope of diffusion of lean management accounting methods and research that would allow, in the long term, to explain the impact of situational factors, and above all the SARS-CoV-2 (COVID-19) pandemic, on practices lean management accounting. It would be interesting to conduct qualitative research that could provide information on how lean management accounting is interpreted and used and how employees experience organizational changes related to its implementation. At the same time, evaluating the opinions of employees of operational and financial and accounting departments within the same contexts would allow to obtain a comprehensive and coherent picture of the implementation and functioning of lean management accounting. Additionally, a multiple case study could identify factors that



influence the differences in the interpretation and use of lean management accounting in different companies. In turn, an approach based on a longitudinal study would provide an answer to how lean management accounting practices develop over time in organizations. It also seems appropriate to investigate whether the integration of lean management accounting practices with the IT infrastructure can play an important role in supporting lean management. It means to examine in detail how operational and financial information can be integrated into these systems. It seems equally important to analyze how lean management accounting solutions develop in the face of changes called "Industry 4.0".

#### **4.4. Contribution to the development of the discipline of management and quality sciences**

In the author's opinion, the results of the research presented in the monograph contribute to the development of the discipline of management and quality sciences. The placement of monograph considerations in management sciences is presented in the approach to management accounting as an information system implemented by enterprises for management purposes. It is reflected in the definitions presented in chapter two. The subject of theoretical and empirical research of the dissertation is the practice of accounting meant as the use of specific methods of preparing information on the economic and financial situation of the enterprise with communicating it to managers.

This view corresponds, *inter alia*, with the considerations of T. Czapla and E. Walińska, who underline the fact that "the mainstream of accounting research interests coincides subjectively with the area of interest of management and quality sciences", at the same time indicate the interdisciplinary nature of both accounting and management and quality studies (Czapla, Walińska, 2021, p. 47).

The concept of lean management accounting is relatively new, and its methodological assumptions are more often presented in the literature than the results of empirical research. So far, no research has been conducted on the interaction between lean implementation and changes in management accounting in Polish manufacturing companies.

The research carried out in the area of monograph can be considered a study of the legitimacy of perceiving lean accounting as a coherent empirical construct. By placing "lean" tools of management accounting in the situational model and verifying this model, an assessment was made of the extent to which lean management accounting is a construct that enables empirical analysis. The range to which the hypotheses formulated in this study received empirical support confirms that lean accounting can be examined as a consistent structure.

The quantitative, correlational, non-experimental study provided insight into the correlation between the extent of use of the lean management concept by Polish manufacturing companies and the adopted lean management accounting practices and the operational, financial and market results obtained.

## **5. Information about significant scientific or artistic activity carried out at more than one university, scientific or cultural institution, especially at foreign institutions**

### **5.1. Scientific activity at the Faculty of Management of AGH University of Science and Technology in Krakow**

The primary field of my interests, beginning from the first years of my work, was and still remains accounting as a source of information. In the case of my development path, these interests constitute a kind of meta-area. At the same time, from the beginning of my research work, I was interested in combining various areas by indicating the connections between them and extending the perspective of their perception. In selecting the research issues, I was guided by the conviction that the complexity of management problems can only be shown with a comprehensive examination of them.

The synergy of interest in accounting as a source of management information with the subject of values in management led to my doctoral dissertation entitled: Method of assessing the effectiveness of the restructured enterprise, prepared under the supervision of professor Wiktor Krawczyk.

The need to undertake restructuring measures is dictated by the desire to increase the efficiency of operations and achieve success in a changing environment. In the literature on the subject, one can often find the statement that it is the restructuring process that should be considered as a factor having a significant, though strongly individualized, impact on the value of the enterprise. Thus, management oriented at increasing value, as well as restructuring processes, is the response of a specific entity to changes and phenomena occurring both inside and around it. The starting point for my dissertation is the assumption that restructuring releases a potential for changes hidden in the enterprise, which, if properly stimulated and managed, leads to the optimization of its value. For the purposes of my doctoral dissertation, I developed my own method of assessing the effectiveness of the restructured enterprise based on the concept of Economic Value Added, the so-called EVA, based on the decomposition of the value added indicator in a way that allows the entire evaluation system to be oriented towards the goal of the economic unit, which is creating value for shareholders.

After obtaining a doctoral degree, my research and development interests continued to focus on the use of accounting for the needs of broadly understood business. My research allows to distinguish the following research trends:

- managed accounting system and the conditions of its functioning,
- the role of IT solutions in shaping the quality of management information in the accounting system,
- management accounting in relation to modern management concepts.

### **Field no I: Management accounting system and its operating conditions**

From the point of view of changes taking place in management accounting systems, it becomes important to obtain knowledge about the factors that may affect their shape. It is important for science to conduct extensive, long-term basic research in this field, relating to both private and public sector entities, which may clearly contribute to the creation of a picture of the current state of accounting systems and the directions of their development. Publications within this trend focused on several leading problems.

Immediately after defending my doctoral dissertation (2002-2007), I continued my previous research related to the perception of value and its measurement. In addition, in order to disseminate some theoretical content and the results of empirical research that I previously conducted for my doctoral dissertation, I prepared the following articles:

- Stroncsek, A. (2002), Uwarunkowanie zastosowania mierników wartości kreowanej do oceny efektywności przedsiębiorstwa restrukturyzowanego, *Zeszyty Teoretyczne Rachunkowości*, (08), s. 200-208.
- Stroncsek, A. (2002), Ocena efektywności restrukturyzowanego przedsiębiorstwa z wykorzystaniem koncepcji EVA, (w:) W. Krawczyk (red.), *Budżetowanie działalności jednostek gospodarczych – teoria i praktyka. Cz. 3*, Katedra Zarządzania Finansami Wydziału Zarządzania Akademii Górniczo-Hutniczej, Kraków, s. 241-249.
- Stroncsek, A. (2003), Wykorzystanie miernika MVA w ocenie przedsiębiorstwa, (w:) W. Krawczyk (red.), *Budżetowanie działalności jednostek gospodarczych – teoria i praktyka*, Katedra Zarządzania Finansami Wydziału Zarządzania Akademii Górniczo-Hutniczej, Kraków, s. 307-312.
- Stroncsek, A. (2003), Rola fuzji i przejęć w kształtowaniu wartości, *Zagadnienia Techniczno-Ekonomiczne*, 48(1), s. 291-298.
- Stroncsek, A. (2007). Metodyczne aspekty korygowania ekonomicznej wartości dodanej (EVA). *Ekonomia Menedżerska*, (1), s. 89-100.
- Stroncsek, A. (2004), Pomiar wyników działalności jednostki gospodarczej, (w:) A. Podobiński (red.), *Zarządzanie przedsiębiorstwem w warunkach integracji europejskiej. Cz. 1, Zmiany w teorii i praktyce zarządzania*, Uczelniane Wydawnictwa Naukowo-Dydaktyczne AGH, Kraków s. 159-164.
- Stroncsek, A. (2004), Aspekt teoretyczny wyboru sposobu ustalania wyników, (w:) T. Kiziukiewicz (red.), *Rachunkowość w zarządzaniu jednostkami gospodarczymi* Akademia Rolnicza w Szczecinie. Katedra Rachunkowości, Szczecin, s. 217-221.
- Stroncsek, A. (2004), Zarządzanie na podstawie wartości, (w:) Krawczyk W., *Budżetowanie działalności jednostek gospodarczych: teoria i praktyka. Cz. 5*, Krakowskie Towarzystwo Edukacyjne sp. z o. o., Kraków, s. 227-233.
- Stroncsek, A., Wojanowska, J. (2007), Implementation of a created value index for the company efficiency improvement evaluation, in: *Company competitiveness in the XXI century XXI MicroCAD International Scientific Conference*, Miskolc, pp. 279–284.

My other research is also related to the problem of creating value. Considerations on the role of creating value for the customer are included in the article:

- Stroncsek, A. (2011), Zadowolenie klienta jako czynnik sukcesu przedsiębiorstwa, *Zeszyt Naukowy. Wyższa Szkoła Zarządzania i Bankowości w Krakowie*, (24), s. 116-127.

This publication, being a natural continuation of the previous cycle, is at the same time a symbolic transition from research conducted in the current of shareholders theory to the current of stakeholders theory, which consequently led to the creation of the monograph presented in this self-report as an achievement. The aim of this publication was to indicate, raise

awareness and emphasize the role of the client in building value, and thus the company's success. Reacting to the needs of the broadly understood client may manifest itself through the implementation of the agility conception or the implementation of the lean conception. Both conceptions appeared in my research.

Over the last thirty years, the internal and external conditions of the organization's functioning have changed dynamically and irreversibly. They resulted in a change in the organisation's optics from short-term profit maximization to strategic management requiring changes in the field of creating and delivering information (Sobańska, Walińska, 2018). Management accounting followed these evolving changes. Subsequent works on this trend were created as a result of research on the assessment of the usefulness of the accounting information system and the degree of use by entities of selected cost accounting models, as well as management accounting practices:

- Bek-Gaik, B., Stroncsek, A. (2005), Wykorzystanie rachunku kosztów działań w zarządzaniu kosztami, (w:) T. Kiziukiewicz (red.), *Rachunkowość w zarządzaniu jednostkami gospodarczymi* Akademia Rolnicza w Szczecinie. Katedra Rachunkowości, Szczecin, s. 193-201.
- Stroncsek, A., Bek-Gaik, B. (2005), Organizacja systemu rachunku kosztów w zakładach opieki zdrowotnej, (w:) W. Krawczyk (red.), *Budżetowanie działalności jednostek gospodarczych: teoria i praktyka*, Polskie Towarzystwo Ekonomiczne. Oddział Kraków, s. 476-485.
- Bek-Gaik, B., Stroncsek, A. (2005), Budżetowanie kapitałowe narzędziem planowania finansowego, (w:) W. Krawczyk (red.), *Budżetowanie działalności jednostek gospodarczych: teoria i praktyka*, Polskie Towarzystwo Ekonomiczne. Oddział Kraków, s. 40-47.
- Stroncsek A., (2007), Ceny transferowe i porozumienia cenowe w przedsiębiorstwie, (w:) Urbańczyk E. (red.), *Strategie wzrostu wartości przedsiębiorstwa*, Wydawnictwo Kreos, Szczecin, s. 437-444.
- Stroncsek, A., Petka K., (2007), Kosztowe formuły ustalania cen w praktyce polskich przedsiębiorstw, (w:) L. Preisner (red.), *Finansowe aspekty transformacji gospodarki w Polsce*, AGH Uczelniane Wydawnictwa Naukowo-Dydaktyczne, Kraków, s. 197-203.
- Stroncsek, A. (2009). Rozliczanie świadczeń wewnętrznych a problemy decyzyjne przedsiębiorstwa. *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Finanse, Rynki Finansowe, Ubezpieczenia*, (18), s. 451-456.
- Stroncsek, A. (2010), Informacyjna rola rachunkowości a sprawozdawczość zarządcza. *Zeszyt Naukowy. Wyższa Szkoła Zarządzania i Bankowości w Krakowie*, (17), s. 132-141.
- Krajewska S., Stroncsek A. (2013) Wykorzystanie metod alternatywnych wobec tradycyjnego budżetowania na przykładzie jednostki gastronomicznej, (w:) A. Dury (red.), *Budżetowanie – dziś i jutro*, Wydawnictwa AGH, Kraków, s. 305-320.

- Marcinkowska, E., Sawicka, J., Stroncsek, A. (2014). Outsourcing a system decyzyjny przedsiębiorstwa, (w:) E. Nowak, M. Nieplowicz (red.), *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, (344 Rachunkowość a controlling), s. 341-351.

Modern management methods, previously reserved for enterprises, are more and more often used by public finance sector entities. This is a direct result of the growing pressure from the environment, which expects public finance sector entities to increase the effectiveness of their operations.

The conception of New Public Management has been developing since the 1980s (mainly in Anglo-Saxon countries). The basic assumptions of the idea of New Public Management consist in the application of market mechanisms to the public sector, promoting competition between service providers, transferring control to the local community, decentralizing competences and introducing participatory management. According to this conception, administration should focus on results, not inputs, and on goals and missions, not rules and orders. The idea of New Public Management puts emphasis on proper goal setting and monitoring of results, financial management (efficiency), setting service standards, using benchmarking and modern human resource management. This approach requires the implementation of appropriate management process support tools. That is why it is so important to expand the accounting system with management accounting methods and tools.

The above-described changes in the approach to management in the public sector were clearly marked by the Public Finance Act in Poland, which introduced an obligation to ensure management control in the public sector, understood as all activities undertaken to ensure the implementation of goals and tasks in a lawful, effective, economical and timely. As a result, the management control system has a wide and comprehensive dimension, and thus, it is a tool for optimizing the functioning of the state administration in all its dimensions. However, it seems obvious that the efficient and effective functioning of the management control system requires the extension of the previously used reporting-oriented budget accounting to the conceptions of management accounting. It follows from the above-mentioned act that without an efficient budgeting system, cost accounting, measurement and evaluation of achievements, management control cannot function efficiently in the unit. The functioning of the adopted management control standards requires that its system be monitored and assessed on an ongoing basis.

Management accounting has a rich set of instruments, giving the opportunity to support the management of both the enterprise as a whole and its individual functional areas. It can be assumed that its modern solutions adapted to the current requirements and needs of the management staff are particularly significant. It is therefore not surprising that its tools and methods are widely used in public sector entities.

The above-mentioned issues have found a place in my following research and publications:

- Stroncsek, A., Chwaleba, W. (2012), Accounting for indirect costs on the example of the salaries of the university employees, *Zarządzanie przedsiębiorstwem – teoria i praktyka*, Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie. Wydział Zarządzania, Kraków, s. 1-16.

- Stroncsek, A. (2012), Kontrola zarządcza w znowelizowanej ustawie o finansach publicznych, *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, (252), s. 448-457.
- Stroncsek, A. (2013), Insights into franchising in Poland: a review of empirical and theoretical perspectives, *Advanced Reseach in Scientific Areas, section Business Management*, 2(1), s. 66-70.
- Stroncsek, A., Krajewska S. (2013), Ryzyko jako element kontroli zarządczej w sektorze finansów publicznych, (w:) B. Micherda i M. Andrzejewski (red.), *Sprawozdawczość i rewizja finansowa: problemy kwantyfikacji ryzyka gospodarczego*, Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie, Kraków, s. 211-220.
- Stroncsek, A. (2015). Konsorcja w zamówieniach publicznych jako przykład współpracy międzyorganizacyjnej. *Studia Ekonomiczne*, 224, s. 209-219.
- Stroncsek, A., Marcinkowska, E. (2016), Answer from Entities of the Public Finance Sector to the Idea of New Public Governance the BSC in the Public Sector, *European Scientific Journal*, s. 412-422.

Information from the accounting system is useful for recipients, provided that they meet legal requirements and have appropriate quality characteristics. Ensuring the proper quality of information derived from financial statements requires many control activities in the area of auditing as well as a high level of ethical activities in the accounting profession. I have addressed these issues in the following publications:

- Sawicka, J., Stroncsek, A. (2013), Rola audytu finansowego w wykrywaniu celowych zniekształceń wyniku finansowego, (w:) M. Czyż (red), *Finansowe i ekologiczne aspekty działalności gospodarczej*, Wydawnictwa AGH, Kraków, s. 81-88.
- Sawicka, J., Stroncsek, A. (2015), Postrzeganie roli audytu wewnętrznego w budowaniu zaufania publicznego jednostek - przykład banku, *Studia Ekonomiczne*, 244, 168-180.
- Sawicka, J., Stroncsek, A. (2015). Poziom wykształcenia audytora wewnętrznego a skuteczne wykrywanie nadużyć. *Zeszyty Naukowe Uniwersytetu Szczecińskiego FRFU. Efekty funkcjonowania audytu wewnętrznego i kontroli zarządczej*, 867 (76), s. 401-412.
- Sawicka, J., Stroncsek, A., Marcinkowska, E. (2016), Przepięstwa przeciwko wiarygodności dokumentów jako obszar zainteresowania audytu wewnętrznego, *Studia i Prace Kolegium Zarządzania i Finansów, Szkoła Główna Handlowa*, (152), s. 95-108.
- Sawicka, J., Marcinkowska, E., Stroncsek, A. (2017). Ujawnianie przestępstw prania pieniędzy przez pracowników zawodów księgowych. *Studia Ekonomiczne*, 345, s. 85-97.
- Stroncsek, A., Sawicka, J. (2017), Postrzeganie zasad etyki przez studentów i czynnych zawodowo przedstawicieli zawodów księgowych, *Studia Ekonomiczne*, 345, s. 98-113.

The general conclusion of the research was the statement that the higher the education level of employees in accounting areas, the better suited to the tasks performed, the more effectively the risk of fraud and irregularities that may occur in a business unit is reduced. The research

confirmed the need to put more emphasis on education in the field of ethics in the accounting profession among students. Better systematization of ethical issues and a deeper look at these issues will allow them to avoid many traps in the course of their professional work in the future.

### **Field no II: The role of IT solutions in shaping the quality of management information in the accounting system**

From the beginning of the 21st century, there is highly visible influence of information technology systems both on the shape of the accounting system and the role of specialists implementing it. In my research, there was a problem of determining how information technologies affect changes in management accounting practices and the quality of management information obtained from the accounting system. The first thread discussed within this problem concerned the determination of the demand for information in the context of cost accounting and the adopted management accounting practices. The objective was to obtain an answer to the question: what tools and methods of management accounting intend to support the audited entities by implementing integrated IT systems.

This issue is reflected in the following works:

- Stroncsek, A., (2006), Zapotrzebowanie na informację a organizacja rachunku kosztów w zakładach opieki zdrowotnej, (w:) M. Nowickiej-Skowron (red.), *Koszty w zarządzaniu przedsiębiorstwem*, AGH Uczelniane Wydawnictwa Naukowo-Dydaktyczne, Kraków, s. 205-211.
- Stroncsek, A., Petka, K. (2008), Zintegrowane systemy informatyczne jako narzędzie wspomagające zarządzanie, (w:) *Informacyjna funkcja rachunkowości w gospodarce współczesnej*, A. Dyhdalewicz, G. Klamecka-Roszkowska, J. Sikorki (red.), Wydawnictwo Uniwersytetu w Białymstoku, Białystok.
- Stroncsek, A., Wiatr, K. (2009), Wybór zintegrowanego systemu informatycznego jako decyzja strategiczna jednostki gospodarczej, (w:) L. Preisner (red.), *Finansowanie rozwoju gospodarczego*, AGH Uczelniane Wydawnictwa Naukowo-Dydaktyczne, Kraków, s. 150-157.

As modern management methods, previously reserved for enterprises, are more and more often used by public finance sector entities, my researches extended to public sector entities in the works:

- Stroncsek, A., Krajewska, S. (2015). Oczekiwania jednostek sektora zamówień publicznych w zakresie wsparcia rachunkowości zarządczej przez zintegrowane systemy zarządzania, (w:) E. Nowak, P. Bednarek (red.), *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, (399) Rachunkowość a controlling, s. 428–435.
- Stroncsek, A. (2016). Informatyczne wsparcie rachunkowości zarządczej na przykładzie wdrożenia w agencji wykonawczej WAM. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, (440), s. 491-500.

In the case of the first of the articles (Stroncsek, Krajewska, 2015), the research was conducted in the form of an analysis of attachments to RFP, selected randomly from the ones published in the Public Procurement Bulletin. The scope of expectations of public procurement sector units concerning of the functioning of the integrated IT system is each time included in an appendix to the RFP as a description of the subject of the contract. According to the aim

of the article, elements that I perceived as interesting were parts of the description of the subject of the contract that referred to the possibility of implementing management accounting tools in public sector entities.

The conducted study was aimed mainly at recognizing the situation in public sector entities through:

1. getting an answer to the question: how the tools and methods of management accounting intend to support the audited entities by implementing integrated IT systems,
2. determination of information needs in the audited entities, which is to ensure effective and efficient implementation of management and operational tasks facing them.

The conducted research showed that the expectations of public procurement sector entities in terms of support with the methods and tools of management accounting are very diverse. The diversity can be compared with the wide range of expectations of the commercial sector entities. At the same time, the surveyed units showed a low level of interest in methods using, for example, non-financial measures. A continuation of the research in the indicated area was another article, the purpose of which was to determine how a specific public sector entity, i.e. an executive agency, can support the management accounting instruments used with appropriately selected IT tools. The agency presented by implementing management accounting tools and supporting them with an integrated management system in order to fulfill its tasks, but also to fulfill the obligation to prepare a task-based budget, which is imposed on executive agencies by the Public Finance Act. The surveyed agency set itself the goal of providing the clients high-quality services, as well as profitability of the conducted activity. All these premises were translated into the requirements for the configuration of the implemented system, which was supposed to help implement selected management accounting tools.

I have gradually extended my research in this trend to include the impact of the systems implementation on the quality of information obtained from the management accounting system. I have presented the results of my research in the following publications:

- Stroncsek, A., Marcinkowska, E., Sawicka, J. (2017), Systemy ERP a informacja zarządcza – perspektywa MSP, *Studia Ekonomiczne*, 341, s. 331-345.

The aim of this article was to define the attitudes and expectations of users from the SME sector towards ERP solutions and to determine how the implementations influenced the perception of the quality features of management information generated by the systems. To achieve the goal, I used the analysis of available documents and reports on the functioning of SMEs and the survey carried out for the purpose of this article. The conclusion of the research was the finding that the implementation of ERP has a positive effect on the qualitative characteristics of information generated in accounting systems. As a continuing of this research (these studies are integrally linked), the following publications were created:

- Stroncsek, A. (2018), Zastosowanie zintegrowanych systemów informatycznych a zwinność organizacji, *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, (513),s. 353-363.
- Stroncsek, A., Basiura B. (2020). Quality of information obtained from IT (ERP) systems and the organization's agility, in: Khalid S. Soliman (ed.) *Sustainable economic development and advancing education excellence in the era of global pandemic*, 36nd International Business Information Management Association Conference, IBIMA 2020,



International Business Information Management Association, IBIMA, Granada, s. 9754-9765.

Recognizing that the desired ability of the organization is agility, understood as the facility and quickness to reconfigure, redesign and adapt their processes to respond to the needs, threats and opportunities arising from the environment I conducted appropriate research. The goal was to show how implementing ERP class systems affect the agility of the enterprise. In order to achieve the adopted goal, literature research and a diagnostic survey using the direct questionnaire method were used. The obtained results allowed for the conclusion that after the implementation of an ERP class IT system, the management should be able to immediately react to changes in economic parameters, which should result in an improvement of the decision-making process. All these benefits are also quantities that build the agility of the organization. However, the dependence between the agility of the organization and the implementation of integrated ERP systems seems to be ambiguous. The result of continued research on the impact of information quality on the response capacity of enterprises, was the publication (Stroncsek, Basiura, 2020), for which hypothesis was adopted that: "improving the qualitative parameters of the information features obtained as a result of ERP implementation has a positive effect on the agility of the organization". For the purposes of the research, in the first place, there was shown the general pattern of dependencies between the qualitative characteristics of information generated with the help of ERP systems and the agile skills supported by the implementation of these system. On the basis of the collected data, initial dependence in the form of Spearman's rank correlation were determined. In the next step, the chi-square test of independence was used for the paired quality features of information generated with the help of ERP systems with individual agile skills supported by the implementation of these systems. Then, using the appropriate data coding, a contingency table was compiled with the distinction of high and low ratings for the quality of information obtained from ERP systems on the one hand, and high and low ratings for agile skills supported by the implemented systems on the other hand. The conducted research allowed to establish that the widespread use of enterprise resource planning systems fundamentally influences the approach to business information, its collection, storage, dissemination and use. This change in the orientation of information processing affects many areas of business operations. The possibility of using integrated class systems allows you to: shorten the response time to an query and the delivery time itself, increase the possibility of professional offer execution, as well as flexibility in formulating the offer, ensuring direct contacts with people involved in the entire process, facilitating customer identification at the next order and improve the quality of its service by collecting information about the parameters of its previous deliveries and the course of the cooperation process.

- Stroncsek, A. (2018), Wpływ wdrożenia ERP na poziom dojrzałości kosztowej organizacji, *Zeszyty Naukowe Politechniki Częstochowskiej. Zarządzanie*, 30, s. 258-267.

The aim of this work was to answer the question: does the implementation of ERP class systems affect the cost maturity of the organization? As a research method used literature research aimed at obtaining an answer to the research question. The conducted critical review of the research so far suggested that the decision to implement cost prediction tools (from less advanced, such as incremental planning to more demanding simulations) does not result from the possession of IT tools. Their implementation is related to the previously taken idea and the

need for changes, and thus the level of cost maturity of the organization, understood as the level of cost accounting development in a given organization, does not seem to be directly dependent on the implementation of an ERP system. It is the external and internal changes in the conditions of activity that are the driving force behind the search for new solutions.

The research regarding *The role of IT solutions in shaping the quality of management information in the accounting system* led to the conclusion that the implementation of IT systems is not a factor that encourages the use of innovative or modern management accounting practices, but it definitely influences the quality parameters of the information obtained.

At this point, I would like to add that the nature of the thematic division of the achievements is contractual, which can be seen in assigning the above mentioned article to the second field *The role of IT solutions in shaping the quality of management information in the accounting system*, even though there are reasons to include it in the first area *Management accounting system and its operating conditions*. The decision on such classification is the result of the fact that, although the considerations in this article emphasize the influence of information technology evolution on the way of using management accounting methods, its intention was to indicate that the quality of the obtained information determines the manner and scope of adopting a given method or tool of management accounting.

### **Field no III: Management accounting against modern management concepts**

Another field of my research is connected with the previously characterized areas. At the same time allowed for the conceptualization of the research area of my habilitation monograph. This trend also reflects the change of the perspective of management accounting perception from tool accounting to process accounting, readable in the theory and practices of enterprises which is observed in Poland in the second decade of the 21st century.

Due to the competition and changing business environment organizations are forced not only to flexibly adapt to changes, but also to anticipate them. Agility is a desired organizational ability, understood as the ease and speed with which companies can reconfigure, redesign and adapt their processes to respond to needs, threats and opportunities. Therefore, the purpose of the publication:

- Stroncsek, A. (2021), Managerial Effectiveness in the Implementation of Quick Response Manufacturing (QRM) to Increase Business Agility, *European Research Studies*, 24(3B), s. 47-60.

was the analysis of the impact of the skills provided with the implementation of QRM (Quick Response Manufacturing) on the key features of the agility of the enterprise. The research methods used to achieve the research objective were literature studies and survey research with the use of agility attribute matrix. On the basis of the conducted research, I developed a model of the impact of QRM implementation on the areas and potentials of internal adaptation of the organization.

- Stroncsek, A. (2017), PLM: wykorzystanie systemów komputerowych do zarządzania cyklem życia produktu, *Przedsiębiorczość i Zarządzanie*, 18(10.1), s. 205-215.

The purpose of this publication was to present the functional possibilities and benefits of using IT systems for product lifecycle management. The article uses a literature review on the subject and conclusions from participant observation.

In my research, the issues related to the use of management accounting tools in various areas of the organization's life also played a significant role. I was particularly interested in the use of the Balanced Score Card as an instrument of management accounting and the possibility of its use in order to shape the image of an institution of public trust and its employees by monitoring the implementation of economic and social goals, identifying and solving problems in the area of public trust, as well as the possibilities of use in reporting on the social responsibility of public interest entities. This subject was reflected in the following publications:

- Krajewska, S., Stroncsek, A. (2015), BSC jako narzędzie realizacji celów społecznych i ekonomicznych instytucji zaufania publicznego na przykładzie uczelni wyższej, *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Problemy Zarządzania, Finansów i Marketingu*, 41 (1), s. 377-388.
- Krajewska, S., Stroncsek, A. (2015), BSC as a tool to achieve social and economic goals of a university-problem of public trust organisation, *European Scientific Journal*, (1), s. 519-529..
- Krajewska, S., Stroncsek, A. (2015). Balanced Scorecard jako instrument ostrzegający przed utratą zaufania publicznego. *Zeszyty Teoretyczne Rachunkowości*, 82(138), s. 65-76.
- Krajewska, S., Stroncsek, A. (2016). Balanced Scorecard w raportowaniu społecznej odpowiedzialności jednostek zainteresowania publicznego,(w:) M. Andrzejewski (red.). *Sprawozdawczość i rewizja finansowa jednostek zainteresowania publicznego*, Difin, Warszawa, s. 87-105.
- Marcinkowska, E., Sawicka, J., Stroncsek, A. (2016), Społeczna odpowiedzialność biznesu jako koncepcja istotna dla funkcjonowania MŚP, *Studia Ekonomiczne*, 299, s. 207-221.

The modern approach to management emphasizes the importance of creating a favorable organizational surroundings through the use of management tools that are designed to enable each member of the organization to use their own potential as much as possible. The interest in psychological conceptions and theories, as well as their application in the interpretation of economic phenomena, has a long tradition. Most often it is used in finance, explaining consumer behavior, marketing, risk-taking behavior, but also in the field of broadly understood accounting (financial and management).

Achieving the objectives of management accounting requires not only having sufficient substantive knowledge in the areas of budgeting, cost conservation and accounting systems, etc., but also the ability to understand human behavior and motivation. Unsurprisingly, one of the research areas of management accounting is the area of behavioral research. This issue also found its place in my research:

- Stroncsek, A. (2010), Postrzeganie miejsca controllera na przykładzie wybranego przedsiębiorstwa, *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, (123 Rachunkowość a controlling), s. 485-492.

- Stroncsek A., Sawicka J., (2014), Beyond budgeting jako koncepcja uwzględniająca behawioralne aspekty rachunkowości zarządczej, (w:) J. Chluska, J. Rubik (red.), *Zarządzanie kosztami przedsiębiorstwa w warunkach ryzyka: aspekty teoretyczne*, Sekcja Wydawnictw Wydziału Zarządzania Politechniki Częstochowskiej, Częstochowa, s. 117-126.

I also took up the subject related to the role of organizational culture in:

- Stroncsek, A. (2011), Rachunkowość zarządcza w kontekście zachowań członków organizacji, *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, (181 Rachunkowość a controlling), s. 557-565.

The conclusion of this publication was the statement that: "The strength of the tools implemented in the enterprise is connected to the people who implement them. Success and efficiency do not come from tools and instruments as such, but from people - when they are appreciated, they identify with solutions, they become more effective". The conclusion resulting from research largely influenced the final shape of the monograph indicated in point 4.1, in which I strongly emphasized the influence of a conscious team and mature organizational culture on the shape of the management accounting system.

Recently, my research interests include subjects related to the green management accounting trend. These interests translated into a series of publications:

- Waksmundzki Ł., Stroncsek A. (2018), „Motywacyjny system gospodarki odpadami” – innowacja procesowa autorstwa EcoTech System jako sposób na realizację założonych poziomów odzysku, (w:) J. Kulczycka, G. Ginda (red.), *Elementy zarządzania w zrównoważonym rozwoju i gospodarce o obiegu zamkniętym*, Wydawnictwo IGSMiE PAN, Kraków, s.137-146.
- Kotyza, W., Stroncsek, A. (2019), Technologie mobilne jako wsparcie innowacji społecznych, (w:) N. Laurisz, A. Stroncsek (red.), *Ekonomia Społeczna. Innowacje społeczne*, Uniwersytet Ekonomiczny w Krakowie, Kraków, s. 59-70.
- Laurisz, N., Stroncsek, A. (2019), Przedmowa: Innowacje społeczne między rynkiem a państwem, (w:) N. Laurisz, A. Stroncsek (red.), *Ekonomia Społeczna. Innowacje społeczne*, Uniwersytet Ekonomiczny w Krakowie, Kraków, s. 7-12.
- Stroncsek, A., Waksmundzki, Ł. (2020), MSGO-EcoTech System as a tool to support enterprises in the implementation of extended producer responsibility (EPR), *Ekonomia i Środowisko*, (1), 126-138.

The analysis of the literature shows that there is a dependence between lean management and an ecological approach but the synergistic concept remains unstructured. When it comes to measuring performance in this area, the elements that enable the assessment of an integrated lean and green system are still unrecognized, as each of these areas has a separate logic of the performance assessment system. Existing research on supporting the area of management by management accounting of lean enterprises focused on ecological activities is fragmentary and focuses primarily on instruments. There is no comprehensive epistemological approach in this area. Therefore, there is a problem of determining how socially responsible accounting supports lean enterprises and which direction its development is heading. My interest in this area will determine the future direction of my research.

The trends I have indicated combine the thematic scopes of theoretical considerations and empirical research of three sub-disciplines in the science of management and quality, such as: supporting managerial decisions, organizational behavior, financial management and managerial accounting.

The indicated areas make up, a coherent and logical picture that illustrates the development of my research interests. Scientific research conducted in each of these trends equally influenced the choice of the subject of the habilitation thesis. Considering the basic definition of lean accounting proposed in the monograph, as well as its layout and structure, it can be noted that this work is a logical consequence of my research interests that have been developing over the years.

The result of my research before obtaining the doctoral degree there were 15 publications, including:

- 1 monograph,
- 12 chapters in monographs and conference materials,
- 2 articles in scientific journals.

The result of my work carried out after obtaining the degree of doctor of economic sciences is 80 scientific and research works (both independent and co-authored), published in the country as well as abroad. My achievements are (table 2):

- 1 independent scientific monograph,
- 7 monographs in co-authorship,
- 15 separate chapters in scientific monographs,
- 14 co-authored chapters in scientific monographs,
- 5 chapters in conference materials,
- 16 independent scientific articles,
- 20 co-authored scientific articles,
- co-editing of 2 scientific monographs.

**Table 2. Summary of scientific achievements. Till March 31, 2022**

Specification	Before obtaining the doctoral degree		After obtaining the doctoral degree		Total
	Independent	co-authored	independent	co-authored	
Scientific monograph		1	1	7	9
Chapters in scientific monographs	2	4	15	14	35
Chapters in conference materials		6	-	5	11
Scientific articles	1	1	16	20	38
Editing of scientific monographs				2	2
<b>Total</b>	<b>3</b>	<b>12</b>	<b>32</b>	<b>48</b>	<b>95</b>

The total number of points of the Ministry of Science and Higher Education for the works that I published after obtaining the doctoral degree is 1063. The number of points weighted by the percentage of my own contribution to the publications produced in this period is 628,56 (Table 3).

**Table 3. number of points of MNiSW\***

Specification	After obtaining the degree of doctor of economic sciences		
	2002-2018	2019-2021	2002-2021
Scientific monograph	153 (35,73)	240 (160)	393 (195,73)
Chapters in scientific monographs	68 (46)	-	68 (46)
Chapters in conference materials	5(2,5)	70 (35)	75 (37,5)
Scientific articles	4 (2)	40 (20)	44 (22)
Editing of scientific monographs	243 (157,33)	240 (170)	483 (327,33)
<b>Total</b>	<b>473 (243,56)</b>	<b>590 (385)</b>	<b>1063 (628,56)</b>

\* There is the number of points in parentheses is given taking into account the percentage contribution in the listed publications

Most of my articles have been published in journals included in part B of the Ministry of Science and Higher Education list, in particular: "Scientific Papers of the University of Economics in Wrocław", "Scientific Papers of the University of Szczecin" or "Zeszyty Teoretyczne Rachunkowosci". I am also the author and co-author of chapters in monographs published in nationwide publications.

The full list of publications is included in Annex 4 to the application.

The overall citation statistics of my studies according to the Google Scholar database are as follows:

- number of citations: 79;
- number of publications cited: 24;
- number of citations / publication: 3,29;
- number of publications cited more than 1 time: 18;

## **5.2. Cooperation with the Department of Financial Accounting of the Institute of Finance of the University of Economics in Krakow**

My cooperation with Department of Financial Accounting in Institute of Finance of the University of Economics in Krakow has been going on for many years. At the beginning it was informal in nature and consisted in conducting scientific discussions on common research interests, exchanging views, establishing scientific contacts and drawing research inspiration. In the following years, this cooperation became official and resulted in many of my activities in the scientific research of the Department. The most important for me was:

- Participation in a research internship at the Department of Financial Accounting (in the period from 2 October to 18 December 2017):

The aim of my internship was to deepen cooperation with academics of the Department of Financial Accounting, participate in scientific research, improve the research and teaching methods used, and exchange experiences as well as knowledge. During this period I acquired knowledge of the procedures in the field of scientific research and teaching at the Faculty of Finance and Law of the University of Economics in Krakow. I also participated in an international scientific conference organized by the Department and got acquainted the publications of academics and research conducted by the Department's team. The joint research resulted in the creation of articles, the publication of which took place in 2018.

- Participation in the statutory research of the Department on: "Reporting and financial audit of public interest entities" (No. 141 / WF-KRAF / 02/2015 / S / 5141) in 2015.
- Publishing in co-authorship with Sylwia Krajewska, an employee of the Department:
  - Basiura, B., Krajewska, S., Marcinkowska, E., Paliński, A., Sawicka, J., Stroncsek, A. (2014), *Zarządzanie ryzykiem w wybranych obszarach życia gospodarczego*, Wydawnictwa AGH, Kraków.
  - Krajewska S., Stroncsek A. (2013), Wykorzystanie metod alternatywnych wobec tradycyjnego budżetowania na przykładzie jednostki gastronomicznej, (w:) A. Dury (red.), *Budżetowanie – dziś i jutro*, Wydawnictwa AGH, Kraków, s. 305-320.
  - Stroncsek, A., Krajewska S. (2013), Ryzyko jako element kontroli zarządczej w sektorze finansów publicznych, (w:) B. Micherda i M. Andrzejewski (red.), *Sprawozdawczość i rewizja finansowa: problemy kwantyfikacji ryzyka gospodarczego*, Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie, Kraków, s. 211–220.
  - Stroncsek, A., Krajewska, S. (2015). Oczekiwania jednostek sektora zamówień publicznych w zakresie wsparcia rachunkowości zarządczej przez zintegrowane systemy zarządzania, (w:) E. Nowak, P. Bednarek (red.), *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, (399 Rachunkowość a controlling), s. 428–435.
  - Krajewska, S., Stroncsek, A. (2015), BSC jako narzędzie realizacji celów społecznych i ekonomicznych instytucji zaufania publicznego na przykładzie uczelni wyższej, *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Problemy Zarządzania, Finansów i Marketingu*, 41 (1), 377-388.
  - Krajewska, S., Stroncsek, A. (2015), BSC as a tool to achieve social and economic goals of a university-problem of public trust organisation, *European Scientific Journal*, (1), s. 519–529.
  - Krajewska, S., Stroncsek, A. (2015). Balanced Scorecard jako instrument ostrzegający przed utratą zaufania publicznego. *Zeszyty Teoretyczne Rachunkowości*, 82(138), s. 65–76.
  - Krajewska, S., Stroncsek, A. (2016). Balanced Scorecard w raportowaniu społecznej odpowiedzialności jednostek zainteresowania publicznego, (w:) M. Andrzejewski (red.). *Sprawozdawczość i rewizja finansowa jednostek zainteresowania publicznego*, Difin, Warszawa, s. 87-105.
  - Krajewska, S., Stroncsek, A. (2018), The premises and the scope of use of tutoring in teaching accounting at a University - the perspective of a student and an academic teacher. *Horyzonty Wychowania*, 17(43), 95-108,

- Participation in conferences organized by the Department (2013, 2015, 2017, 2021) and in the scientific seminar "The search for successful research" led by prof. David Alexander of the University of Birmingham (December 9, 2015).

### **5.3. Cooperation with the Victoria Foundation for Knowledge and Technologies for Small and Medium Business**

Since 2019, as part of popularizing the idea of circular economy using green-lean accounting tools, I have been cooperating with the Victoria Foundation for Knowledge and Technologies for Small and Medium Business established in Kaliningrad. As part of the international cooperation carried out via electronic means of communication, a pilot project for the implementation of the Incentive Waste Management System for the city of Kaliningrad was developed and an article was created on modern waste collection. The article is awaiting publication in the journal "Окружающая Среда СПб".

The study visit planned for the period of July-August 2021 did not take place due to the pandemic period.

The current situation related to the COVID-19 pandemic prevents direct meetings, but we maintain professional contact while planning further projects.

## **6. Presentation of teaching and organizational achievements as well as achievements in popularization of science or art**

### **6.1. Didactic achievements**

In parallel with my scientific and research activity, I conduct teaching, which effects can be attributed to three areas of activity: conducting classes, promoting and reviewing diploma theses, and publishing for the purposes of teaching.

At the native Faculty of Management of AGH, I conduct classes in first and second degree studies in the following fields: Management, Management and Production Engineering. My classes focus on accounting, cost accounting and controlling. I carry out the following subjects: Controlling, Strategic Controlling, Economics of Enterprises, Finance, Finance and Accounting, Computer Accounting Systems, Computer Decision Support, Fundamentals of Accounting, Fundamentals of Cost Accounting, Cost Accounting, Cost Accounting for Engineers, Financial Accounting, Computer Accounting, Management Accounting, Corporate Finance Management, Strategic Management.

I am the author of syllabuses and descriptions of learning effects for conducted classes.

I also teach at other AGH University of Science and Technology faculties and as part of the University's Elective Subject Base (database of elective subjects offered to students of various faculties), as well as at postgraduate studies.

In addition to working at my alma mater, I also collaborated as a teacher with other universities, including the Pedagogical University of Krakow and the School of Management and Banking in Krakow, where I was employed for several years. My teaching activity is also revealed by conducting courses and trainings for the industry as well as lectures as part of training public administration employees.



I am also the author and co-author of didactic materials for lectures and workshops, textbooks for students, managers and specialists in the field of management, and other didactic publications, including:

### monographs

- Dyduch A., Sawicka J., Stroncsek A. (2004), *Rachunkowość finansowa: wybrane zagadnienia*, Wydawnictwo C. H. BECK, Warszawa.
- Dyduch A., Sawicka J., Stroncsek A. (2004), *Podstawy rachunkowości*, Uczelniane Wydawnictwa Naukowo-Dydaktyczne AGH, Kraków.
- Stroncsek A., Surowiec A., Sawicka J., Marcinkowska E., Białas M. (2010), *Rachunek kosztów. Wybrane zagadnienia w teorii i przykładach*, Wydawnictwo C.H. Beck, Warszawa.
- Sawicka J., Stroncsek A. (red.), (2011), *Rachunkowość finansowa: podstawy i ewidencje szczegółowe*, CeDeWu, Warszawa.
- Basiura, B., Krajewska, S., Marcinkowska, E., Paliński, A., Sawicka, J., Stroncsek, A. (2014), *Zarządzanie ryzykiem w wybranych obszarach życia gospodarczego*, Wydawnictwa AGH, Kraków.
- Sawicka, J., Stroncsek, A., Marcinkowska, E., Surowiec, A. (2017), *Rachunkowość finansowa: podstawy i ewidencje szczegółowe*, CeDeWu, Warszawa.
- Sawicka J., Stroncsek A., Marcinkowska E. (2018), *Rachunkowość finansowa. Ewidencje i sprawozdawczość*, CeDeWu, Warszawa.
- Sawicka J., Stroncsek A., Marcinkowska E. (2020), *Sprawozdanie finansowe przedsiębiorstwa zgodnie z ustawą o rachunkowości*, CeDeWu, Warszawa.

### chapter in monograph

- Stroncsek, A. (2014), Sprawozdawczość zarządcza w sieciach franczyzowych (w:) M. Łada (red.), *Międzyorganizacyjna rachunkowość zarządcza: zastosowania metod rachunkowości w zarządzaniu sieciami biznesowymi*, Wydawnictwo Nieoczywiste, Warszawa, s. 121-140.

### articles

- Stroncsek, A., (2006), Wybrane problemy dydaktyczne nauczania przedmiotu „Komputerowe systemy finansowe”, (w:) T. Kiziukiewicz (red.), *Dydaktyka w naukach ekonomicznych*, Akademia Rolnicza w Szczecinie. Katedra Rachunkowości, Szczecin, s. 210-214.
- Stroncsek, A., Bek-Gaik, B. (2005), Rozrachunki jednostki gospodarczej w świetle przepisów rachunkowości, (w:) T. Kiziukiewicz (red.), *Rachunkowość w zarządzaniu jednostkami gospodarczymi* Akademia Rolnicza w Szczecinie. Katedra Rachunkowości, Szczecin, s. 164-168..
- Marcinkowska, E., Sawicka, J., Stroncsek, A. (2016), Wpływ zmian w ustawie o rachunkowości na ewidencję księgową i sprawozdawczość finansową małych jednostek gospodarczych, *Finanse, Rynki Finansowe, Ubezpieczenia*, 80, 117-124,.

- Marcinkowska, E., Sawicka, J., Stroncsek, A. (2017), Odpisy aktualizujące rzeczowe aktywa trwałe w ośrodkach wypracowujących korzyści ekonomiczne, *Finanse, Rynki Finansowe, Ubezpieczenia*, 88, 157-166.
- Krajewska, S., Stroncsek, A. (2018), The premises and the scope of use of tutoring in teaching accounting at a University - the perspective of a student and an academic teacher. *Horyzonty Wychowania*, 17(43), 95-108.

An important part of my research and teaching work is to act as a supervisor of master's, bachelor's and engineering theses. I was the supervisor of over 260 diploma theses (bachelor's, engineering and master's) as well as about 350 reviews of theses.

My scientific interests and the scope of my research contributed to the fact that by the decision of the Board of the Faculty of Management of the AGH University of Science and Technology, I was appointed as an auxiliary supervisor of Mr. Bartłomiej Bartnik's doctoral thesis, entitled: The impact of market liberalization on the evolution of the management accounting system - a case study of an organizational unit belonging to PGNiG Group. The thesis supervisor was prof. AGH dr hab. Monika Łada. The thesis was accepted on February 22, 2019.

## **6.2. Organizational and science popularizing achievements**

I was the initiator and co-founder of the Accounting and Financial Management Scientific Club under the name "Audytor" at the Department of Financial Management at the Faculty of Management at AGH in 2004. In the years 2004–2011 I was the supervisor of this club.

As a supervisor of the "Audytor" Science Club, I participated in organizing nationwide student scientific seminars, both on the initiative of this club (in 2006 and 2007) and as part of the cyclical Student Sessions of Scientific Club of the AGH in Mining Faculty. I was also the supervisor of papers delivered by students at these sessions.

As part of my organizational activities, I was and is performing a function in the task departmental committees established by the Council of the Faculty of Management of AGH in Krakow. In the years 2016–2020 I was a member of the Faculty Examination Committee and the Faculty Education Quality Committee. In the 2021–2025 term, I am a member of the Faculty Examination Committee and I act as the faculty editor. Before 2015, I participated many times in the work of recruitment committees for the second degree of studies (full-time and part-time studies).

An important achievement is my participation in the creation and improvement of curricula as well as programs and syllabuses for new subjects.

In order to learn about current research trends and the possibility of integration with the scientific community in the period after obtaining the doctoral degree, I actively participated in 55 conferences, including 23 international ones, delivering 19 papers and presenting 4 posters. These events gave me the opportunity to present the results of my own research and participate in inspiring scientific discussions.

I was also a member of the organizing committees of 6 conferences (details in Annex 4).

I reviewed articles in scientific journals: "Horyzontach Wychowania" and Management Systems in Production Engineering, and conference articles 37th-IBIMA and 38th-IBIMA (while being a member of the program committee).

I am a member of the Societe Internationale pour l'Enseignement Commercial - International Society for Business Education (SIEC-ISBE).

Research projects carried out as my own and statutory research were a significant support for my scientific work. I am also a co-contractor of the task under the strategic research and development program co-financed by the National Center for Research and Development under the Smart Growth Operational Program (POIR) for the project entitled: Innovative Comprehensive Waste Collection and Recycling System.

I actively participate in research initiatives, creating research teams, applying for grants, in didactic and organizational projects carried out by the Department of Enterprise Management at the Faculty of Management at AGH and in projects at the University level (eg Tutoring at AGH).

I also conduct popularization activities as the president of the "RecycLife" foundation since 2019. Activities in this field allow me to combine my scientific interests, in particular the subject of green & lean accounting, with the need to present the attitude of a socially responsible person and wider cooperation with the business community.

### **6.3 Awards for research and didactic activities and other prizes**

For my research and teaching activities, I have received six awards from the Rector of the AGH University of Science and Technology (four for scientific activities and two for teaching activities(didactic):

1999	team award of the AGH Rector, 2nd degree for teaching achievements
2003	individual award of the AGH Rector, 3rd degree for scientific achievements
2005	team award of the AGH Rector, 2nd degree for teaching achievements
2016	individual award of the AGH UST Rector, 2nd degree for scientific achievements
2019	individual award of the AGH Rector, 3rd degree for scientific achievements
2020	individual award of the AGH Rector, 3rd degree for scientific achievements

I received diplomas of recognition awarded by the AGH University of Science and Technology Vice-Rector for Education for my commitment and exemplary care over the "Audytor" Science Club in 2006-2008 years.

I also received special medals:

2017	Medal of the National Education Commission awarded by the Minister of National Education, ID No. 159341
2019	Silver Medal for Long Service (2nd degree) awarded by the President of the Republic of Poland, card No. 455-2019-42

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