

# **MODELS OF MODERN INFORMATION ECONOMY**

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# MODELS OF MODERN INFORMATION ECONOMY: CONCEPTUAL CONTRADICTIONS AND PRACTICAL EXAMPLES

EDITED BY

**ALEXANDER P. SUKHODOLOV**

*Baikal State University, Irkutsk, Russian Federation*

**ELENA G. POPKOVA**

*Volgograd State Technical University, Volgograd,  
Russian Federation*

**TATIANA N. LITVINOVA**

*Volgograd State Agrarian University, Volgograd,  
Russian Federation*



United Kingdom – North America – Japan – India – Malaysia – China

Emerald Publishing Limited  
Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2018

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**British Library Cataloguing in Publication Data**

A catalogue record for this book is available from the British Library

ISBN: 978-1-78756-288-2 (Print)

ISBN: 978-1-78756-287-5 (Online)

ISBN: 978-1-78756-289-9 (Epub)



ISOQAR certified  
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Environmental  
standard  
ISO 14001:2004.

Certificate Number 1985  
ISO 14001



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# Contents

List of Contributors *xi*

**Introduction** *1*

## **PART I: THEORETICAL MODEL OF MODERN INFORMATION ECONOMY**

### **Chapter 1 The Notion and Essence of Information Economy**

*Alexander P. Sukhodolov, Elena G. Popkova and Tatiana N. Litvinova 7*

### **Chapter 2 Basic Characteristics of Information Economy**

*Alexander P. Sukhodolov, Elena G. Popkova and Tatiana N. Litvinova 17*

### **Chapter 3 Basic Characteristics of Information Economy: Theoretical Features and Analytical Aspects**

*Karina V. Kuznetsova, Elena N. Klochkova, Tatiana L. Lukyanchikova  
and Mikhail S. Shmarkov 25*

### **Chapter 4 Stages of Information Economy's Formation**

*Alexander P. Sukhodolov and Elena G. Popkova 37*

## **PART II: PRACTICAL EXPERIENCE OF FORMATION OF INFORMATION ECONOMY'S MODEL**

### **Chapter 5 Information Economy in Asian Countries**

*Alexander P. Sukhodolov and Elena G. Popkova 47*

### **Chapter 6 The European Experience of Information Economy's Formation**

*Aleksei V. Bogoviz, Olga A. Mishchenko, Svetlana G. Bychkova,  
Marina V. Bogdanova and Elena N. Kolomoets 57*

### **Chapter 7 The American Practice of Implementing the Model of Information Economy**

*Aleksei V. Bogoviz, Tatiana V. Skryl, Irina S. Ferova,  
Anna A. Burdina and Aigul Sultanguzhiyeva 67*

### PART III: PECULIARITIES OF INFORMATION ECONOMY IN MODERN RUSSIA

#### **Chapter 8 The Basic Preconditions of Information Economy's Formation in Modern Russia**

*Larisa A. Ilyina, Lilia V. Ermolina, Anton N. Sunteev and  
Lyudmila D. Orlova* 81

#### **Chapter 9 Barriers on the Path of Information Economy's Formation in Modern Russia**

*Zhanna V. Gornostaeva, Ekaterina S. Alekhina, Inna V. Kushnareva,  
Olga Y. Malinina and Sergey L. Vasenev* 89

#### **Chapter 10 Implementation of CALS Systems as a Condition of Information Economy's Formation in the Russian Production Practice**

*Viktor P. Kuznetsov, Ekaterina P. Garina,  
Natalia S. Andryashina and Elena V. Romanovskaya* 99

#### **Chapter 11 Stages of Development of Information Economy in Modern Russia**

*Aleksei V. Bogoviz, Vladimir S. Osipov, Aleksei G. Zeldner,  
Nadezhda K. Rozhkova and Olga V. Titova* 115

### PART IV: LOGICAL DISPARITIES OF THE MODEL OF INFORMATION ECONOMY

#### **Chapter 12 Unreadiness of Society for Information Economy's Formation**

*Aleksei V. Bogoviz, Vladimir S. Osipov, Olga A. Ageeva, Elena V.  
Kletskova and Ludmila V. Makuschenko* 125

#### **Chapter 13 Entrepreneurship's Potential in Economy's Informatization**

*Zhanna V. Gornostaeva* 137

#### **Chapter 14 Institutional Contradictions of Information Economy**

*Larisa A. Ilyina, Yuliya A. Panteleeva, Dmitriy L. Skipin and  
Alexandra N. Bystrova* 147

**PART V: RECOMMENDATIONS FOR OPTIMIZATION OF  
THE MODEL OF INFORMATION ECONOMY**

<b>Chapter 15 Mechanism of Optimization of the Model of Information Economy</b>	
<i>Tatyana E. Kozhanova, Irina A. Tarasova, Nataliya V. Asanova and Natalia A. Shchukina</i>	157
<b>Chapter 16 New Balance in the Model of Information Economy</b>	
<i>Yulia I. Dubova</i>	171
<b>Chapter 17 Perspective Model of Well-balanced Information Economy</b>	
<i>Larisa A. Ilyina, Oksana Y. Eremicheva and Tatyana N. Kochetova</i>	183

**PART VI: THE KEY CHARACTERISTICS OF THE  
OPTIMIZATION MODEL OF WELL-BALANCED  
INFORMATION ECONOMY**

<b>Chapter 18 The Principles of Implementation of Innovational Model of Well-balanced Information Economy</b>	
<i>Valentina N. Parakhina, Olga Boris, Pavel Timoshenko and Svetlana Panasenko</i>	193
<b>Chapter 19 Priorities of Implementation of the Optimization Model of Well-balanced Information Economy</b>	
<i>Elena Y. Merkulova, Natalia S. Morozova, Anastasia A. Kokoreva and Tatiana D. Samoylova</i>	203
<b>Chapter 20 The Main Components of Well-balanced Information Economy</b>	
<i>Vera I. Menshchikova, Sergey P. Spiridonov, Margarita A. Aksenova and Galina K. Gudovich</i>	213
<b>Chapter 21 The Basic Institutes of Well-balanced Information Economy</b>	
<i>Svetlana V. Lobova, Igor A. Prodchenko, Tatiana M. Rogulenko, Svetlana V. Ponomareva and Victor V. Gorlov</i>	227

**PART VII: METHODOLOGICAL PROVISION OF MONITORING  
AND CONTROL OVER IMPLEMENTATION OF THE  
OPTIMIZATION MODEL OF INFORMATION ECONOMY**

- Chapter 22 Indicators of Efficiency of the Process of Implementation  
of the Optimization Model of Information Economy**  
*Yulia V. Ragulina, Elena V. Popova, Lyudmila I. Chistohodova,  
Mikhail A. Mikhaylov and Marina Y. Eremina* 237
- Chapter 23 Criteria of Effectiveness of State Management of the  
Process of Implementing the Optimization Model of Information  
Economy**  
*Yulia V. Ragulina, Leonid F. Malinovski, Yuliya A. Agunovich,  
Larisa A. Kapustyan and Oksana M. Zaryankina* 245
- Chapter 24 Target Indicators of Implementing the Measures on  
Formation of the Model of Information Economy**  
*Gilyan V. Fedotova, Natalia N. Kulikova, Lyubov V. Perekrestova  
and Yuri A. Kozenko* 255
- Chapter 25 The Main Directions of Development of Information  
Production of Russia's Tax System**  
*Lyubov I. Vanchukhina, Tatiana B. Leybert, Elvira A. Khalikova  
and Evgeny A. Shamonin* 265

**PART VIII: ADAPTATION OF THE OPTIMIZATION  
MODEL TO THE MODERN RUSSIA'S ECONOMY**

- Chapter 26 The Framework Strategy of Implementing the  
Information Economy's Optimization Model in Modern Russia**  
*Alexander N. Alekseev, Yulia A. Romanova, Irina M. Zurakhovskaya,  
Valeriy V. Mishchenko and Valentina V. Latysheva* 277
- Chapter 27 Algorithm of the Strategy of Implementing the  
Information Economy's Optimization Model in Modern Russia**  
*Larisa V. Popova, Tatiana A. Dugina, Natalia N. Skiter and  
Ivan S. Korabelnikov* 285
- Chapter 28 Perspectives of Information Economy's Formation in  
Modern Russia**  
*Larisa A. Ilyina, Olga A. Babordina, Marina P. Garanina and  
Vladimir S. Tikhonov* 293



<b>Chapter 29 Expected Scenarios of Development of Information Economy in the Global Economic System</b>	
<i>Aleksei V. Bogoviz, Dina N. Savinskaya, Alfira M. Kumratova, Tatiana B. Fonina and Naimdzhon M. Ibragimov</i>	303
<b>Chapter 30 The Essence and Peculiarities of Implementing the Optimal Scenario of Digital Economy Development in Modern Russia</b>	
<i>Irina V. Gashenko, Irina N. Bogataya, Irina V. Orobinskaya and Yulia S. Zima</i>	313
<b>Chapter 31 Practical Recommendations for Monitoring and Control of the Implementation of the Optimization Model of Digital Economy in Modern Russia</b>	
<i>Natalia N. Khakhonova, Elena N. Makarenko, Tatiana V. Makarenko and Irina A. Kislaya</i>	323
<b>Chapter 32 Correlation of Evolutional and Revolutionary Transformations in a Socio-Economic System in the Conditions of Information Economy's Formation</b>	
<i>Aleksei V. Bogoviz, Anna V. Bodyako, Alexander A. Pochestnev, Natalia A. Medvedeva and Larisa O. Velikanova</i>	333
<b>Chapter 33 The Role and Value of Information in the Economic System: Opposition of Post-industrial and Information Economy</b>	
<i>Aleksei V. Bogoviz, Yulia V. Ragulina, Tatiana V. Tkachenko, Tatiana N. Agapova and Viktor E. Saykinov</i>	343
<b>Conclusion</b>	
<i>Elena G. Popkova, Alexander P. Sukhodolov and Tatiana N. Litvinova</i>	351
Index	353

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## List of Contributors

<i>Tatiana N. Agapova</i>	Federal State Public Educational Establishment of Higher Education “Moscow University of the Ministry of Internal Affairs of the Russian Federation named after V.Y. Kikot,” Moscow, Russian Federation
<i>Olga A. Ageeva</i>	Federal State Budgetary Educational Institution for Higher Professional Education “State University of Management,” Moscow, Russian Federation
<i>Yuliya A. Agumovich</i>	Federal State Budget Educational Institution of Higher Education “Kamchatka State Technical University,” Petropavlovsk-Kamchatskiy, Russian Federation
<i>Margarita A. Aksenova</i>	Russian Presidential Academy of National Economy and Public Administration, Lipetsk branch, Lipetsk, Russian Federation
<i>Ekaterina S. Alekhina</i>	Institute of Service Sphere and Entrepreneurship (branch) of Don State Technical University, Shakhty, Russian Federation
<i>Alexander N. Alekseev</i>	Moscow Aviation Institute (National Research University), Moscow, Russian Federation
<i>Natalia S. Andryashina</i>	Kozma Minin Nizhny Novgorod State Pedagogical University, Nizhny Novgorod, Russian Federation
<i>Nataliya V. Asanova</i>	Volgograd State Technical University, Volgograd, Russian Federation
<i>Olga A. Babordina</i>	Samara State Technical University, Samara, Russian Federation
<i>Anna V. Bodyako</i>	Federal State Budgetary Educational Institution for Higher Professional Education “State University of Management,” Moscow, Russian Federation
<i>Irina N. Bogataya</i>	Rostov State University of Economics, Rostov-on-Don, Russian Federation
<i>Marina V. Bogdanova</i>	State University of Management, Moscow, Russian Federation

*xii List of Contributors*

- Aleksei V. Bogoviz* Federal State Budgetary Scientific Institution  
“Federal Research Center of Agrarian Economy  
and Social Development of Rural Areas – All  
Russian Research Institute of Agricultural  
Economics,” Moscow, Russian Federation
- Olga Boris* North-Caucasus Federal University, Stavropol,  
Russian Federation
- Anna A. Burdina* Federal State Budgetary Educational Institution  
for Higher Professional Education “Moscow  
Aviation Institute (National Research  
University)” (MAI), Moscow, Russian  
Federation
- Svetlana G. Bychkova* State University of Management, Moscow,  
Russian Federation
- Alexandra N. Bystrova* University of Tyumen, Tyumen, Russian  
Federation
- Lyudmila I. Chistohodova* Moscow State Regional University, Moscow,  
Russian Federation
- Yulia I. Dubova* Volgograd State Technical University,  
Volgograd, Russian Federation
- Tatiana A. Dugina* Volgograd State Agrarian University,  
Volgograd, Russian Federation
- Oksana Y. Eremicheva* Samara State Technical University, Samara,  
Russian Federation
- Marina Y. Eremina* Federal State Budget Educational Institution of  
Higher Education “Kamchatka State Technical  
University,” Petropavlovsk-Kamchatskiy,  
Russian Federation
- Lilia V. Ermolina* Samara State Technical University, Samara,  
Russian Federation
- Gilyan V. Fedotova* Volgograd State Technical University,  
Volgograd, Russian Federation
- Irina S. Ferova* Federal State Autonomous Educational  
Institution of Higher Education “Siberian  
Federal University,” Krasnoyarsk, Russian  
Federation
- Tatiana B. Fonina* Moscow Region State University, Moscow,  
Russian Federation
- Marina P. Garanina* Samara State Technical University, Samara,  
Russian Federation

- Ekaterina P. Garina*                      Kozma Minin Nizhny Novgorod State Pedagogical University, Nizhny Novgorod, Russian Federation
- Irina V. Gashenko*                        Rostov State University of Economics, Rostov-on-Don, Russian Federation
- Victor V. Gorlov*                          Federal State Budgetary Educational Institution of Higher Education “Gubkin Russian State University of Oil and Gas (National Research University),” Moscow, Russian Federation
- Zhanna V. Gornostaeva*                Institute of Service Sphere and Entrepreneurship (branch) of Don State Technical University, Shakhty, Russian Federation
- Zhanna V. Gornostaeva*                Institute of Service Sphere and Entrepreneurship (branch) of Don State Technical University, Shakhty, Russian Federation
- Galina K. Gudovich*                     Financial University under the Government of the RF, Lipetsk, Russian Federation
- Naimdzhon M. Ibragimov*              Novosibirsk State University, NGU, Novosibirsk, Russian Federation; Institute of Economics and Industrial Engineering, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russian Federation
- Larisa A. Ilyina*                          Samara State Technical University, Samara, Russian Federation
- Larisa A. Kapustyan*                    Federal State Budgetary Educational Institution “Altai State University,” Barnaul, Russian Federation
- Natalia N. Khakhonova*                Rostov State University of Economics, Rostov-on-Don, Russian Federation
- Elvira A. Khalikova*                    Ufa State Petroleum Technological University, Ufa, Russian Federation
- Irina A. Kislaya*                         Rostov State University of Economics, Rostov-on-Don, Russian Federation
- Elena V. Kletszkova*                    Federal State Budget Educational Institution of Higher Education “Altai State University,” Barnaul, Russian Federation
- Elena N. Klochkova*                     Plekhanov Russian University of Economics, Moscow, Russian Federation; Russian Presidential Academy of National Economy and Public Administration, Moscow, Russian Federation

*xiv* List of Contributors

<i>Tatyana N. Kochetova</i>	Samara State Technical University, Samara, Russian Federation
<i>Anastasia A. Kokoreva</i>	Financial University under the Government of the RF, Lipetsk, Russian Federation
<i>Elena N. Kolomoets</i>	Moscow Aviation Institute (National Research University)
<i>Ivan S. Korabelnikov</i>	Volgograd State Agrarian University, Volgograd, Russian Federation
<i>Yuri A. Kozenko</i>	Volgograd State University, Volgograd, Russian Federation
<i>Tatyana E. Kozhanova</i>	Volgograd State Technical University, Volgograd, Russian Federation
<i>Natalia N. Kulikova</i>	Volgograd State University, Volgograd, Russian Federation
<i>Alfira M. Kumratova</i>	Federal State Budgetary Educational Institution of Higher Education “Kuban State Agrarian University named after I.T. Trubilin,” Krasnodar, Russian Federation
<i>Inna V. Kushnareva</i>	Institute of Service Sphere and Entrepreneurship (branch) of Don State Technical University, Shakhty, Russian Federation
<i>Viktor P. Kuznetsov</i>	Kozma Minin Nizhny Novgorod State Pedagogical University, Nizhny Novgorod, Russian Federation
<i>Karina V. Kuznetsova</i>	Orel State University, Orel, Russian Federation
<i>Valentina V. Latysheva</i>	Moscow Aviation Institute (National Research University), Moscow, Russian Federation
<i>Tatiana B. Leybert</i>	Ufa State Petroleum Technological University, Ufa, Russian Federation
<i>Tatiana N. Litvinova</i>	Volgograd State Agrarian University, Volgograd, Russian Federation
<i>Svetlana V. Lobova</i>	Altai State University, Barnaul, Russian Federation
<i>Tatiana L. Lukyanchikova</i>	Orel State University, Orel, Russian Federation
<i>Elena N. Makarenko</i>	Rostov State University of Economics, Rostov-on-Don, Russian Federation
<i>Tatiana V. Makarenko</i>	Rostov State University of Economics, Rostov-on-Don, Russian Federation
<i>Ludmila V. Makuschenko</i>	Surgut State Pedagogical University, Surgut, Russian Federation

- Olga Y. Malinina*                      Institute of Service Sphere and Entrepreneurship  
(branch) of Don State Technical University,  
Shakhty, Russian Federation
- Leonid F. Malinovski*                State Educational Institution of Higher  
Professional Education Moscow Region  
“Moscow Regional State University,” Moscow,  
Russian Federation
- Natalia A. Medvedeva*                Federal State Budgetary Educational Institution  
of Higher Education “Vologda State Dairy  
Farming Academy by N.V. Vereshchagin,”  
Vologda Russian Federation
- Vera I. Menshchikova*                Tambov State Technical University, Tambov,  
Russian Federation
- Elena Y. Merkulova*                 Tambov State Technical University, Tambov,  
Russian Federation
- Mikhail A. Mikhaylov*                Federal State Budgetary Educational Institution  
for Higher Professional Education “State  
University of Management,” Moscow, Russian  
Federation
- Olga A. Mishchenko*                 Altai State University, Barnaul, Russian  
Federation
- Valeriy V. Mishchenko*                Federal State Budgetary Institution of the  
Higher Education “Altai State University,”  
Barnaul, Russian Federation
- Natalia S. Morozova*                 Financial University under the Government of  
the RF, Lipetsk, Russian Federation
- Lyudmila D. Orlova*                 Dimitrovgrad Engineering Institute of  
Technology – (branch) of National Research  
Nuclear University of MIFI, Dimitrovgrad,  
Russian Federation
- Irina V. Orobinskaya*                 Voronezh State Agrarian University, Voronezh,  
Russian Federation
- Vladimir S. Osipov*                 Plekhanov Russian University of Economics,  
Moscow, Russian Federation; Federal State  
Budgetary Scientific Institution “Market  
Economy Institute of Russian Academy of  
Sciences,” Moscow, Russian Federation
- Svetlana Panasenko*                 Plekhanov Russian University of Economics,  
Moscow, Russian Federation
- Yuliya A. Panteleeva*                 Samara State Technical University, Samara,  
Russian Federation

*xvi* List of Contributors

- Valentina N. Parakhina* North Caucasus Federal University, Stavropol, Russian Federation
- Lyubov V. Perekrestova* Volgograd State University, Volgograd, Russian Federation
- Alexander A. Pochestnev* Moscow Aviation Institute (National Research University), Moscow, Russian Federation
- Svetlana V. Ponomareva* St. Petersburg State University of Economics (UNECON), St. Petersburg, Russian Federation
- Elena G. Popkova* Volgograd State Technical University, Volgograd, Russian Federation
- Elena V. Popova* Federal State Budgetary Educational Institution of Higher Education “Kuban State Agrarian University named after I.T. Trubilin,” Krasnodar, Russian Federation
- Larisa V. Popova* Volgograd State Agricultural University, Volgograd, Russian Federation
- Igor A. Prodchenko* Federal State Federal Military Educational Establishment of Higher Education “Military University” of the Ministry of Defense of the Russian Federation, Moscow, Russian Federation
- Yulia V. Ragulina* Federal State Budgetary Scientific Institution “Federal Research Center of Agrarian Economy and Social Development of Rural Areas – All Russian Research Institute of Agricultural Economics,” Moscow, Russian Federation
- Tatiana M. Rogulenko* Federal State Budgetary Educational Institution for Higher Professional Education “State University of Management,” Moscow, Russian Federation
- Yulia A. Romanova* Federal State Educational Budget Institution of Higher Professional education “Financial University under the Government of the Russian Federation,” Moscow, Russian Federation; Federal State Budgetary Institution of Science Institute of Market Problems, Russian Academy of Sciences, Moscow, Russian Federation
- Elena V. Romanovskaya* Kozma Minin Nizhny Novgorod State Pedagogical University, Nizhny Novgorod, Russian Federation



- Nadezhda K. Rozhkova* Federal State Budgetary Educational Institution for Higher Professional Education “State University of Management,” Moscow, Russian Federation
- Tatiana D. Samoylova* Financial University under the Government of the RF, Lipetsk, Russian Federation
- Dina N. Savinskaya* Federal State Budgetary Educational Institution of Higher Education “Kuban State Agrarian University named after I.T. Trubilin,” Krasnodar, Russian Federation
- Viktor E. Saykinov* Federal State Budgetary Educational Institution of Higher Education “Kuban State Agrarian University named after I.T. Trubilin,” Krasnodar, Russian Federation
- Evgeny A. Shamoinin* Ufa State Petroleum Technological University, Ufa, Russian Federation
- Natalia A. Shchukina* Plekhanov Russian University of Economics, Moscow, Russian Federation; Financial University under the Government of the Russian Federation, Moscow, Russian Federation
- Mikhail S. Shmarkov* Orel State University, Orel, Russian Federation
- Dmitriy L. Skipin* University of Tyumen, Tyumen, Russian Federation
- Natalia N. Skiter* Volgograd State Technical University, Volgograd, Russian Federation
- Tatiana V. Skryl* Plekhanov Russian University of Economics, Moscow, Russian Federation
- Sergey P. Spiridonov* Tambov State Technical University, Tambov, Russian Federation
- Alexander P. Sukhodolov* Baikal State University, Irkutsk, Russian Federation
- Aigul Sultanguzhiyeva* West Kazakhstan Innovative Technological University, Uralsk, Kazakhstan
- Anton N. Sunteev* Samara State Technical University, Samara, Russian Federation
- Irina A. Tarasova* Volgograd State Technical University, Volgograd, Russian Federation
- Vladimir S. Tikhonov* Samara State Technical University, Samara, Russian Federation
- Pavel Timoshenko* Nevinnomyssk State Humanitarian-Technical Institute, Nevinnomyssk, Russian Federation

*xviii List of Contributors*

- Olga V. Titova* Federal State Budget Educational Institution of Higher Education “Altai State University,” Barnaul, Russian Federation
- Tatiana V. Tkachenko* Moscow Aviation Institute (National Research University), Moscow, Russian Federation
- Lyubov I. Vanchukhina* Ufa State Petroleum Technological University, Ufa, Russian Federation
- Sergey L. Vasenev* Institute of Service Sphere and Entrepreneurship (branch) of Don State Technical University, Shakhty, Russian Federation
- Larisa O. Velikanova* Federal State Budgetary Educational Institution of Higher Education “Kuban State Agrarian University named after I.T. Trubilin,” Krasnodar, Russian Federation
- Oksana M. Zaryankina* Federal State Budget Educational Institution of Higher Education “Smolensk State Agricultural Academy,” Smolensk, Russian Federation
- Aleksei G. Zeldner* Federal State Budgetary Institution Science “Institute of Economics of Russian Academy of Sciences,” Moscow, Russian Federation
- Yulia S. Zima* Rostov State University of Economics, Rostov-on-Don, Russian Federation
- Irina M. Zurakhovskaya* Moscow Region State University, Moscow, Russian Federation

# Introduction

This book presents the results of leading scientific, methodological, and applied studies in the sphere of information economy, and presents the most vivid provisions of their scientific novelty, which are logically structured, systematized, and unified into a single scientific work. This provides a unique possibility to get acquainted with new knowledge before being included in study guides.

This book is expected to generate high interest because the problem of information economy's formation is topical in the modern economic realia and the spheres of its application are very wide. The global economy features tough and increasing competition between countries for leadership in the information economy's formation. At the macro-economic level, economic systems strive to form their own approaches to the implementation of the basic model of information economy, adapted to the peculiarities of their socio-economic development.

At the corporate level, entrepreneurial structures consider usage of new information and communication technologies as a basis of their competitive advantages and strive for larger informatization of their business processes. At the individual level, modern consumers realize value and set demand for information goods and services, including online trade, electronic payments, and E-government.

The studies, the results of which are presented in this book, were performed by economists who specialize in the problems of evolution and modernization of economic systems and agree that the pinnacle of evolution and the key direction of modernization of these systems is information economy. Due to the unification of efforts and combination of opinions of representatives of various scientific schools, the issue of information economy is studied and analyzed both critically and comprehensively.

The book consists of 8 parts and 33 chapters.

Part I, *Theoretical Model of Modern Information Economy*, focuses on information economy as a concept of the modern economic science. Defined by certain authors as a completely new branch of evolution of economic systems and by other authors as the next stage of development of the process of economy's post-industrialization, information economy is popular but at the same time a contradictory concept. The authors study the approaches to the treatment of the notion of information economy, determine its basic principles and characteristics, and consider the main stages of information economy's formation. Further, the authors' view of the concept of modern information economy and its theoretical model are presented.

## 2 Introduction

Part II, *Practical Experience of Formation of Information Economy's Model*, has an applied character. Striving to overcome the global economic crisis and providing high global competitiveness, countries of the world want to quickly build information economy. Flexibility of the treatment of its concept and strong dependence on context predetermines the emergence of three regional models of information economy. The technocratic Asian model is opposed to the European model, which is based on overcoming social contradictions in the information sphere and to the American model, which overcomes structural disproportions in the economic development of the countries of the American region. The authors analyze the practical experience of formation of the model of information economy in Asian, European, and American countries.

Part III, *Peculiarities of Information Economy in Modern Russia*, analyzes the Russian economic practice in the sphere of informatization of the socio-economic system. Developing countries are in the process of formation of this model, which is expressed vividly in modern Russia. The authors determine the basic preconditions and barriers on the path of information economy's formation in modern Russia. Implementation of the CALS system is given as a condition of information economy's formation in the Russian production practice. Furthermore, the stages of development of information economy in modern Russia are distinguished.

Part IV, *Logical Disparities of the Model of Information Economy*, is devoted to a critical analysis of the existing conceptual model of information economy. The first efforts of information economy's formation showed incompleteness and contradiction in the theoretical concept. In practice, it faces barriers such as society's lack of readiness for information economy's formation, absence or complexity of implementation of entrepreneurship's potential in economy's informatization, and underdevelopment of the institutional basis.

Part V, *Recommendations for Optimization of the Model of Information Economy*, contains the authors' offers on improving the existing conceptual model of information economy. Based on the evidence regarding the necessity for improving the concept of industrial economy, the recommendations are given for optimization of its theoretical model and improvement of the practice of its implementation in modern economic systems. The authors develop the mechanism of the optimization model of information economy, offer and substantiate a new balance in the information economy's model, and offer a perspective model of well-balanced information economy.

Part VI, *The Key Characteristics of the Optimization Model of Well-balanced Information Economy*, presents a new conceptual model of a well-balanced information economy. The authors substantiate the principles and priorities of implementing the innovational model of a well-balanced information economy, specify its main components and basic institutes, and develop and present the institutional model of a well-balanced information economy.

Part VII, *Methodological Provision of Monitoring and Control Over Implementation of the Optimization Model of Information Economy*, contains the scientific and methodological recommendations for managing the process of practical implementation of the model of a well-balanced information economy. The authors provide the indicators of efficiency of the process of implementing the information economy's optimization model and the criteria of effectiveness of state management of implementing the information economy's optimization model. Control values of the indicators of implementing the information economy's optimization model and recommendations for correcting the measures of state management are given, and the main directions of development of information production of the tax system of Russia are presented.

Part VIII, *Adaptation of the Optimization Model to the Modern Russian Economy*, concludes the results of the performed work and offers practical recommendations for implementing the optimization model of a well-balanced information economy in the Russian economic system. The authors develop the framework strategy of implementing the information economy's optimization model in modern Russia and offer the algorithm of its implementation. Perspectives of information economy's formation in modern Russia are determined, and the expected scenarios of development of information economy in modern Russia are offered. The essence and peculiarities of implementation of the optimal scenario of developing a digital economy in modern Russia are determined, and practical recommendations for monitoring and controlling this process are given.

*Wishing for new scientific inventions on the basis of this book.*  
*Alexander Sukhodolov, Elena G. Popkova, and*  
*Tatiana Litvinova*

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**PART I**  
**THEORETICAL MODEL OF**  
**MODERN INFORMATION**  
**ECONOMY**

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## Chapter 1

# The Notion and Essence of Information Economy

*Alexander P. Sukhodolov, Elena G. Popkova and  
Tatiana N. Litvinova*

### Abstract

*Purpose* – The purpose of this chapter is to study the conceptual provisions of the theory of information economy and to determine its notion and essence.

*Methodology* – The research methodology is based on the application of traditional methods of economic science, including the methods of systemic, problem, and comparative analysis, method of analysis of causal connections, systematization, classification, and formalization of scientific data.

*Results* – The authors systematize the existing conceptual provisions of the theory of information economy and classify the conceptual approaches to its study as process approach, resulting approach, and combined approach; a comparative analysis of these approaches is also conducted.

*Recommendations* – The authors conclude that the evolutionary development of modern socio-economic systems is dominated by the information economy concept, which should be the basis of the future developmental model of the global economic system. This concept develops within the combined approach, based on the previous concepts of digital economy and internet economy, which is a part of the process approach proclaiming technological capital, the key factor of reproduction, by focusing on the development of socio-economic systems and the concept of knowledge economy, which is a part of the resulting approach that emphasizes human capital and innovations as a target result of the development of economic systems. The information economy concept includes the features of previous concepts, emphasizes the importance of technological and human capital, applies information and communication technologies, and achieves

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**Models of Modern Information Economy: Conceptual Contradictions and  
Practical Examples, 7–16**

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**ISBN: 978-1-78756-288-2**

results that are connected to highly effective creation, storage, distribution, and usage of information. It also supplemented them with a new sense of proclaiming information on the most valuable resources as well as provision of free and continuous interaction of economic subjects – the highest priority of socio-economic systems.

*Keywords:* Digital economy; internet economy; knowledge economy; socio-economic development; information economy; socio-economic system

*JEL classifications:* B52; L86; M15; O11; O32; P52

## **Introduction**

Socio-economic systems are the most complex study objects in modern science as they are subject to constant changes and include several connections of elements possessing unique characteristics. Economic science distinguished the common features and qualities of these elements, modeled statistical states of socio-economic systems, and determined the tendencies and regularities of their development, suggesting their dynamic models.

At present, it is proven that socio-economic systems not only develop but also evolve and become more complicated. This process is described differently by different scholars such as change of economic formations, transition to new technological modes, formation of new and more complex social systems. The modern global economic system is in a transitional state in which the previous model of its development, which envisaged foundation on a society of consumption, postindustrial economy, and almost absolute market freedom, depleted its potential of stimulation of economic growth and social progress.

The duration of overcoming the consequences of the global depression of the early twenty-first century, which was accompanied by cardinally opposite measures applied by governments of different countries for restoration of the economy after the crisis, shows the global society's lack of an understanding of a new model of socio-economic development. Certain features of this model, which correspond to the key global tendencies of modernization of economic systems are noted by different scholars and are set in the foundation of their visions of the future that outline the global economy as prospective vectors of its development.

All things considered, the problem of inconsistency of scientific knowledge and its contradictions arises. This problem is caused by different treatments of the same socio-economic phenomena and processes or applications of various notions for denoting them. This does not allow for compilation of a comprehensive model and a precise new course of socio-economic development of the modern global economic system, which hinders a successful struggle with crisis phenomena in this system.

In this chapter, the authors offer a hypothesis that furthers the development perspectives of the global economy that are related to the formation of

information economy. The purpose of this chapter is to study the conceptual provisions of the theory of information economy and to determine its notion and essence.

## **Materials and Method**

A theoretical overview of the selected topic showed that there are four scientific schools that study the information economy and come to an agreement that it is the highest stage of socio-economic system development; however, it is assigned various features. The first one formulates the object of study as the digital economy which emerged at the end of the twentieth century; its key scientific provisions are described in the works of the following authors: Chakpitak, Maneejuk, Chanaim, and Sriboonchitta (2018); Cheng and Foley (2018); Goldstein (2017); and Teoh and Mahmood (2017).

The second scientific school, which appeared at the same time, studies the internet economy. Its representatives are described in Sukhodolov, Popkova, and Kuzlaeva (2018a, 2018b). The similarity of the conceptual settings allows for the definition of this scientific school as a component (subsystem) of the first scientific school, which studies the digital economy. However, these schools are divided for the vividness of differences in the categorical tools used.

The third scientific school treats the pinnacle of evaluation of socio-economic systems as the knowledge economy and defines it as the object of its research. This school appeared at the beginning of the twenty-first century and includes many scholars (Arsenyev, Litvinova, Parakhina, Kozenko, & Denisov, 2016; Goryainova, Krishtal, & Kuznetsova, 2017; Kravets, Gurtjakov, & Darmanian, 2013; Kuleshov, Untura, & Markova, 2017; Kuznetsov, Tereliansky, Shuvaev, Natsubize, & Vasilyev, 2016; Popova, Litvinova, Ioda, Suleimanova, & Chirkina, 2015; Przhedetskaya & Akopova, 2016; Sibirskaya & Shestaeva, 2016).

The fourth scientific school, which appeared in the early 2010s, offered the term “information economy” and selected it as the object of research. The main scientific provisions of this school are described in the works of the following authors: Aliyev, Shahverdiyeva, and Abbasova (2017); Azuero Zúñiga, Guzmán Vásquez, and Trujillo Dávila (2017); Bogoviz, Ragulina, Komarova, Bolotin, and Lobova (2017); Boukouras and Koufopoulos (2017); Chen, Wang, Nevo, Benitez, and Kou (2017); Keszei (2017); Öhman and Floridi (2017); Tan and Hew (2017); and Timofeev, Bayandin, and Kulikova (2018).

Meanwhile, it should be noted that the representatives of the above scientific schools do not show their connection to these or other schools. Further, the modern scientific economic literature is peculiar for the phenomenon of substitution of notions, at which the research object is assigned, with characteristics that are not peculiar to them, or, in other words, the research uses various scientific terms to denote the same idea (research objects of different schools).

This shows the weakness of the fundamental platform of studying information economy and imprecision of the categorical tools of this modern scientific economic theory, which reflects the necessity for further research aimed at the

specification of its theoretical provisions. The methodology of the research conducted in this chapter is based on the application of traditional methods of economic science, including the method of systemic, problem, and comparative analysis, analysis of causal connections, method of systematization and classification, and formalization of scientific data.

## Results

As a result of content analysis, systematization, and classification of the existing studies and publications on the studied topic, we distinguished three main conceptual approaches to determine the notion and essence of information economy. Their comparative analysis is shown in [Table 1](#). Representatives of these approaches are specified in the description of scientific schools that correspond to the names of economies that are research objects of these approaches.

In [Table 1](#), approaches are named depending on the essence and role of the research objects in socio-economic systems. The technological approach studies digital and internet economies, which show technological peculiarities of the development of modern economic systems, related to the application of digital and, in particular, internet technologies.

This approach helped the formation of digital society in leading developed countries of the world and the process of formation of digital society in developing countries. The leading developed countries are countries that achieved the highest success in the informatization of their socio-economic systems. The ranking of all countries as per the development of information and communication technologies (ICT Development Index, which is measured in points from 1 to 10) is compiled annually by the International Telecommunication Union (2018). The leading developed countries that achieved the largest success in the informatization of their socio-economic systems in 2017 include the following countries ([International Telecommunication Union, 2018](#)):

- Ireland (ICT Development Index constitutes 8.98 points, first position in the ranking of countries as per this index);
- South Korea (ICT Development Index constitutes 8.85 points, second position in the ranking of countries as per this index);
- United Kingdom (ICT Development Index constitutes 8.65 points, fifth position in the ranking of countries as per this index);
- Japan (ICT Development Index constitutes 8.43 points, 10th position in the ranking of countries as per this index);
- Germany (ICT Development Index constitutes 8.39 points, 12th position in the ranking of countries as per this index); and
- USA (ICT Development Index constitutes 8.18 points, 16th position in the ranking of countries as per this index), etc.

We think that countries that occupy the top 20 positions in this ranking could be considered to be leading in the aspect of information economy development.

Table 1. Comparative Analysis of Conceptual Approaches to Defining the Notion and Essence of Information Economy.

<b>Approach</b>	<b>Economy</b>	<b>Central Element</b>	<b>Essence of Economy</b>	<b>Representatives of the Approach (Corresponding Scientific School)</b>
Technological	Digital economy	Digital technologies	Production and distribution of electronic goods and services	Chakpitak et al. (2018), Cheng and Foley (2018), Goldstein (2017), Teoh and Mahmood (2017) Sukhodolov et al. (2018a, 2018b)
	Internet economy (online economy)	Internet		
Resulting	Knowledge economy	Knowledge, human capital as a source of innovations	Constant innovational development	Arsenyev et al. (2016), Goryainova et al. (2017), Kravets et al. (2013), Kuleshov et al. (2017), Kuznetsov et al. (2016), Popova et al. (2015), Przhedetskaya and Akopova (2016), Sibirskaya and Shestaeva (2016)
Combined	Information economy	Knowledge, information	Domination of intellectual and innovational activities and digital technologies for the production and distribution of information products	Aliyev et al. (2017), Azuero Zúñiga et al. (2017), Bogoviz et al. (2017), Boukouras and Koufopoulos (2017), Chen et al. (2017), Keszei (2017), Öhman and Floridi (2017), Tan and Hew (2017), Timofeev et al. (2018)

Source: Compiled by the authors.

Russia occupies 45th position in this ranking (7.07 points) ([International Telecommunication Union, 2018](#)), which shows the success of the Russian socio-economic system in the formation of information economy and certain perspectives of its success in entering the group of leading developed countries.

In this society, digital technologies are used, they are widely available to masses, and most people possess the competences of using them. Digital society is the basis for the formation of digital economy, in which digital technologies are included in business processes. One of its forms is internet economy, which is based on internet technologies.

Due to the application of digital technologies, including the internet, it becomes possible to produce and distribute electronic goods and services. Almost all socio-economic phenomena and processes acquire electronic form. Thus, the system of electronic payments is formed in which financial operations are performed remotely; the system of e-governance, which provides consumers with remote access to the state, survives; the system of electronic entrepreneurship, which eliminates direct (personal) interaction between buyers and sellers, and other new systems exist. Moreover, the existing systems are transformed into an electronic format.

The resulting approach studies the knowledge economy, which reflects the result of socio-economic development of modern economic systems, related to the creation, distribution, and usage of new knowledge. According to this approach, modern socio-economic systems are peculiar for knowledge society or innovational society, in which the highest value belongs to new knowledge – innovations.

In this society, establishment of knowledge economy – innovational economy – takes place. The most valuable production factor is human capital, which includes labor (one that ensures execution of routine business operations) and intellectual (one that determines the capability for innovational activity) competences of employees that lead to the creation of formalized (separated from their creator and/or bearer and, as a rule, protected by the right for objects of intellectual property – patents, useful models, etc.) and nonformalized (inseparable from their creation and/or bearer and, as a rule, not protected by the right for objects of intellectual property – new ideas, know how, etc.) new knowledge and technologies.

Due to public support for innovational activity of economic subjects, constant innovational development of economic systems takes place, determined within the resulting approach as a key landmark and the main purpose of knowledge economy. For that, high-tech spheres of economy are created that are peculiar to high knowledge-intensity, are based on new technologies, and that ensure creation of leading knowledge.

Simultaneous existence of the process and resulting approaches – despite their different treatments of the essence of the future direction for development of modern socio-economic systems – is caused by their strong scientific substantiation and several confirming facts from the economic practice. We are sure that these approaches should not be viewed as alternative but should be considered mutually reinforcing – the ones reflecting various peculiarities of the

modern global economic system, both of which are correct and should be the basis of the future model of its development.

This is achieved within the combined approach that takes into account (i.e., combines) prospective technologies of socio-economic development of modern economic systems and the result of their application. Within this approach, it is noted that the formation of information society, in which information is of the highest value, and information economy, which is characterized by the application of new information technologies (the core of which is digital technologies which includes internet), takes place for maximization of effective creation, storage, distribution, and usage of information.

Information is viewed in a wise sense and includes existing and new knowledge and technologies. Information economy combines the features of digital economy, internet economy, and knowledge economy – their systemic interaction results in a synergetic effect, which is the essence of information economy. Similar to digital economy and internet economy, information economy is based on digital technologies that are a part of information and communication technologies. Expansion of technological support in the conditions of information economy ensures not only high speed and reliability but also continuity of interaction between socio-economic subjects.

Similar to knowledge economy, in information economy, the value of knowledge is not only proclaimed but also viewed as a part of the information that forms a central element of socio-economic systems. Information exchange includes not only translation of new knowledge but also distribution of standardized information. At the same time, not only the novelty of transferred information but the very interaction between economic subjects is important.

Synergetic effect, which emerges in information economy, is related to the maximization of effective economic activities and intensity of achieved social progress and economic development. Based on the above results, the notion of information economy is defined as a socio-economic system in which information society is formed and intellectual and innovational activities dominate with the application of digital technologies and the internet for the production and distribution of information products.

## **Conclusions**

The results of this research confirmed the hypothesis and proved that the pinnacle of evolutionary development of modern socio-economic systems is occupied by information economy, the concept of which should be the basis of the future developmental model of the global economic system. This concept was formed based on the previous concepts – digital economy and internet economy – which proclaimed technological capital, the key production factor, and focuses on the process of development of socio-economic systems and the concept of knowledge economy, which emphasized on human capital and innovations as a target result of the development of economic systems.

The concept of information economy embodies the features of previous concepts, emphasizing similar importance of technological and human capital, applies information and communication technologies, and achieves result, related to highly effective creation, storage, and usage of information. It supplemented them with a new sense, proclaiming information the most valuable resource, and provision of free and continuous interaction of economic subjects as the highest priority of socio-economic systems.

As a result of the research, we offer our definition of the idea of the “information economy” – a model of socio-economic growth that is at the pinnacle of evolution of modern socio-economic systems and that envisaged being founded on leading information and communication technologies, which are the basis for the formation and progress of information society and information economy, the most important resources (production factors), and product (production result) of which is information.

## Acknowledgments

This study was funded by the RFBR according to the research project No. 18-010-00103 A.

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