



## BUSINESS ANALYTICS SKILLS FOR THE FUTURE- PROOF SUPPLY CHAINS

# QUALITY ASSURANCE OF STATISTICAL METHODS FOR ANALYZING LOGISTICS DATA (C3)



## Introduction

The *Statistical Methods for Logistics Data Analysis (C3)* textbook and its accompanying teaching materials were developed for those seeking an in-depth understanding of statistical methods applied to logistics data analysis. This publication provides comprehensive practical and substantive support for students in logistics and business programs, as well as for academic instructors and professionals involved in analyzing and optimizing supply chain processes.

The textbook's content was developed based on research conducted within the *Business Analytics Skills for Future-proof Supply Chains (BAS4SC)* project. It introduces readers to the theoretical foundations of data analysis methods and logistics process optimization, complemented by teaching materials developed as part of the same project. This combination enables users to acquire both theoretical knowledge and practical analytical skills necessary for working effectively with logistics data.

The authors emphasize the growing role of analytical tools in supply chain management and the continued importance of statistics as a fundamental tool for data analysis. Despite the rapid development of advanced IT systems, statistical methods remain invaluable in both educational and professional practice. The handbook is carefully structured into ten chapters, each focusing on key aspects of logistics operations and their corresponding data analysis methods.

*Statistical Methods for Logistics Data Analysis (C3)* is the third publication produced within the BAS4SC project, co-funded by the ERASMUS+ program. The handbook serves as both an academic textbook and a source of inspiration for developing analytical skills, conducting independent analyses, and implementing solutions to improve logistics processes. By combining theoretical knowledge with practical tools, the publication fully addresses the contemporary needs of teaching in business analytics and logistics.



# **Textbook *Statistical Methods for Analyzing Logistics Data (C3)***

The purpose of this report is to present the results of a quality assessment of the textbook *Statistical Methods for Analyzing Logistics Data (C3)*, conducted by a group of academic instructors. The analysis includes both quantitative results for each evaluation criterion and qualitative feedback provided by the lecturers. Particular emphasis was placed on assessing the textbook's usefulness for teaching, its alignment with the curriculum, and its relevance to business needs.

## **Question: Are the chapters relevant to the title of the course?**

The majority of lecturers (93%) stated that the textbook's chapters are fully consistent with the course title. One respondent (7%) gave a rating of "4," which may indicate minor differences in the perceived relevance of certain chapters to the overall theme of the course.

### **Comment:**

The textbook demonstrates a high degree of consistency with the course content, helping students clearly understand the connection between individual chapters and the main subject. The structure and selection of topics enable a smooth and logical progression through the material.

## **Question: Is the textbook in the proper sequence of chapters?**

The majority of lecturers (80%) found the textbook to have an appropriate and logical chapter order. Three respondents (20%) rated it "4," which may suggest that, in some cases, minor improvements could be made to the structure or sequencing of the content.

### **Comment:**

The textbook features a well-designed structure and logical chapter arrangement, supporting gradual knowledge acquisition – from basic statistics to advanced analytical techniques and their applications in logistics. The organization of the content facilitates the teaching process, allowing for step-by-step development of competencies. The received



ratings indicate that minor adjustments to the sequencing could further improve the material's clarity and enhance its usability in teaching.

### **Question: Is the textbook designed in a proper way (Is it edited according to the template)?**

The majority of lecturers agreed that the textbook was well-designed and adhered to the adopted template. Fifty-three percent of respondents gave it a rating of "5," while forty-seven percent rated it "4." These results indicate an overall high quality of editorial work while also pointing to minor opportunities for improvement in consistency and layout.

#### **Comment:**

The textbook was prepared clearly and in accordance with the series' template guidelines, ensuring a uniform format and facilitating its use in the teaching process. Consistency was maintained across the chapter structure, layout, and visual elements, which enhances the material's readability. The slightly lower ratings from some respondents may suggest a need for refining certain formatting details. Steps have been taken to further standardize the editorial aspects and improve the textbook's aesthetic and functional qualities.

### **Question: Are the references of the textbook up-to-date?**

Respondents' ratings for the currency of the bibliographic sources were distributed as follows: 47% rated the sources "5," 47% rated them "4," and 6% rated them "3." The results indicate that most lecturers considered the literature current and relevant, although some noted the need to supplement the references with more recent publications.

#### **Comment:**

The textbook draws on a solid foundation of scholarly sources, encompassing both classic works in statistics and logistics as well as contemporary studies in business analytics. The balance between theoretical literature and practical industry sources enhances the educational value of the material. At the same time, several comments regarding slightly older references suggested the inclusion of more up-to-date publications and industry reports.



## **Question: Are the pictures and tables in the textbook readable (resolutions)?**

The majority of lecturers (73%) found the illustrations and tables in the textbook to be clear and of adequate graphic quality. Four respondents (27%) rated them “4,” which may indicate minor concerns regarding the resolution or formatting of some visual elements.

### **Comment:**

The textbook features high-quality visual materials- illustrations, charts, and tables are generally clear and well-integrated with the text, supporting content comprehension. However, lecturers noted that a few graphics could be improved. It was therefore decided to standardize the formatting of tables and ensure consistently high-quality visuals to enhance the overall user experience.

## **Question: Is the content of the textbook up-to-date?**

The majority of lecturers (60%) found the content of the manual to be up-to-date and reflective of contemporary approaches to data analysis in logistics. Six respondents (40%) rated it “4,” which may indicate the need for minor updates to incorporate the latest technological trends or industry examples.

### **Comment:**

The manual presents a modern approach to logistics data analysis, covering current statistical methods, analytical tools, and the application of artificial intelligence and machine learning in supply chain management.

## **Question: Is the content of the textbook useful for the business?**

The majority of evaluators (53%) found the textbook’s content to be very useful from a business practice perspective. Another 33% rated it “4,” indicating high, though not fully optimal, usefulness. Two evaluators (14%) rated this aspect “3,” suggesting that some sections are more theoretical and could benefit from stronger connections to real-world business contexts.



**Comment:**

The textbook strongly supports the development of practical competencies in logistics and data analytics. Its content is valuable both for students preparing for careers in the logistics sector and for practitioners seeking tools to facilitate data-driven decision-making. The slightly lower ratings from some respondents indicate a potential need to expand the material with more complex case studies or up-to-date examples from industry practice.

**Question: Is the content of the textbook useful for the teachers  
(and enrich your courses)?**

The majority of lecturers (73%) found the textbook's content very useful for academic instructors and noted that it could enrich their classes. Four respondents (27%) rated it "4," suggesting that the teaching materials could be further enhanced.

**Comment:**

The textbook provides valuable support for teaching, offering well-organized content that can be readily incorporated into courses on logistics, data analysis, or supply chain management. Most instructors agreed that the publication enriches the teaching process. Nonetheless, steps have been taken to supplement the textbook with additional materials to further support teachers.

**Question: Does the content of the textbook cover the aim of the  
project?**

The majority of evaluators (73%) confirmed that the handbook's content fully meets the project's objectives. Four respondents (27%) rated it "4," suggesting that, in some cases, minor additions or expansions could further enhance alignment with the project's goals.

**Comment:**

The handbook largely fulfills the project's objectives, presenting content consistent with its didactic and substantive aims. It covers both basic and advanced topics in data analysis and logistics. The alignment between the project's objectives and the handbook's structure reflects a well-conceived publication concept. Steps were also taken to expand selected topics to further demonstrate the practical application of analytical tools.



## **Question: Is the language of the textbook tailored to the business needs?**

The majority of lecturers (53%) found the language of the manual well-suited. Another 33% rated it “4,” indicating high, though not entirely optimal, language adequacy. Two respondents (14%) rated this aspect “3,” suggesting that some sections of the text may require improvement.

### **Comment:**

The manual employs precise, consistent, and terminologically accurate language that effectively reflects the specifics of data analytics and logistics. The style is generally clear and understandable. However, some lecturers suggested that certain sections could be simplified or supplemented with additional examples. Efforts were made to refine the terminology and introduce phrases more commonly used in business contexts, further enhancing the manual’s practicality.

## **Question: How do you assess the quality of the textbook translation?**

The majority of evaluators (73%) rated the quality of the textbook’s translation very highly, awarding it a “5.” Three respondents (20%) rated it “4,” and one (7%) rated it “3.” These results indicate that the translation was generally considered accurate and professional, although minor linguistic or stylistic issues were noted in a few instances.

### **Comment:**

The textbook’s translation demonstrates high linguistic and substantive quality. Terminology was carefully chosen, and the translation style balances scientific precision with accessibility. Individual comments from evaluators highlighted minor stylistic corrections, which have been addressed.



## **Question: Can the content of the textbook be easily integrated with study program (of your courses)?**

The majority of evaluators (67%) confirmed that the textbook's content can be easily integrated into existing study programs. Five respondents (33%) rated it "4," suggesting that, in some cases, minor adjustments may be needed to adapt the material to the specifics of a given course or program.

### **Comment:**

The textbook demonstrates a high degree of substantive consistency with typical curricula in logistics, data analysis, and supply chain management. Its structure and selection of topics allow for flexible use in both theoretical and practical courses. Evaluators noted that the textbook effectively supports the achievement of learning outcomes related to analytical and decision-making skills. Steps have been taken to add teaching guidelines, further facilitating its integration into study programs.

## **Question: Will you recommend this textbook to your colleagues?**

The majority of evaluators (73%) stated that they would definitely recommend the textbook to their colleagues. Four respondents (27%) rated it "4," indicating a generally positive assessment with minor reservations.

### **Comment:**

The textbook was very well received, with evaluators highlighting its educational value, clear structure, and practical approach to data analysis in logistics. The high proportion of "5" ratings underscores the recognition of its quality and usefulness. Evaluators indicated that the textbook can be confidently recommended to other academic instructors, particularly those teaching courses in business analytics, logistics, or supply chain management.

## **General comments**

The textbook under review demonstrates a high level of content quality and teaching value, as confirmed by the evaluators. They emphasized that "the textbook has a very valuable message for both students and academic teachers" and that "the content of the textbook



covers the most important aspects of statistics used in Supply Chain Management.” The publication effectively combines theory with practice, providing “a practical representation of topics covered by each chapter,” which significantly enhances its educational value.

The language of the textbook is clear and accessible. Evaluators noted that “the textbook uses understandable language,” facilitating comprehension of even complex statistical concepts. The content is logically structured, well-organized, and clearly written, as confirmed by comments such as “the content has been developed clearly and has an appropriate layout and structure” and “the book is well-written.”

Minor technical issues were noted, for example, that “the references of each chapter need to be tailored to the textbook template.” However, these editorial details do not affect the overall high rating of the publication. The textbook was described as “very good work” and “very useful in working with students.” Its materials and examples provide an excellent foundation for teaching statistical methods in logistics data analysis. As one review highlighted, “each chapter is carefully structured, providing clear explanations and practical insights that are particularly beneficial for students in the field.” Overall, the textbook is a coherent and valuable teaching tool that can be confidently recommended for use in study programs and academic work.



## **Teaching materials *Statistical Methods for Analyzing Logistics Data (C3)***

### **Question: Are the materials relevant to the title of the course?**

The majority of evaluators (73%) felt that the materials in the textbook were fully consistent with the course title. They emphasized that the content accurately reflected issues related to statistical methods used in logistics data analysis and that each chapter logically and coherently addressed the course's main learning objectives. Twenty-seven percent of respondents rated it "4," suggesting that some chapters could place a stronger emphasis on linking theory to practical logistics contexts.

#### **Comment:**

The textbook demonstrates strong substantive alignment with the course's thematic scope, making it a valuable resource for both students and instructors. The content structure effectively supports the achievement of teaching objectives related to data analysis in logistics and supply chain management.

### **Question: Are the materials in the proper sequence?**

The majority of evaluators (73%) confirmed that the teaching materials were arranged in an appropriate sequence, ensuring a logical and gradual progression of content. The structure allows a smooth transition from basic statistical concepts to more advanced analytical techniques. Twenty-seven percent of respondents rated it "4," suggesting minor adjustments to the layout of some chapters, which have since been addressed.

#### **Comment:**

The teaching materials align consistently with the textbook content and effectively reflect the progression from theory to practical application of analytical tools. Their logical sequence facilitates lesson implementation and supports the comprehension of key concepts.



## **Question: Are the topics of case studies suitable for the course title?**

The majority of evaluators (73%) confirmed that the case study topics were fully appropriate for the course title and aligned with its learning objectives. They emphasized that the case studies effectively illustrate the application of statistical methods in logistics data analysis, facilitating understanding of practical aspects. Twenty-seven percent of respondents rated them "4," suggesting that some examples could be expanded. Improvements have been implemented.

### **Comment:**

Case studies are a strong component of the teaching materials, well-matched to the course content and supporting the application of statistical knowledge in realistic business contexts. Their diversity allows students to analyze logistics problems from multiple perspectives, fostering practical skill development. Selected case studies have been enriched with real-world data and extended decision-making scenarios.

## **Question: Are the materials designed in a proper way (Are they edited according the template)?**

The majority of lecturers (73%) felt that the teaching materials were appropriately developed and adhered to the adopted editorial template. Evaluators highlighted the clarity of the layout, the coherence of the structure, and the well-organized division of content, which facilitate use by both students and instructors. Twenty-seven percent of respondents rated them "4," indicating minor formatting differences and the need to standardize some visual elements.

### **Comment:**

The teaching materials demonstrate a high level of editorial quality and attention to both visual and substantive consistency. The format follows the adopted design template, ensuring a professional and uniform appearance throughout. Steps have been taken to standardize table formats and further enhance the overall aesthetics and consistency of the materials.



## **Question: Are the references of the materials up-to-date?**

The majority of evaluators (47%) considered the sources and references used in the teaching materials to be up-to-date and reflective of contemporary trends in data analytics and logistics. Another 33% rated them "4," indicating that while most of the literature is current, some references could be updated or supplemented with more recent publications. Single ratings of "3" (7%) and "1" (13%) suggest that certain materials still include older sources.

### **Comment:**

The teaching materials are largely grounded in current and valuable scholarly sources. However, the evaluation results highlight the need for partial revision of the bibliography. Steps have been taken to incorporate the latest publications in the fields of data analytics and supply chain management.

## **Question: Are the pictures and tables in materials readable (resolutions)?**

The majority of lecturers (73%) confirmed that the illustrations, charts, and tables in the teaching materials were legible and of appropriate graphic quality. They noted that clear resolution and well-organized visual layouts supported understanding of the data and facilitated statistical analysis. A rating of "4" was given by 27% of respondents, suggesting that in some cases, certain graphic elements could be presented at higher resolution.

### **Comment:**

The teaching materials were developed with careful attention to the readability and aesthetics of visual elements. Most tables and charts are well-formatted, positively supporting comprehension of the content. Efforts were made to further standardize the graphic style, enhancing the overall professional quality of the teaching materials.

## **Question: Are software/tools described in materials user friendly?**

The majority of evaluators (80%) confirmed that the software and tools described in the teaching materials were user-friendly and well-adapted to student needs. Twenty percent



of respondents rated them "4," suggesting that some sections could benefit from expanded explanations or additional practical examples.

**Comment:**

The descriptions of the software and analytical tools are clear and accessible, making them a valuable resource for teaching data analysis in logistics. Efforts have been made to enhance the explanations and provide more practical examples.

**Question: Is it possible to prepare lectures and workshops  
based on delivered materials?**

The majority of evaluators (53%) agreed that the provided teaching materials could be successfully used to prepare both lectures and workshops. Respondents emphasized that the materials were substantively complete, logically organized, and included examples that could be directly applied in teaching. Forty-seven percent of participants rated them "4," suggesting the need to supplement the materials with additional practical exercises. Improvement measures have been implemented.

**Comment:**

The teaching materials provide a solid foundation for preparing both theoretical lectures and practical workshops.

**Question: Is the content of the materials up-to-date?**

The majority of lecturers (67%) confirmed that the content of the teaching materials is current and reflects contemporary trends in data analysis, logistics, and supply chain management. They noted that the examples, case studies, and references to analytical tools accurately reflect the realities of the modern business environment. Thirty-three percent of respondents rated the materials as "4," suggesting that some areas could benefit from updated references to the latest technologies or industry reports.

**Comment:**

The teaching materials are highly current and effectively reflect developments in supply chain management practice. The examples and tools presented are relevant to contemporary



educational needs. Efforts have been made to update and incorporate references to the latest publications and industry reports.

## **Question: Is the content of the materials useful for the business?**

The majority of evaluators (53%) found the content of the teaching materials useful for business practice, particularly in the context of data analysis and decision-making in supply chain management. Evaluators emphasized that the materials present tools and methods that can be directly applied in professional settings. Thirty-three percent of respondents rated the content as "4," indicating that some sections could be further expanded, while a small number of "3" ratings (13%) suggested that certain material requires stronger connections to business practice.

### **Comment:**

The teaching materials effectively support the development of practical skills. The included examples and the logical structure of the content facilitate understanding of how analytical results can inform decision-making processes in logistics companies. Efforts were made to strengthen the links between the content and real-world business cases, further enhancing the practical value of the materials.

## **Question: Is the content of the materials useful for the teachers (and enrich your courses)?**

The majority of evaluators (73%) confirmed that the content of the teaching materials is highly useful for academic teachers and can significantly enrich their courses. Respondents emphasized that the materials are well-organized, substantively coherent, and easily adaptable to various teaching contexts. Twenty-seven percent of evaluators gave a rating of "4," indicating that some adaptation may be needed to suit the specifics of certain subjects or the proficiency levels of students.

### **Comment:**

The teaching materials provide valuable support for academic instructors, offering both a solid theoretical foundation and practical tools for conducting classes in logistics data



analysis. Their clear structure and accessible language facilitate the planning of lectures, tutorials, and workshops..

## **Question: Does the content of the materials cover the aim of the project?**

The majority of evaluators (73%) confirmed that the content of the teaching materials fully met the project's objectives. Evaluators noted that the materials were consistent with the project's substantive goals, and their thematic scope supported the development of students' analytical and practical skills. Twenty-seven percent of respondents awarded a "4" rating, suggesting that in some areas, the connection between individual modules and the overall project objectives could be emphasized more strongly.

### **Comment:**

The teaching materials effectively achieve the project's objectives, offering content of high educational and practical value. They cover both basic and advanced data analysis methods. The "4" ratings indicate minor elements that could be further refined to strengthen alignment with the project's goals, but the overall assessment is unequivocally positive.

## **Question: Is the language of the materials tailored to the business needs?**

The majority of evaluators (60%) found the language used in the teaching materials well-adapted to business needs and relevant to the context of data analysis in logistics. The terminology was noted as understandable, precise, and consistent with industry practice. Forty percent of respondents gave a rating of "4," suggesting that some sections of the text could be more closely aligned with real business scenarios.

### **Comment:**

The language in the teaching materials was developed in a clear and professional manner, making it suitable for both academic and business contexts. Industry – specific terminology was presented accessibly, facilitating students' understanding of specialized concepts and their practical application. Improvements were made to the language, including the addition of more examples reflecting usage in real-world reports and business analyses.



## **Question: How do you assess the quality of the materials translation?**

The majority of evaluators (73%) rated the translation of the teaching materials very highly, highlighting its linguistic accuracy, terminological consistency, and faithful retention of the original content. The translation was described as natural and easily understandable, with vocabulary that accurately reflects the context of data analysis and logistics. Twenty-seven percent of respondents gave a rating of "4," indicating that some sections could benefit from minor stylistic or terminological refinements in future editions.

### **Comment:**

The translation of the teaching materials was executed with great care and attention to linguistic precision. The text reads naturally while maintaining its specialized character, making it suitable for both academic use and professional practice. Efforts have been made to fully standardize technical terminology and align the translation style with other project materials.

## **Question: Can the content of the materials be easily integrated with study program (of your courses)?**

The majority of evaluators (67%) confirmed that the content of the teaching materials can be easily integrated into existing study programs. Thirty-three percent of respondents gave a rating of "4," suggesting that in some cases, integration may require minor adjustments to suit specific curricula or the students' proficiency levels.

### **Comment:**

The teaching materials are well-aligned with typical logistics and business analytics curricula. Their structured topics and clear layout allow for flexible integration of individual modules into academic courses.



## **Question: Can the content of the materials be easily integrated with study program**

The majority of evaluators (71%) confirmed that the content of the teaching materials can be easily integrated into existing study programs. Respondents highlighted the thematic coherence of the materials with subjects such as logistics, supply chain management, data analysis, and information systems. A rating of "4" was given by 29% of respondents, suggesting that in some cases, minor adaptations may be needed to align the materials with the specifics of a given course or curriculum.

### **Comment:**

The teaching materials demonstrate a high degree of compatibility with fields and specializations in logistics, management, and business analytics. Their structure and thematic scope facilitate straightforward integration into both theoretical and practical academic courses.

## **Question: Will you recommend this materials to your colleagues?**

The majority of evaluators (67%) stated that they would confidently recommend the teaching materials to their colleagues. Thirty-three percent of respondents gave a rating of "4," which may indicate that while the materials are valuable, in some cases they require minor adjustments or additions to fully meet the needs of all academic audiences.

### **Comment:**

The teaching materials were rated very highly for their quality and usefulness in the teaching process. The high number of "5" ratings confirms that the materials are perceived as professional and valuable teaching tools. Steps have been taken to supplement them with additional supporting materials.

## **General comments**

Both the textbook *Statistical Methods for Logistics Data Analysis (C3)* and its accompanying teaching materials received high ratings from the evaluators. Respondents emphasized their substantive consistency, logical structure, and practical approach to data



analysis in the context of logistics and supply chain management. Many evaluators noted that "the textbook has a very valuable message for both students and academics" and that its content "covers the most important aspects of statistics used in supply chain management."

The teaching materials were also positively received, described as "well-developed, clear, and useful for teaching." They were praised for their practical orientation, ease of use in courses, and relevance to real-world business problems. Evaluators considered them a valuable teaching tool that can be successfully integrated into existing study programs.

Some respondents suggested minor improvements, particularly regarding "standardizing the bibliography and adapting the references to the editorial template." However, the overall assessment remains clearly positive – the textbook and teaching materials meet high-quality standards, are up-to-date, useful, and fully aligned with the objectives of the Business Analytics Skills for Future-proof Supply Chains (BAS4SC) project.

## Conclusions

Both the *Statistical Methods for Logistics Data Analysis* (C3) textbook and its accompanying teaching materials fully support the objectives of the *Business Analytics Skills for Future-proof Supply Chains* (BAS4SC) project. These materials received high evaluations for their content quality, pedagogical value, and practical relevance. Respondents highlighted their modern approach to data analysis in logistics, clear and logical structure, and accessible language adapted to the needs of both academic and business audiences.

Overall, the teaching materials for the C3 course were recognized as reliable, well-prepared, and substantively consistent with the project's objectives. Further refinements – particularly the supplementation of missing elements and clarification of bibliographic references – will ensure full compliance with teaching standards and further enhance their educational value.

Following the publication's release, nine letters of intent were received, clearly expressing an interest in using the materials for teaching at various universities. This strong response confirms that the materials meet both educational and business needs and have significant potential to support student learning in logistics data analysis.

This level of interest not only validates the publication's educational and practical value but also ensures its broad implementation in the teaching process. The received letters of



intent demonstrate the growing appeal of the textbook and teaching materials as modern tools supporting the development of students' analytical and business competencies. It can be confidently expected that these publications will become a standard component of academic courses and practical workshops in many educational institutions.