Summary of professional accomplishments
providing a description of career and relevant scientific activity

Adam Koliński

1. Name

Adam Koliński

2. University degrees

2.1. Master's degree in engineering obtained on 1 July 2008, confirmed by a diploma of completion of a 5-year Master's degree in Management and Marketing in the field of business management at the Faculty of Informatics and Management, Poznan University of Technology (currently Faculty of Engineering Management). Studies completed with a very good grade.

2.2. The degree of Doctor in Economics in the field of management sciences obtained at the Faculty of Engineering at Poznan University of Technology on 19 January 2015, on the basis of the presented doctoral dissertation entitled "A model for assessing the efficiency of the production process", prepared under the scientific supervision of prof. Bogusław Śliwczyński (Annex – Z1).

3. Information on previous employment in scientific institutions

3.1. Intern Assistant in the Department of Logistics Information and Informatics at the Poznan School of Logistics (March 2008–September 2008).

3.2. Assistant in the Department of Logistics Information and Informatics at the Poznan School of Logistics (September 2008–December 2014).

3.3. Assistant Professor in the Department of Logistics Information and Informatics at the Poznan School of Logistics (January 2015–August 2016).

3.4. Lecturer at the Faculty of Engineering Management, Poznan University of Technology (March 2015–June 2017)

3.5. Assistant Professor in the Department of Controlling and Information Systems at the Poznan School of Logistics (September 2016–September 2020)

3.6. Main Expert for logistics development in the research department of the Łukasiewicz Research Network - Poznan Institute of Technology *(previously the Institute of Logistics and Warehousing)* (June 2017–present)

3.7. Assistant Professor in the Department of Controlling and Accounting at the Poznan School of Logistics (October 2020–present)

4. Overview of the achievements referred to in art. 219 sec. 1 item. 2 of the Act of 20 July 2018. - Law on higher education and science (Journal of Laws 2021 item 478 with modif.)

As a scientific achievement resulting from in Art. 219 sec. 1 item. 2 of the Act of 20 July 2018. - Law on Higher Education and Science (Journal of Laws 2021, item 478, with modif.), I indicate the monograph:

Koliński, A. (2023). *Model efektywności procesów logistycznych przedsiębiorstw w łańcuchu dostaw/Efficiency model for logistics processes of companies in the supply chain* (321 stron/321 pages). Polskie Wydawnictwo Ekonomiczne/Polish Economic Publishers - in Polish language.

The publishing reviewers of the monograph were:

- prof. Jarosław Witkowski, Wroclaw University of Economics and Business,
- prof. Artur Świerczek, University of Economics in Katowice.

Justification for the chosen study area

The realisation of logistics processes with a focus on improving and rationalising the flow of goods and services in the supply chain provides the basis for the effective functioning of companies in the market environment. An essential measure of logistics process performance is the level of service provided to the final customers and internal customers, which impacts on activities throughout the supply chain. This is related to the leading role of the customer in specifying the needs required to define the income and costs of companies, the efficiency of processes and the correct information flow in the supply chain.

Logistics management is an element of supply chain management focused on planning, steering and implementing improvements and control of the efficient flow of goods along the supply chain (including reverse flow). This concentration also applies to the stocking of goods and the information integration of ongoing processes, taking into account the expectations of final customers. With its integrative function, logistics management coordinates and optimises all logistics activities and integrates logistics activities with other functions, including production, sales, finance and information technology.

Research can identify a number of factors that directly or indirectly influence the improvement of the overall logistics process in supply chains. In line with P. Drucker's definition of the characteristics of management, it can be said that one of the basic objectives of management is to continuously monitor and identify opportunities for improvement. Logistics management in supply chains should therefore focus on ways to improve the efficiency of operations, both within business partners and across the supply chain, as well as on continuous monitoring and evaluation of the achieved results.

Although in the scientific literature it is possible to identify attempts to define the research scope in relation to the logistics process efficiency, both in terms of company management and the entire supply chain, it should be noted that the research does not result in the development

of a comprehensive model for analysing the logistics process efficiency. Taking into account the specificity of the logistics processes carried out in the supply chain, logistics management should include not only the key processes, which are the basis of economic activity and guarantee the continuity of the flow of goods and services, but also supporting processes that also have an impact on potential improvements.

Due to the impact of different logistics processes on the supply chain, the following logistics management objectives can be identified:

- guaranteeing the continuity of the flow of goods and services,
- maintaining a high quality of supplied goods and services,
- minimising stocks,
- efficient and even use of resources,
- increasing the reliability and timeliness of deliveries and shortening delivery times,
- rationalisation of incurred costs,
- elimination of losses in logistic processes.

In an environment of continuous technological progress and computerisation of processes in companies, it should be noted that the key objectives from the point of view of management decision-making are:

- monitoring the flow of goods and services,
- ongoing control of emerging deviations from plans and norms,
- monitoring information flows regarding the logistics process efficiency in the supply chain.

Efficiency analysis requires both operational data relating to the organisational process, assisted by supporting processes and services, as well as data generated by the information system, in order to guarantee its reliability and up-to-date. Therefore, efficiency analysis should ultimately take into account both the physical and informational flow and the feedbacks.

Research problem and identified research gaps

In defining the research problem, according to research methodology, it is important to point out the following:

1. The need to explore the uncertainty surrounding the use of existing scientific knowledge and its complementation in terms of the precise definition of logistics process efficiency and the logical correctness of the concepts formulated. The definition of logistics process efficiency is ambiguously defined in the literature and is very often equated with effectiveness and efficiency, which makes it difficult to conduct reliable research in this area. In addition, each phase of the material flow in the supply chain is analysed separately, which carries the risk of failing to identify trade-off links between processes.
2. The analysis of logistics process efficiency, despite numerous literature references, is not widely used either in scientific research or in business practice. For many years, process efficiency has been discussed in the literature in a fragmented manner, both in

terms of the material flow phases mentioned and the actual scope of the analyses carried out.

The research problem and the presented research questions point to an existing research gap, observed as a result of the author's many years of research. No clear solution can be found in the scientific literature regarding the scope and method of carrying out an analysis and evaluation of the logistics process efficiency in supply chains. The lack of precise theoretical indications therefore makes it impossible to develop and carry out an efficiency analysis of logistics processes in business practice.

Aims and research questions of the monograph

The aim of the research was to conduct a multidimendisonal analysis and evaluation of the logistics process efficiency in companies and to develop a reference model for the logistics process efficiency in supply chains, taking into account the material flow phases and the accompanying information flows and financial flows.

It should be noted that the developed reference model is focused on the transposition of strategic objectives into operational activities, taking into account the importance of efficiency indicators and the need to standardise logistics processes in the different phases of material flow. In addition, the research carried out presents an organisational model that allows the concepts of the developed reference model to be applied and verified in business practice.

The specifics of analysis of logistics process efficiency and the author's own research carried out as part of a number of research and development projects, as well as cooperation with business practice in reorganising logistics processes of enterprises in supply chains allowed the formulation of three research questions:

P1. How should the analysis and evaluation of logistics process efficiency in companies be defined in terms of the entire supply chain?
P2. What should be the scope of analysis and evaluation of logistics process efficiency in supply chains?
P3. What elements should be included in the reference model for logistics process efficiency in companies in the supply chain?

In order to achieve the main objective of the conducted research and to answer the raised research questions, the following research procedure was adopted (Figure 1).

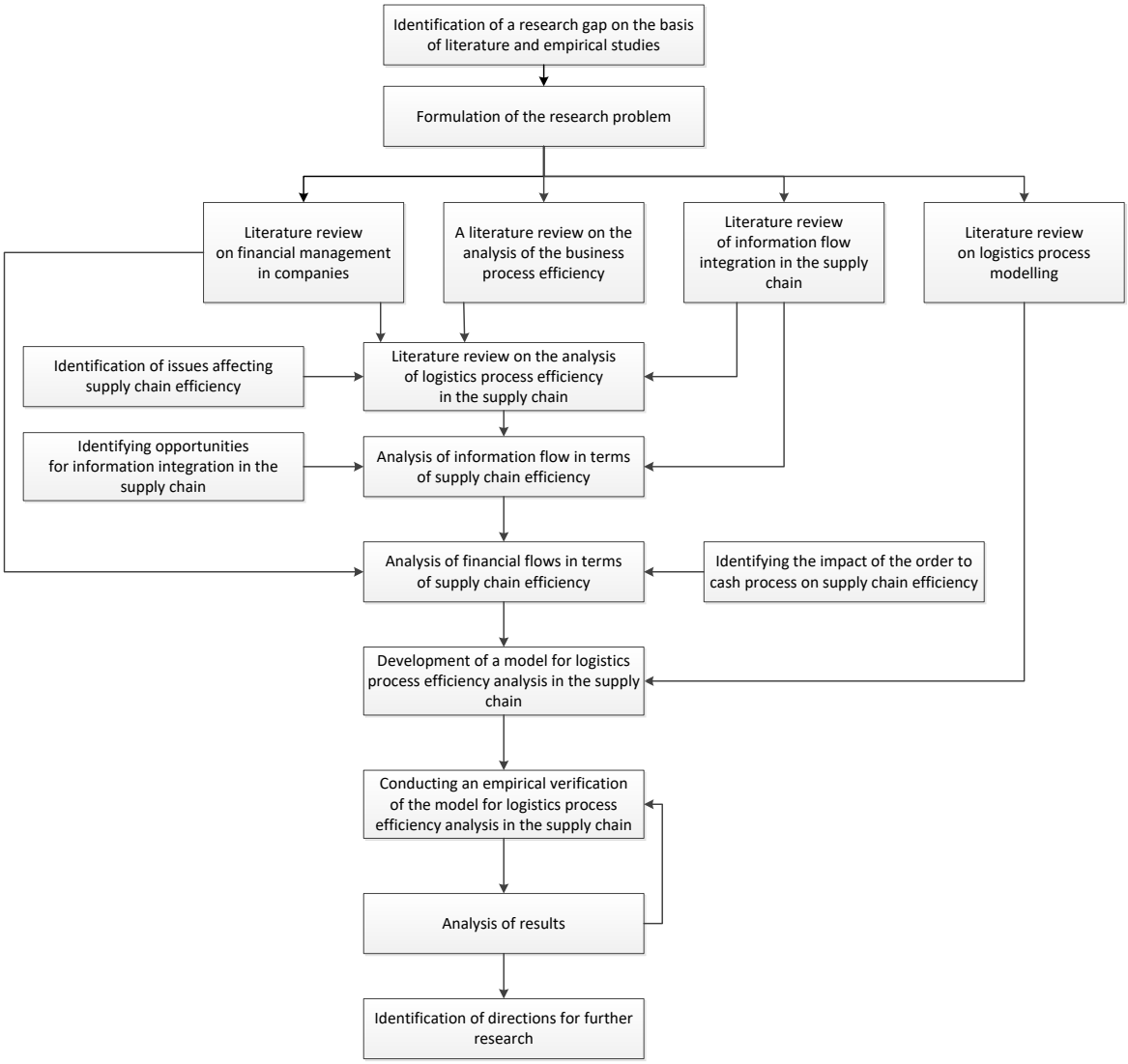

Figure 1. Research procedure

The research procedure used provides for methodological triangulation in the form of a combination of obtaining data for analysis on the basis of qualitative and partly quantitative methods. This triangulation is based on the necessity of mutually complementary, but also corrective and verifying methods, which is also confirmed in the approach to ongoing research in the analysis of logistics process efficiency in the supply chain.

Characteristics of research methods

The following methods were used in the research procedure:

1. Critical analysis of the literature on the subject, both domestic and foreign, which aimed to assess the state of knowledge for the solution of the research problem and to obtain scientific explanations related to the formulated research problems.
2. Observations and measurements in companies implementing logistics processes in supply chains, which aimed to confront the state of theoretical knowledge with business practice and the specifics of the observed companies.
3. Qualitative and quantitative analysis methods on the basis of a questionnaire survey to deepen the analysis of the processes in the enterprises.
4. Process mapping and modelling aimed at presenting and mapping of processes carried out in business practice.
5. Case study research to analyse the impact of individual factors and inputs on the logistics process.
6. Methods of deductive reasoning and comparative analysis at the observational-empirical level.

The research methods presented here were used as part of research work carried out at the Poznań School of Logistics and the Łukasiewicz Research Network - Poznań Institute of Technology (formerly the Institute of Logistics and Warehousing) between 2011 and 2022. The result of the research work carried out was the development of a concept for conducting logistics process efficiency analyses in the supply chain, the individual elements of which were verified for their usefulness in business practice.

Structure of the monograph

In order to achieve the intended research results, a monograph was prepared, structured in five chapters (Figure 2).

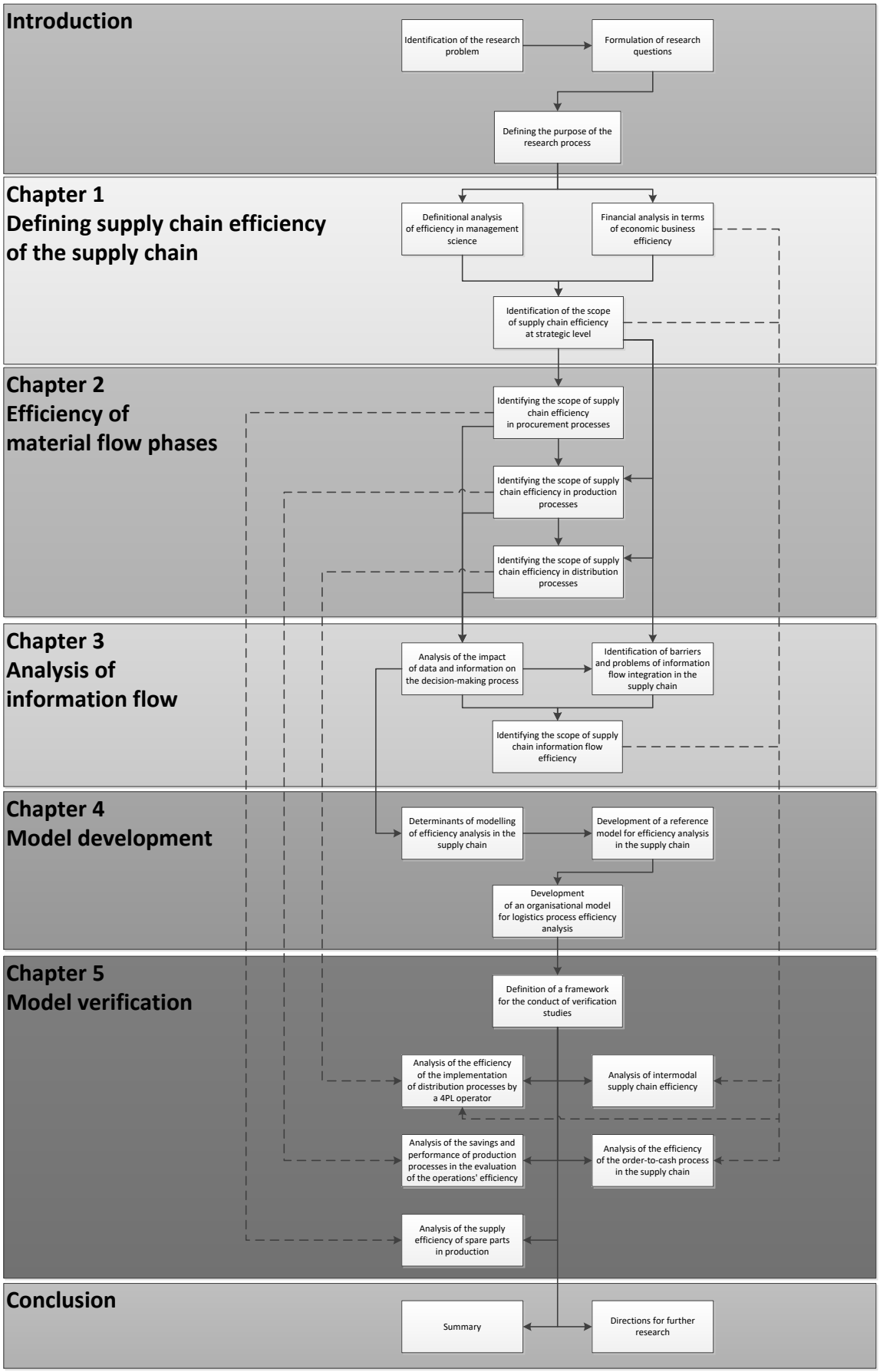

Figure 2. Structure of the monograph

Chapter one outlines the key issues involved in defining the concept of efficiency in management and quality sciences, supported by a detailed analysis of the impact of financial management on business efficiency. Efficiency is a rather difficult concept to define unambiguously. Particularly in the Polish-language literature, there are close synonyms such as effectiveness, performance, rationality, productivity, profitability, reliability or capacity.

The results of the literature analysis only confirm the complexity of the problem for logistics process efficiency, which is part of a broader controlling analysis that takes into account the material and accompanying information flow in individual companies and their business relationships in the supply chain. The capacity of logistics resources, understood as the ability to handle the material or goods flow of the supply and distribution phases, is one of the key factors determining logistics process efficiency in the supply chain.

The next section of the chapter addresses the impact of cash liquidity on the logistics process efficiency of enterprises in the supply chain. The specific character of the business activities of enterprises as business partners in the supply chain, demands the application of an insightful approach to conducting financial analysis. This is due to the specificity of supply chains and, for this reason, financial analysis has become an extremely important tool for assessing the efficiency of companies, serving for decision-making purposes at both operational and strategic levels.

The starting point of the analysis was to define the scope of supply chain efficiency at the strategic level. The purpose of discussing efficiency from a strategic perspective was to identify the link between the chosen strategy and the operational activities to implement it. Capturing the interconnectedness of corporate logistics processes and business interrelationships in the supply chain is crucial in this aspect, as it influences the efficiency of the realised logistics processes. The transposition of strategic objectives into operational activities in logistics processes must therefore take into account both intra-company considerations and considerations agreed with business partners in the supply chain. Focusing on logistics processes, it is important to state that, due to their trade-off relations and the mutual integration and synchronisation of processes, it is impossible to maintain a single strategy in all areas of operational activities without negatively affecting the economic and operational efficiency of the supply chain. The same dependency mechanism applies to multi-factor trade-off relations within each process, e.g. performance, cost and reliability of the process. The analysis therefore forms the basis for the development of a model for assessing logistics process efficiency, taking into account feedbacks across the supply chain.

The second chapter examines the specifics of the efficiency of the processes occurring in the different phases of material flow in the supply chain. In order to create a coherent system of logistics process efficiency measures, it was necessary to identify the cause-and-effect relations of the different levels of supply chain management by means of transposing strategic objectives into operational activities in all phases of material flow. Supply, production and distribution processes should take into account not only the flow in line with the material flow phases, but also the reverse flow. Reverse logistics refers both to the reverse process in the supply phase of materials and raw materials for production or in the distribution phase of finished goods, as well as to the reprocessing and elimination of shortages in the production phase. Reverse logistics is an extremely important supply chain process that cross-cuttingly affects all phases of material flow and requires separate detailed research in the scope of

efficiency and waste management, which is not covered in the argument of this monograph, this should be taken as a direction for further research.

The chapter also presents the results of research carried out as part of various research and development projects to identify the needs of business practice in transposing strategic objectives into operational activities, as well as the degree of importance of logistics process efficiency indicators in the different phases of the material flow.

The third chapter is dedicated to the issue of information flow in the supply chain. Successful logistics management in the supply chain requires the use of a large amount of data, which, after information processing, is intended both to represent the actual state of the physical flow of goods and to enable constructive conclusions to be reached regarding possible changes in the future and to improve the decision-making process. The efficiency of a company's information flow has a direct impact on the accuracy of management decision-making. This is due to the specificity and multi-criteria scope of influence of information flow on supply chain efficiency. This is because it is impossible to separate the flow of information in the supply chain from the material flow phases (supply, production, distribution) and from the physical flow of goods between partners along the supply chain, which result from the processes of supply, distribution or co-production.

In addition to a literature analysis of the role of data and information in decision-making, research is presented on identifying supply chain integration issues.

The structure of the first three chapters follows the logic of the search for answers to the formulated research questions P1 and P2, as shown in Figure 3.

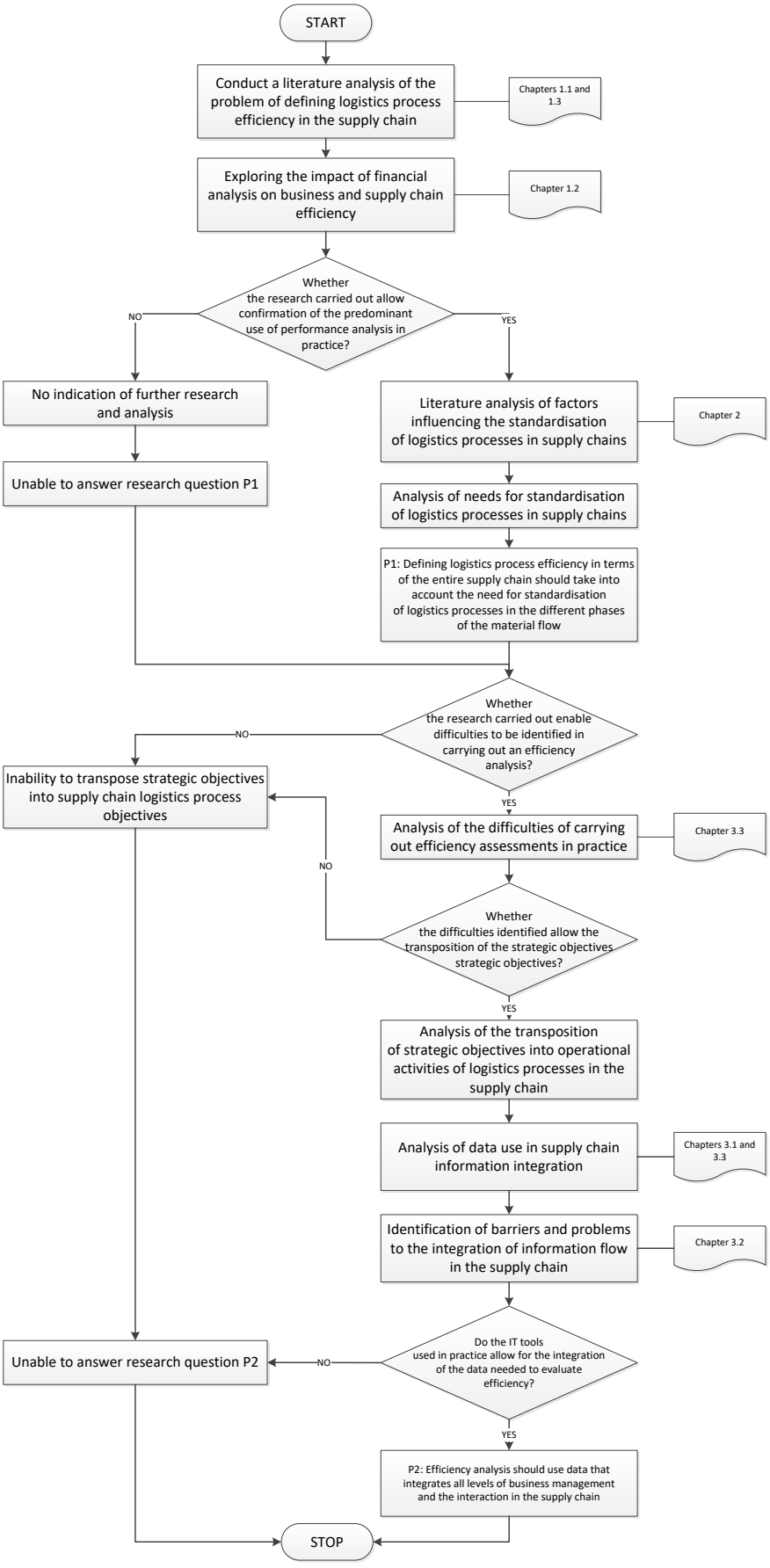

Figure 3. Logic of inference and answers to research questions P1 and P2

Analysing the logical process, the following conclusions were formulated:

1. The literature research, as well as the empirical research conducted, confirmed the ambiguity of the use of logistics process efficiency analyses in companies and supply chains.
2. The research made it possible to identify key processes influencing the success of efficiency analysis, taking into account the separation of material flow phases in the supply chain.
3. Research on the degree of standardisation of supply, production and distribution processes in enterprises confirmed the ambiguity in interpreting the scope of conducting an analysis and evaluating logistics process efficiency in supply chains.

The conclusions presented, based on the literature and empirical research, provide an answer to research question P1.

Defining logistics process efficiency in terms of the entire supply chain should take into account the needs for standardization of logistics processes in the individual phases of material flow.

By analysing the different phases of the logical process shown in Figure 3, it can be concluded that there are significant difficulties in effectively carrying out logistics process efficiency analysis. These difficulties are caused by transposing the objectives of the company into the objectives of the supply, production, distribution processes by choosing an appropriate supply chain management strategy. A review of the information needs of logistics process efficiency analysis in supply chains indicates how to use IT tools in supply chain efficiency analysis. The present study helps to answer the research question P2.

The scope of supply chain efficiency analysis and evaluation should include the use of data that integrate all levels of business management (operational, tactical, strategic) in the context of the entire supply chain, by transposing the balanced objectives of the business into the objectives of the logistics processes.

Chapter four presents a reference model for the analysis of logistics process efficiency in the supply chain, taking into account the different phases of material flow, as well as the scope of information flow integration and financial flows between the different phases of the supply chain (Figure 4). The chapter focuses on the modelling aspect of logistics processes in the supply chain. It includes an organisational model to enable the application and verification of the concepts of the developed reference model in business practice.

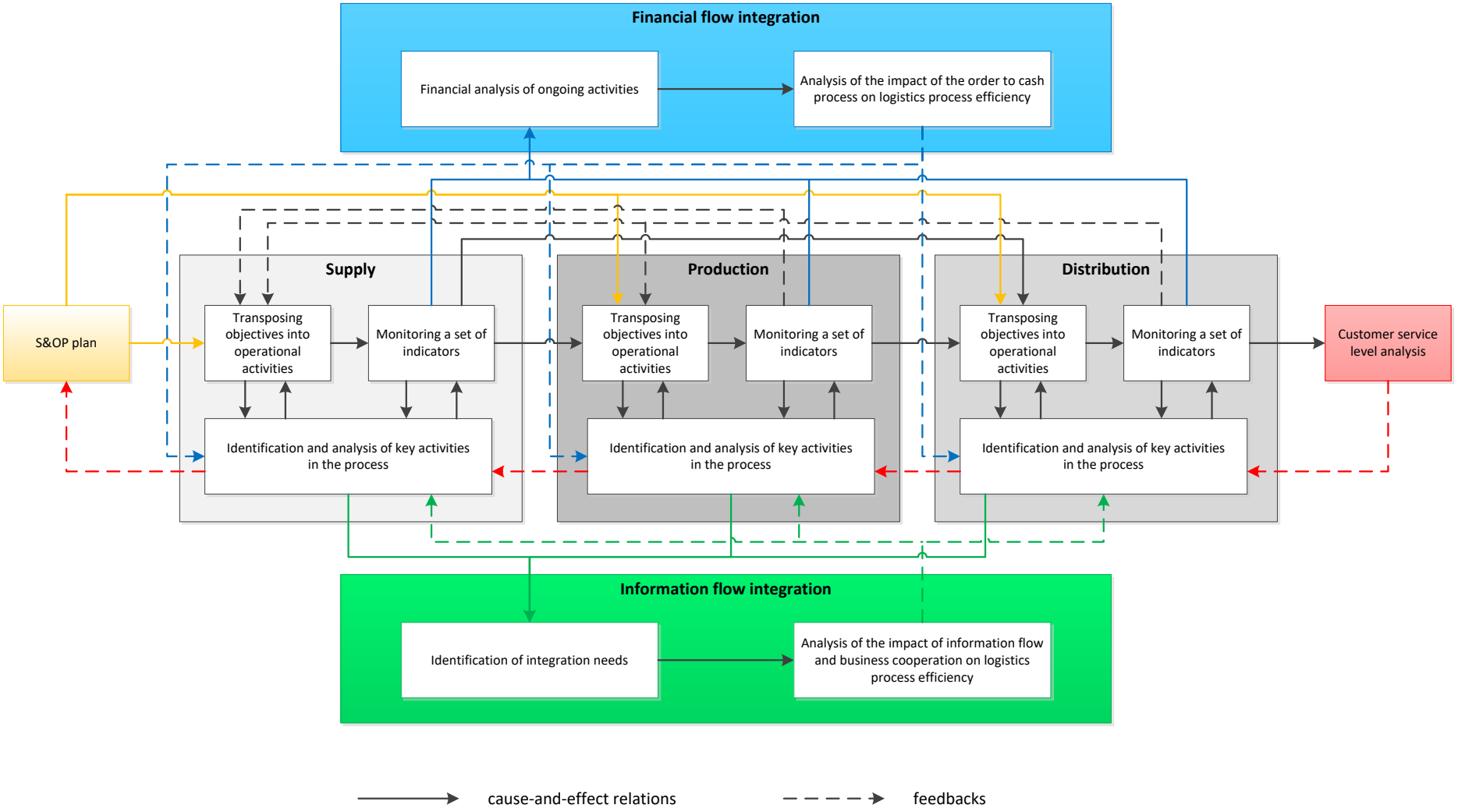

Figure 4. Reference model of logistics process efficiency in supply chains

The aim of the **fifth chapter** was to empirically verify (exemplify) the developed reference and organisational model using the case study as a research method focused on explaining the processes taking place in companies. The chapter analysed efficiency both at the strategic level, taking into account the specifics of the intermodal supply chain and the order to cash process, and at the operational level, isolating the specific factors influencing supply, production and distribution processes. The correlation and thematic interrelation of the research work carried out made it possible to achieve synergies and develop the construction of the presented reference model and its subsequent empirical verification.

The developed model, presented in Chapter Four, and the verification of its analytical scope, presented in the analyses of logistics processes in the different phases of material flows in supply chains, aim to answer research question P3.

On the basis of the analysis of the verification process presented, the following conclusions are formulated:

1. The verification procedure carried out confirms the complexity of the model for analysing the operational efficiency of logistics processes in the supply chain. Using a research method based on a case study, an analysis was carried out to verify the defined variants of logistics processes and resources.
2. The carried out procedure for the verification of logistics process efficiency in the supply chain allows for the verification of the model taking into account the division into material flow phases (supply, production and distribution), which have a direct impact on the values of indicators and their normative ranges.
3. The conducted research confirms the validity of using the developed reference model to conduct analyses of logistics process efficiency in the supply chain.

The conclusions presented, based on empirical studies of a reference model of logistics process efficiency in the supply chain, allow us to answer research question P3.

Process analysis provides a basis for logistics process efficiency in the supply chain from both an economic, operational and informational perspective, allowing to create a reference model taking into account the interrelation of material flow phases in the supply chain with information and financial flows.

Conclusion of the monograph

The research conducted, the results of which are presented in the monograph, contributed to reducing the identified research gap concerning the determinants of supply chain management and logistics process optimisation. The main substantive focus of this work has been on the practical application of the developed model of logistics process efficiency analysis in the supply chain and methods for assessing the benefits of implementing solutions that optimise these processes. The literature and empirical research, included in the monograph, is located in the area of the discipline of management and quality sciences, in its practical stream at the functional level, in the sub-discipline of logistics management.

The results of the empirical research carried out made it possible to identify the basic determinants of the logistics process efficiency analysis model of companies in the supply chain. Inference and interpretation of the results made it possible to find answers to the adopted research questions.

The results of the research can be boiled down to a few key findings:

1. The definitional ambiguity of logistics process efficiency analysis in companies and supply chains is a fundamental factor hindering the study of this efficiency in business practice.
2. As part of the efficiency analysis conducted in the individual phases of material flow, it is necessary to identify the key logistics processes, as these are the ones that influence the benefits obtained from the implementations and improvements carried out.
3. Attempts to standardise procurement, production and distribution processes in enterprises confirm the difficulty in interpreting the scope of conducting an analysis and evaluating logistics process efficiency in supply chains.
4. The developed reference model for the analysis of logistics process efficiency in the supply chain was verified in a partial form, taking into account the division into phases of material flow in the supply chain along with the separation of information flows and financial flows.
5. The conducted research confirms the possibility to use the developed reference model to conduct a multi-criteria analysis of logistics process efficiency in the supply chain. The developed reference model of logistics process efficiency in the supply chain creates new perspectives for scientific and empirical research in business practice.
6. The multi-faceted verification of the developed model provides a basis for further research, increasing the level of impact of the proposed solutions for logistics process efficiency in the supply chain.

Research on logistics process efficiency in the supply chain shows that supply chain companies are neither aware of the need for complex efficiency analysis nor of the resulting economic benefits. Companies focus on the savings of processes carried out within the organisation, which can often negatively affect logistics process efficiency in the supply chain. In addition, companies implementing innovative solutions with a direct impact on supply chain efficiency need financial support through R&D activities, as the implementation of innovative technologies is highly cost-intensive and has a high risk of not being successful and achieving economic or operational benefits in logistics processes. In addition, the risk increases in the absence of cooperation of supply chain partners, in the processes of implementing innovative solutions.

I consider the most important achievements of the conducted research, enriching the sub-discipline of logistics management in management and quality sciences, as:

1. In theoretical terms:
    - to present a comprehensive theoretical, methodological and empirical study on the review and systematisation of knowledge related to the use of supply chain

efficiency analysis, as well as logistics process efficiency in the individual phases of material flow in economic theory and practice,
- to enrich and clarify the definitions of the basic constructs in the area under study,
- to identify and justify the incompleteness of hitherto used methods and tools for logistics process efficiency analysis in supply chains,
- to create a reference model for the analysis of supply chain efficiency.

2. In terms of methodology:

   - design a methodology for a study relating to the identification of the benefits of implementing logistics process optimisation solutions and their impact on the efficiency of companies as partners in supply chains.

3. In empirical terms:

   - an analysis and critical assessment of the possibility of standardising key processes at the material flow phase level influencing the improvement of logistics process efficiency in the supply chain,
   - proposal of recommendations for the information integration of business partners in the supply chain in terms of monitoring delivery times and other operational activities related to handling and transport,
   - identify the role and impact of the implementation of digital solutions and innovative technologies in increasing the efficiency of operations in companies.

The primary objective of this monograph, which was to develop a reference model of logistics process efficiency in the supply chain, was realised and empirically verified in the form of a case study in implementation work. The inference and interpretation of the results of the literature research, research in Polish enterprises and the analysis of the presented cases from the implementations made it possible to provide answers to the adopted research questions. The presented research results and the proposed logistics process efficiency reference model in the supply chain are a contribution to the perception of efficiency analysis as an effective analytical tool in the management of a company and its supply chain. The proposed solutions, describing the practical use of the logistics process efficiency evaluation model, enable its application in companies of different industries.

5. Information on evidence of significant scientific activity

From 2003 to 2008, I studied full-time at the Faculty of Informatics and Management of the Poznan University of Technology (now Faculty of Engineering Management), in the field of management and marketing, specialisation: business management. I prepared my Master's thesis entitled *Evaluation of external sources of financing for micro-enterprises on the example of the NEO-PC.PL* under the supervision of PhD Arkadiusz Borowiec. The thesis was graded as very good.

Already during my studies, I started an internship at the Poznan School of Logistics, where I prepared my teaching and research skills in the field of information systems supporting logistics management and company controlling.

After graduation, I undertook postgraduate studies at Poznan University of Technology in the field of in the field of financial management in a competitive economy, which initiated my interest in the financial aspect of logistics process management and efficiency. From 2009 to 2014 I was a PhD student at the Faculty of Engineering Management, Poznan University of Technology. I defended my doctoral thesis entitled "A model for assessing the efficiency of the production process" on 15.12.2014. The thesis was supervised by Prof. Bogusław Śliwczyński, the associate supervisor was PhD Eng. Paulina Golińska, while the reviewers were Prof. Tomasz Nowakowski from Wrocław University of Technology and Prof. Maria Nowicka-Skowron from Częstochowa University of Technology.

Since completing my master's degree in 2008, I have been a research associate at Poznan School of Logistics:

- as intern assistant (3.2008–9.2008),
- as assistant (9.2008–12.2014),
- as assistant professor (1.2015–present).

Since 2015, I have been collaborating with the Poznan University of Technology in teaching students (2015-2017) and teaching postgraduate students (2016 - present).

Since 1.06.2017, I have been a researcher at the Lukasiewicz Research Network - Poznan Institute of Technology (previously the Institute of Logistics and Warehousing), where I am responsible for carrying out research and development projects and projects for companies in the field of logistics process optimisation.

Since 2015, I have also been collaborating with a foreign university - Josip Juraj Strossmayer University of Osijek (Croatia), where I periodically visit as a guest professor. I also held a three-month research internship there from 11.03.2019 to 12.06.2019 (Annex – Z2).

My cooperation with various scientific and research centres has resulted in joint research resulting in numerous scientific publications:

1. As part of the cooperation between Poznan School of Logistics and the Institute of Logistics and Warehousing research was carried out and a monograph was published: Sliwczynski, B. i Kolinski, A. (2016). *Controlling supply chains: Theory and practice*. Nova Science Publishers.
2. As part of a cooperation between the Poznan School of Logistics, Poznan University of Technology and Lublin University of Technology, research was conducted and a monograph was published: Koliński, A., Małyszek, E. i Trojanowska, J. (2016). *Zarządzanie logistyką w przedsiębiorstwach produkcyjnych/ Logistics management in production companies*, Wydawnictwo Naukowe Texter.
3. As part of the cooperation between the Poznan School of Logistics and the Poznan University of Technology, an international research cooperation was established and a monograph was edited in the prestige publishing house: Golinska-Dawson, P. i

Kolinski, A. (Eds.). (2017). *Efficiency in sustainable supply chain.* Springer International Publishing.

4. As part of the cooperation between the Poznan School of Logistics, the Poznan University of Technology and Josip Juraj Strossmayer University of Osijek, an international research cooperation was established and a monograph was edited in the prestige publishing house: Kolinski, A., Dujak, D. i Golinska-Dawson, P (Eds.). (2020). *Integration of information flow for greening supply chain management*. Springer International Publishing.
5. As part of the cooperation between Poznan School of Logistics and Josip Juraj Strossmayer University of Osijek, I participated in the research project "Retail Supply Chain Management" financed by Faculty of Economics in Osijek, Josip Juraj Strossmayer University of Osijek (October 2021–October 2022) and a textbook was developed, published in six languages (Polish, Croatian, English, Hungarian, Czech and Slovenian): Dujak, D., Kolinski, A. i Mesarić, J. (2020). *Supply chain and logistics design*. Poznan School of Logistics.

In my research work, which is a synergy of cooperation between the Poznan School of Logistics and the Lukasiewicz Research Network - Poznan Institute of Technology, five complementary strands can be distinguished:

N1. Efficiency of supply processes in ensuring production of spare parts at operational level.

N2. Efficiency of production processes in the use of optimisation solutions in strategic and operational terms.

N3. Efficiency of distribution processes using a 4PL operator and integration of information flow.

N4. Intermodal supply chain efficiency in terms of logistics process efficiency and integration of information flow at strategic level.

N5. Efficiency of information flow in the supply chain - taking into account additionally the financial flow at strategic level.

The presented substantive scope of my research work was supported by the implementation of research projects in which I acted as project leader or contractor. Table 1 presents a list of research projects supporting my research work in the scope of supply chain logistics process efficiency.

Table 1. List of research projects verifying specific scopes of supply chain logistics process efficiency evaluation model

Verification scope	Research work carried out
Efficiency of supply processes in the supply chain	"Development of a prototype of an Electronic Logistics Platform for enterprise services with the use of 4PL/5PL concept", Institute of Logistics and Warehousing, Poznan 2007-2010
	"Simulation of enterprise material flow management as an instrument for multivariate analysis of transport process efficiency", No. N N509 549940 is realised from funds of science financing granted by the Ministry of Science and Higher Education Decision No. 5499/B/T02/2011/40, Poznan School of Logistics, Poznan 2011-2013
	"Development of methods and tools to support the analysis and improvement of logistics processes of companies and supply chains - LOGIBAR", S-3737-4-2014, Institute of Logistics and Warehousing, Poznan 2014
	"A reference model for the multidimensional transposition of a company's financial performance into supply chain operations management (Score-Driven Management)", Poznan School of Logistics, KILiI 1/16, Poznan 2016-2018
Efficiency of production processes in the supply chain	"Simulation of enterprise material flow management as an instrument for multivariate analysis of transport process efficiency", No. N N509 549940 is realised from funds of science financing granted by the Ministry of Science and Higher Education Decision No. 5499/B/T02/2011/40, Poznan School of Logistics, Poznan 2011-2013
	"A reference model for the multidimensional transposition of a company's financial performance into supply chain operations management (Score-Driven Management)", Poznan School of Logistics, KILiI 1/16, Poznan 2016-2018
Efficiency of distribution processes in the supply chain	"Information instruments supporting the optimisation of transport processes in supply chains", No. KPL1/2013, Poznan School of Logistics, Poznan 2013-2015
	"A reference model for the multidimensional transposition of a company's financial performance into supply chain operations management (Score-Driven Management)", Poznan School of Logistics, KILiI 1/16, Poznan 2016-2018
	"Analysis of the possibilities of applying GS1 standards in the TSL industry", Institute of Logistics and Warehousing - GS1 Poland, Poznan 2017
	"Analysis of the possibilities of applying the GLN standard in distribution processes", Institute of Logistics and Warehousing - GS1 Poland, Poznan 2017
	"Analysis of the impact of operational activities on the efficiency of distribution processes", No. KCiSI1/17, Poznan School of Logistics, Poznan 2017-2019
	"Analysis of the applicability of the order to cash process in supply chains", Institute of Logistics and Warehousing - GS1 Poland, Poznan 2019-2021
Efficiency of the intermodal supply chain	„e-Freight Implementation Action (e-Impact)", Nr 2014-EU-TM-0686-S, Institute of Logistics and Warehousing, Poznan 2015–2018
	"Analysis of the applicability of GS1 standards in a port environment", Institute of Logistics and Warehousing - GS1 Poland, Poznań 2018
	„Progress towards Federated Logistics through the Integration of TEN-T into A Global Trade Network – PLANET", Grant Agreement No 860274, Lukasiewicz Research Network – Institute of Logistics and Warehousing, Poznan 2020–2022
	„North Sea Baltic Connector of Regions - NSB Core, Interreg Baltic Sea Region Programme 2014–2020", Grant Agreement No R033, No 3676/INTERREG BSR/16/2017/2, Institute of Logistics and Warehousing, Poznan 2017–2020
Information flow efficiency in the supply chain	"Analysis of the impact of operational activities on the efficiency of distribution processes", No. KCiSI1/17, Poznan School of Logistics, Poznan 2017-2019
	"Efficiency of the use of GS1 logistics labels in the TSL industry", Institute of Logistics and Warehousing - GS1 Poland, Poznań 2018
	"Analysis of the applicability of the order to cash process in supply chains", Institute of Logistics and Warehousing - GS1 Poland, Poznan 2019-2021
	"Paperless - Analysis of opportunities for the digitalization of supply chains", Lukasiewicz Research Network - Institute of Logistics and Warehousing - GS1 Poland, Poznań 2020-2022

The efficiency in the different phases of the material flow in the supply chain was studied at different time segments. This was largely due to the timing of the research work in the projects, but mainly due to the need to separate the verification work for efficiencies in the supply, production and distribution phases.

N1. Supply efficiency in supply chain

The research work in the area of efficiency of the supply process in the supply chain was carried out in two ways: as part of the realization of the research project of the Higher School of Logistics " Simulation of enterprise material flow management as an instrument for multivariate analysis of transport process efficiency ", No. N N509 549940, and of the statutory projects of the Poznan School of Logistics, as well as of the research projects of the Institute of Logistics and Warehousing in which I took part. This conceptual research was supported in 2017-2018 by implementation work on improving production supply processes for spare parts, as part of work carried out at the Institute of Logistics and Warehousing. The results of this work were a synergistic effect of the collaboration between the Poznan School of Logistics, the Institute of Logistics and Warehousing and the Poznań University of Technology. This has resulted in the following publications:

1. Śliwczyński, B., & Koliński, A. (2012). Efficiency analysis system of material management. *LogForum*, *8*(4), 297–310 (Annex A001).
2. Kolińska, K. i Koliński, A. (2013). Efektywność procesu zarządzania zapasami części zamiennych w przedsiębiorstwach produkcyjnych – wyniki badań/ Effectiveness of the spare parts inventory management process in production companies - results of a study. *Gospodarka Materiałowa i Logistyka*, (3), 2–6 (Annex A002).
3. Koliński, A., Kolińska, K. i Frąś, J. (2015). Wpływ standaryzacji procesu zaopatrzenia na efektywność łańcucha dostaw/ Impact of standardisation of the supply process on supply chain efficiency. *Gospodarka Materiałowa i Logistyka*, (10), 11–20 (Annex A003).
4. Koliński, A., & Śliwczyński, B. (2016). Impact of transposing the strategic objectives on supply efficiency. *Ekonomski vjesnik/Econviews – Review of Contemporary Business, Entrepreneurship and Economic Issues*, *29*, 45–60 (Annex A004).
5. Kolinska, K., Sliwczynski, B., Hadas, L., & Kolinski, A. (2017). Operational controlling in the management of spare parts availability. *Business Logistics in Modern Management*, *17*, 139–156 (Annex A005).
6. Kolinska, K., Sliwczynski, B., Hadas, L., & Kolinski, A. (2018). Analysis of spare parts in terms of their availability management for the production processes needs. *Business Logistics in Modern Management*, *18*, 191–204 (Annex A006).

N2. Production efficiency in the supply chain

Research on production efficiency in the supply chain was initiated first, as it was the core subject of my doctoral thesis. The research on production efficiency was therefore conducted both before the defence of my doctoral thesis and, in the form of synthesis research, continued after the defence. Due to the realisation of doctoral studies at Poznan University of Technology, this research scope is the result of cooperation with employees of Poznan University of Technology, in cooperation with the Institute of Logistics and Warehousing. The results of this research are reflected in the following publications:

1. Koliński, A. i Tomkowiak, A. (2010). Wykorzystanie koncepcji analizy wąskich gardeł w zarządzaniu produkcją/Using the concept of bottleneck analysis in production management. *Gospodarka Materiałowa i Logistyka*, (9), 16–21 (Annex A007).
2. Koliński, A. (2012). The efficiency of the production – the analyse of problems based on the literature research. *LogForum*, *8*(2), 137–150 (Annex A008).
3. Koliński, A. (2013). The role of production efficiency regarding ecological aspects. In P. Golinska (Ed.), *EcoProduction and logistics* (pp. 93–102). Springer Verlag (Annex A009).
4. Koliński, A., & Koliński, M. (2013). The use of Hungarian metod in the evaluation of production efficiency. In R. Knosala (Ed.), *Innovations in management and production engineering* (pp. 116–127). Publishing House of Polish Association for Production Management (Annex A010).
5. Koliński, A., Śliwczyński, B., & Golińska-Dawson, P. (2016). Evaluation model for production process economic efficiency. LogForum, *12*(2), 129–145 (Annex A011).
6. Koliński, A., Małyszek, E. i Trojanowska, J. (2016). *Zarządzanie logistyką w przedsiębiorstwach produkcyjnych/ Logistics management in production companies*. Wydawnictwo Naukowe Texter (Annex A012).
7. Trojanowska, J., Kolinski, A., Galusik, D., Varela, M. L., & Machado, J. (2018). A methodology of improvement of manufacturing productivity through increasing operational efficiency of the production process. In *Advances in Manufacturing* (pp. 23-32). Springer International Publishing (Annex A013).

N3. Efficiency of distribution processes in the supply chain

This strand is based on the conceptual work carried out as part of the statutory projects of the Poznan School of Logistics and the research and development work carried out by the Institute of Logistics and Warehousing for the GS1 Poland Foundation, in the field of analysing the benefits of implementing improvements in line with GS1 standards. This research strand is

the result of cooperation between the Institute of Logistics and Warehousing, GS1 Poland, the Poznan School of Logistics and the Poznan University of Technology. The following publications have been prepared within this research area:

1. Koliński, A., & Śliwczyński, B. (2015). *Evaluation problem and assessment method of warehouse process efficiency*. *Business Logistics in Modern Management, 15*, 175–188 (Annex A014).
2. Stajniak, M., & Koliński, A. (2016). The impact of transport processes standardization on supply chain efficiency. *LogForum, 12*(1), 37–46 (Annex A015).
3. Koliński, A. (2018). Wpływ metod harmonogramowania dostaw na efektywność procesów logistycznych –wyniki badań/ Impact of delivery scheduling methods on logistics process efficiency - research results. *Gospodarka Materiałowa i Logistyka*, (1), 12–20 (Annex A016).
4. Cudziło, M., Voronina, R., Dujak, D., & Koliński, A. (2018). Analysing the efficiency of logistic actions in complex supply chains – conceptual and methodological assumptions of research. *LogForum, 14*(2), 171–184 (Annex A017).
5. Horzela, A., Kolinski, A., Domanski, R., & Osmolski, W. (2018). Analysis of use of communication standards on the implementation of distribution processes in Fourth Party Logistics (4PL). *Business Logistics in Modern Management, 18*, 299–231 (Annex A018).
6. Dubisz, D., Golińska-Dawson, P., & Koliński, A. (2022). Measuring CO_2 emissions level for more sustainable distribution in a supply chain. *Engineering and Applied Science Research, 49*(6), 804–810 (Annex A019).

N4. Efficiency of the intermodal supply chain

The research work focused on the specifics of the intermodal supply chain is the result of research projects carried out by me at the Institute of Logistics and Warehousing. This research and development work was conceptually supported by cooperation with academics at the Poznan University of Technology, but nevertheless related to the assumptions developed as part of the research at the Institute of Logistics and Warehousing. This research work resulted in the following publications:

1. Kolinski, A., & Jaskolska E. (2018). Analysis of the information flow efficiency in the intermodal supply chain – research results. *Business Logistics in Modern Management, 18*, 135–155 (Annex A020).
2. Śliwczyński, B. i Koliński, A. (2020). Zintegrowana identyfikacja i monitorowanie przesyłek e-commerce w łańcuchu dostaw Nowego Jedwabnego Szlaku/ Integrated

identification and monitoring of e-commerce shipments in the New Silk Road supply chain. *Gospodarka Materiałowa i Logistyka*, (9), 13–26 (Annex A021).

3. Sliwczynski, B., & Kolinski, A. (2021). Impact of shipment marking on the operational efficiency for new silk road logistics processes. *Business Logistics in Modern Management, 21*, 215–230 (Annex A022).
4. Nowak, P., Kirchner, M., & Koliński, A. (2022). Analysis of digitalisation needs improving the supply chain efficiency for New Silk Road transport corridor. *Ekonomska Misao i Praksa, 31*(2), 487–503 (Annex A023).

N5. Information flow efficiency in the supply chain

Research work within the Institute of Logistics and Warehousing also referred to the application of modern technologies and process innovations, as well as solutions integrating business partners in the supply chain. The present substantive scope of the research work carried out was created primarily in cooperation with GS1 Poland, for whom I carried out research and development projects. The result of these works are the following publications:

1. Koliński, A., & Śliwczyński, B. (2015). IT support of production efficiency analysis in ecological aspect. In P. Golinska & A. Kawa (Eds), *Technology management for sustainable production and logistics* (pp. 205–219). Springer (Annex A024).
2. Osmólski, W., Koliński, A., & Dujak, D. (2018). Methodology of implementing e-freight solutions in terms of information flow efficiency. *Interdisciplinary Management Research, 14*, 306–325 (Annex A025).
3. Osmólski, W., Voronina, R., & Koliński, A. (2019). Verification of the possibilities of applying the principles of the Physical Internet in economic practice. *LogForum, 15*(1), 7–17 (Annex A026).
4. Koliński, A., Horzela, A., Cudziło, M., & Domański, R. (2019). Reference model of information flow in business relations with 4PL operator. In A. Kolinski, D. Dujak, & P. Golinka-Dawson (Eds.), *Information flow integration towards the greening supply chain* (pp. 19–45). Springer (Annex A027).
5. Kolinski, A., Nowak, P., & Cudzilo, M. (2021). Review of intelligent solutions to optimise logistics processes and improve efficiency. *Business Logistics in Modern Management, 21*, 327–349 (Annex A028).
6. Adamczak, M., Kolinski, A., Trojanowska, J., & Husár, J. (2023). Digitalization trend and its influence on the development of the operational process in production companies. *Applied Sciences, 13*(3), 1393 (Annex A029).

7. Werner-Lewandowska, K., Kolinski, A., & Golinska-Dawson, P. (2023). Barriers to electronic data exchange in the supply chain - results from empirical study. *LogForum 19*(1), 127-139 (Annex A030).

In total, I have published 126 scientific papers (60 of which are in English), 49 of which (13 of which are in English) were published prior to my doctoral degree. In terms of post-doctoral output, I have authored or co-authored 77 scientific papers, including (Table 2):

- the author of 1 monograph constituting an achievement as referred to in Art. 219 sec. 1 item. 2 of the Act of 20 July 2018. - Law on Higher Education and Science (Journal of Laws 2021, item 478, with modif.),
- co-author of 4 monographs, including 1 in English,
- scientific editor of 1 English-language monograph and co-editor of 4 English-language monographs,
- author of 1 and co-author of 37 scientific publications in journals, of which 20 in English,
- author of 5 and co-author of 7 chapters in monographs, including 6 in English,
- co-author of 17 articles in English-language conference proceedings.

My other scientific achievements include:

- Research internship of 3 months at Josip Juraj Strossmayer University of Osijek (Croatia).
- Reviews of articles in scientific journals such as: *International Journal of Retail & Distribution Management*, *Management and Production Engineering Review*, *Asian Journal of Technology Innovation*, *International Journal of Management Science and Engineering Management*, *Mathematical Problems in Engineering*, *Ekonomski Vjesnik/Econviews – Review of Contemporary Business, Entrepreneurship and Economic Issues*, *Logistics*, *e-mentor*, *Sensors*, *Sustainability*, *International Journal of Technology Management*, *Logistics Research*, *Gospodarka Materiałowa & Logistyka*, *LogForum*.
- Reviews of papers in scientific conferences, including: Intelligent Systems in Production Engineering and Maintenance ISPEM 2023, Manufacturing, Business Logistics in Modern Management – BLMM, WSLFORUM, Manufacturing Modelling, Management and Control – MIM 2022.
- Active participation in 8 international scientific conferences with a paper.

6. Information on achievements in teaching, organising and disseminating science

In terms of teaching achievements, I have published 14 works, of which:

- I have co-authored 5 academic textbooks,
- I was a co-editor of 9 student monographs, written within the framework of conferences organized by the CORLOG Student Scientific Circle, functioning at the Poznan School of Logistics.

In terms of other teaching achievements, the following activities can be mentioned:

- conducting classes in the form of lectures, exercises and laboratories at full-time and part-time studies of the first and second degree, including 2 in English (2008 - present);
- conducting lectures at MBA in Logistics & Supply Chain Management and postgraduate studies "Logistics Manager", "Logistics", "Logistics for Teachers" at the Poznań School of Logistics and "Production Organisation and Management" at the Poznan University of Technology;
- teaching in foreign universities as part of the Erasmus+ Programme: Josip Juraj Strossmayer University of Osijek (Croatia) and OBUDA University (Budapest, Hungary);
- Visiting Professor in the summer semester of the academic year 2022/2023 at the Faculty of Economics in Osijek, Josip Juraj Strossmayer University of Osijek (Croatia);
- Supervision of theses and Master's theses (2017 - present)[1]:
    - 46 bachelor's theses,
    - 92 engineering theses,
    - 84 master theses;
- Tutor of the CORLOG Logistics Student Research Group from 2016 to 2021;
- Scientific supervision of 3 PhD students: one as assistant supervisor and two as research supervisor for implementation PhDs.

[1] Status on 31.03.2023.

Of the organisational functions performed as part of the work at the Poznan School of Logistics, the following should be mentioned:

- Coordinator of the Erasmus+ Programme, responsible for organising student and lecturer mobility, 2015-2021,
- Head of the Department of Controlling and Accounting in 2020-2021,
- Rector of the Poznan School of Logistics from 1.01.2022-present.

Organisational activities external to the university:

- Member of the Polish Economic Society (from 7.2009 until now),
- Member of the Polish Production Management Society (from 11.2010 until now),
- Member of the Production and Operations Management Society (from 5.2012 to 12.2014),
- Member of the Polish Logistics Society (from 1.2015 to now) - Member of the Executive Board of PTL from 6.2021,
- Member of The International Federation of Logistics and SCM Systems (from 11.2022
- until now) - from 11.2022 member of the Executive Board of IFLS.

In addition, I have provided training on logistics costs and controlling in cooperation with the following training companies:

- cooperation with the Centre for Logistics Education within the scope of training in logistics controlling and logistics costs (1.03.2011 to present),
- cooperation with Poznan Business Incubator as part of consultancy and training in financial controlling and logistics management (12.05.2011-17.11.2011),
- cooperation with CEL Consulting Group sp. z o.o. in the scope of training in logistics cost management and logistics controlling (1.02.2012-31.10.2012),
- cooperation with Kompetea sp. z o.o. in the framework of training in logistics controlling (18.10.2013-31.05.2017),
- cooperation with the company Szkoleniowiec PHSU within the scope of training in logistics and the analysis and optimisation of logistics processes (1.10.2014-31.05.2017).

Participation in the organising and Editorial Boards of conferences:

- Member of the Organising Committee of the International Scientific Conference Business Logistics in Modern Management - BLMM2016, organised by Faculty of Economics, Josip Juraj Strossmayer University of Osijek.
- Member of the Organising Committee of the International Scientific Conference Business Logistics in Modern Management - BLMM2017, organised by Faculty of Economics, Josip Juraj Strossmayer University of Osijek.
- Member of the Organising Committee of the international scientific conference WSLFORUM 2017, organised by the Poznan School of Logistics.
- Member of the Organising Committee of the International Scientific Conference Business Logistics in Modern Management - BLMM2018, organised by Faculty of Economics, Josip Juraj Strossmayer University of Osijek.
- Member of the Editorial Board of the International Scientific Conference Business Logistics in Modern Management - BLMM2019, organised by the Faculty of Economics, Josip Juraj Strossmayer University of Osijek.
- Member of the Organising Committee of the international scientific conference WSLFORUM 2019, organised by the Poznan School of Logistics.
- Member of the Editorial Board of the International Scientific Conference Business Logistics in Modern Management - BLMM2020, organised by the Faculty of Economics, Josip Juraj Strossmayer University of Osijek.
- Member of the Editorial Board of the International Scientific Conference Business Logistics in Modern Management - BLMM2021, organised by the Faculty of Economics, Josip Juraj Strossmayer University of Osijek.
- Chairman of the Scientific Committee of the WSLFORUM 2022 international scientific conference, organised by the Poznan School of Logistics.
- Member of the Organising Committee of the Scientific Conference Logistics in Rescue 2022, organised by the University of Technology and Humanities in Radom.
- Member of the Editorial Board of the International Scientific Conference Business Logistics in Modern Management - BLMM2022, organised by the Faculty of Economics, Josip Juraj Strossmayer University of Osijek.

7. In addition to the issues listed in points 1 to 6, the applicant may provide other information, important from his point of view, about his career

My achievements were also influenced by the activities related to the popularisation of knowledge as part of the teaching of vocational subjects - logistics in the Secondary School - Technical School No. 6 in Poznan in 2011-2017. During this period, I was a co-author of 7 textbooks for education in the profession of logistics technician:

1. Fajfer, P. i Koliński, A. (red.). (2012). *Wirtualne laboratoria/ Virtual laboratories* (t. 1). Wyższa Szkoła Logistyki
2. Fajfer, P. i Koliński, A. (red.) (2012). *Wirtualne laboratoria/ Virtual laboratories* (t. 2). Wyższa Szkoła Logistyki
3. Koliński, A. i Kolińska, K. (2013). *Organizacja przepływów w procesie produkcji – projektowanie gniazda produkcyjnego/Organisation of flows in the production process - designing the production unit*. Instytut Logistyki i Magazynowania.
4. Śliwczyński, B., Koliński, A. i Andrzejczyk, P. (2014). *Organizacja i monitorowanie procesów produkcyjnych/Organisation and monitoring of production processes*. Instytut Logistyki i Magazynowania.
5. Śliwczyński, B. i Koliński, A. (2014). *Organizacja i monitorowanie procesów dystrybucji/Organisation and monitoring of distribution processes*. Instytut Logistyki i Magazynowania
6. Hajdul, M., Stajniak, M., Foltyński, M., Koliński, A. i Andrzejczyk, P. (2015). *Organizowanie i monitorowanie procesów transportowych/Organising and monitoring transport processes*. Instytut Logistyki i Magazynowania.
7. Fajfer, P., Kolinski, A. i Andrzejczyk, P. (2015). *Logistyka w jednostkach gospodarczych/Logistics in business units*. Instytut Logistyki i Magazynowania.

Participation in development projects of an educational nature:

- "Logistics puts on a technician", No. RPWP.08.03.0130-0052/16 (09.2016-12.2018) - enhancing professional qualifications of students of the logistics technician profession improving their employability. Innovative project of the Poznan School of Logistics, - Project Manager;
- Project "Science Closer to Business, Business Closer to Science", No. POKL.08.02.01-30-018/10 (1.08.2011-31.10.2012), an innovative project of the Poznan School of Logistics, - project contractor;

- Project "Dual Studies in Supply Chain Engineering", project no. POWR.03.01.00-00-DU23/18 (06.2018-08.2022), development of a programme to launch dual studies in Supply Chain Engineering improving students' competences in line with the needs of the TSL industry - project contractor;
- Project "Integrated Programme of the University of Logistics", project number POWR.03.05.00-00-Z089/17 (01.01.2018-30.08.2023), improvement of the quality of functioning and management of the University in the area of educational programmes, internship programmes, increasing the competences of students(s), IT tools for university management modifying the educational process management model and increasing the managerial competences of the WSL management and administrative staff - project contractor;
- Project "EKO-LOG", project number POWR.03.01.00-00-C039/16 (01.08.2017-31.07.2018), an unconventional module of activities for secondary school students developing their competences and arousing their curiosity, creativity and willingness to deepen their knowledge in the area of conscious and pro-ecological participation in the complex logistics processes of the waste management chain" - project contractor;
- Project "Wielkopolska needs to know", project no.: POKL.09.02.00-30-077/09 (01.09.2009-30.09.2011), an innovative project aimed at creating in the Wielkopolskie Voivodeship a communication platform between schools providing education in the following professions: freight forwarding technician and logistics technician, and the labour market reporting the need to employ graduates of these specialisations - project contractor;
- Project "Virtual laboratories - the success of innovation", project no. WND-POKL.03.03.04-00-010/10 (01.06.2010-30.06.2012), an innovative project of the Poznan School of Logistics aimed at creating an innovative method of education with the use of advanced information and communication technologies in the conduct of professional laboratories in the field of logistics - project contractor;
- The project "NEXTLOG" - building next generation competencies for logisticians and supply chin managers from the ERASMUS+ Programme Strategic Partnerships in the Higher Education (HEI) Sector, project number 2019-1-PL01-KA203-065731 (01.12.2019- 30.11.2022), which aimed to develop an innovative international learning framework that will significantly improve the knowledge and skills of HEIs to create

more labour market oriented curricula in digital, intelligent and sustainable logistics (DISL) - project contractor;

- 'Master Logistics Learning (MLL)' project from ERASMUS+ Strategic Partnerships in the Higher Education (HEI) sector, project number 2017-1-PL01-KA203-038698 (01.09.2017-30.12.2020), which aimed to develop an innovative certified logistics learning module programme and complete teaching materials based on contemporary learning methods necessary for the delivery of this programme - project contractor.

Table 2 provides a synthetic summary of my output quantified by achievements before and after the doctorate in economics.

Table 2. Achievements divided into achievements before and after the award of the doctoral degree in economics

Type of achievement	Achievement prior to obtaining a doctorate in economics				Achievements after obtaining a doctorate in economics				TOTAL
	authorship		co-authorship		authorship		co-authorship		
	PL	ENG	PL	ENG	PL	ENG	PL	ENG	
Publikacje naukowe									
Scientific publications in journals	3	1	22	3	1	0	17	20	67
Monographs	–	–	1	–	1	–	3	1	6
Editing of monographs	–	–	–	–	–	1	–	4	5
Chapters in monographs	0	2	10	5	4	1	2	5	29
Scientific articles in conference proceedings	–	–	–	2	–	–	–	17	19
Total scientific publications	**3**	**3**	**33**	**10**	**6**	**2**	**22**	**47**	**126**
	6		**43**		**8**		**69**		
	49				**77**				
Teaching publications									
Academic textbooks	-	-	3	1	-	-	-	1	5
High school textbooks	-	-	5	-	-	-	2	-	7
Editing student monographs	-	-	-	-	-	-	9	-	9
Total teaching publications	**-**	**-**	**8**	**1**	**-**	**-**	**11**	**1**	**21**
	-		**9**		**-**		**12**		
	9				**12**				
Popular science / professional publications									
Popular science / professional publications	4	-	4	-	3	-	3	-	14
Total popular science publications	**4**	**0**	**4**	**0**	**3**	**0**	**3**	**0**	**14**
	4		**4**		**3**		**3**		
	8				**6**				
Indicators of scientific achievement									
Impact Factor	-				9,979				9,979
MNiSW points	287				1584				1871
Number of citations (Web of Science)	6				96				102
Number of citations (Scopus)	-				58				58
Number of citations (Google Scholar)	117				644				761
Hirsch Index (Web of Science)	-				7				7
Hirsch Index (Scopus)	-				4				4
Hirsch index (Google Scholar)	10				14				14

Signed by / Podpisano przez:

Adam Robert Koliński

Date / Data: 2023-06-01 22:44

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(Applicant's signature)