**D. A. Tsenov Academy of Economics - Svishtov**

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# PROSPECTS FOR CUSTOMS CONTROL THROUGH THE PERSPECTIVE OF ITS DIGITAL TRANSFORMATION

## ABSTRACT

On a dissertation

for the award of the educational and scientific degree of "Doctor",

in the doctoral programme "Accounting, Control and Analysis of Economic Activity (Control and Analysis)"

**Scientific supervisor:**

ASSOC. PROF. DR. MOMCHIL ANTOV

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The dissertation has been discussed by the Department of Control and Analysis of Economic Activity and has been proposed for defence.

The dissertation is 229 pages long and consists of an introduction, a main body structured in three chapters, a conclusion, references, appendices and a declaration of originality and authenticity.

The open meeting of the scientific jury for the defence of the dissertation will be held on 24 April 2026, in the "Rectorate" conference room at the D. A. Tsenov Academy of Economics in Svishtov.

The materials for the defence are available at the Doctoral Studies and Academic Development Department.

# I. GENERAL CHARACTERISTICS OF THE DISSERTATION

## 1. Relevance of the topic

Digitisation is of key importance in the transformation and modelling of socio-economic processes on a global scale. Starting slowly at the end of the 20th century, its development has become increasingly widespread in all human activities in the current millennium. The direct impact of digitisation on the economy is reflected in the development of technologies, the emergence of an ever-increasing variety of goods for industry and everyday life, the development of communications, easier access to goods and services anywhere in the world, and more. Looking back at human history, the movement of people, resources, know-how and capital has never been so easy. One of the greatest contributions to the development of digitalisation is the intensification of international trade and the ensuing globalisation.

On the one hand, the movement of goods is not an end in itself, and on the other hand, it is accompanied by compliance with certain legal regulations in the countries of import, export and transit. Establishing the compliance of traded goods with the applicable legislation and the relevant commercial, transport and customs documents is one of the main operational tasks of customs administrations. The existence of non-compliance may be a prerequisite for the movement of contraband or prohibited goods. Given the ever-increasing volumes and diversity of goods moving across borders, the task of customs authorities to carry out control activities to monitor international goods traffic is becoming increasingly difficult. This necessitates the implementation of as many automated processes and digital transformation of customs activities as possible in order to ensure effective control.

The European Union is one of the world's leading exporters and importers of goods, and the volume of goods entering or leaving the Union is constantly increasing. All 27 Member States comply with a common European regulatory framework for customs formalities. It is developed in detail, individually harmonised through the national legislation of the Member States and implemented by the separate customs administrations of the countries. They have the right to organise the implementation of the common European customs policy on their territory themselves, with the result that individual aspects of customs legislation are interpreted and applied in 27 different ways (Wise Persons Group on the Reform of the EU Customs Union, 2022); (European Parliament, 2022). This directly affects the effectiveness of customs control and implies that the Union is as vulnerable to unregulated imports and exports of goods as its "weakest" border. This circumstance makes the establishment and development of a single customs union in the EU an increasingly pressing issue, given the dynamic geopolitical situation affecting global supply chains.

It is important to note that effective customs control can be achieved through the digital transformation of customs, which requires the increased implementation of high-tech innovations such as Artificial Intelligence (AI), blockchain, the Internet of Things (IoT), Machine Learning (ML), etc. Their application could significantly reduce errors, simplify customs formalities, improve communication and information exchange between participants in global supply chains, and significantly develop both their coordination and their partnerships.

In view of the above, the study focuses on the possibilities for digitising the main processes of import, export and transit of goods in the context of the transformation from a process-based to a system-based approach in line with the New European Customs Reform.

## 2. Subject and object of the study

***The object*** of this study is *the control activities within the fiscal, protective and economic functions of customs control*, and its ***subject*** is *to determine and analyse their current digitisation from a legal and technological point of view through the perspective of the system and process approach.*

## 3. Aim and objectives of the dissertation

The dissertation **aims** to propose possible solutions for the technological modernisation of customs and the optimisation of the main customs processes (import, export and transit of goods) based on a study of the digital transformation of customs control.

The **tasks** set out in the dissertation to achieve the stated objective are as follows:

1. To analyse specific features of the International, European and National legal and functional frameworks governing the digitisation of customs control and, on this basis, to justify the need to define a coordination function in the activities of customs authorities.
2. To highlight the theoretical aspects of digitisation in customs control through the application of a systematic and process-based approach.
3. To examine the technological aspects of the digitisation of customs control through the perspective of the New European Customs Reform by applying a systematic and process-based approach.
4. To identify the main challenges to the digital transformation of customs control and formulate conceptual proposals for overcoming them.

## 4. Research thesis

The thesis defended in this dissertation is that *digitisation is a key means of modernising European customs towards functioning "as one", which could lead to both a simplification of customs formalities for economic operators and the implementation of effective and efficient customs control in the EU*.

The author believes that a digitised single European customs service is the balancing factor that could lead to more effective implementation of the goals and tasks set for customs authorities. On the other hand, a European customs system operating "as one" could offer maximum simplification of customs formalities for legal businesses through the introduction of increasingly automated processes and the use of high technology. This would contribute significantly to increasing the competitiveness of European businesses and the economies of Member States.

## 5. Research methodology

***The research methods*** used in the dissertation include scientific-theoretical and empirical methods. Scientific-theoretical methods include: scientific analysis and synthesis, comparative, systematic and logical analysis, statistical analysis. Empirical research methods include: study of Bulgarian and foreign sources of information relevant to the research area; a survey of the opinions of representatives of customs practice in the Republic of Bulgaria, through our own questionnaire (see Appendix No. 1); graphical and tabular methods for data visualisation; description of results and study of experience.

A questionnaire survey was conducted to support the thesis and accomplish the tasks set. It consists of two questionnaires aimed at:

1. Employees of the Bulgarian Customs Agency – 15 questions;
2. Representatives of economic operators in the Republic of Bulgaria – 21 questions.

The number of respondents was 504 employees of the Bulgarian Customs Agency and 342 business representatives, who were selected through a stratified random sample. On this basis, the results of the survey can be considered a representative sample on which to draw specific conclusions.

## 6. Limitations of the study

The dissertation is accompanied by a number of limitations, the main ones being as follows:

1. ***Territorial limitation*** – The digitisation of customs formalities presented from a technological point of view is derived solely from Bulgarian practice, due to the existence of a large number of relevant national customs information systems in the individual EU Member States. For this reason, the empirical research was conducted only in the Republic of Bulgaria among employees of the Customs Agency and representatives of economic operators.

2. ***Organisational and structural constraints*** – the digitisation of customs and its functioning "as one" involves many aspects such as organisational structure, human resource management, financial and accounting security, development and improvement of information systems, and others. This study aims only to outline a general framework and concept for the digitisation and automation of customs control activities and related customs formalities for the import, export and transit of goods.

### 7. Approval

The dissertation was discussed at a meeting of the Department of Control and Analysis of Economic Activity at the D. A. Tsenov Academy of Economics in Svishtov. Parts of the study have been published in specialised scientific journals.

### 8. Application of the results of the study

In order to achieve the objectives and prove the thesis of this dissertation, an analysis and assessment of the current digital processes in customs control was carried out. The conclusions and results of the empirical study aim to identify potential opportunities for the digital transformation of customs control in the future, which would contribute to increasing its efficiency.

## II. SCOPE AND STRUCTURE OF THE DISSERTATION

The dissertation is 229 pages long, typed on a computer, or 230 standard pages according to BDS. The main text is 209 pages long and consists of an introduction, three chapters and a conclusion. It contains 28 diagrams, 11 figures and 5 tables. In addition to the dissertation, the following are included: a declaration of originality and authenticity; 122 cited sources, including scientific books, articles, normative acts, reports, dissertations, and 2 appendices.

**CONTENTS**



## III. MAIN CONTENT OF THE DISSERTATION

### INTRODUCTION

The introduction to the dissertation aims to present both the relevance and significance of the topic and to define the object, subject and purpose of this study. On this basis, the tasks to be solved are identified and the thesis to be defended is formulated. In addition, the methodology used is described and the limitations accompanying the dissertation are indicated.

## CHAPTER ONE. THEORETICAL FEATURES OF DIGITISATION IN CUSTOMS CONTROL

The first chapter of the dissertation is scientific and theoretical in nature and is 70 pages long. It is structured in three paragraphs, which fulfil the first two tasks defined in the introduction.

### *Paragraph 1. Regulatory and functional framework of digitisation in customs control*

Based on a partial review of the scientific literature and some of the normative acts, an attempt has been made to define the concept of "digitisation" in customs control, namely: digitisation in customs control represents ***the complete transformation of a given process, system, method or phenomenon, for the implementation of which an unlimited amount of data is processed, analysed and stored using digital and "smart" technologies in order to increase their efficiency and comprehensiveness, minimise costs and possible errors.*** As a result, it can be concluded that digitisation represents a transformation of the model, procedures and processes, i.e. it changes the way the system and its processes function. In practice, they become more complex, as the algorithms embedded in digital tools have the capacity to process and analyse large volumes of data, unlike humans. The output data is easy to use, as it utilises the end result obtained from complex analyses.

***A review of the legal framework*** for digitisation in customs control has been carried out, as it is fundamental to the development of rules and the direction of its development. The main conclusions drawn from this analysis are:

- Digitalisation is relatively underrepresented in the main international, European and national legislative acts in the field of customs control, which is why an attempt has been made to define this concept and a proposal has been made to include it in the Union Customs Code (UCC);
- Some secondary legislation at European and national level, such as strategies, plans, regulations, etc., provides for the partial digitisation and automation of customs formalities;
- Some legislative acts provide for the parallel use of both electronic and paper documents, which shows that at this stage the legislation does not envisage a complete digital transformation of customs control.

***The functional framework*** (fiscal, protective, economic, informational and coordination functions) of digitisation in customs control has been analysed with a view to gaining a deeper understanding of the individual activities and objectives inherent in customs. This area has been little researched in the scientific literature, so such an analysis could help to

develop guidelines for the future digital transformation of activities related to each core function of customs control. In this regard, the following conclusions are drawn:

- The advantages identified from the introduction and development of digitalisation in customs control demonstrate its beneficial impact on both customs authorities and economic operators.
- The main characteristics of the fiscal, protective, economic and information functions not only enrich the scientific literature, but also provide a deeper understanding of the role of individual activities in relation to customs functions;
- Bringing the information and coordination functions to the fore is key to effective customs control, as with the introduction of modern projects such as Single Window, information has become a key resource for customs.

***Paragraph 2. Development and organisation of digitalisation in customs control***

This part of the presentation examines the development of customs digitisation in the EU and in the Republic of Bulgaria in two main areas: the chronology and organisation of customs control at European and national level. The main summaries and conclusions reached in this paragraph of the research paper are as follows:

- The emergence of digitisation in customs is a long-term process, accompanied by the adoption of a number of legislative acts to harmonise and simplify customs formalities, which have an indirect impact on it, but nevertheless represent logical prerequisites for the digitisation of customs in the present;
- A chronological review of the development of digitisation in European customs provides greater clarity on the scope of their digital transformation;
- The development of digitisation in customs control is shifting the focus from physical checks on goods to data analysis. This means that priority is given to preliminary control rather than ongoing and subsequent control;
- Although the Directorate-General for Taxation and Customs Union (DG TAXUD) and its specialised units in TAXUD.B supervise and assist Member States in implementing digital solutions and improvements to their systems, the 27 customs administrations are at different stages of implementation. This means that the effect of the *"weakest"* European border is created (European Parliament, 2022) , (Wise Persons Group on the Reform of the EU Customs Union, 2022) .

***Paragraph 3. Approaches to digitisation in the customs control process***

Through the prism of the digitalisation of customs control, in order to fulfil the second task of this study, ***the system and process- approach*** to control is examined. For a better understanding, based on the author's opinions and a more in-depth analysis in this area, an attempt has been made to define the concepts:

- ***customs control system*** – a complex, dynamic, legally regulated set with clearly defined boundaries, consisting of interconnected and continuously interacting elements that have the common goal of establishing compliance between specific actions of the controlled entities and the current customs legal framework at each moment of control;
- ***system approach to customs control*** – viewing customs activity, in particular its functioning, as a single indivisible whole that can be influenced in order to reduce negative impacts, correct system errors and maximise the results of the set objectives;
- ***process in customs control activity*** - a set of legally regulated, sequential and interrelated actions with a precisely defined structure and scope, which process incoming data into output information regarding the movement of goods from, through and to the customs territory of the Union in full compliance with the applicable customs formalities.

Based on the author's views and presentation of different models, an attempt has been made to theoretically analyse and examine digitisation in customs control through the perspective of a systematic approach. The aspects of volatility, uncertainty, complexity and ambiguity (VUCA) are examined, as well as system errors that reveal possible weaknesses in the customs control system. In order to optimise it, various complementary system approaches are presented, such as the cybernetic approach, system and design thinking. Their application to optimise the system provides an opportunity to solve complex tasks that require creativity. While cybernetics provides the opportunity to collect, processing and storing large amounts of data using digital means, systems and design thinking are key to making informed and accurate decisions based on all the information available in the system, contributing significantly to its flexibility and adaptability in today's reality.

The process approach in customs control is examined through the Business Process Maturity Model (BPMM). Through its elements ***of modelling, implementation, optimisation, management, culture and structure***, the BPMM model focuses on a comprehensive understanding of the process through the use of digital tools, which leads to the processing of much more information regarding its functioning, which in turn makes the analysis in-depth and the conclusions reliable. Separately, the use of digital solutions at each stage allows for

more accurate results due to the large amount of data on the functioning of the process that can be processed.

Digitalisation is widely used in the process approach as it significantly assists in identifying the processes/sub-processes that are subject to optimisation; strengthens the links and communication between the individual sub-processes; it contributes to a higher level of control and feedback on both the smooth functioning of the process and the identification of errors and inconsistencies, etc. In practice, digitisation facilitates the application of the process approach in organisations, which often makes its use the preferred method of management and efficiency improvement.

As a result of the above, a comparative analysis has been prepared regarding the advantages and disadvantages of using the two approaches in customs control, namely (see Table 1 and Table 2):

*Table 1*

*Advantages of the systematic and process-based approaches to customs control*

| | Criteria | System approach | Process approach |
|---|---|---|---|
| 1 | Focus | Focus on the whole (strategy, mission, customs objectives) | Focus on the details (control measures for the import, export and transit of goods) |
| 2 | Internal environment | Focus on the internal environment in the customs control system (departments, human resources) | Focus on processes (their stages and activities) |
| 3 | Diversity | Wide variety of systems and approaches | Diversity of ways to apply the process approach |
| 4 | Optimisation and flexibility | Strong emphasis on optimisation of the entire system (subsystem) while taking into account external and internal influences | Strong emphasis on continuous process optimisation |
| 5 | Complexity | Need to correspond to the complexity of the external environment | Possibility for more extensive process optimisation (the more complex a process is, the more comprehensive the optimisation will be) |
| 6 | Information and high technologies | Digital strategy for customs development | Main tool for process optimisation |

*Table 2*

*Disadvantages of the system and process approach in customs control*

| No | Criteria | System approach | Process approach |
|---|---|---|---|
| 1 | Focus and functions | Not detail-oriented;<br>Risk of too many and diverse functions | Lack of focus on the whole, strategy, functions |
| 2 | Optimisation and cost-effectiveness | Higher optimisation costs (inefficiency) | Risk of creating overly large and comprehensive processes that are difficult to optimise and control<br>Risk of optimising the same process multiple times |
| 3 | Complexity and external environment | Risk of mismatch between the complexity of the external and internal environment<br>Risk of instability, uncertainty, and ambiguity | Risk of optimising complex processes over an excessively long period of time;<br>Lower orientation towards external influences |
| 4 | Flexibility | Not flexible enough when optimising | Risk of process shutdown when errors occur |
| 5 | Protection and security | Vulnerability arises due to dynamic changes in the external environment | Separation of controls at each stage, which can complicate the functioning of the process |
| 6 | Information and high technologies | Digitised, but insufficiently automated and digitised | Insufficiently digitised |

A comparative analysis of the system and process approaches shows that, in practice, the two approaches are not opposed but complement each other. Therefore, for the effective optimisation of both the customs control system and customs processes, the approaches can be applied jointly. It should also be taken into account that ***where the useful actions of one approach end, the other approach actually finds application***. In practice, both the customs control system and the main customs processes are equally important, which means that ***the joint application of the two approaches is a flexible solution that can contribute to increasing the efficiency of European customs***. The theoretical examination of the system and process approaches contributes to finding different practical combinations between them and to their actual implementation with a view to modernising and digitally transforming the customs control system. Their joint application contributes to the analysis of both the entire system, together with its internal and external environment, and the examination of the main processes that constitute the core activity of customs. This means that their combined use contributes to the detailed examination of each aspect, thus reducing the likelihood of omissions. At the same time, combining the two approaches can help minimise their weaknesses and maximise their benefits, as each would be applied where it can contribute most to optimising the system and processes in customs control.

This section of the dissertation reaches the following significant conclusions:

- There is a close link between the axis "goal - approach to achieving it - means used";
- A system, including the customs control system, may become unstable in the process of optimisation if it is under pressure from external and/or internal influences;
- Currently, most systems in the public and private sectors are complex, i.e. they are difficult to manage. Therefore, the implementation of digital and modern management solutions in them is of particular importance in order to control the complexity of the system.
- In essence, the customs control system should be flexible and adaptive, otherwise it would lose its effectiveness because it is exposed to a number of negative external influences (VUCA).
- The complexity of the customs control system gives rise to the possibility of system errors that can lead to difficulties in its proper functioning. These could be minimised by implementing digital solutions that support its functioning.
- In customs control, systems and design thinking are applicable where the useful action of cybernetics ends, and the joint application of the three systems approaches could contribute to the optimisation of the customs control system.
- The long-term optimisation of a process may prove ineffective, as the external environment changes during that time, resulting in the need for various changes. For this reason, the use of the process approach should be refined in terms of correctly identifying the complexity of the process and setting a reasonable time frame for its optimisation.
- The systematic and process approaches can be used together in customs control because of the different scope, focus, and goals of each approach, since where one approach ends, the other one starts.

## CHAPTER TWO. TECHNOLOGICAL ASPECTS OF DIGITISATION IN CUSTOMS CONTROL

The second chapter of the dissertation is scientific and practical in nature and is 66 pages long. It is structured in three paragraphs, through which the third task defined in the introduction is accomplished.

### *Paragraph 1. Digitisation of the application of the fiscal function of customs control*

This part of the dissertation attempts to outline the digital application of the system and process approach to the fiscal function in customs control.

The use of the system approach in customs control involves the ***analysis of a huge amount of data,*** on the basis of which decisions are made on subsequent actions by the customs control authorities in the import, export or transit of goods. ***The focus*** of the information collected should be ***on the participants in the process*** – sender/recipient, carrier, customs representatives and ***their overall activity over time***, rather than on each individual shipment, as is the case with the process approach. Given the limited resources available to customs administrations, this could be achieved through the more intensive implementation and use of innovative digital and high-tech tools. ***The data on economic operators (EOs)*** that could be analysed in relation to ***the fiscal function*** can be in the following three areas: ***financial stability, credit history and tax history*** (see Figure 1)***.*** In practice, ***considering them together would give*** customs authorities ***clarity*** on ***the overall financial culture of the economic operator.***

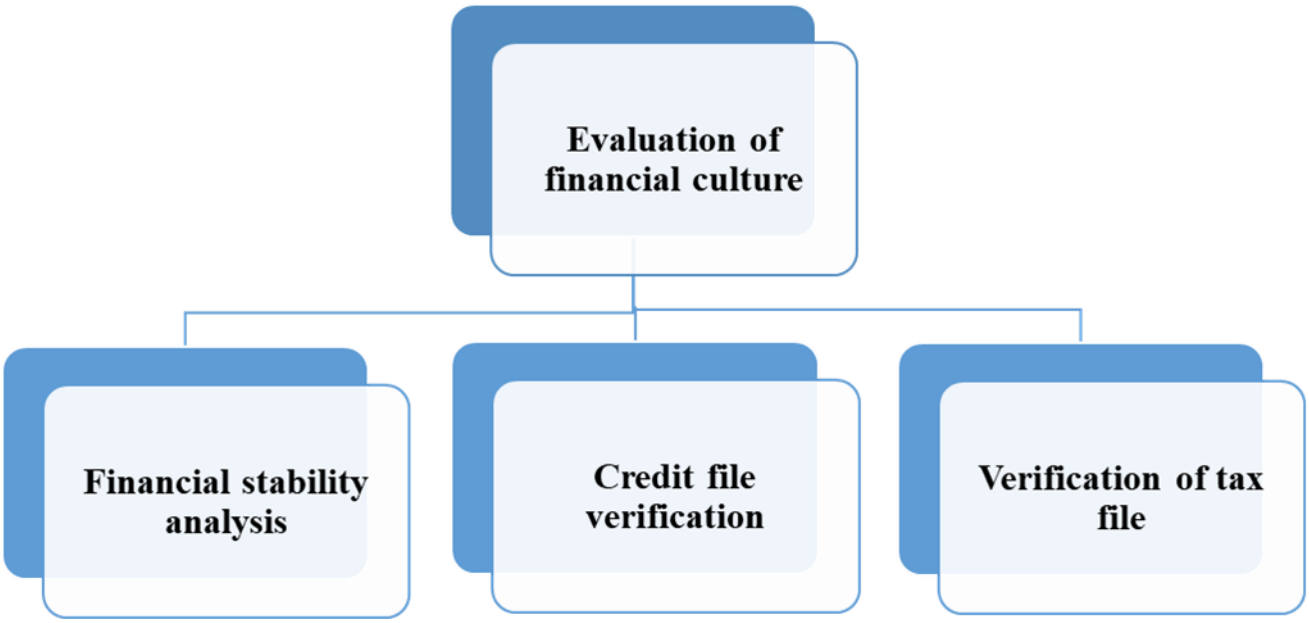


*Figure 1. Model for automatic examination of the financial culture of the economic operator*

The analysis of this type of information and the result obtained may alert customs to suspicions of deliberate manipulation of the customs value, tariff number of goods or their origin in order to reduce/increase customs duties, failure to comply with the legally regulated deadlines for payment of customs duties, and others. The use of ***a systematic approach can indicate where and in which cases more in-depth control should be carried out*** to ensure consistency between the current procedures and the actual actions of the economic operator.

Unlike the systematic approach, which analyses the financial culture of each person involved in their interaction with customs (*Who is the operator?*), the process approach focuses on goods (*What is being controlled?*). It could be used primarily in cases where the results of analyses based on the systematic approach have indicated an increased risk in relation to the behaviour of a particular economic operator. In such cases, the useful effect of the systematic approach ends, and the process-based approach comes into play. This means that customs authorities should carry out targeted controls on the import, export and transit operations of economic operators with a risk profile other than 'low'.

Regarding the fiscal function, research and analysis can be conducted in several main areas: ***customs value, tariff classification, origin of goods and customs duty.*** Each of these areas is examined in accordance with its current digitisation status, and conceptual proposals are made on how digitisation could be developed in this direction.

Given the different scope and focus of the two approaches, the following main summaries and conclusions are drawn in this part of the study:

- Assessing the financial culture of economic operators for customs control purposes would be difficult without the implementation of digital tools and smart technologies for collecting, processing and analysing large volumes of data in real time. In this way, customs officials could benefit from the result without having to perform tasks that are not inherent to their work, such as determining financial stability or cross-checking accounting data.
- Given that, at present, the primary information that could be used for analysis under the systematic approach is submitted to different users in the public and private sectors, it is advisable to establish a link between their systems. This would take coordination between control authorities to a new, higher level, contributing to more effective customs control.
- The implementation of digital solutions for customs value verification could significantly facilitate the application of methods for determining customs value and could reduce subjectivity in their use, given the larger database that would be used in such a case.
- For the most part, customs processes relating to the fiscal function are automated, but the introduction of digital means of verifying customs value, whereby the data from the customs declaration (SAD) is automatically verified against the commercial and transport documents, could significantly facilitate the work of customs officials.
- The use of a systematic approach through the perspective of the fiscal function provides customs authorities with indications of possible cases of non-compliance, on the basis of which control measures and more thorough checks can be carried out in accordance with the process approach.

***Paragraph 2. Digitisation of the application of the protective function of customs control***

This part of the dissertation outlines the digital use of the system and process-based approaches in relation to the protective function of customs control.

Based on the existing business models studied***, individual building blocks of the EO business model*** are proposed to provide summary and detailed information ***for the purposes of customs control.*** In this way, it would be possible to analyse as thoroughly as possible those areas of the trader's activity where there is ***a potential risk of intentional or unintentional violations of the formalities falling within the scope of the protective function of customs control***. An example of a business model for economic operators is presented through the prism of the systematic approach according to the author's views, namely (see Table 3):

*Table 3*

*Business model of the economic operator for the purposes of customs control*

| No | Constructive element of BM | Main guidelines for analysis |
|---|---|---|
| 1 | Activity of the economic operator | ✓ Key characteristics of the activity;<br>✓ Related persons;<br>✓ Compliance with the applicable legal framework; |
| 2 | Internal control | ✓ Internal control policy (competences);<br>✓ Existence/absence of internal control systems and quality management systems;<br>✓ SAFE framework (Customs to Business); |
| 3 | Interaction with customs | ✓ Existence/absence of previous violations by the economic operator and/or related persons (nature, severity);<br>✓ Analysis of usual operations (import, export, transit, authorisations, simplified procedures, customs offices);<br>✓ Results of checks carried out (follow-up control, corrective actions). |
| 4 | Interaction with other control authorities | ✓ Interaction with the National Revenue Agency, Regional Inspectorates of Environment and Water, Bulgarian Food Safety Agency, etc.;<br>✓ Violations committed;<br>✓ Measures taken based on the results of inspections carried out. |
| 5 | Suppliers and customers of EO | ✓ Markets (risky);<br>✓ Type and characteristics of goods (prohibitions, restrictions, licences, permits, non-tariff measures, origin);<br>✓ Organisation of deliveries (connectivity, quantities, frequency). |

The study of the EOs business model for customs control purposes provides a comprehensive overview of the business from a managerial, structural and functional point of view, on the one hand, and shows, in qualitative terms, how the EO interacts with customs and other control authorities, on the other. Poor management of any of these components could lead to problems within the organisation. These, in turn, could increase the risk of non-compliance and illegal activities in the import or export of goods that are dangerous to human life and health, pose a threat to the environment or violate the financial interests of the state and the EU. This comprehensive assessment of the business model can also provide a sufficiently in-depth understanding of the past, current and future development of the economic operator's business, which would allow customs authorities to rely as much as possible on this comprehensive risk analysis. Due to its large volume and diversity, all information can be classified as "big data" as it "*covers unstructured, semi-structured and structured data, with the main focus on unstructured information. It is used to reveal relationships and dependencies and to make predictions about outcomes and* behaviour" (Ribov, 2021) . Performing such a complex analysis for many organisations simultaneously would be unthinkable without the digital transformation of customs.

The main activities related to the manifestation of the protective function through the prerspective of the process approach are expressed in notifying the customs authorities of an upcoming import or export operation, analysing the risk and performing documentary and physical checks to establish the compliance of the goods with the regulations in force in the EU (see Figure 2).


*Figure 2. Customs activities for the implementation of the protective function through the lens of the process approach*

At present, the development of digitalisation in relation to these processes brings to the fore the collection of preliminary information, the performance of increasingly automated verifications and a significant reduction in the volume of physical controls. The possibility of

digitising customs activities in line with the upcoming New European Customs Reform is examined.

This part of the dissertation attempts to analyse customs control activities in relation to the protective function of the import, export and transit of goods through the perspective of the system and process approach and the possibility of their digital development. The main conclusions and summaries reached are:

- The introduction of the new European customs reform with an emphasis on the system approach can contribute to more effective customs control with regard to activities within the scope of the protective function, as the analysis of large databases could help to build predictability of the behaviour of economic operators in their interaction with customs.
- The volume and diversity of information for assessing the business model for all economic operators in the EU can be classified as "big data". For this reason, and due to the complexity of such an analysis, it could be carried out primarily by means of digitalisation.
- From a process perspective, the main customs activities within the scope of the protective function are significantly digitised, with priority given to risk analysis as a means of effective pre-clearance control.

Avoiding duplication of the same activities by the customs authorities of individual Member States, in cases where more than one country is involved in the movement of goods to and from the customs territory of the Union, would help to increase the effectiveness of customs control at EU level. In practice, this would lead to the harmonisation of customs formalities in Member States at operational level, which is a step forward in the creation of a single European customs service carrying out effective customs control to protect the financial interests, health and safety of citizens, the environment and the EU.

***Paragraph 3. Digitalisation of the application of the economic function of customs control***

This part of the dissertation reviews the digital development of the main customs facilitations and restrictions within the scope of ***the economic function*** of customs control from the perspective of the system and process approach. Their importance for the continuity of the international supply chain is justified. Attention is paid to the need to provide more customs facilitations for legal businesses and to consolidate all available information on customs formalities in a single information system (EU Data Hub) for timely and easy access by all interested parties. This could significantly contribute to reducing errors and achieving full

compliance with customs formalities, which would lead to more effective customs controls and facilitate business in the import, export and transit of goods.

Based on the systematic approach to control, various facilitations of customs formalities are provided to economic operators, who are subject to specific checks according to legally defined criteria. On this basis, customs authorities obtain a sufficient level of assurance that the economic operator meets the conditions for using certain ***simplified procedures***, which grant privileges in terms of the manner of declaring and presenting goods, payment of customs duties, the amount of security, etc. However, it should be noted that customs still continues to process each shipment individually through the perspective of the process approach. The use of these customs facilitations according to economic function clearly shows how the two approaches interact and work together. ***However, the overall concept of the AEO programme is based on the systematic approach***, because the status is granted after thorough checks and analysis of the trader's activities according to precisely defined criteria. This shows that the focus when granting the status is primarily on the economic operator rather than on the individual movement of goods, which leads to the conclusion that the AEO concept is essentially based on the systematic approach. The programme offers several advantages and facilitations not only for businesses but also for customs, since with minimal documentary and physical checks on the flow of goods generated by AEOs, customs officials can focus their efforts on the part of the standard movement of goods that carries a higher risk. The main customs simplifications offered using AEO status are as follows: ***simplified declaration, self-assessment, entry in the declarant's records and centralised processing***. Opportunities for their digital development through the implementation of the New European Customs Reform are also presented.

The concept of "Green Corridors" is also discussed, which provides for a significant reduction in physical checks on goods at the border. The innovation consists of priority and maximum speed checks so that the stay at the EU entry/exit point is minimal. Technologically, it would work as follows (see Figure 3).

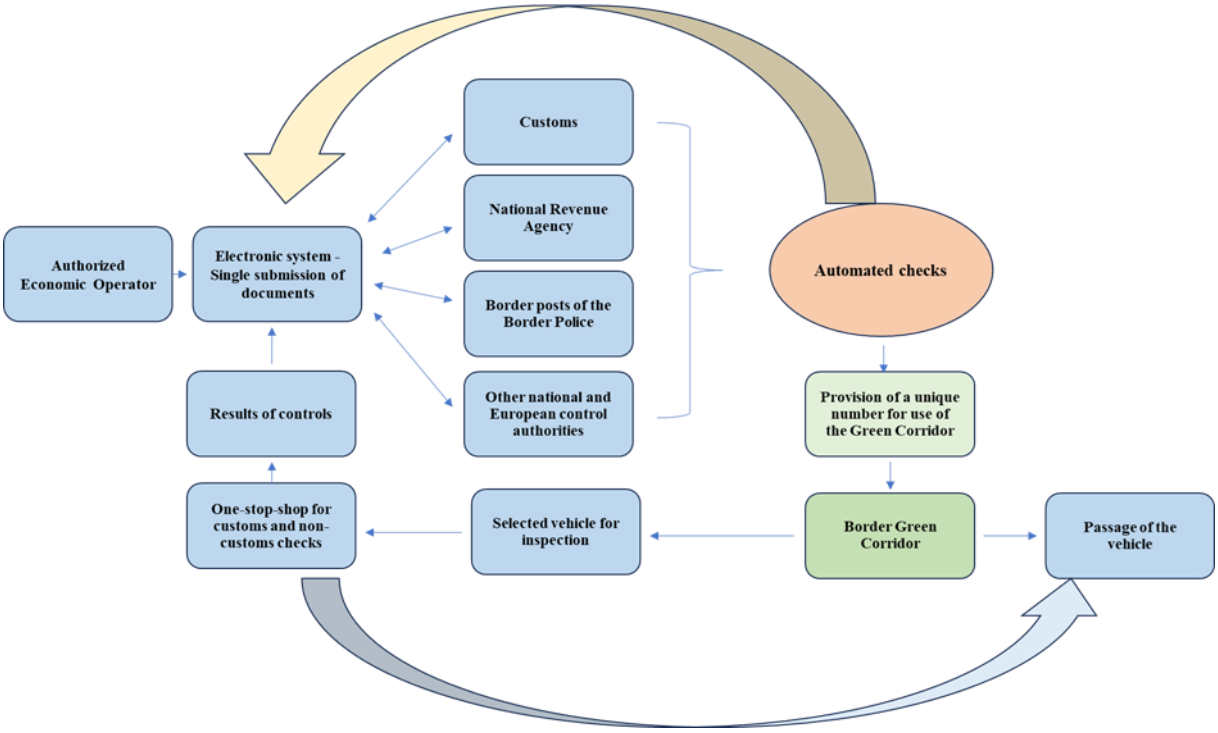


*Figure 3. Technological functioning of the "Green Corridors" concept*

The concept demonstrates ***the growing importance and close link between mutual cooperation, simplification of formalities, digitalisation, coordination and the effectiveness of customs control.*** In practice***, the continuity and timeliness of global supply chains*** could be achieved by introducing ***innovative solutions that benefit not only businesses and the state, but also society***. The main means of achieving this is digitalisation, as its key high-tech tools such as AI, IoT, ML, DL and others are the necessary link that contributes to the timely provision, exchange and analysis of the information needed for the smooth functioning of the Green Corridors concept.

Customs restrictions and some customs facilitations can also be viewed through the perspective of the process approach in cases where they apply to each shipment individually, regardless of whether the declarant is a standard economic operator or an AEO. The type of goods (tariff number), country of import/export, origin of the goods, etc. are the main factors in their application. Customs prohibitions and facilitations are not constant, but are variables that are reflected in the following two main guidelines:

- the current European economic policy aimed at stimulating or slowing down the development of certain economic sectors within the Union;
- the current economic and political relations between the EU and third countries (a group of third countries).

The digitisation of restrictions and facilitations through the lens of the process approach is of paramount importance due to their variable nature and dynamics, as their timely and accurate application by customs and the EO could significantly:

- reduce errors;
- reduce customs discrepancies;
- save control time and resources for customs authorities;
- limit the imposition of sanctions and fines on economic operators in cases where the error was made due to ignorance and lack of information.

This part of the dissertation examines only some of the more significant customs restrictions and facilitations that have the strongest impact on the customs control system, such as ***anti-dumping measures, deferred VAT payments for certain types of goods, customs exemptions, mechanisms for restricting imports of "undesirable goods", import quotas and the Carbon Border Adjustment Mechanism (CBAM)***.

Customs facilitations and restrictions, viewed through the prerspective of the approach in question, are a tool for the correct application of the EU's current foreign trade policy, which aims to develop and support certain sectors in the Union by stimulating or restricting the import/export of certain goods. The variety of measures and additional requirements imposed on businesses are a prerequisite for errors and non-compliance with customs and non-customs formalities. This, in turn, hinders and slows down the work of both economic operators and customs authorities. Therefore, the digitisation of customs facilitations and restrictions at every level (easy access to this information, operational implementation, etc.) is essential for simplifying customs formalities and achieving full compliance with them. Theoretical and practical research in this area makes it possible to identify aspects of the development of digitisation and to discover new opportunities for transformation in this direction. A possible perspective for development is the implementation of the EU Data Hub, as the architecture and functionalities of a single customs data centre could significantly simplify access to the necessary information at the right time in an easy way, which would also reduce inconsistencies in the implementation of customs formalities.

This part of the presentation analyses the digital development of customs facilitations and restrictions related to the economic function through the perspective of the system and process approach. In addition, an attempt is made to provide possible guidelines for their future digital transformation, taking into account the introduction of the New European Customs Reform. The main conclusions reached are:

- Customs is the controlling executive body of European foreign trade policy. This means that the more complex and dynamic the global economic situation is, the more complex and diverse its tasks and responsibilities are. In such a situation, customs authorities face difficulties in performing their tasks effectively. Digitalisation could therefore help to manage this dynamic, which also has an impact on the internal environment of the customs control system.
- There are significant benefits to customs simplification from a system perspective, but the desired effects could be optimised through digital transformation.
- The requirements for granting access to simplified procedures under the AEO status are high and, in practice, there is an imbalance between them and the actual facilitations provided.
- Providing more and more substantial facilitations such as self-assessment, centralised processing, access to "Green Corridors" and others with minimal documentary and physical checks could encourage more economic operators to apply for and obtain AEO/Trust & Check Trader status.
- Activities related to the economic function show the growing importance of closer interaction between customs and other control authorities, as their joint action could significantly contribute not only to the simplification of customs formalities but also to the continuity of supply chains (Green Corridors, Single Window, etc.).
- The establishment of seamless connectivity between the information systems of the customs authorities and the customs authorities, the introduction of more automated checks and the application of intelligent solutions such as AI, ML, DL, IoT, etc. can significantly contribute to reducing errors and achieving a higher level of compliance with customs formalities.
- The implementation of a single European customs information system with an easy-to-use interface and guidance on applicable tariff and non-tariff measures significantly reduces errors and leads to greater compliance with customs formalities.

## CHAPTER THREE. CHALLENGES AND OPPORTUNITIES FOR DIGITALISATION IN CUSTOMS CONTROL

The third chapter of the dissertation is practical in nature and comprises 65 pages. It is structured in two paragraphs, through which the fourth task defined in the introduction is accomplished.

***Paragraph 1. Challenges to the digitisation of customs formalities in the Republic of Bulgaria***

This section of the dissertation summarises the results of a survey conducted among employees of the Customs Agency and economic operators in the Republic of Bulgaria regarding the digitisation of customs control in order to identify the main challenges it faces. The main conclusions are as follows:

- The Customs Agency has established good communication links within its own structures and with partner organisations in the country, but there are some problems in communication and information exchange with the customs authorities of third countries and those of EU Member States.
- Almost half of customs officials and the majority of economic operators believe that there are differences in the customs controls applied in individual customs offices in the country. This contributes significantly to the "weakest link" effect, which is a challenge to the implementation of effective customs controls.
- There is a significant difference in opinion between customs officials and businesses regarding the development of digitalisation of customs control in Bulgaria. The lag in customs control affects both the effectiveness of customs control and the effective development of international supply chains.
- Customs officials point to the need to deepen their knowledge and skills in the field of digitalisation. This is essential for the effective functioning of the administration in the medium and long term, given the current and future changes in this area.
- Most economic operators consider the current customs formalities to be adequate, but they are not always understandable and are often difficult to comply with. This leads to potential errors, delays in customs clearance of goods, increased costs and other problems.
- Most of the Customs Agency and EO employees surveyed are not familiar with the proposal for a new European customs reform, which at present can be seen as a challenge in terms of their preparation and adaptation to the new rules.

Despite the challenges outlined above for the digital transformation of Bulgarian customs, the views of the respondents from the two surveys, which also highlight some positive aspects, deserve attention. Among them, the following deserve attention:

- According to the customs officers and economic operators surveyed, digitisation in customs control has significant advantages in areas such as facilitating customs formalities, optimising customs processing of goods, minimising technical errors, etc. Its subsequent

development significantly optimises customs formalities, which contributes to the smooth functioning of international supply chains.

- Economic operators are willing to provide more data to customs for comprehensive automated checks in line with the new system approach to control. This would significantly contribute both to improving the quality of information received by customs authorities, and to simplifying customs formalities based on more effective risk analysis.

The results of the two studies show that, according to the participants, customs formalities in Bulgaria are digitised in terms of digitalisation and automation. At the same time, the development of information technologies reveals significant potential for their future digital transformation. Respondents clearly outline several challenges that are the focus of future optimisation of customs control but also point out some advantages that its digitisation brings.

***Paragraph 2. Opportunities for overcoming the problems facing the digital transformation of customs***

This part of the dissertation outlines and proposes potential measures to overcome the problems identified in the previous paragraph regarding the digital transformation of customs control. To accomplish the fourth task, the problems are examined according to their conceptual, legal, technical and organisational nature, and proposals are made in the following areas:

- ***Poor communication between customs authorities***

Poor communication and information exchange occurs at two levels: between customs administrations in EU Member States and between European customs administrations and customs authorities in third countries. In the first case, this leads to a number of operational problems such as delays in the processing of customs declarations, errors, weaknesses in risk management, etc. All this contributes both to the complexity of customs control and to the lack of transparency in its application. Poor communication and information exchange between customs authorities in the EU affects not only their efficiency and the quality of their operational activities, but also the smooth functioning of international supply chains. They can be significantly improved by ***establishing a single automatic European customs system (SAECS)*** to replace national systems entirely. In this case, there would be no need for "data exchange" as data would be collected and processed in one place and would be accessible to any customs administration in the EU that needs it. In practice, the SAECS would take communication between European customs authorities to a new level, where ***cooperation and coordination would become the main focus***. The existence of a single system would enable ***a***

***comprehensive, pre-coordinated check*** of goods and their accompanying documents at several stages in the various customs offices responsible until the goods leave the EU customs territory.

Poor communication and exchange of information between European customs administrations and customs authorities in third countries is an important element in achieving full compliance with the customs formalities in force in the global supply chain. It is caused by a number of factors such as different customs formalities under national legislation, different and incompatible information systems, lack of automatic data exchange, etc. Possible solutions to this problem include the use of uniform international standards for the exchange of customs data, valid for all WCO member countries. ***Coordination units*** could also be set up within the customs administrations of partners (in the EU and third countries) ***to exchange data*** on the movement of high-risk goods and the activities of high-risk economic operators.

- ***Differences in customs control practices between individual customs offices***

The existence of differences in the controls carried out by individual customs authorities at national and European level creates significant ***conditions for the emergence of a "weakest" European border***, which reduces the effectiveness of the implementation of activities in accordance with the fiscal, protective and economic functions of customs control. Separately, this creates ***administrative barriers for business*** and for the smooth functioning of international supply chains. The main reasons for this problem include different interpretations of the current European legal framework and internal regulations, different national legislation in Member States, differences in digitalisation between customs authorities in Member States, etc. The unification of control activities in individual customs offices in the EU requires measures to be taken in several areas, such as the unification of national legislation, the establishment of a single central customs administration in the EU, the organisation of joint training for customs officials from the individual administrations of the Member States, implementation of a single European digital customs information system, etc.

- ***Differences in the development of customs and business digitalisation***

The differences in the development of customs and business digitalisation create a serious imbalance in the smooth functioning of global supply chains, leading to a number of weaknesses and problems, the main ones of which can be summarised as follows an increase in the administrative burden on economic operators the creation of barriers to minimising a number of costs for more digitised enterprises, inequality in customs-economic operator relations, etc. Customs should be an equal partner for businesses, not an additional administrative burden, so balancing their digitalisation is essential both for effective customs control and for supporting the competitiveness of European economic operators. In practice,

this task is extremely difficult and requires significant changes in several areas, the main ones being: changes in the legal framework, organisational changes in the EU customs control system, strengthening coordination and interaction between customs and business, implementation of high-tech solutions in a single European customs information system, etc.

- ***Insufficient digital skills of customs officers***

A significant proportion of customs officers consider that they have insufficient digital skills, which hinders the effectiveness of customs control. The main ones are related to data analysis and processing, risk management, and the use of the full capacity of customs electronic systems and databases. To improve the digital skills and qualifications of customs officers, customs authorities need to develop policies in ***two main areas***: digital competence requirements for new recruits and programmes for the qualification and upskilling of current staff. An additional facilitation would be the establishment of partnerships between European customs authorities and universities through the creation of disciplines for the acquisition of basic theoretical and practical digital knowledge and skills applicable to customs control.

- ***Complex customs formalities for businesses.***

***The complexity of customs formalities is a major obstacle to achieving full compliance*** for every import, export and transit operation, which significantly affects the efficiency of customs control and the smooth functioning of international supply chains. The main reasons for the complex customs formalities are the wide variety of goods, the large number of legal acts regulating customs control, differences between the trade policies of the EU and third countries, delays in customs clearance of goods, multiple submissions of the same data to customs, differences in the controls carried out by individual customs offices, etc. Simplifying customs formalities is a difficult task that needs to be discussed by all parties involved – customs and economic operators. ***A comprehensive review will lead to optimal solutions, effective customs control and simplified customs formalities***. The European Customs Authority (EU Customs Authority) should be responsible for managing and coordinating the entire process of simplifying customs formalities, with the main areas for reform being: ***simplification of the legal framework*** and ***digital changes*** (operation of a single European customs information system, digital risk management, implementation of AI models for determining tariff numbers, origin and customs duties on goods, etc.).

The main conclusions drawn in this paragraph are as follows:

- Improving communication and information exchange between European customs administrations is of paramount importance for the establishment of a single European customs service that minimises the effect of the functioning of the "weakest" border in the EU. This can

be achieved by setting up a single customs information system (EU Data Hub), as envisaged in the EC's Proposal for a New Customs Reform, which would eliminate the need to use multiple national customs information systems. In practice, the SAECS will allow the use of all necessary databases in real time, which can significantly improve communication and coordination between customs authorities in Member States.

- In order to increase the effectiveness of customs control, it is necessary to strengthen the data exchange process and improve the coordination of control activities between customs authorities in the EU and third countries regarding high-risk consignments and high-risk EOs. Resolving this problem faces several challenges, such as different and incompatible information systems; lack of connectivity for automatic information exchange; irregular communication; differences between digitisation in Member States and third countries, etc. The reasons mentioned above show that communication and data exchange between the EU and third countries is difficult to synchronise in its entirety. However, it is possible to set up coordination departments for data exchange in the customs administrations of the EU and partner countries to monitor the movement of high-risk consignments. This will strengthen international customs cooperation through joint coordinated control actions and minimise attempts at customs fraud and smuggling.

- The harmonisation of customs controls in individual customs offices is essential for facilitating customs formalities for businesses and reducing the effect of the "weakest" European border. To achieve this, a number of measures should be taken, the main ones being: harmonisation of the national legislation of the Member States with the establishment of uniform customs sanctions in the EU for the purpose of equal treatment of economic operators; establishing a single European customs agency (EU Customs Authority), which should create uniform internal rules and standards for work in national customs offices, as well as conduct joint training for customs officials in the EU; Establishment of an EU Data Hub to support the implementation of uniform digital processes and procedures in each customs office and to become the main means of communication within customs itself.

- Customs and business have differences in digitisation, which creates inequality in their relations and further increases the administrative burden on economic operators. This leads to barriers to the smooth functioning of international supply chains and the uncompetitiveness of the European economy. Customs should be an equal partner to business, and this can be achieved by strengthening coordination and interaction between them through the implementation of uniform digital solutions, the functioning of a flexible European customs service and the introduction of more high-tech tools in the EU Data Hub.

- Customs officials need to develop their digital skills, as their low level creates conditions for both ineffective customs control and more difficult and time-consuming performance of operational tasks. To this end, the EU Customs Authority should develop standardised digital training and upskilling programmes in this area, to be implemented in all Member States. should also develop common criteria and requirements for staff selection that meet the minimum requirements for digital competences in customs control. It would be useful to build partnerships with higher education institutions by jointly creating disciplines for the acquisition of theoretical digital knowledge and practical skills. These could provide sufficient training for future specialists to meet the needs and requirements of customs.
- The transfer of customs formalities to an electronic environment provides opportunities to reduce human intervention on the part of customs and business. The implementation of both normal and simplified customs procedures is directly linked to the use of computerised information systems for the import, export and transit of goods. Within these systems, as well as the future EU Data Hub, AI and ML-based algorithms can be developed to perform routine and/or repetitive tasks and further facilitate the work of customs authorities and economic operators.

**CONCLUSION**

This dissertation attempts to highlight not only the importance of digitisation for customs control, but also to outline a number of opportunities for modernising customs through digital transformation. Optimising key customs processes (import, export and transit of goods) and the functioning of a single, effective European customs service will contribute to the prosperity and security of everyone in the EU.

***Chapter One*** outlines the specifics of digitalisation, according to the author's views and the international, European and national legal framework in customs control. An analysis of the main customs functions (fiscal, protective and economic) is carried out, and the definition of a new coordination function directly related to the digitisation and modernisation of customs is justified. The theoretical aspects of digitisation in customs control are presented through the application of a system and process-based approach.

***Chapter Two*** analyses the technological aspects of customs activities within the scope of the fiscal, protective and economic functions through the perspective of the system and process approach. The significance of the proposal for a new European customs reform, which is expected to significantly transform European customs in the long term, is also outlined.

In ***Chapter Three***, based on the results of a survey conducted among employees of the Customs Agency and economic operators in the Republic of Bulgaria, some significant challenges are identified that customs faces on the path to its digital transformation. On this basis, conceptual proposals are made for overcoming them, including with the help of digital tools.

To ***substantiate the thesis***, the following activities were carried out: the views of a number of Bulgarian and foreign authors on the topic of the dissertation were examined and subjected to critical and comparative analysis, as well as the relevant legal framework; the current digitisation of customs activities in the import, export and transit of goods was examined through the perspective of the system and process approach; a survey was conducted among customs officials and economic operators in the Republic of Bulgaria. On this basis, ***arguments*** were put forward in support of the thesis, namely that ***digitisation is a key means of modernising European customs towards functioning "as one", which could lead to both a simplification of customs formalities for economic operators and the implementation of effective and efficient customs control in the EU.*** This is achieved through:

- Defining digitalisation and examining it in more detail in the current customs legislation in order to ensure a proper understanding and implementation of the digital transformation of customs;
- Taking measures to develop communication, coordination and information exchange between participants in international supply chains (customs, economic operators, other control authorities and institutions);
- Optimal joint use of the system and process-based approaches to ensure effective customs control, since where one approach ceases to be effective, the other can be applied;
- Establishment of a single European customs information system (EU Data Hub) and a European Customs Authority, which would contribute significantly not only to the functioning of a single customs service in the EU, but also to the harmonisation of customs formalities in the Union;
- Automating the processes for handling the import, export and transit of goods and introducing digital tools such as Artificial Intelligence (AI), Blockchain, the Internet of Things (IoT), Machine learning (ML), etc., which could contribute both to the harmonisation of digitisation between customs and business and to achieving fuller compliance with customs formalities and effective customs control.

The dissertation could be useful both for enriching science and for the operational activities of customs. Customs operates in an extremely dynamic environment, which requires

constant optimisation of processes and the system itself in a way that contributes to the development of international supply chains. This requires both digital transformation and the functioning of a single European customs service, which should carry out unified and effective customs control while simplifying customs formalities for businesses.

## IV. REFERENCE TO THE SCIENTIFIC CONTRIBUTIONS IN THE DISSERTATION

As a result of the tasks set out in the dissertation, ***the*** following main ***scientific and applied contributions*** stand out, which aim to enrich science:

1. Definitions are proposed for the concepts of "*digitisation in customs* control", "*customs control system*", "*system approach in customs* control" and "*process in customs control* activity" are proposed from the author's point of view and the current legal framework of customs control. The definitions are based on a critical analysis of the views on the essence of these concepts and can be used in theory and practice.

2. It is proposed that *a coordination function* in customs control be established as a basic function, given the functioning of a single European customs authority acting "as one" and the forthcoming implementation of the Single Window concept with a view to facilitating cross-border goods control.

3. The digitisation of customs control is examined through the perspective of the system and process approaches, highlighting their strengths and weaknesses. This is achieved based on a comparative analysis of the advantages and disadvantages of applying the two approaches. The analysis and assessments can contribute to their better implementation in practice.

As a result of the dissertation, some ***practical and applied contributions*** are identified:

1. It is proposed to build a digital model for automated research of the financial culture and business model of economic operators through the perspective of the systematic approach. These are relevant to the proper performance of the fiscal and protective functions of customs control, and their use would contribute to a more complete digital transformation of customs in this area, facilitating customs formalities and enabling more effective customs control.

2. The main challenges to the digitisation of customs control have been systematised and relevant proposals for overcoming them have been identified. The challenges have been outlined based on an analysis of data from a questionnaire survey and have been divided into the following groups: *poor communication between customs authorities, differences in the implementation of customs control in individual customs offices, differences in the development of customs and business digitalisation, insufficient digital skills of customs officials and complex customs formalities for businesses.* The problems and the proposed mechanisms for their solution are aimed at supporting the customs administration in the process of digitising customs control.

## V. LIST OF PUBLICATIONS RELATED TO THE TOPIC OF THE DISSERTATION

**Studies (1)**

1. Antov, M., Kostova, S., Zhelev, Zh., **Peycheva, B**. & Zheleva, A. (2025). Impact of the new customs reform in the EU on functional and methodological approaches in customs control, Almanac of Scientific Research, Volume 33, 2025, 149-186, ISSN 1312-3815

**Articles (2)**

1. Peycheva, B. (2023). Functional framework of digitalisation in customs control, Annual Almanac "Scientific Research of Doctoral Students" at the D. A. Tsenov Academy of Economics – Svishtov, issue XVI-2023, Book 19, pp. 255-270, ISSN: 1313-6542 2.

2. Peycheva, B. (2024). Digital aspects of the economic function in customs control, Annual Almanac "Scientific Research of Doctoral Students" at the D. A. Tsenov Academy of Economics – Svishtov, issue XVII-2024, Book 20, pp. 184-199, ISSN: 1313-6542

**Report (2)**

1. Peycheva, B. (2023). Digital Perspective of the System Approach and Its Application in Customs Control Activities, Jubilee International Scientific and Practical Conference "Challenges to Finance and Financial Reporting in Conditions of Multiple Crises" – at the D. A. Tsenov Academy of Economics – Svishtov, pp. 516-522, ISBN 978-954-23-2427-0 (online) pp. 516-522, ISBN 978-954-23-2427-0 (online)

2. Peycheva, B. (2025). Consequences of the differences in digitalisation between customs and business, Electronic Journal "Economics and Computer Science", Issue 2, 2025, ISSN 3033-2362, Varna, Bulgaria, pp. 37-41

## VI. REPORT ON THE IMPLEMENTATION OF THE MINIMUM NATIONAL REQUIREMENTS UNDER THE RULES FOR THE APPLICATION OF THE LAW ON THE DEVELOPMENT OF ACADEMIC STAFF IN THE REPUBLIC OF BULGARIA

by doctoral student Boryana Rumenova Peycheva

*for the fulfilment of minimum national requirements for the award of the educational and scientific degree of "doctor" in the field of higher education*
*3. Social, economic and legal sciences,*
*pursuant to Article 2b of the ZRASRB*

### 1. Studies published in non-refereed peer-reviewed journals or published in edited collective volumes

| No | Publication | Number of points for the author |
|---|---|---|
| 1 | Antov, M., Kostova, S., Zhelev, Zh., **Peycheva, B.** & Zheleva, A. (2025). Impact of the new customs reform in the EU on functional and methodological approaches in customs control, *Almanac of Scientific Research, Volume 33, 2025, 149-186, ISSN 1312-3815* | 3 p. |

### 2. Articles published in non-refereed peer-reviewed journals or published in edited collective volumes

| No | Publication | Number of points for the author |
|---|---|---|
| 1. | Peycheva, B. (2023). Functional framework of digitisation in customs control, Annual almanac "Scientific Research of Doctoral Students" at the D. A. Tsenov Academy of Economics – Svishtov, issue XVI-2023, Book 19, pp. 255-270, *ISSN: 1313-6542* | 10 p. |
| 2. | Peycheva, B. (2024). Digital aspects of the economic function in customs control, Annual almanac "Scientific Research of Doctoral Students" at the D. A. Tsenov Academy of Economics – Svishtov, issue XVII-2024, Book 20, pp. 184-199, *ISSN: 1313-6542 10* | 10 p. |

**3. Reports published in non-refereed peer-reviewed journals or published in edited collective volumes**

| No | Publication | Number of points for the author |
|---|---|---|
| 1. | Peycheva, B. (2023). Digital perspective of the systematic approach and its application in customs control activities, Jubilee International Scientific and Practical Conference "Challenges to Finance and Financial Reporting in Conditions of Multiple Crises" - at the D. A. Tsenov Academy of Economics - Svishtov, pp. 516-522, ISBN 978-954-23-2427-0 (online) pp. 516-522, *ISBN 978-954-23-2427-0 (online)* | 10 p. |
| 2. | Peycheva, B. (2025). Consequences of the differences in digitalisation between customs and business, Electronic Journal "Economics and Computer Science", Issue 2, 2025, *ISSN 3033-2362*, Varna, Bulgaria, pp. 37-41 | 10 p. |

## VII. DECLARATION OF ORIGINALITY AND AUTHENTICITY

In connection with the procedure for obtaining an educational and scientific degree "Doctor" in the scientific field: Accounting, Control and Analysis of Economic Activity (Control and Analysis), I declare:

1. The results and contributions in the dissertation on the topic: "Prospects for customs control through the perspective of its digital transformation" are original and have not been borrowed without permission from studies and publications in which the author has not participated.

2. The information presented by the author in the form of copies of documents and publications, personally compiled reports, etc., corresponds to the objective truth.

21 January 2026 Declarant:……...…….

Svishtov (Boryana Peycheva)