Tonina Velichkova Yaneva

DIGITAL TRANSFORMATION OF COMMERCE WITH INSURANCE PRODUCTS IN BULGARIA

A B S T R A C T

of a dissertation paper for the award of the educational and scientific degree "Doctor" in a professional field 3.8 "Economics", doctoral programme "Economics and Management (Commerce)"

Varna

2024

The dissertation consists of 286 pages, of which the main text - 236 pages and appendices - 22 pages. The exposition is structured as follows: introduction - 5 pages, main text (three chapters) - 222 pages, conclusion - 6 pages, list of references - 258 sources (115 in Cyrillic and 143 in Latin). In maintenance of the exposition are presented 40 tables and 39 figures.

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The defence of the dissertation will take place on 26.04.2024. in University of Economics - Varna at a meeting of the Scientific Jury, appointed by Order № RD-06-32/27.02.2024. of the Rector of the University of Economics - Varna. The materials of the defence are available to the parties concerned on the website of the University of Economics - Varna, www.ue-varna.bg.

UNIVERSITY OF ECONOMICS - VARNA
DEPARTMENT OF ECONOMICS AND MANAGEMENT OF COMMERCE AND SERVICES

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CONTENTS

I. GENERAL CHARACTERISTICS OF THE DISSERTATION

1. Relevance of the research topic

Digital change is one of the most important determinants of economic development today. The penetration of the Internet into the sphere of business services and the dynamically changing business environment confront the conservative insurance sector with the opportunities and challenges, arising from the need to adapt to the digital economy. The global pandemic of COVID-19 has accelerated the processes of digitalization in the economy, including in the lagging insurance industry.

The insurance sector is an important element of the market infrastructure of the modern economy and is an activity of broad economic and social importance. The biggest risk, facing the insurance industry at the moment, is the ability to meet the structural and technological changes, associated with the digitalization. It is a mandatory component and determinant for achieving competitive advantages for insurance companies. The importance of insurance increases in the conditions of growing economic uncertainty and the unpredictability of crises (climate, health, political, economic, military, etc.) and their diverse effects.

Digital transformation undoubtedly presents a challenge, but it also opens up new development opportunities. The scientific literature is dominated by studies, devoted to how information technology can be implemented in the activities of insurance companies, the challenges and consequences of the transformation on the value chain in insurance. At the same time, the effect of the implementation of high-tech innovations in the commercial process in insurance and especially their impact on the financial performance of companies is still an under-researched issue. There is a lack of established approaches for analyzing the level of digitalization of insurance companies and the entire insurance market. At this stage, no single criterion has been adopted for determining the degree of digitization of insurance companies. Digitalization of sales in insurance requires large-scale financial investments. Quantitative assessment of the effect and efficiency of the implementation of innovative technologies requires the use of new economic tools, indicators and models for analysis. A customer-centric approach is the basis of the strategy of insurers to achieve and retain leadership positions in a

dynamically changing and uncertain environment. Given this and the specifics of the insurance service, several essential questions that specifically explore the potential of digital innovations to influence customer loyalty remain relatively unexplained.

2. Object and subject of the research

The object of the research in the dissertation is the insurance companies in Bulgaria, that implement high-tech digital innovations in their activities, and the subject is the study of the relationship between the digital transformation of the trade in insurance products and the financial performance of the insurers.

3. Purpose and tasks

The main objective of the dissertation work is to clarify the key aspects of the digital transformation of the insurance products trade and, on this basis, to study its development in the insurance business in Bulgaria, to assess its impact on the indicators of the corporate performance of insurers and to provide guidelines for increasing the effectiveness of the implementation of digital technologies and their sustainability. Achieving the objective thus formulated requires solving the following tasks:

1. Based on a theoretical review of Bulgarian and foreign authors to be revealed the essence of digitalization in the insurance sphere, the need and the factors that determine it and the achievements of the world experience.

2. By conceptualizing the impact of digitalization on the activities of insurance companies and its impact on customer behavior, to propose a model for assessing the achieved level of digital development of insurance companies in Bulgaria.

3. To assess the impact of digitalization on the performance of insurance companies by analyzing a group of indicators available in the publicly available consolidated financial statements of companies in the insurance sector.

4. To construct an appropriate analytical framework and conduct an empirical study of the "satisfaction with digital distribution channels in insurance – customer loyalty" relationship.

5. To identify the problems of digitalization adaptation and digital culture, the opportunities for their solution and to formulate guidelines, applicable to insurance companies in the country, that can assist in increasing their efficiency.

4. Research thesis of the dissertation

The thesis, that the digital transformation is a determinant of sustainable sales development in the modern insurance business and influences the financial performance indicators of the insurance companies, is defended in the dissertation work.

5. Information sources

For the development and derivation of generalizations in the theoretical part are used specialized scientific publications, information sources - research results of leading consulting companies, statistical data of world, European and national organizations, publicly available reporting and analytical information on the international and Bulgarian insurance market, publications and regulatory authority reports, etc. Primary and secondary data is used, and a combination of qualitative and quantitative methods is applied to collect the primary data.

The quantitative empirical study of the assessment of the direct effects of the digital transformation of insurance trading on the financial performance of insurance companies is based on the published consolidated financial statements of the studied organizations.

The study of the indirect impact of digital insurance offerings by inducing customer loyalty, in consequence of better customer experience and satisfaction, on insurers' financial performance is based on two logically related empirical studies.

The first of them is qualitative and it applies the research methodology with unstructured personal interviews. The research was conducted in the period from 05.09.2022 to 05.10.2022 and includes 15 face-to-face and mediated interviews with customers and managers of insurance companies via telephone or a digital platform.

The second empirical study is quantitative and takes the form of a structured survey. The survey was conducted in the period from 21.10.2022 to 22.12.2022. It involved 462 respondents and 10.8% of the respondents purchased insurance online.

6. Research methodology

In examining the content of popular and specialized literature in the field of digital transformation of insurance product marketing and subsequent use to develop the theoretical and methodological foundations of the dissertation, the classic research methods of analysis, synthesis, comparative and critical analysis are applied.

As a result of the review of the methods and methodology used in previous analogous studies and in conformity with the current trends in the insurance sector, a research model, reflecting the degree of digitalization of insurance product sales, is built. Based on the results of qualitative research, with an emphasis on the analysis of published information, principles for the development of an assessment of the degree of digital development achieved in insurance are systematized and qualitative and quantitative measures are defined.

Quantitative studies are applied to analyze the relationship between the level of investment in innovative technologies and the patterns in the development of the economic effect of insurance activity. Correlation and regression models are used to establish the relationship between the implementation of digital technologies in the commercial process and the financial performance of the insurance companies.

The impact of digital sales transformation on the financial performance indicators of insurance companies - gross written premium and profit, are analyzed using a one way (one factor) ANOVA for each of the outcome variables.

The data, collected by the survey method through the development and administration of an online questionnaire in the LimeSurvey platform to study consumer satisfaction and loyalty with the use of digital channels for the purchase of insurance in Bulgaria, is analyzed, using univariate statistical methods. The influence of consumer sociodemographic characteristics on insurance purchase through digital channels is analysed by formulating and testing hypotheses using the nonparametric Mann-Whitney U test for the comparison of two independent samples. Bivariate distributions are used to analyze the relationships between the sociodemographic characteristics of the study participants and online insurance purchase, as well as willingness to purchase digitally in the future. Chi-square analysis is conducted, based on crosstabulations.

The study of the causal relationship "satisfaction with digital distribution channels in insurance - customer loyalty" and the evaluation of the impact of the perceived benefits of using an online channel to purchase insurance on the level of customer loyalty are carried out, using the variance-based partial least squares structural equation modelling (PLS-SEM).

The information obtained, based on the qualitative and quantitative research conducted, is tested using different tools for the reliability and applicability of the results.

The processing of the obtained data is performed, using the specialized licensed software products Excel 365, SPSS 21.0, Gretl and SmartPLS 4. Appropriate tabular and graphical tools and methods are used to present the results of the theoretical and empirical studies.

7. Perceived limitations in the scope of the study

Due to the lack of mandatory public disclosure of reporting data on specific indicators directly reflecting digital investments in insurance companies, some untouched or partially analyzed issues remain outside the scope of the dissertation, which are limitations of the conducted research:

1. Due to the specificity of the defined research problem, a limited number of variables accounting for digitalization in insurance and its effect on insurance activity are used.

2. The analysis focuses on insurance companies in Bulgaria. The five most digitally advanced European companies only serve for a more accurate positioning of the Bulgarian insurers in terms of digital maturity.

3. The obtained estimates and their analytical interpretation, findings and conclusions are valid only for the defined time horizon of the study (the period 2012-2022).

4. The object of research is the impact of digitization on the sales of insurance products to consumers, and the study of its effects on the personnel of insurance companies remains outside the scope of the dissertation. The results of the study on consumer satisfaction with knowledge and use of digital insurance sales should not be generalised beyond the studied population.

8. Approbation

On the topic of the dissertation were published 3 scientific articles and 2 conference papers in specialized scientific journals. Parts of the results of the practical research and proposals from the dissertation have been presented at scientific conferences.

9. Opportunities for future research and application
of the study

The assessment of the digital transformation of the insurance trade and the conclusions drawn are based on economic results, achieved in the period from 2012 to 2022. This circumstance and dynamically developing information technologies create the need for periodic updates in order to timely reveal new trends in the researched area. The dissertation argues that over a long-term time horizon, there is a key potential in investments in information technology to increase customer satisfaction and loyalty and this will have a positive influence on the financial performance of insurance companies. The striving for leadership positions in the insurance sector justifies the need for further research to confirm or reject such a hypothesis. Research can be extended in a territorial aspect, being conducted for different countries and regions, or insurance companies can be differentiated by certain sector-specific and common to all economic units characteristics. The impact of digital innovation on human resources engaged in the insurance sector may also be the subject of future research by the author. The focus on digitization in insurance can be extended to an aspect, related to sustainability and related environmental and social factors.

II. STRUCTURE AND CONTENT OF THE DISSERTATION

The dissertation is 286 pages long and consists of an **introduction**, an outline in **three chapters**, a **conclusion**, a **bibliography** (258 reference sources, incl. Monographs, articles and scientific reports - 131 items and Normative acts, reports, statistical and internet sources - 127 items) and **appendices**. The main text includes 40 tables and 39 graphs.

The content of the dissertation is as follows:

List of abbreviations
Introduction
CHAPTER ONE. Theoretical issues of the digital transformation of commerce with insurance products
1. Essential characteristics of the digital transformation of the commerce with insurance products
1.1. Key theoretical features of the "digital transformation" in insurance

III. SUMMARY OF THE DISSERTATION

Introduction

In the introduction the relevance and importance of the topic of the dissertation is argued. The subject and object of the research are formulated, the scientific goal is

defined, the tasks are systematized, the main research thesis is outlined and the perceived limitations in the scope of the research are marked. The choice of the period of the research, the selection of the main methods and the information sources, that are used, are indicated and justified.

CHAPTER ONE
THEORETICAL ISSUES OF THE DIGITAL TRANSFORMATION OF COMMERCE WITH INSURANCE PRODUCTS

Chapter one of the dissertation has theoretical and methodological character. **The first paragraph** deals with the clarification of the nature and features of the digital transformation of insurance products trading. In the **first sub-paragraph**, according to the level of digital transformation, the main definitions are synthesized and the main used terms are summarized. On this basis is given an author's definition of digital transformation in the context of the research problems: digital transformation of insurance trading activities is a process of business improvement through the implementation of technological innovations in order to improve the customer experience and service complexity, as well as overall company performance.

In the next part of the exposition the factors on which successful digitalization in insurance companies depends are commented. Summarizing the knowledge in this area, they can be reduced to: 1) human factor; 2) technological factor; 3) quality of leadership management; 4) the state and EU membership on the one hand as drivers of innovation in the sector, and on the other hand as creators of the legal framework and regulatory bodies; 5) availability of financial resources; 6) level of insurance culture; 7) the degree of IT literacy, achieved by the society.

The theoretical summary, based on the synthesis and on the author's critical commentary of various scientific publications, allows the following more important conclusions to be formulated:

1. In order to clarify the nature of the digital transformation of the commerce with insurance products, basic definitions have been derived, the most significant of which is the derived formulation of the category "digital transformation", which is

described as: 1) the transition from analogue to digital services; 2) implies strategic use of resources and abilities to improve the financial indicators of organizations; 3) leads to a redefinition of value propositions to customers; 4) change in the way of interaction between the parties concerned; 5) pressing regulatory changes.

2. Global trends of socio-economic development exert a primary influence on the conservative insurance sector in the direction of their gradual adoption or specific adaptation.

3. Digital transformation is an important and mandatory process for the modern insurance business and acquires the characteristics of a tool in the competitive struggle. Digitalisation in insurance is not a matter of choice, but a question of time for partial or full implementation.

4. The skillful implementation and management of digital innovations in organisations should lead to a synergistic effect in customer satisfaction and corporate financial performance of insurance companies.

In the **second sub-paragraph**, after a review and analysis of academic literature and published studies on the insurance sector, the conclusion is reached that the main modern technologies with the greatest potential for application in the insurance business are: big data, artificial intelligence (AI), Internet-of-Things (IoT), cloud computing and distributed ledger technology (DLT), specifically considering blockchain technology.

Summaries are presented in tabular form regarding the benefits and opportunities for each technology, including their specific application in insurance. From the critical analysis of the scientific publications on the subject, three categories of changes, that occur in insurance under the influence of the implementation of new technologies, are identified: (1) the way of interaction between insurers and customers is changing (social media, chatbots, robo-advisors, etc.); (2) automating, standardizing and improving the effectiveness and efficiency of business processes (online sales, remote claiming, claims liquidation); (3) opportunities to modify the existing (telematic insurance) and to develop new products (e.g. cyber insurance).

In the next part of the presentation, the emphasis is placed on an analysis of the importance of access to information in insurance, its correct interpretation and the

mutual dependence with the digital transformation in the context of the commerce with insurance products.

After a discussion on the characteristics and features of the different digital technologies, it is concluded, that the existence of a correlation between technological development and the evolution of the insurance business is a prerequisite for emphasizing that there is a need for a complex digital strategy, based on a precise view of the benefits, opportunities for application and the identification of the specific insurance requirements for each technology. The implementation of digital tools in insurance requires: 1) an integrated approach, due to the strong interdependence of digital technologies; 2) selection of technology according to the specific purpose; 3) revision of the conservative business model and processes in the company.

The theoretical overview allows the following more important conclusions to be drawn, regarding the main technological innovations, applicable in insurance:

1. The expected results of the implementation of new technologies in insurance are: increasing the efficiency of commercial activity by improving and accelerating the commercial process, increasing premium income and reducing costs; improving the customer experience; stimulating proactive behavior in insurance companies by providing solutions related to environmental and social sustainability.

2. Among the leading requirements for the implementation of new technologies are: 1) personnel with specific skills and competences, developed on the basis of regular training, taking into account the dynamic development of innovations, in the field of information technologies, risk assessment and the specifics of the commercial process in insurance; 2) application of innovations in accordance with applicable laws, regulatory documents and control bodies; 3) high security and reliability; 4) the digital transformation in insurance should not cause negative consequences, both for society and environment.

3. The implementation of ICT becomes a powerful tool for transforming customer information into knowledge, which on the one hand increases the consumer value for users of insurance services, and on the other hand, facilitates accurate risk prediction. This reflects positively on both customer satisfaction and business performance of insurers, which supports the main thesis, asserted in the dissertation.

4. As a result of ICT, it is possible to transparently, securely and legally interact with customers through digital channels and provide a new or modified range of customised insurance products.

5. At the same time, along with all the positives, there are significant negatives that hinder the mass implementation of digital capabilities in Bulgarian insurance companies. On the one hand, the reason for this is the conservatism of the sector and the consumers themselves, and on the other hand- the limitations of the legislation, the lack of regulated interpretation and unified standards and policies of application of innovative technologies.

In the **third sub-paragraph**, based on the theoretical foundations, arguments are provided in support of the need to transform the business model in insurance as a key moment in dealing with the challenges of the rapidly changing environment, increasing the competitiveness and efficiency of the activities of insurance companies. Digital business models are classified according to the way of imposing market power into two main areas: 1) constructive business models and 2) expansionist business models. The advantages and disadvantages are analyzed, the main characteristics regarding the innovative potential, key success factors and possible threats to traditional insurers from the main types of Insuretech startups are commented on: 1) digital brokers and platforms for comparison and management of insurance services; 2) "smart" contracts, index insurance and mutual insurance models - innovative products, based on blockchain technologies, an usage-based insurance; 3) start-up companies, whose activity is aimed at optimizing processes and selecting customers through the most modern technologies (robotic process automation, data analytics, artificial intelligence).

As a result of an in-depth analysis of the publications on the subject, it was found that: 1) digital transformation of commerce with insurance products is an evolutionary process of intelligent integration of technological innovations in the commercial and accompanying processes. It has a huge potential to bring the insurance company to corporate leadership in the conditions of a volatile and complex environment, while observing the condition of balance between high social responsibility and maximization of return on invested resources; 2) a successful insurance digital strategy requires leadership management of processes, with an awareness of the importance of the human

factor and an overall vision and analysis of the advantages and disadvantages of applicable digital technologies, taking into account their interdependence; 3) there is a need to derive criteria for positioning insurance companies according to the level of digital maturity, on the basis of which an effective business model can be chosen.

The focus of the **second paragraph** is on revealing the nature and features of trading insurance products in an electronic environment. The main objective is to clarify the key aspects of digital transformation for the optimization and development of sales processes. A theoretical review of the existing definitions of the concepts "insurance product", "insurance service", "innovation strategy in insurance", "digital insurance" are carried out. The main characteristics for products, offered in a digital environment, are asserted. Summarizing the knowledge in the field of e-commerce in insurance, the following trends are identified:

- E-commerce creates opportunities for accelerated development and increased sales of insurance products.

- The electronic sales channels popularize the insurance products by attracting customers from new segments, which affords an opportunity for an increase in market share and gross premium income.

- Process automation leads to cost reduction, increased customer satisfaction and frees up human resources for specific consulting activity on complex products. This ultimately reflects positively on insurers' revenue and profit.

- E-commerce affords an opportunity for the elimination of some links in the distribution chain without reducing the quality of service, which leads to savings on commissions for intermediaries and cost optimization.

- Due to low costs, uniform pricing and the ability to easily switch from one insurer to another, companies should focus on mechanisms and tools to retain customers. Cross-selling and upselling on the one hand, increase the customers' commitment to the insurer of these, which own more than one insurance product and on the other hand, contribute to increasing premium income.

- In order to be up to the strict legal requirements for the insurance business, as well as come up to customers' expectations for a high level of security in the purchase,

payment and processing and storage of personal data, more and more insurers are building partnerships with organizations from other.

An important point that should be noted is that, despite the undeniable advantages of a fully automated distribution chain, multi-channel and omnichannel options are proving to be an attractive option for modern consumers to purchase an insurance.

In the **third paragraph,** metrics are defined and digitalization measurement indicators are synthesized, taking into account the need to derive Digital Key Performance Indicators (DKPIs), whose relevance and use may differ in the different phases of digital transformation. After a review of scientific publications and research on the topic, proposals are made for the selection of indicators and the adaptation of metrics for measuring and analyzing the effect of digitalization on the performance of insurance companies, available in the generally available consolidated financial statements of insurance companies.

Chapter One of the dissertation concludes with a clarification of the methodological features in the assessment of the "digitalization-insurance" relationship with an emphasis on the threats and opportunities that are revealed to insurers under the impact of digital innovations and their penetration in the business. Guided by the multifaceted nature and manifestation of the digital transformation of sales in insurance, as well as the benefits for the parties concerned - the insurance company and the customers, a theoretical causal model, that is applied to solving the research problem, is derived (Fig. 1).
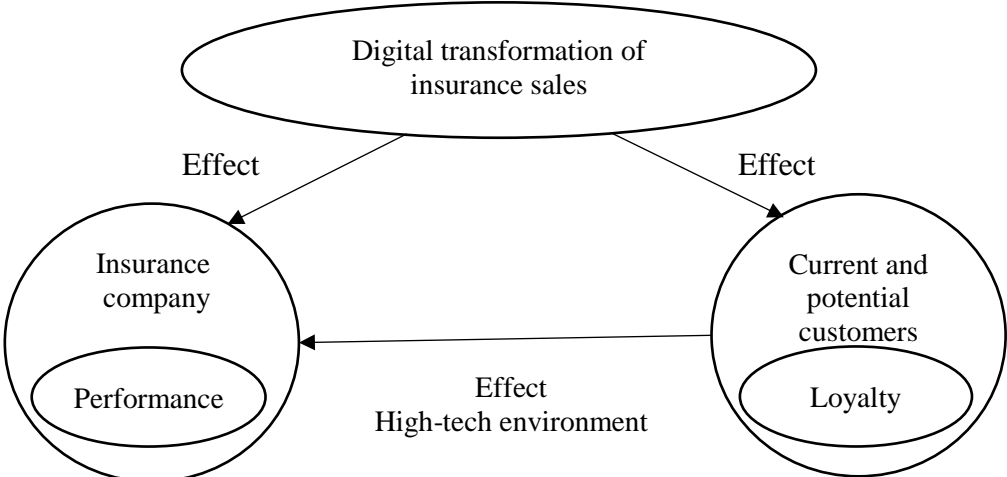
Figure 1. Conceptual research model
Source: Own work of the author.

The application of the author's model adapted to the Bulgarian companies for the study of the digital transformation of the commerce with insurance products goes through the following stages:

1) Assessment and positioning of insurance companies in Bulgaria according to the reached level of digitalization using a specially developed logical framework.

2) Evaluate the impact of digitalization on the performance of insurance companies by applying the methods of descriptive statistics to identify trends and dependencies. A comparative analysis is carried out on the examined criteria and for the digital European insurance market leaders. Application of correlation and regression analyses.

3) Evaluation of customer satisfaction and loyalty from the use of digital channels for insurance purchase in Bulgaria.

4) Systematization and analysis of the obtained results.

5) Identifying key issues in selling insurance in a high-tech environment.

6) Formulation of conclusions and recommendations for improvement of e-commerce with insurance products.

In accordance with the trends, the following set of hypotheses were analyzed in the present study:

H_1: Insurance companies in Bulgaria are increasing their investments in information and communication technologies.

H_2: Insurers in Bulgaria increase spending on software and ICT with higher acquisition costs.

H_3: Insurance companies increase the value of software if there is a growth in insurance sales revenue..

H_4: The rate at which the value of software increases, exceeds the rate of increase in GWP and is greater for insurance companies that are in the early stages of their digital development.

H_5: Acquisition costs are increasing at a slower rate in digitally advanced organizations.

The dissertation continues by examining the emerging trend in the choice of channel for purchasing an insurance product. In the customer centric approach, in

addition to metric indicators for evaluating the effect of the implementation of digital technologies in the sale of insurance products, the requirements and individual perceptions of customers become important.

As a result of the analysis of the theoretical concepts of customer satisfaction, the empirical experience of researchers in the field of the impact of digital marketing channels on customer loyalty in the banking sector and the review of research on this issue specifically in the insurance sector, a methodology for the study of customer satisfaction with digital insurance sales and the effect of digital innovations on loyalty is adapted, which goes through the following stages:

1. Conducting unstructured (in-depth) interviews with managers and clients of insurance companies in Bulgaria in order to specify and formulate the main perceived benefits of online insurance purchases.

2. Formulating a theoretical model based on a literature review and the results from the in-depth interviews (Figure 2).

3. Operationalization of the latent variables in each construct and elaboration of the research questionnaire.

4. Testing the questionnaire.

5. Specifying the questions and sharing the questionnaires on the LimeSurvey platform.

6. Data collection and processing.

7. Model verification, using variance-based partial least squares structural equation modelling (PLS-SEM).

8. Data analysis.
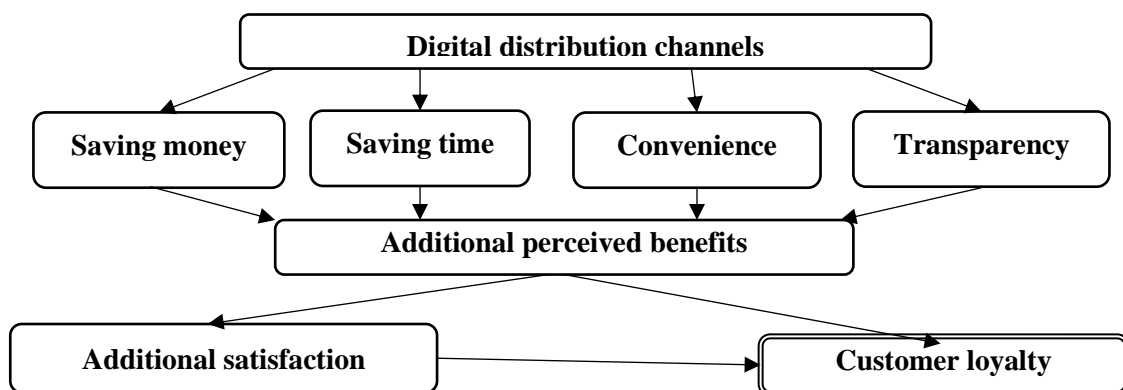
Figure 2. A conceptual model for an empirical study on the impact of digitalization of sales on customer loyalty in the insurance companies

Based on synthesis and generalization of the results, four main benefits of using digital marketing channels (online platforms for buying insurance, mobile applications, insurance company websites) are outlined - time saving, convenience, money saving, security and transparency. On this basis, a theoretical model (Figure 3) has been formulated and the questions in the questionnaire in Section B "Perceived benefits" have been developed. The model is tested using the partial least squares method. Evaluating a theoretical model with the PLS algorithm involves two steps: verification of the validity of the measurement model and valuation of the predictive capabilities of the structural model.
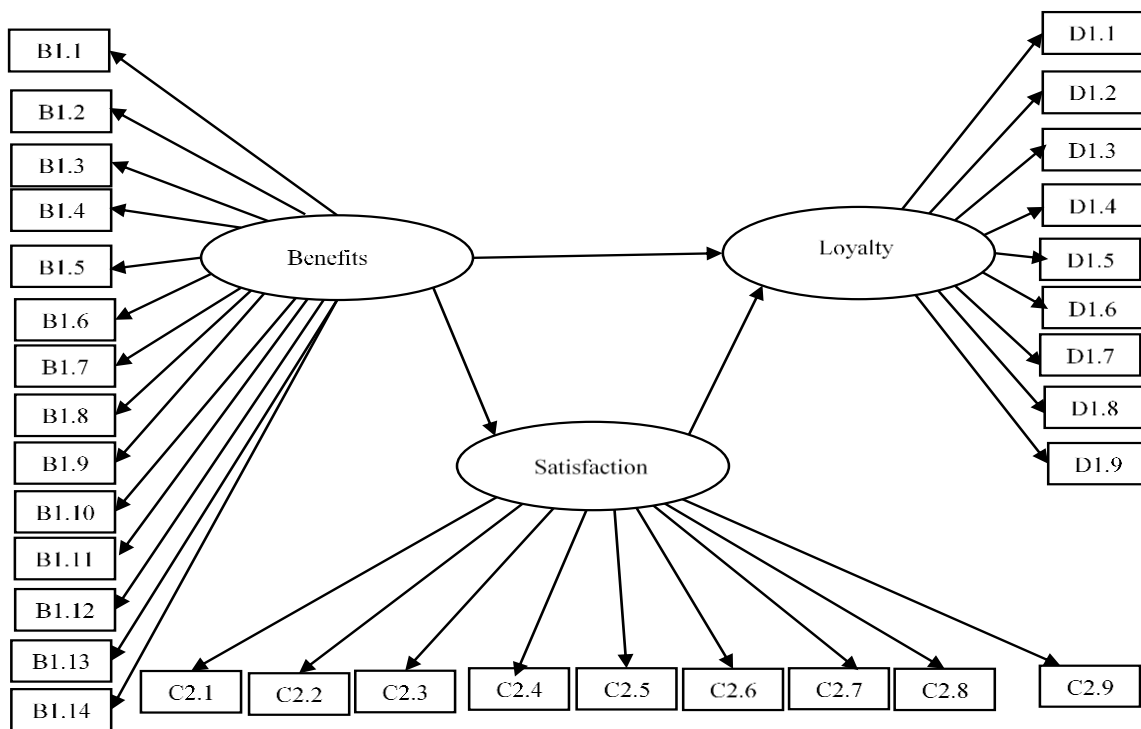
Figure 3. A structural model and measurement models
Source: Own work of the author.

To evaluate the measurement models with used primary data, selected during the period 21.10.2022 - 22.12.2022 by means of a structured questionnaire distributed online, which includes six blocks of questions, incl. general questions, three multi-attribute scales, a sociodemographic block, questions aimed at detection of the main reasons that would lead to the purchase of an insurance product online, as well as identification of main premises that deter consumers from using digital channels for

insurance. Respondents should rate the extent to which each of the selected indicators measures the construct. A five-point Likert-type measuring scale is used, with extreme values: 1 – "completely disagree" and 5 – "fully agree".

In the next part, the presentation continues with an overview of the specifics of measuring latent personality constructs, on the basis of which specific guidelines for choosing an approach for the operationalization of the constructs in the model are derived and adapted to the particularities of insurance. Multiattribute scales have been developed and proposed to measure the constructs "Perceived benefits", "Customer satisfaction", "Customer loyalty".

Based on the review of the specialized literature and the findings described in previous analogous studies, the following research hypotheses were formulated:

H_6: There is a statistically significant difference between those who bought and did not buy insurance online according to different sociodemographic criteria.

H_7: There is a statistically significant difference between those who would and those who would not purchase insurance online according to different sociodemographic criteria.

H_8: The traditional distribution channel is comparatively less preferred by customers compared to the online insurance purchase channel.

H_9: The trend towards an increase in young internet users opens up a target market with high potential for the insurance business, that is suitable for the online channel.

H_{10}: The perceived benefits of online insurance purchasing options have a direct impact on customer loyalty.

H_{11}: The perceived benefits of online insurance purchasing options have an indirect impact on customer loyalty.

H_{12}: Customer satisfaction with digital channels for buying insurance has a direct effect on customer loyalty.

Through the application of the chosen research approach, key areas of current digital change are identified in relation to the insurance trade.

CHAPTER TWO
AN EMPIRICAL STUDY OF THE DIGITAL TRANSFORMATION OF COMMERCE WITH INSURANCE PRODUCTS IN BULGARIA

Chapter two of the dissertation is empirical in nature. In the **first paragraph**, with the help of qualitative research, the analysis of the published secondary information is emphasized from the point of view of the state, features and impact of the digital transformation on insurance sales in Bulgaria. A modified model is developed and applied to determine the level of digitization of the Bulgarian insurance organizations. Through the application of content analysis of information sources and a framework, adapted in the research for the reached level of digital development, Bulgarian insurers are evaluated with an emphasis on insurance through digital channels.

Based on the results obtained within the first paragraph, the following findings are made:

- Only seven organizations receive above the national average score of 8,95 points for digital progress, with a minimum score of 1 point and a maximum of 31 points;

- With the largest market share of the Bulgarian life insurance market in the first year of the COVID-19 pandemic (2019) are precisely three of the companies, distinguished by digital development – "Bulstrad" (30,3%), followed by "DZI" (22,1%) and "Allianz" (18,1%);

- The online environment is used for the purposes of concluding the insurance transaction, but its actual finalization ends after the delivery of certain material media and forms by the insurer to the client, most often through the mediation of a courier or postal operator;

- A distinctive feature of the domestic insurance market is that no insurance company in Bulgaria offers Life Insurance or Investment Insurance for sale via a website or mobile application.

- Currently, the insurance that is offered the most through a digital channel is that for property insurance – 61,5% of insurers in Bulgaria offer this product online,

which actually represents 100% of the organizations from which it is possible to be bought insurance through digital channel;

- "Motor Third Party Liability Insurance" is with the largest share in the gross premium income from the insurances most sold through digital channels in the digital leaders of the Bulgarian insurance market;

- Options for online purchase through an insurer's mobile application are relatively less than through a website and the most sold insurance is "Travel Abroad Assistance";

- Health insurance is the product where customers have the greatest opportunity to prefer the advantages of digital filing and processing of insurance claims over the traditional option with a physical visit to an office (88,9% of insurers in Bulgaria providing online claims filing , with 36,4% of all insurers in Bulgaria offering online filing of claims for this product);

- The online environment is used for the purposes of accompanying customer service and bringing different dimensions of its convenience, but it is far from a full-fledged digital experience, that is related to a complete cycle of sales activity.

Based on the realized overview of key moments and trends regarding digitalization in native insurance, it can be summarized that at this stage insurance companies are in their initial stage of digitalization, such as the possibilities of buying insurance online, the digital claims submission and the additional digital services are not everywhere and on a mass scale widespread, but rather they are a characteristic feature of the digital process of individual participants and in individual segments of the insurance market. General insurance products are easier to be sold and served through digital channels than life insurance products, in terms of easier risk parameterization, as well as the absence of a legal requirement to collect and process sensitive information. The advantages of online insurance distribution and online claims liquidation cannot be realized on a large enough scale at this stage to influence the redistribution of market shares on the Bulgarian insurance market, but are a prerequisite for change in the near future and with the progress of digitalization of the insurance market.

In the **second paragraph**, through quantitative studies, using a variety of statistical methods, the association of the degree of digitalization with the financial

results achieved by insurers is evaluated. The study period covers the years from 2012 to 2022 and resonates with the fact that digital transformation is a fairly recent phenomenon in insurance. The trend of development of a pre-selected group of indicators was studied. The general development of gross premium income, program products and acquisition costs were analyzed, calculating key indicators such as growth rate (baseline with 2012 as base period and chained), growth rate (baseline with 2012 base year and chained), average growth rate, overtaking ratio and average overtaking ratio. Based on the analyzed data, the following more important conclusions are reached:

1. Each of the analyzed companies is characterized by a specific dynamics of development of the studied indicators, which is a product of the long-term market and digitalization strategies of the companies and the adequate response to the socio-economic situation and its challenges (pandemics, slowdown in economic growth, etc.).

2. For those companies (all except Unica) where there is a trend towards an increase in gross premium income and software value, there is also a trend towards an increase in acquisition costs, even so at a slower rate.

3. The growth rate of software value is outpacing the growth rate of gross premium income and acquisition costs, with the exception of one insurer (Unica).

4. The growth rate on average for the researched period of the gross premium income is ahead of the development of the acquisition costs, or is almost the same for both indicators.

5. A significant rate of growth in the value of software has been observed for all analyzed companies since the start of the COVID-19 pandemic in 2019.

In addition, in the **second sub-paragraph**, a comparative analysis using the same criteria is carried out for the top five European insurance companies. Due to a lack of available data for one of the companies, resulting from non-disclosure of software value data for the time period studied, the number of companies is reduced to four. In the course of the analysis the following more important conclusions are reached:

1. The clearest and most pronounced trend of increasing acquisition costs is observed against the background of a decreasing trend of development of the value of software in Allianz SE (Germany). This cannot be said about the Bulgarian company, representative of this concern. The reason for this can be found in the specifics of the

markets in which the companies operate. In the other three European companies, acquisition costs are also increasing, but at a much smoother and slower pace.

2. There is an outpacing rate of development of acquisition costs compared to the rate of development of gross premium income with the exception of one insurance company Assicurazioni Generali SpA (Italy).

3. The rate of development of software value outpaced both the rate of development of gross premium income and acquisition costs, with the exception of Allianz SE (Germany).

The comparative analysis allows to be made some more important findings, regarding the pace of digital transformation in Bulgaria.

1. For the companies with the highest average software values for the period 2012-2022 (DZI and Bulstrad), the most intensive increase in gross premium income is found.

2. The volume of the indicator "software value" develops at a faster and more intense pace in Bulgarian organizations, while in the studied European companies the changes are relatively slower, on the one hand due to a difference in the scale of the activity, and on the other hand due to the attempt to catch up of the digital backwardness of the conservative insurance sector in Bulgaria.

3. Gross written premium is growing faster and at a higher rate in Bulgarian insurance companies.

4. It is expected that, as a result of the accelerated digitization of processes in Bulgarian insurance, acquisition costs will slow down their growth following the example of digitally advanced European insurance companies.

In the **third sub-paragraph,** by conducting a one-factor analysis of variance, the impact of the possibility of selling insurance through a digital channel on the gross written premium and profit of the studied insurance companies is investigated.

According to the results of the analyses applied, the results of testing the formulated hypotheses are synthesized in the following table (Table 1).

Table 1.

Results of hypothesis testing on the impact of the digital sales opportunity on the gross written premium and profit of the studied insurance companies

Effect	ANOVA	Kolmogorov – Smirnov test		Levene's test	Kruskal-Wallis test	Conclusion
	Sig.	*Asymp. Sig. (2-tailed) "yes"*	*Asymp. Sig. (2-tailed) "no"*	*Sig.*	*Sig.*	
Opportunity for digital sales→GWP (2021)	0,165	0,997	0,064	0,546	-	h_0
Opportunity for digital sales→Profit (2021)	0,021	0,336	0,585	0,001	0,009	**h_1**
Opportunity for digital sales→GWP (2022)	0,128	0,819	0,107	0,791	-	h_0
Opportunity for digital sales→Profit (2022)	0,036	0,693	0,330	0,002	0,076	h_0

Note: significance level α=0.05
Source: author's calculations based on Financial Supervision Commission data.

The established results can be interpreted as follows:

1)   Selling through emerging digital channels does not impact insurers' premium income and is contrary to expectations. This can be explained by the fact that digital purchase options are still entering the insurance sector in Bulgaria and are not such a used insurance channel yet to account for an expected effect of a significant impact on gross written premium.

2)   In the conducted research, based on data from the annual financial statements of companies as of 31.12.2021, it is proven that digitalization affects the amount of profit.

3)   When the study is deepened and implemented with data as of 2022, the drawn conclusion, that the possibility of online sales of insurance products affects the amount of profit of insurance companies, is rejected.

4)   The thesis, defended in this dissertation, that digitization of sales affects the financial performance of companies is supported by the results, but at a conditionally higher significance level of α=0.10.

In the next stage of the study, correlation and regression models were applied to establish a relationship between the variables "software value", "gross written premium" and "acquisition costs". Tests were conducted for the reliability and applicability of the results. The correlations between the variables, analysed for the whole insurance sector and separately for the life and general insurance segments, are visualized on a heat map (Figure 4).

Correlation Matrix Insurance Sector 2022

	GWP	Software value	Acquisition costs
GWP	1	0,391*	0,941**
Software value	0,391*	1	0,363*
Acquisition costs	0,941**	0,363*	1

1 / 0,5 / 0

Correlation Matrix Life Insurance 2022

	GWP	Software value	Acquisition costs
GWP	1	0,845**	0,781**
Software value	0,845**	1	0,847**
Acquisition costs	0,781**	0,847**	1

1 / 0,5 / 0

Correlation Matrix Non-Life Insurance 2022

	GWP	Software value	Acquisition costs
GWP	1	0,355	0,979**
Software value	0,355	1	0,354
Acquisition costs	0,979**	0,354	1

1 / 0,5 / 0

Figure 4. Correlation matrices of dependencies between gross written premium, software value and acquisition costs
*Note: statistical significance at: * p<0,05; ** p<0,01*
Source: calculations, based on financial data from the FSC for 2022.

From the analysis of the obtained results it is found that: 1) the weakest correlation at the insurance sector level is between the software value and the gross written premium; 2) the strongest straight correlation between the software value and the acquisition costs is found in the insurance companies in the life insurance segment; 3) the results in the non-life insurance sector show a relatively weaker correlation between the indicators.

The analyzed indicators are also studied in a dynamic direction of research for the period 2012-2022 for the five insurance companies with the highest degree of digital development in Bulgaria. The chained growth rates of the three variables were calculated to remove the trend present in the time series. The presence of trend was checked by calculating autocorrelation function (ACF) and partial autocorrelation

function (PACF) of gross written premium, software value and acquisition costs by insurance companies. Pearson coefficients of correlation are calculated (Table 2).

Table 2

Correlation coefficients between the chain growth rates of the studied variables

Indicators		GWP	Software Value	Acquisition Costs
Bulstrad				
GWP	*Pearson Correlation*	1	0,526	0,318
	Sig. (2-tailed)		0,118	0,37
Software Value	*Pearson Correlation*	0,526	1	0,089
	Sig. (2-tailed)	0,118		0,806
Acquisition Costs	*Pearson Correlation*	0,318	0,089	1
	Sig. (2-tailed)	0,37	0,806	
DZI				
GWP	*Pearson Correlation*	1	-0,024	0,559
	Sig. (2-tailed)		0,948	0,093
Software Value	*Pearson Correlation*	-0,024	1	0,148
	Sig. (2-tailed)	0,948		0,684
Acquisition Costs	*Pearson Correlation*	0,559	0,148	1
	Sig. (2-tailed)	0,093	0,684	
Unica				
GWP	*Pearson Correlation*	1	-0,381	0,165
	Sig. (2-tailed)		0,277	0,648
Software Value	*Pearson Correlation*	-0,381	1	0,305
	Sig. (2-tailed)	0,277		0,392
Acquisition Costs	*Pearson Correlation*	0,165	0,305	1
	Sig. (2-tailed)	0,648	0,392	
Allianz				
GWP	*Pearson Correlation*	1	0,001	0,261
	Sig. (2-tailed)		0,999	0,467
Software Value	*Pearson Correlation*	0,001	1	*-0,649**
	Sig. (2-tailed)	0,999		0,043
Acquisition Costs	*Pearson Correlation*	0,261	*-0,649**	1
	Sig. (2-tailed)	0,467	0,043	
Generali				
GWP	*Pearson Correlation*	1	-0,18	**0,924 ****
	Sig. (2-tailed)		0,618	0
Software Value	*Pearson Correlation*	-0,18	1	-0,158
	Sig. (2-tailed)	0,618		0,663
Acquisition Costs	*Pearson Correlation*	**0,924 ****	-0,158	1
	Sig. (2-tailed)	0	0,663	

*Note: statistical significance at: * $p<0,05$; ** $p<0,01$*
Source: author's calculations based on FSC data for the period 2012-2022.

The presentation continues with a discussion of the obtained results and, contrary to expectations, despite the extension of the time horizon with the disclosed data in the consolidated financial statements of the insurance companies for 2022, no statistically significant correlations are found between the studied variables.

In the **third paragraph** of **chapter two,** the digitalization of sales is also examined in the light of the customer centricity philosophy. A market research study is re-

analysed, which is deployed in quantitative and qualitative aspects of the analysis, preceded by an unstructured interview with insurance experts and a survey conducted in the territory of the city of Varna.

In the **first sub-paragraph,** the main perceived benefits of consumers purchasing insurance through a digital channel are explored and highlighted: time savings, money savings, convenience and transparency.

In the **second sub-section,** the impact of consumers' sociodemographic characteristics on the insurance purchase through digital channels is examined. The participants in the survey are predominantly highly educated professionals (48,3% with higher education), women (58,2%), with a gross monthly income in the range of monthly minimum wage and average monthly wages and salaries in Bulgaria to 30.06.2022 г. (56,5%). The majority of respondents are employed in the private sector 65,4%. The analysis of the results indicates that a larger proportion of those who purchased insurance online are women (64%), as well as the share of women (57,5%), which are inclined to digital insurance is bigger than those of men (42,5%). The highest percentage (60%) of those, who purchased insurance online, have a personal gross monthly income above the national monthly average wages to June 2022 (1 710 BGN), whereas the highest percentage from those, who have never bought until now, but intend to do it, have gross monthly income within the borders of the interval of 710 BGN (the minimum wage) and 1 710 BGN, or 49,7%. In accordance with the educational level, 64% from those, who have bought insurance online, are with university education, as well as the highest percentage (57,6%) is for higher educated respondents, who would like to buy in the future. According to the marital status, the married respondents prevail over those, who are not married, as for those, who already have bought digital insurance (78% are married, as 48% are in a civic marriage, and 30% cohabiting), as well as for those, who would like to buy henceforth (44% are in a civil marriage and 25,1% cohabiting contrasted with 23% never married).

The analysis of the impact of sociodemographic characteristics on the purchase or refusal to purchase of insurance through a digital channel by the respondents, based on the results of the Mann-Whitney U test, shows that despite the weak magnitude of the effect of difference, respondents who bought insurance online, differed from those

who did not buy, by education and personal gross monthly income. It turned out that for the population studied, gender is not a factor in online insurance purchase.

On the basis of the obtained results of the study on the impact of sociodemographic characteristics on respondents' willingness to purchase insurance through a digital channel, it can be concluded that respondents, who have not purchased insurance online, but are willing to do so, differ from those, who would not, in age, education (mean or typical effect size of difference), and personal gross monthly income. According to the results, age, education, and income appear to be factors among survey respondents, influencing the willingness to purchase insurance in the future through a digital channel.

The paragraph goes on to analyse the relationships between the sociodemographic characteristics of survey participants and the online insurance purchase, as well as the willingness to purchase digitally in the future, using bivariate distributions. Based on cross-tabulations, Chi-square analysis was conducted and the following results were obtained (Table 3):

Table 3

The results of testing the hypotheses for the presence of a statistically significant relationship between sociodemographic characteristics and online insurance purchasing

Tested hypothesis	Coefficient	Significance level	Result
(H1): There is a statistically significant relationship between gender and online insurance purchase.	Pearson Chi-Square	0,1905	h0
(H2): There is a statistically significant relationship between age and online insurance purchase.	Pearson Chi-Square	0,306	h0
(H3): There is a statistically significant relationship between education and online insurance purchase.	Pearson Chi-Square	0,000	**h1**
	Cramer's V=0.239	0,000	
(H4): There is a statistically significant relationship between family status and online insurance purchase.	Pearson Chi-Square	0,272	h0
(H5): There is a statistically significant relationship between occupation and online insurance purchase.	Pearson Chi-Square	0,327	h0
(H6): There is a statistically significant relationship between personal gross monthly income and online insurance purchase.	Pearson Chi-Square	0,000	**h1**
	Cramer's V=0.228	0,000	

Source: author's survey data, processed by SPSS 21.0.
Note: h0 - null hypothesis, h1 - alternative hypothesis

Based on the established quantitative assessments, the following conclusions have been drawn:

- Gender is not a factor in the inclination towards online insurance purchasing. Each individual, regardless of the gender identity, forms a preference for using this modern commercial channel in a similar manner.

- The respondents' age and marital status do not appear to be determining factors in the clients' decision to take advantage of the alternative digital insurance purchasing channel.

- A weak correlation is observed between education and online insurance purchases.

- There is no statistically significant relationship between the occupation of the participants in the study and online insurance purchases.

- Online insurance purchases can be influenced by the incomes of the customers, as individuals with higher personal incomes have taken advantage of the opportunity for digital insurance purchases more than those with a personal gross monthly income below the minimum wage.

Similarly, the relationship between the sociodemographic characteristics of the surveyed individuals and their willingness for future insurance purchases through an alternative digital channel was examined. The synthesized results are presented in a tabular form as follows (Table 4):

Table 4

Results from testing the hypothesis of dependency using the Chi-Square test between sociodemographic characteristics and the "willingness for online insurance purchase" variable

Indicator	Gender	Age	Education	Marital status	Occupation	Personal gross monthly income
Pearson Chi-Square	0,051	35,777	64,288	31,048	19,789	17,530
Asymp. Sig. (2-sided)	0,822	0,000	0,000	0,000	0,003	0,000
Conditions of application	0 cells (0.0%) have expected count less than 5. The minimum expected count is 81.13.	0 cells (0,0%) have expected count less than 5. The minimum expected count is 12,05.	3 cells (25,0%) have expected count less than 5. The minimum expected count is 1,85.	0 cells (0,0%) have expected count less than 5. The minimum expected count is 7,45.	2 cells (14,3%) have expected count less than 5. The minimum expected count is 1,40.	0 cells (0,0%) have expected count less than 5. The minimum expected count is 25,48
Hypothesis	h0	**h1**	**h1***	**h1**	**h1**	**h1**
Cramer's V	0,11	**0,295**	**0,395**	**0,275**	0,220	0,207
Approx. Sig	0,822	0,000	0,000	0,000	0,003	0,000

Source: author's survey data, processed, by SPSS 21.0

Based on the obtained results, the following more important conclusions can be drawn:

• There is no statistically significant relationship between the two variables "gender" and "willingness for online insurance purchase".

• A statistically significant relationship is observed between the remaining five variables individually ("age", "education", "marital status", "occupation" and "personal gross monthly income") and "willingness for online insurance purchase".

• Young consumers are much more inclined to start purchasing insurance through the alternative digital channel. Given the increasing share of young internet users, it can be concluded that there is a new market with high potential for insurance companies in Bulgaria.

• The highly qualified participants are the most willing to take advantage of online insurance purchases (71,4% with second higher education and 57,6% with higher education from the participants that have never bought online insurance and have these educational levels).

• Families could be a potential segment to which insurers could target digitally offered products.

• There is a big potential for online insurance and across the solvent population with incomes above the average in Bulgaria. They represent nearly 2/3 of the surveyed individuals with a positive attitude towards digital sales.

The second section of the **third paragraph** concludes by focusing and drawing attention to sociodemographic characteristics, that may have a key influence on the decision and formation of customers' desire for a wider use of online insurance in the future. The main reasons why the traditional channel of selling insurance products (physical) is still preferred are highlighted. The product lines for insurers to focus on are systematized, orienting the offering of specific insurances mainly through digital distribution channels in the short - term time horizon in order to achieve higher profitability.

Chapter Two concludes with an assessment of the impact of digital transformation in the sale of insurance products on consumer satisfaction and loyalty. Key factors to maximize the impact of digital innovation for all stakeholders are clarified. The presentation presents a study of the relationship "satisfaction with digital distribution channels in insurance - consumer loyalty" and the impact of the perceived benefits of using an online channel for buying insurance on the level of customer loyalty. Initially, a direct effect model was tested. The choice to apply the partial least squares structural equation modeling (PLS-SEM) is justified. The empirical validity of the conceptual model of the impact of digitalization of sales on customer loyalty of insurance companies is tested (Fig. 3). A sequential PLS algorithm was used and the correlation of the indicators for each latent construct was estimated. The reliability of the multiattribute scales was checked by deriving Cronbach's alpha coefficient values. A bootstrapping procedure was applied to derive the empirical t-test values and significance levels. The estimated measurement model is presented in Fig. 5.
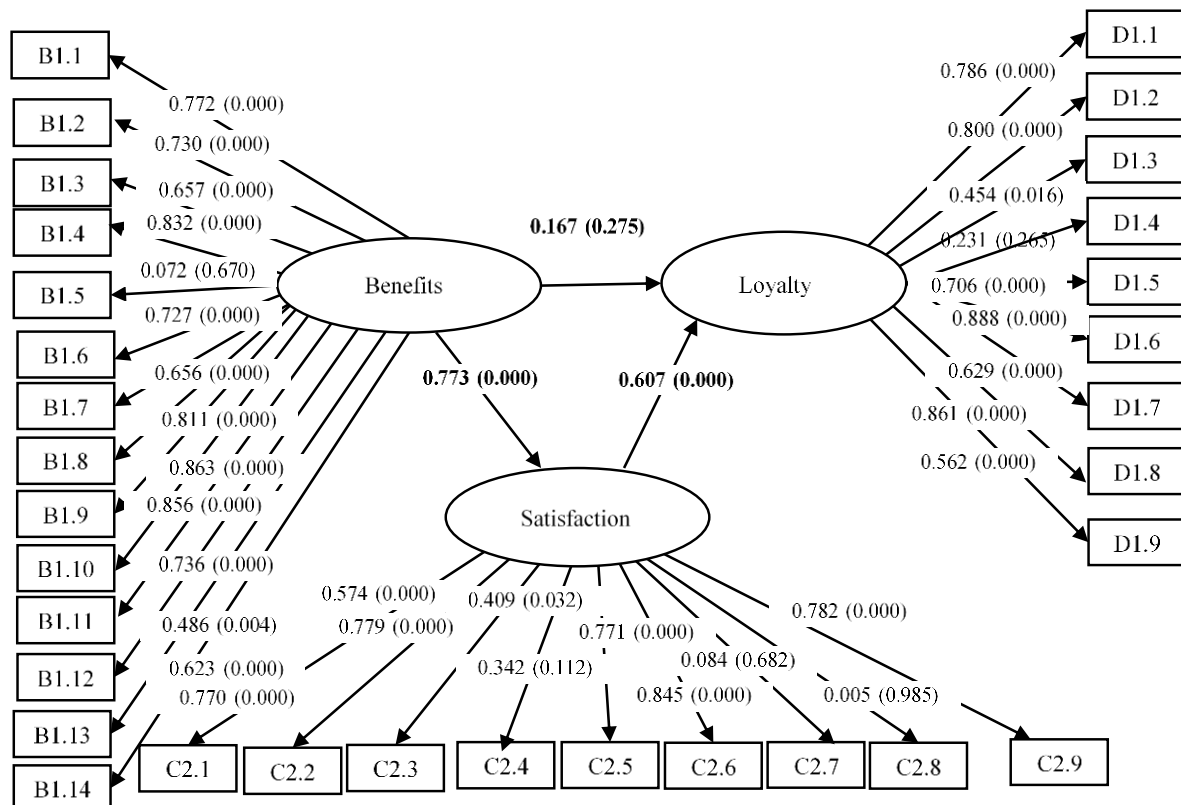
Figure 5. An estimated partial least squares model
Source: Data from the author's survey, processed by a software product SmartPLS 4.

After the initial model testing, the results of the applied analyses indicated the need to respecify the measurement models and modify the structural model by excluding indicator variables from the measurement models of the constructs and removing established statistically insignificant relationships. The estimated modified model is illustrated in Fig. 6.
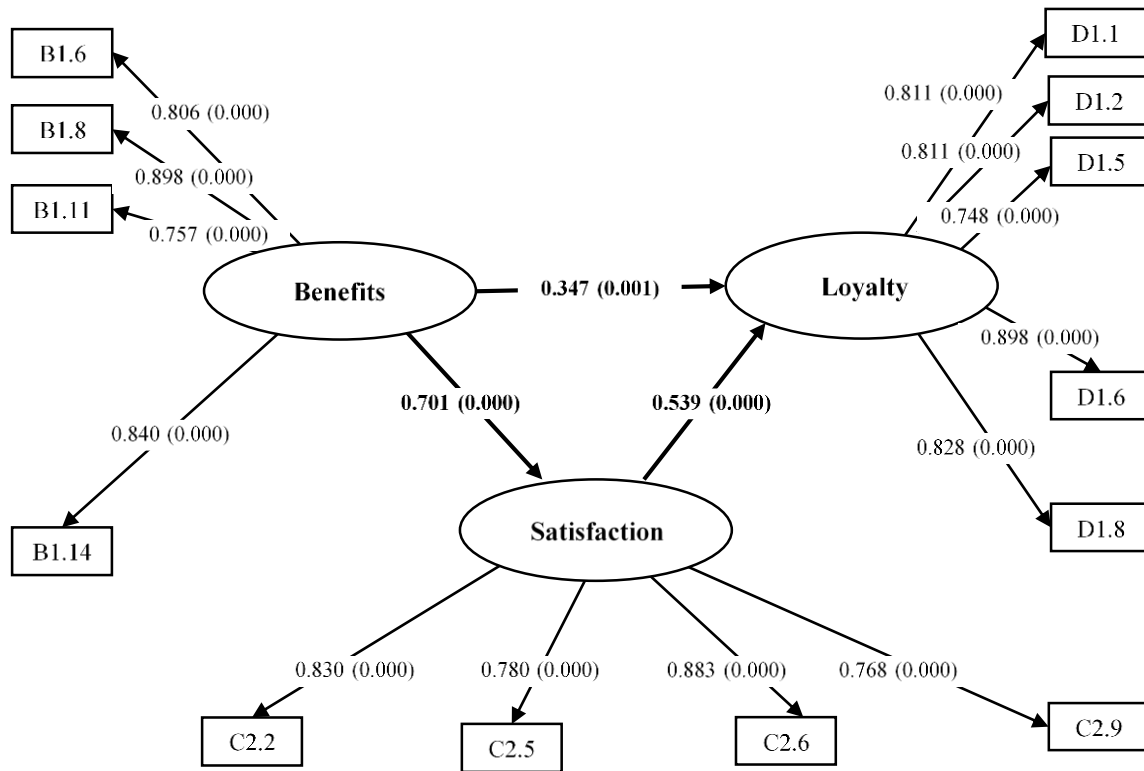
Figure 6. An estimated modified theoretical model of customer satisfaction and loyalty from online insurance purchase
Source: Data from the author's survey, processed by a software product SmartPLS 4.

The current model cannot be considered complete in terms of forming loyalty or satisfaction despite the good predictive ability found. The purpose of the present study is to analyze the relationship and to establish the existence of an effect of the perceived benefits of the online insurance purchase on the customer loyalty of insurance companies in Bulgaria, that have started digitalization of sales processes. The estimates of the direct and indirect effects of perceived benefits on loyalty at the respective significance level are presented in Table 5.

Table 5.
Direct and indirect effects in the model of customer satisfaction and loyalty from online insurance purchase

Fixed effect	Original sample (O)	Mediam (M)	Standard deviation (STDEV)	t-statistics (O/STDEV)	Significance level
Benefits -> Loyalty *(indirect effect)*	0,378	0,378	0,08	4,723	0,000
Benefits -> Loyalty *(direct effect)*	0,725	0,727	0,069	10,554	0,000
Benefits -> Satisfaction *(direct effect)*	0,701	0,703	0,096	7,343	0,000
Satisfaction -> Loyalty *(direct effect)*	0,539	0,543	0,108	4,983	0,000

Source: Author's calculations by means of SmartPLS 4.

On the grounds of the results of all applied analyses can be systematized the following key findings and conclusions:

• Statistical significance is observed in both the coefficients reflecting the direct influence of perceived benefits and those reflecting the indirect influence coefficients.

• The highest absolute value is observed in the influence of perceived benefits from purchasing insurance through digital channels on satisfaction with online purchases.

• Increasing the perceived benefits provided to users of digital insurance products leads to an increase in loyalty towards the insurance company.

• The impact of satisfaction with online purchases on loyalty is stronger than the direct influence of the perceived benefits from users.

• The more benefits customers believe that perceive from purchasing insurance through digital channels in terms of convenience and time saving, within the context of service speed and access to information, the more satisfied they will be with their experience using insurance products.

• Digital capabilities in insurance contribute to attracting and retaining customers, which is expected to lead to increased premium revenue and improved financial performance of the company.

• The seamless integration of insurance products in an omnichannel approach, along with a high-quality and optimal user experience, is much better perceived by customers, compared to a multichannel approach.

CHAPTER THREE
PROBLEMS AND GUIDELINES FOR IMPROVING E-COMMERCE IN INSURANCE PRODUCTS

In the **third chapter** problems, accompanying the commercial process with insurance products in a digital environment are examined and options for improving the implementation of insurance sales on the Internet in Bulgaria are proposed. As a result of the conducted study of the digital progress of insurance companies and the analysis of the data from the survey, the conclusion is reached, that the difficulties, facing the effective digital transformation of the insurance products trade in Bulgaria, are mainly caused by: 1) the strict regulatory and normative legal requirements for insurance; 2) the condition for maximum protection of the interests of the participating parties; 3) the dynamically developing technologies and the related new dimensions of customer relationships; 4) the rapidly changing consumer expectations and ever-higher demands. The identified areas for efficiency improvement, as well as the formulated guidelines and recommendations, based on the theoretical and empirical research, are synthesized and presented in an algorithm for influencing the effectiveness of the digital transformation of the insurance products trade in Bulgaria (Fig. 7).

Impact on the efficiency of digital transformation of insurance trading in Bulgaria

Improving the insurance product tendering process in a digital environment

Regulatory optimizations

- Visually appealing and online accessible key information document (KID;
- Using KID as an interactive tool;
- Regulation of online access to electronic health records and the application of digital documents in the Life insurance;
- AI&Blockchain sandboxes.

Ecosystem partnerships

Implementing principles of sustainable insurance

- Reducing your own environmental footprint;
- Exclusion Policy;
- "Green" insurance products;
- Quick access to insurance;
- Inclusion of vulnerable groups.

Building a satisfying customer experience

Increasing customer satisfaction

- Attractive website with responsive design;
- Advertising and communication sales campaigns on social networks;
- Expansion of the assortment;
- CRM.

Building consumer trust

- Raising awareness;
- Assisted digital sales;
- Enhancing payment security and reliable data storage;
- Increase engagement through the use of intelligent virtual assistants;
- Personalization of offers;
- Improvement of the complaints and grievance system.

Improving e-commerce of insurance products in Bulgaria

Impact on the insurance company

- Increasing market share;
- Growth in gross written premium;
- Reduction of acquisition costs;
- Profit maximization.

Perceived benefits → Satisfaction

Impact on customer loyalty

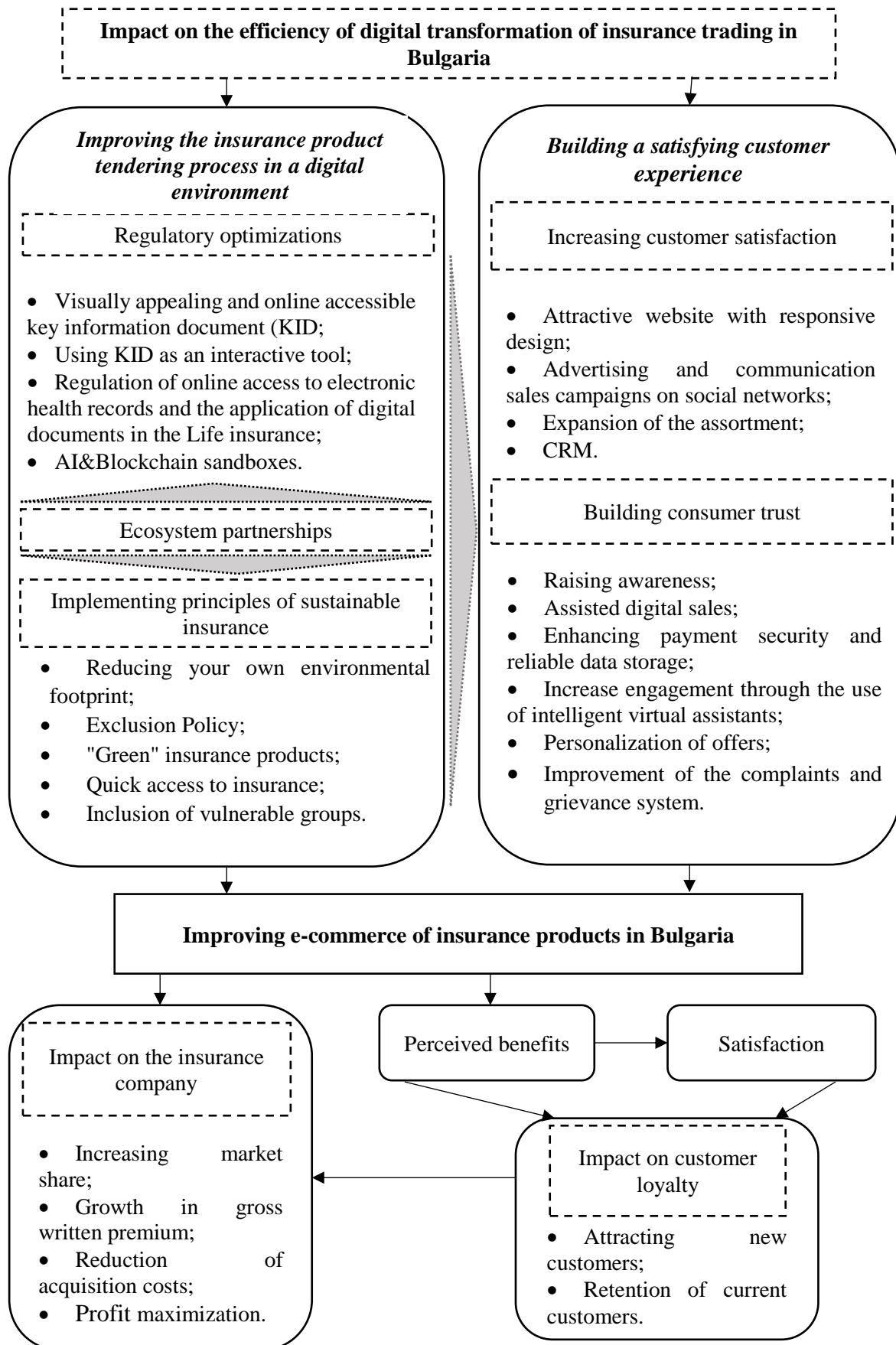- Attracting new customers;
- Retention of current customers.

Figure 7. An algorithm for influencing the effects of digital transformation on the insurance trade

The **first section** of the **first paragraph** the challenges, related to the implementation of the digital transformation of the trade in insurance products, are analyzed, in accordance with the regulatory requirements. The following are highlighted as the main problems in this context: 1) GDPR regulations and, more precisely, the personal data protection from illegal use in the online and offline environment; 2) the requirements of Know your customer (KYC), Anti-money laundering (AML) and Regulation (EU) 910/2014 on electronic identification and trust services for electronic transactions in the internal market and the limited possibilities for remote and lawful identification; 3) the specific legal requirements regarding the disclosure and delivery to customers of a key information document (KID) for the life insurance with saving component and investment life insurance products offered; 4) the lack of regulation allowing and regulating the online access to the electronic health record of insureds in the risk assessment, for the purpose of insurance policy conclusion; 5) the lack of precise regulation of the statement of a clear affirmative act in an online environment, expressing the unambiguous indication by the insured on the issues in the personal health declaration; 6) the lack of clear standards and rules for the application of artificial intelligence and blockchain technologies in insurance. When formulating specific recommendations for improvement, the starting point is the idea of achieving consistency with the goals of overall consumer protection, financial stability and sound prudential regulation.

The **second section** of the **first paragraph**, the role of digitalization in achieving the principles of sustainable insurance and the main problems, related to the environmental and social responsibility of insurance organizations, are analyzed. Innovative digital approaches to reduce the environmental footprint of insurance companies are discussed. Opportunities to positively influence and stimulate society towards responsible behavior through innovative digital insurance solutions are explored.

In the **second paragraph** of **chapter three**, based on the analysis of the results, obtained from the survey, conducted in the dissertation, areas for improvement in the field of customer service and insurance experience are identified. Specific proposals have been made to improve the commercial process in a digital environment, related to

the need to increase the awareness and commitment of the insured in a digital environment, the confidentiality and storage of personal data and the processing of sensitive information in an online environment. Through the assisted insurance model, it is possible to identify specific problems in online sales in a real environment, gradually involving customers in the digitalization process. A sense of empathy can mitigate any dissatisfaction with initial possible imperfections and not reduce brand loyalty. Ideas are advocated to increase confidence in the security of online payments through advertising, video presentation of the digital purchase process, providing information on making online payments and advice on fraud prevention. An opportunity to guarantee a high level of security in the remote identification of insured persons is the establishment of partner relationships with providers of authentication services, based on innovative cloud technologies. Given the large share of the emotional component in insurance, the integration of a digital channel and the human factor increases trust and supports the initial sale of more specific and expensive products. Untapped potential for stronger customer engagement with the insurance company is revealed in the implementation and effective use of CRM systems and intelligent virtual assistants for fast service, cross-selling and providing personalized solutions. Last but not least in terms of importance, guidelines have been formulated for optimizing the systems and the process of processing complaints and claims. In the future, it is recommended to explore opportunities to implement artificial intelligence in order to improve the customer experience through models for effective automated resolution and prevention of complaints.

The third paragraph of **chapter three** focuses on innovative, sustainable and responsible development, in accordance with the global goals for a better and ecological future for the benefit of society and the requirement for a clear and transparent vision, as well as an overall strategy for the future development of insurance companies. The main challenges for high-tech insurance are reduced to:

- Development of mechanisms for evaluating the effect of the application of digital technologies on the overall performance of the insurance company, including on customer satisfaction;

- Identification of new risks and opportunities resulting from digitization;

- Active role of insurers in managing social and environmental risks;

- Participation in strategic partnerships to achieve digital excellence and distinctiveness, combined with initiatives integrating the concept of corporate social responsibility;

- "Humanization" of the digital experience.

Collaboration of insurance organisations with educational and scientific institutions is recommended. The developed indicators for reporting the effect of implementing innovations in insurance should reflect the impact of new processes and products on the environment, as well as customer satisfaction and loyalty. Indicators that take into account digitization in insurance and the implementation of the principles laid down in the EU's climate change policy have been adapted and systematized.

Effective risk management and accurate identification and use of opportunities, arising from the digital transformation of insurance processes, are key components that must be integrated into long-term development strategies to achieve sustainable and profitable growth. Here, special attention is paid to the key role of the senior management of the insurance company and the actuarial department. A framework for identifying, measuring, analyzing, reporting and tracking risk, in accordance with legal and regulatory requirements, is proposed to integrate the impact of specific factors, such as: 1) regulatory changes (GDPR, AML, etc.); 2) the digitization of business processes and the related cyber risks; 3) the risks, associated with climate change.

Emphasis is placed on the need to borrow good practices from the Bulgarian insurance companies from the foreign parent companies, both in terms of digitalization experience and in relation to the optimization of strategies for corporate sustainability.

Possible ecosystem collaborations are discussed in three main areas: 1) achieving a competitive advantage in terms of market share; 2) overcoming the challenges of digitization of processes; 3) eco-innovative collaborations.

The highly regulated insurance sector and the high expectations of modern consumers of insurance products put the requirement to "humanize" the digital experience. In this regard, the future efforts of insurers should be directed to developing their own policies in the implementation of artificial intelligence and blockchain technologies. The increasingly topical topic of environmental protection outlines

"green" insurance products as a future prospect for insurance companies, both in terms of insuring "green" objects and from the point of view of innovative products, stimulating responsible and environmentally friendly behavior among consumers. Socially responsible investment insurance is expected to have a wide social significance in the future. The insurers should strengthen their efforts to increase the accessibility of health insurance, stimulate the insured to activities, related to a healthy lifestyle, and focus on the prevention and overcoming of social exclusion of vulnerable groups of clients.

Conclusion

In the conclusion, an overview of the achieved results of the theoretical and empirical study of the effect of the digital transformation of the trade in insurance products on the financial performance of insurance companies and the impact on customer satisfaction and loyalty is made.

The implementation of innovative technologies in the commercial process, based on knowledge and the right management approach, has a huge potential in the long term to improve the indicators of the insurance activity reported in the consolidated financial statements.

In accordance with the results of the analysis of the relationship "satisfaction with digital distribution channels in insurance - consumer loyalty", the conclusion is reached that insurance companies in Bulgaria should focus their strategies for digital transformation of the commercial process in the direction of providing additional perceived benefits from digital insurance.

Through the generalizations and conclusions drawn, the idea is built that the digital transformation of the insurance trade is a long-term strategic process through which insurance organizations stimulate environmentally responsible behavior on the part of their customers and contribute to a better future and prosperity for all stakeholders.

IV. REFERENCE FOR CONTRIBUTIONS IN THE DISSERTATION

As a result of all the research carried out in the dissertation, the following theoretical and practical contributions can be highlighted:

1.   Based on a literature study and systematization of the concepts of the essence of digital transformation, its substantive characteristics are clarified, with an emphasis on the advantages and challenges to the trade in insurance products, on the basis of which an author's definition of the category "digital transformation" is derived in the insurance.

2.   A conceptual research model has been developed and argued for the analysis of the direct effect of the digital transformation of the trade in insurance products on the financial performance of insurers, as well as the indirect influence expressed through customer loyalty.

3.   Indicators have been systematized, with the help of which the progress in the digital transformation of commercial activities in insurance can be studied, a comparison has been made with the leading European insurers and a modified framework has been constructed for assessing the degree of digitization reached in the insurance companies in Bulgaria.

4.   An empirical market study was conducted and, with the help of the collected primary information, the impact of the digital transformation of the trade in insurance products in Bulgaria on customer satisfaction and loyalty was assessed.

5.   On the basis of highlighted main problems in the implementation of the commercial process with insurance products in a digital environment, specific recommendations of a practical and applied nature have been formulated for its improvement, in accordance with the principles of sustainable business development and modern insurance, in the dimensions related to the construction of consumer trust in digital insurance and providing a satisfying customer experience.

V.   PUBLICATIONS ON THE DISSERTATION TOPIC

1.   Yaneva, T. (2021). Digital Transformation of Insurance Sector. *Izvestia Journal of the Union of Scientists - Varna Economic Sciences Series,* 10(1), pp. 97-104. **(scientific article)**

2.   Yaneva, T. (2021). Digital transformation of health insurance in the context of personal data protection. *Round table "Protection of the personal data and the digitalization - challenges and perspectives", 1 October 2021,* Varna, Science and Economics University of Economics - Varna, pp. 180-189. **(conference paper)**

3.   Yaneva, T. (2022). Research of the Digital Transformation in Bulgarian Insurance Companies. *Izvestia Journal of the Union of Scientists - Varna Economic Sciences Series*, 11(2), pp. 205-214. **(scientific article)**

4.   Yaneva, T. (2023). Improving Customer Experience – Digitalization and/or Humanization of Insurance Products Trade. *Commerce 5.0 - digitalization and/or humanization : International Scientific Conference dedicated to 70 years since the establishment of the „Economics and Management of Commerce and Services" Department (1953-2023) and 75 years since the beginning of studies in the „Economics and Commerce" programme (1948-2023), 13 October 2023*, Varna, Science and Economics University of Economics - Varna, pp. 341-348. **(conference paper)**

5.   Yaneva, T. (2023). Research on customer satisfaction and loyalty from the use of digital channels for purchasing insurance products in Bulgaria. *Izvestia Journal of the Union of Scientists - Varna,* 12(1), pp. 262-273. **(scientific article)**