



Poznan University of Technology



**Faculty of Engineering Management
Institute of Management and Computing Systems
Division of Entrepreneurship and Communication in Business**

**National Technical University of Ukraine
„Igor Sikorsky Kyiv Polytechnic Institute”**

**Faculty of Management and Marketing
Department of International Economics**

**„SOCIAL AND ECONOMIC ASPECTS OF
CRISIS MANAGEMENT”**

International Scientific Seminar

**December 6, 2022 12.45- 15.20
On-line**

Spis treści

IMPLEMENTATION OF THE PRINCIPLES OF INDUSTRY 4.0 IN DUAL PURPOSE PRODUCTS.....	3
CRISIS MANAGEMENT OF LOCAL COMMUNITY: SYSTEMS THINKING.....	4
SECURITY AND SOCIAL RESPONSIBILITY OF COMMUNITIES IN EMERGENCY CONDITIONS	5
THE FORMING ROLE OF TRUST IN CRISIS SITUATIONS.....	7
FORMATION OF A MODEL OF BALANCED DEVELOPMENT IN CONDITIONS OF THREATS TO PUBLIC SECURITY.....	9
SYSTEM-FORMING FACTORS OF NATIONAL SECURITY BASED ON THE HARMONIZATION OF PUBLIC INTERESTS	10
MODELING CROWD BEHAVIOR IN PLANNING EMERGENCY PREPARATION: CASE STUDY	12
INTERNET OF THINGS SECURITY POLICY IN ENTERPRISES	13
WHAT DO WE EXPOSE OURSELVES TO EVERY DAY ON THE WEB?.....	14
INVESTMENT AND INNOVATION SECURITY AS A FACTOR OF SOCIO-ECONOMIC GROWTH IN THE CONDITIONS OF THE LEGAL REGIME OF MARTIAL LAW.....	15
ASYMMETRY OF DEVELOPMENT IN THE SOCIAL AND LABOR SPHERE IN THE CONDITIONS OF INDUSTRY 4.0 UNDER THE INFLUENCE OF THE LEGAL REGIME OF MARTIAL STATE.....	16

IMPLEMENTATION OF THE PRINCIPLES OF INDUSTRY 4.0 IN DUAL PURPOSE PRODUCTS

Serhii Voitko

National Technical University of Ukraine

„Igor Sikorsky Kyiv Polytechnic Institute”

Scientific and technological progress for thousands of years has been carried out simultaneously in the military field and the social sphere. Progress is a long process, the results of which are inventions that arise at certain moments and are later used for military needs or commercialized for the population.

Scientists now distinguish the following three main trends in the industrial development of civilization: 1) digitalization of production processes; 2) use of new materials; 3) creation of smart environments. Industry 4.0 is a complex concept and includes both a change in technological processes and the emergence of the latest technologies and production models in modern industry. Duality also lies in the fact that Industry 4.0 developments can be used both for military purposes and for civilian consumption.

The key areas of revolutionary changes in Industry 4.0 are the Internet of Things (IoT), Big Data, namely the analytics of large data sets (Data Driven Decision), direct interaction of machines (Connected Machines) and Artificial Intelligence. The basis for development is the following: IIoT ("industrial Internet of Things"), Cloud computing, Wireless Communication, Remote & Mobile Access, 3D Printing ("Three-Dimensional Printing"). Above the enterprise level, Smart or Digital Factories are created, and the concept of a Smart City appears. The above determines the development from Digitalization to the Digital Economy.

Ukraine has a chance to take its position (MedTech & eHealth, Mobility 4.0, Cyber-security, Smart Cities, Smart manufacturing, etc.). Industry 4.0 sees in modern production the integration of technological processes and stages of implementation, operation, and service with the use of the Internet of Things technology. This can create new markets and, accordingly, supply and demand for the latest goods and services in the military and civilian spheres.

CRISIS MANAGEMENT OF LOCAL COMMUNITY: SYSTEMS THINKING

Yevhen Revtiuk

Poznan University of Technology

Crisis management is a systematic process by which a community deals with a crisis, before, during, or after one occurs. It is the sum of activities aimed at minimizing the impact of a crisis and typically involves multiple actors at different administrative levels and from different areas at both the strategic and the operative levels. Governance capacity, governance legitimacy, and social resilience are the three most crucial issues for the preparation of an effective crisis management strategy. Governance capacity is the ability of the national or local governments to develop and conduct effective crisis management policies. Governance legitimacy deals primarily with the relationship between governments and citizens and concerns citizens' perceptions of whether the actions of the authorities are desirable. Governance legitimacy includes

- 1) input legitimacy (government and citizens' concern about the developed policy);
- 2) throughput legitimacy (citizens' readiness to support processes within the administrative apparatus);
- 3) output policy (acceptance of the means and measures of the policies).

Social resilience is the ability of the local community to counteract, absorb or adapt to the negative consequences of the crisis, including the situations when the support from the governmental authorities is limited.

SECURITY AND SOCIAL RESPONSIBILITY OF COMMUNITIES IN EMERGENCY CONDITIONS

Oksana Okchrimenko

National Technical University of Ukraine

„Igor Sikorsky Kyiv Polytechnic Institute”

The local community is not only the grassroots link of the administrative system, but also a powerful team capable of combining the efforts of individuals on the way to ensure the viability of this territorial entity.

The training for the specified groups of stakeholders on issues of community life organization in emergency conditions aims to: form the trainees' system of knowledge and skills on issues:

- the creation of voluntary initiative groups for working out collective decisions, delegating powers aimed at overcoming specific challenges and uniting community residents;
- using the principles of social responsibility at the level of: local administration, local business, community residents;
- development of a volunteer movement aimed at helping vulnerable groups of the population, which will include, among other things, the rules and requirements for the creation of such organizations (cash receipts, reporting, interaction with banks and the tax administration);
- prevention of offenses, protection of territory, organization of national resistance, support of territorial defence, etc.

Organizational and technical methods of risk management should be based on strong connections, communications and a high level of trust between different groups of stakeholders. Strengthening the security of communities in emergency situations on the basis of social responsibility will contribute to the parallel development of a system of basic access to means of livelihood; activation and accumulation of decentralized reserves that will help the community maintain a certain level of sustainability; formation of social awareness and responsibility at the level of various stakeholder groups as an element of national security; education of community members in social competence and basic training in matters of life safety, morality, etc.

The training will help:

- develop a sense of community involvement and responsibility for the performance of delegated powers;

- will provide an in-depth understanding of the essence of community social responsibility, the concept of security, risk situation and community risk management;
- will create a basis for solving priority problems related to the development of preventive measures to ensure the safety of community life;
- will stimulate the development of proposals and the production of ideas for improving the community's risk management system.

THE FORMING ROLE OF TRUST IN CRISIS SITUATIONS

Oksana Erdeli

Poznan University of Technology

Trust is a mental activity with use of the tools of critical analysis of the information provided, the situation in our environment. Unlike naivety it is a long-term activity, which is based on unfounded faith. Trust is needed in cooperation, achieving goals, communication, overcoming barriers and risk management and it starts with building relationships with the environment.

In the analysis of the research results we have used the tools developed for business relations, namely: strategic trust, normative trust, interpersonal trust, trust in the values of a person, organization and trust in organizational culture.

In the pilot study, institutions were selected that have an impact on our decisions in terms of security or dealing with crisis situations and have a developed system of activities. Our respondents, aged 18 to 45, placed the greatest trust in:

- Scientists - 75.2%
- UN - 51.1%
- Public organizations - 44.4%
- police - 43.1%
- Local government - 30.03%
- European Parliament - 38.5%
- Legal system - 29.1%
- Politicians - 11.1%
- Government - 5.16%

We also asked respondents about the level of trust in the government in responding and making decisions in crisis situations. Based on the answers, we came to the conclusion that the vast majority of respondents do not trust government entities.

We have asked the respondents whether in the last 5 years they were informed about the actions they should take in the event of critical situations, such as: natural disasters, terrorist attacks, etc. Most of the answers are depressing, because in most of these situations, the respondents as a society were not informed by the government how to behave, what decisions and actions to take in order not to introduce additional chaos.

To understand what could be causing this, we used the concept of the "Ladder of Trust" which consists of: relationships, commitment, guarantee and responsibility.

The remedy for the problem of society's lack of trust in government are knowledge sharing, honesty, kindness, open and honest expression of opinions, delegation of tasks, commitment, which is carried out in the strength of connections.

FORMATION OF A MODEL OF BALANCED DEVELOPMENT IN CONDITIONS OF THREATS TO PUBLIC SECURITY

Natalia Skorobogatova

National Technical University of Ukraine

„Igor Sikorsky Kyiv Polytechnic Institute”

The modern security environment is characterized by a high degree of variability and unpredictability. The events currently taking place in the world prompt a search for new mechanisms for ensuring global, regional, and national security. Scientists distinguish different types of threats to national security. A balance of interests of all economic agents must be observed to ensure the system of protection of national interests. We believe that any sphere of economic activity should be considered from the point of view of a systematic approach, based on the identified internal relationships between its economic agents: both the population, consumers, and manufacturers, as well as the state. Today it is impossible to consider the economy of any country in isolation from the world economy since all countries are interconnected in the context of international trade and cooperation. It is possible to reduce and prevent the impact of external threats to the national economy by introducing an ecosystem approach based on the circular economy. Resource suppliers, manufacturers, and consumers will be connected to a single business ecosystem, which will reduce the risk of a negative impact on the country's economy. At the same time, this approach will reduce the consumption of natural resources, emissions, and environmental impacts through recycling.

The development of the economic system is possible only with the use of a balanced assessment: economic agents, when planning their activities, must consider the balance of their development in four directions: economic, social, environmental, and innovative. The objective function of business ecosystem development is maximizing the total result of all agents in these areas. To implement the proposed approach, it is necessary to create a business model for sustainable development; identify threats to the development of the national economy as a whole, the industry, and a specific economic agent; development of a system of measures to prevent and minimize the impact of threats; monitoring the implementation of the developed action plan and operational changes.

SYSTEM-FORMING FACTORS OF NATIONAL SECURITY BASED ON THE HARMONIZATION OF PUBLIC INTERESTS

Anna Kucharuk

National Technical University of Ukraine

„Igor Sikorsky Kyiv Polytechnic Institute”

The lecture highlights the consolidated schematics of the formation of national security based on the main non-military ideas, in particular those that provide for the formation of internal capabilities and self-sufficiency of the country in order to overcome external threats based on balancing the interests of the Human, business and the state (states).

The meaning of the concept "national security" and related concepts such as "national interests", "national strategy", "international security", "threats to national security", "harmonization of interests", etc. is given.

The scientific message of the lecture is based on the hypothesis of the interdependence between the system of national interests, the level of balancing or harmonization of public interests, including the interests of other states, and the possibility of ensuring national security by the following components: political security, economic security, individual security, environmental security, energy security, and cybersecurity. This, in turn, meaningfully determines the peculiarity of the schematic presentation of the system-forming factors of national security in close connection with the prerequisites of the sustainable development of the country, the external conditions of such development (crises, wars, environmental challenges, etc.), as well as the internal reserves of national security (sufficient production, innovation, human , financial, technological potential) and the effectiveness of the national strategy for ensuring the conditions of national and international security.

The principles on which the National Security Strategy of Ukraine is based are revealed, in particular those defined at the legislative level, namely: containment (development of defense and security capabilities to prevent armed aggression against Ukraine); stability (the ability of society and the state to quickly adapt to changes in the security environment and maintain sustainable functioning, for instance, by minimizing external and internal vulnerabilities); interaction (development of strategic relations with key foreign partners, primarily with the European Union and NATO and their member states, the United States of America, pragmatic cooperation with other states and international organizations based on the national interests of Ukraine).

The relationship between current national strategies of Ukraine and their impact on the possibility of achieving national security is explained.

MODELING CROWD BEHAVIOR IN PLANNING EMERGENCY PREPARATION: CASE STUDY

Grzegorz Dahlke

Poznan University of Technology

Evacuation simulation models make it possible to analyze the time and possibility of people moving away from an evacuated area. They make it possible to represent many people's behaviors (Dahlke, 2020). Person models in computer applications take the shapes of circles, balls, cylinders, cuboids, phantoms or realistic figures. They are assigned dimensions: height and diameters, widths or depths. These values can be assigned fixed or variable quantities within the range indicated by the user or the program. The article proposes the use of a sample application for modeling evacuation conditions to analyze the movement of people in an open space bounded by sectoralization during the organization of a mass event. During the modeling, the effect of the anthropometric criterion on the time of dispersal of people from the area of the organization of a mass event was analyzed for selected evacuation scenarios. This is one of many criteria that can be set in modeling applications. A significant number of other variables are included in event scenarios, the number of which can strive to infinity. Since modeling aims to obtain information to support management, it is necessary to reduce event scenarios and infer based on the most likely events. Based on the results of modeling, the following can be optimized: maximum numbers of participants; separations into sectors and sections; widths of evacuation routes; control of the dispersal of people after the event, etc.

INTERNET OF THINGS SECURITY POLICY IN ENTERPRISES

Michał Trziszka

Poznan University of Technology

The aim of the article is to discuss the threats resulting from expanding access to the network of new devices, and at the same time to demonstrate to what extent the introduction of procedures in the field of data security and the architecture of systems used for data processing can affect the security of the continuity of technological processes in the company, but also data protection. The author draws attention to the fact that the problem of data and process security in the Internet of Things should be considered not only in terms of protecting the content of information, but also its authenticity and timeliness. On the other hand, inappropriate formulation of the rules of the Internet of Things security policy in a given enterprise may limit the availability of solutions and access to data, often eliminating the possibility of obtaining and processing them altogether. Enterprises therefore need to take steps to help maintain both the functionality and security of their systems.

Digitization and connection to the global Internet network can potentially bring huge benefits, but as long as all entities do not take on the tasks related to ensuring security, IoT can bring threats at the same time as solutions. From the point of view of the functioning of a company based on the Internet of Things, the key issue is the implementation of such technical security measures and procedures that will allow it to run its business in the safest possible way, while securing its own processes as well as the data of employees, customers and cooperators. This is the purpose of the security policy, which is the responsibility of not only the company's managers, but also the employees themselves. The security policy is to improve the company's operations and increase the security of its operation, and not to be a procedural brake for it.

WHAT DO WE EXPOSE OURSELVES TO EVERY DAY ON THE WEB?

Hubert Wojciechowski

Poznan University of Technology

This article aims to introduce, how we expose ourselves on the web, how to protect ourselves and the last part is about crisis management when there is a leak.

It is quite common to use unprotected Wi-Fi when we are on holiday or in the restaurant. However, this action can expose ourselves and our data to anyone that can listen to the Internet traffic in the network. Using a personal email address in business communication, can also be in issue in security. Try to consider, how many times you left your PC or laptop without locking it? It can be a matter of seconds to get access to everything on this PC. Moreover, visiting not secure (HTTP) website or sending not protected documents with your signature can cause financial and social problems. These are quite common actions that may lead to leak of your personal data. These were only the risks that may occur. However, you are not left alone, because there are ways to protect yourself.

To protect yourself, you can use strong passwords, password managers, or just not open files that are from unknown source. To rise your protection level, you might consider using hardware keys. Protecting is one way, also you should think about what you put to public e.g. to social media. Avoiding fishing websites and using only encrypted connection might be a good way to keep calm.

Consequences of exposing ourselves on the web can be divided into financial and social ones. The easiest way to have no problems in this matter is not to lead to a leak. When the crisis occurs, you will need time to recover from it. Everything can be both, form personal point of view, or affect companies and even governments. In this case, the crisis will be much bigger but the ways of protection are very similar.

INVESTMENT AND INNOVATION SECURITY AS A FACTOR OF SOCIO-ECONOMIC GROWTH IN THE CONDITIONS OF THE LEGAL REGIME OF MARTIAL LAW

Tetiana Ivanova, Kateryna Petrenko, Natalia Skorobogatova

National Technical University of Ukraine

„Igor Sikorsky Kyiv Polytechnic Institute”

Security issues in Ukraine today occupy the basis of economic development, and the investment and innovation component of partner countries allows Ukraine to survive in conditions of instability. The state and dynamics of the development of investment and innovation security motivate the aspiration of business entities to socio-economic development and stimulate it to expand reproduction. Since the challenges and threats in the conditions of war are changing the provision of sustainable socio-economic development of the economy based on an innovative model, there is an increasing need to increase investment volumes, which should be included in the strategic priorities of the revival of the economy of Ukraine. The main principles for the formation of the mechanism of social management of the economy are proposed: adaptability, coherence, efficiency, complexity, competitiveness, planning, continuity, proportionality, reasonableness, and limited resources. A single social mechanism of economic management is proposed, which includes: the study of statistical aspects, an approach to economic development, functioning, and development. The influence of a complex of global threats on the countries of the world was studied using the component of human life safety. The main indicators of innovation and investment security in Ukraine were also analyzed. Proposed actions that will contribute to the development of investment and innovation security in the context of ensuring the country's economic growth. The main measures that should be implemented in order to achieve the set goal regarding the socio-economic growth of Ukraine are given. Therefore, in order to implement the mechanism of adaptive management of the investment and innovation security of the country's economy and strengthen the economy's ability to survive in the conditions of war, it is necessary to perform tactical tasks and achieve strategic goals in the conditions of an unstable operating environment.

ASYMMETRY OF DEVELOPMENT IN THE SOCIAL AND LABOR SPHERE IN THE CONDITIONS OF INDUSTRY 4.0 UNDER THE INFLUENCE OF THE LEGAL REGIME OF MARTIAL STATE

Natalya Chernenko, Olena Korogodova, Yaroslava Glushchenko, Tetiana Moisiienko

National Technical University of Ukraine

„Igor Sikorsky Kyiv Polytechnic Institute”

Population migration from regions where hostilities or occupied territory leads to information asymmetry, where one side is more informed than the others. There is a violation of communication channels in the communal sector, where new residents of the community do not find important information. At the same time, community representatives do not have the necessary data regarding internal migrants, which creates a certain danger in the conditions of the legal regime of martial law. The relevance of the mentioned topic is caused by the need to study the current state of affairs regarding to the residents preparation to cooperate with the relevant authorities in emergencies and participate in overcoming consequences.

The implementation of cooperation between representatives of the scientific community, local authorities, and military administrations will allow developing a set of measures for creating a new jobs and increasing the energy efficiency of the utility sector. Fruitful cooperation and mutual trust are required for an effective solution, such as, the feedback from representatives of local authorities, which ensures transparency of interaction and dialogue with the involvement of Industry 4.0 tools.

Using "atypical labor contracts" and introducing non-standard forms of employment in order to overcome the problem of internal migrants employment, is proposed. It will contribute increasing the flexibility of the labor market and a new quality form of the country's workforce with an involvement of Industry 4.0. tools. Internal migrants can combine education or professional development (Life Long Learning) as well as work for atypical conditions, part-time work with the possibility of taking care of children, temporary or other work. The asymmetry of the social and labor sphere development in the conditions of Industry 4.0. under the influence of the legal regime of martial law, is indicated.