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# CONTENTS

# СОДЕРЖАНИЕ

# IX International Scientific Practical Conference "The Prospects and the Pace of Scientific Development" (Prague, Czech Republic, December 15–17, 2016)

**Материалы VI международной научно-практической конференции «Перспективы и темпы научного развития» (Прага, Чехия, 15–17 декабря 2016 года)**



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– Педагогические науки

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# Application of Mobile Pre-Fabricated Section Dams at Threat of Flooding of the Area

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**Key words and phrases:** mobile pre-fabricated section dam; flood; geographic information system; area of flooding; dam height; forecast.

**Abstract:** The article discusses the main problems of building temporary dams, using the example of the disastrous floods of 2013 and 2016. Much attention is paid to the possibility of using mobile prefabricated sectional dams to reduce flood damage. All major types of sectional dams are given. The most efficient type of the pre-fabricated sectional dam manufactured by CBD “CHANCE” has been selected. The results of calculation of possible application of a pre-fabricated section dam, using the example of the village Bogorodskoye are given.

In view of the increased floods, particularly in the Far East (2013 and 2016), the problem of using modern means of protecting human settlements in conditions of disastrous floods is relevant.

The disastrous flood in 2013 in the Far East is a valuable experience in the use of protective equipment, or rather, the identification of shortcomings of the existing methods. First, in the conditions of high water, bags of sand were used. Within a few hours sand was washed out and the dam slowly but surely collapsed. Largely, the problem was in the material that was used for the bags. It was necessary to use a waterproof material from which sand would not have been washed away, and thus, it would not have been necessary to spend a large amount of effort on the restoration of the dam. Secondly, the use of a water dam was impossible due to uneven terrain, and rescuers had to split the dam and protect the settlements from the waves with their own bodies. This experience brings us to the conclusion that it is necessary to use other types of prefabricated dams.

Now, there are several types of prefabricated dams proposed for wide application (Fig. 1–3).

1. Prefabricated “Prefabricated sectional dam”.

The use of this dam is possible, but not in the mountainous area, since the height of the dam is only calculated to 2 meters and the strength of the dam’s body seems insufficient.

2. The product of “NPK Pozhhimzaschita” – containers of a prefabricated dam (**CBD**) “Chance”. The height of the dam can reach 3 meters.

3. An exemplary analogue of the previous optionis prefabricated flexible dams and shells designed by the Rassvet LLC. The height of the dam can also reach 3 meters, the maximum

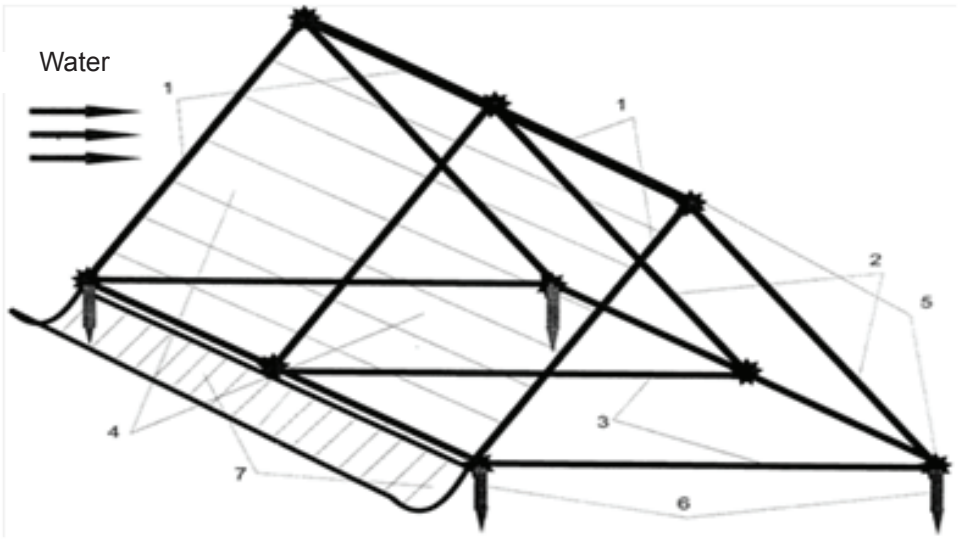


**Fig. 1.** Diagram of prefabricated sectional dam:
1 – front frame; 2 – support column; 3 – coupling rod; 4 – water-resistant plywood or shield (4 mm); 5 – hinges; 6 – treaded mini-piles; 7 – steel shield deepened into the ground

**Fig. 2.** CBD “Chance”

perimeter of the dam is 16.6 meters, the design diameter with the maximum filling is 5 meters.

The team of researchers carried out a comparative analysis of the above mentioned prefabricated sectional dams. Based on the results of the analysis, a conclusion was made on a number of advantages of the dam CBD “Chance”. A study on the possibility of using this dam in

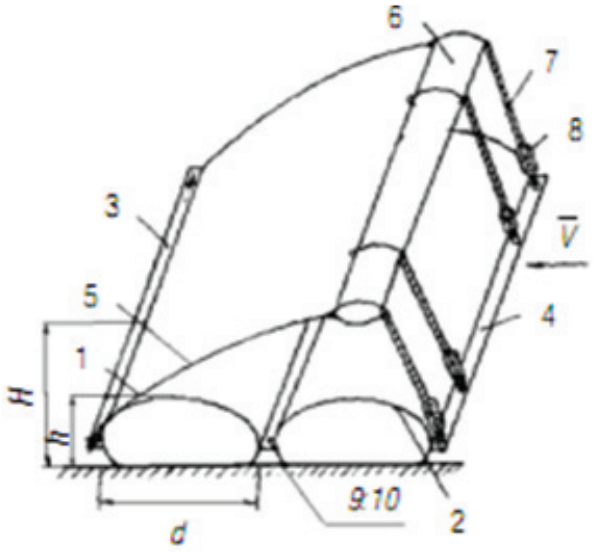


**Fig. 3.** Prefabricated dams and shells:
1, 2 – cylindrical shells; 3, 4 – reinforcement ribs; 5 – unclosed flexible membrane; 6 – float; 7 – flexible stretch marks; 8 – strop-shortening device; 9, 10 – internal ribs

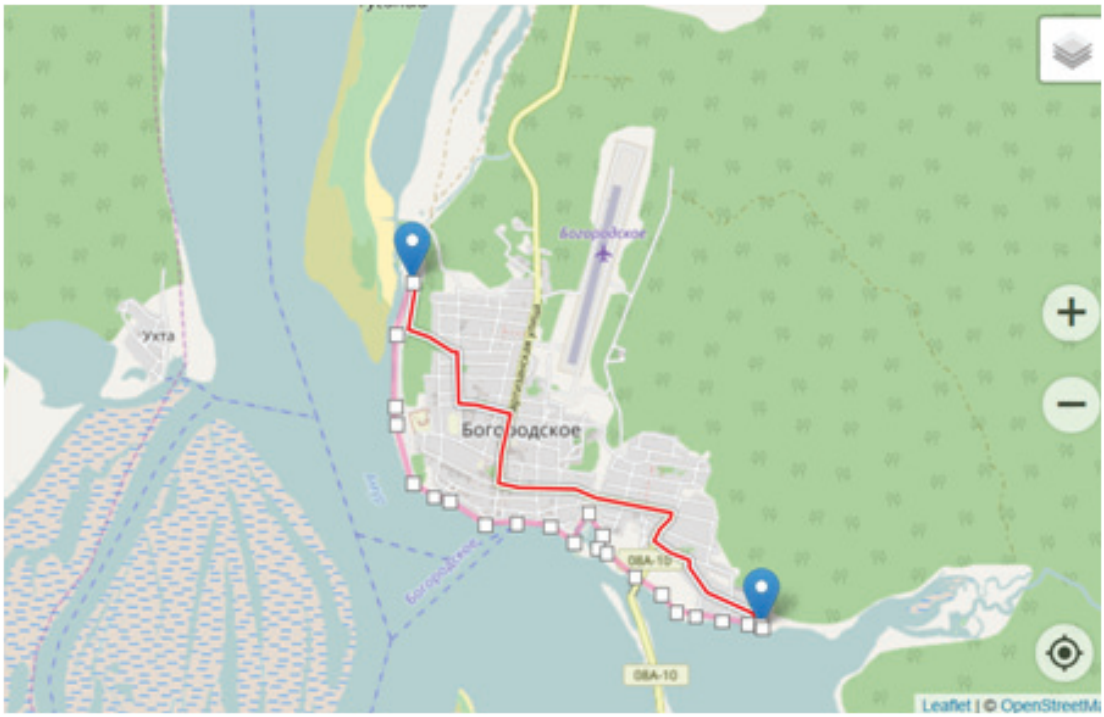


**Fig. 4.** The map of a prefabricated dam in the village of Bogorodskoye

the conditions of a disastrous flood was made, using the example of the village of Bogorodskoye, Ulchi District, Khabarovsk Territory. This settlement was flooded in 2013. Along with the other objects, the only bridge was flooded, connecting the village of Bogorodskoye with the mainland.

According to the measurements made with the help of the geographic information system of

the GIS-map (Fig. 4), the required total length of the prefabricated dam is 5004 m.

Given the length of one container, and the number of containers in one section, it was determined that to prevent flooding in Bogorodskoethe number of sections must be 1,001 pieces for the erection of the dam with the length of 5,004 m.

According to the received data, it is possible to determine the amount of equipment and personnel for the transportation and erection of a temporary prefabricated sectional dam.

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## Применение мобильных быстровозводимых секционных дамб при угрозе затопления местности

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**Ключевые слова и фразы:** мобильная быстровозводимая секционная дамба; наводнение; геоинформационная система; площадь затопления; высота дамбы; прогнозирование.

**Аннотация:** В статье приводятся основные проблемы применения временных дамб на примере катастрофических наводнений 2013 и 2016 гг. Обращено внимание на возможность применения мобильных быстровозводимых секционных дамб для уменьшения ущерба от наводнения. Приведены основные типы секционных дамб. Сделан выбор наиболее эффективного типа быстровозводимой секционной дамбы КБД «ШАНС». Приведены результаты расчета возможного применения быстровозводимой секционной дамбы на примере села Богородское.

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UDK 004.05

# Assessment of Regulating Documents in the Field of Information and Telecommunication Services

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**Key words and phrases:** quality of communication services; standards; mobile communication; Internet, user of services.

**Abstract:** The paper analyzes national normative and legal documents in the field of communication services quality. The authors discuss the problems existing in the field of communication, arising when subscribers travel within the country and abroad (roaming).

At the present stage of development, the quality indicators of communication services and their competent assessment are necessary for the implementation of the systematic approach to the improvement of business systems, increase in their competitiveness, implementation of modern principles of quality assurance and quality management, improvement of users' satisfaction with the provided services.

Today, the information and telecommunication network (further – **ITCN**) of the Russian Federation has almost completely integrated with the global ITCN and become its component.

The rights and obligations of the service provider and the subscriber, the list of services, order of their provision; the cost of services, etc. are stated in the standard service provision agreement of communication. However, the quality indicators and methods of the communication services assessment are not specified in such agreements.

An essentially important element of any quality management system, including the services provided by modern information and telecommunication system is a set of regulating documents of both national and international levels.

Regulating documents for ITCN for each region and each country include the following: bandwidth, speed of transfer/data reception, etc.

At the same time, the data transmission rate of ITCN in the different countries differ greatly, which that is reflected in Fig. 1.

Figure 1 shows that for a subscriber who will use ITCN of other countries the parameters of communication services of will change depending on its location (roaming). The main regulating documents are the service provision agreement of communication with the operator, as well as standards, technical recommendations and regulations which force of action is widespread on the territory of the conclusion of the agreement. However, the agreement does not specify the quality of the communication service when roaming.

It should be noted that absolutely the same changes extend to territories of the Russian Federation when connection is established between the subscribers located in the different cities, regions, federal districts. This is shown in Table 1.

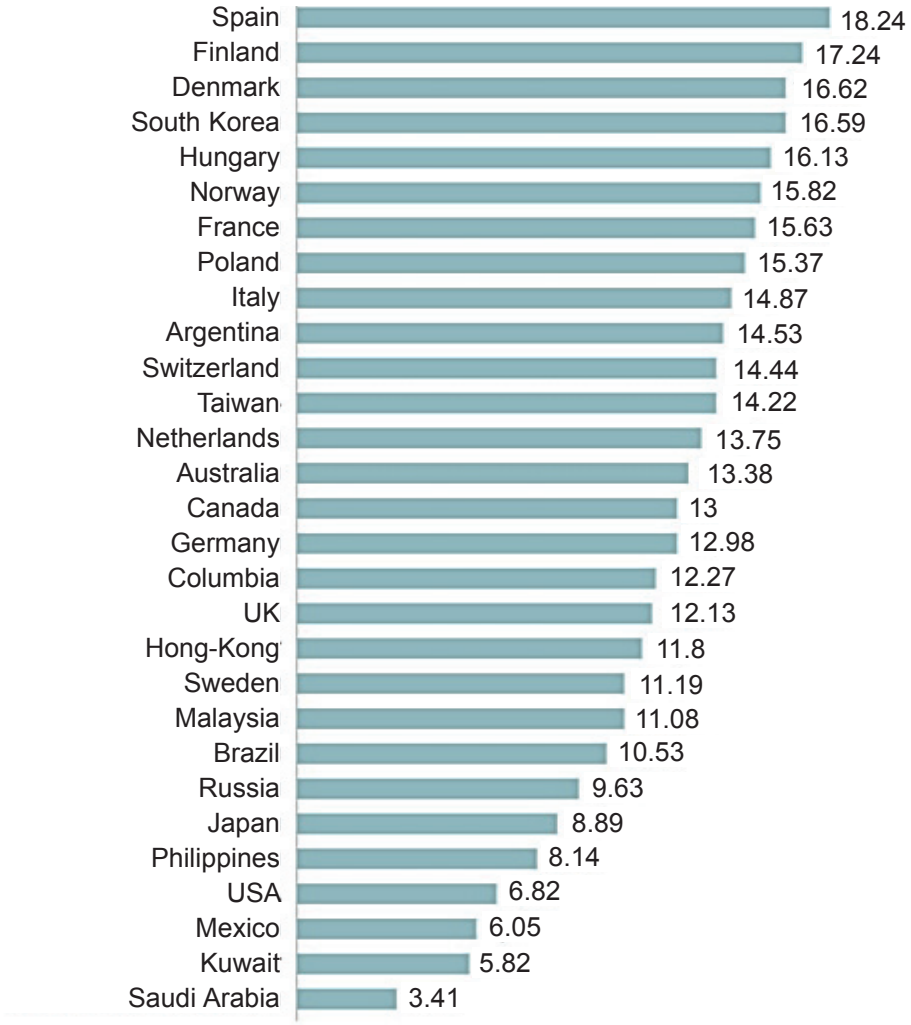


**Fig. 1.** Speed of loading 4G LTE over the countries

As can be seen from Table 1, indicators of data transmission rate in different regions significantly differ from each other. At the same time, not every region supports the required standards and protocols. For example, in some cities the LTE technology is completely absent.

When rendering service the operator is obliged to provide:

– access to a matching network of communication;
– transfer of voice information;
– fax messaging;
– data transmission, etc.

A more detailed list of communication services is given in the Order of the Government of the Russian Federation of 18.02.2005 No. 87 [1].

Thus, the mass character, the technological complexity of the provided services, the non-equivalence of opportunities of the provider and the consumer to assess the quality and range of services are the main causes of the problem of quality assessment of the services provided

**Table 1.** Speed of loading 4G LTE over the countries

| City | MegaFon | | Beeline | | MTS | | Tele2 | | |
|---|---|---|---|---|---|---|---|---|---|
| | average speed | max. speed | average speed | max. speed | average speed | max. speed | average speed | max. speed | Route length |
| Perm | **3.5** | 6.3 | 3.1 | 6.7 | 3.4 | 7.4 | 3 | 7.8 | 250 km |
| Yekaterinburg | 3.8 | 7.4 | 3.7 | 7.5 | 4.1 | 8.4 | **5.6** | 8.9 | 270 km |
| Chelyabinsk | 3.8 | 6.7 | 3.8 | 7.4 | 3.9 | 8.2 | **4.7** | 7.3 | 250 km |
| Kazan | **4.2** | 11.2 | 4 | 9.3 | 4.1 | 7.3 | 3.8 | 9.6 | 265 km |
| HH | 3.7 | 8.1 | 3.8 | 8.8 | **4.5** | 9.6 | 3.9 | 7.9 | 250 km |
| Ufa | 4.2 | 12.1 | 4.3 | 12.8 | **5.1** | 13.6 | | | 285 km |
| Volgograd | **5.1** | 9.7 | 4.3 | 9.6 | 4.9 | 8.7 | 5.2 | 10.1 | 270 km |
| Samara | 4.7 | 11.1 | 4.3 | 12.3 | **5.2** | 13.1 | 5.1 | 12 | 260 km |
| Rostov to Dona | 4.7 | 12 | **5.3** | 12.5 | 5.4 | 13.1 | 5.2 | 13 | 290 km |
| Krasnoyarsk | 3.6 | 7 | **5.3** | 11.1 | 3.7 | 8 | 3.8 | | 280 km |
| Novosibirsk | 3.2 | 6.3 | 3.6 | 6.2 | **4.9** | 6.6 | 3.6 | 6.9 | 260 km |
| Omsk | **4.8** | 6.4 | 4.7 | 7.5 | 4.4 | 7.3 | 4.8 | 6.9 | 270 km |
| Moscow | 5.8 | 28.1 | 4.2 | 20.1 | 5.4 | 27 | **7.2** | 30.1 | 3200 km |
| St. Petersburg | 5.8 | 27.1 | 6 | 22.2 | 6.1 | 25.1 | **7.7** | 27.1 | 1350 km |
| Voronezh | 4.7 | 9 | 4.6 | 10.1 | 4.7 | 12.8 | **4.9** | 13 | 250 km |

to certain consumers and participants of electronic business processes.

In this regard, there is a need for legal regulation of quality requirements of the provided communication services, excluding discrimination of consumers by regions, and harmonization of the corrected standards and technical recommendations.

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# Оценка нормативно-правовых документов в области информационных и телекоммуникационных услуг

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**Ключевые слова и фразы:** качество услуг связи; стандарты; мобильная связь; интернет; пользователь услуг.

**Аннотация:** Рассматриваются государственные нормативно-правовые документы в области качества услуг связи и проблемы области предоставления услуг мобильной связи.

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UDK 327.82

# The Development of Chinese Diplomacy

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**Key words and phrases:** diplomacy; China; diplomatic service; foreign policy.

**Abstract:** The article explores the main stages of the formation of diplomatic activity in China. Since ancient times, the diplomatic service of China has fulfilled the foreign policy objectives of the country, being one of the three leading foreign policy activities of the Chinese nobility.

Diplomacy of China is, first of all, a rich tradition, dating back in the history of several thousand years ago. Chinese diplomats have always been as important to society as the great commanders or cultural figures. In China's policy, diplomacy has always been one of the most important elements of the coexistence of this state with other countries.

Since ancient times, the diplomatic service of China has fulfilled the foreign policy tasks, the economic basis of which was slavery. The slave system underwent some changes. In the course of its historical development, it passed several successive stages [7]. The wars by the states of ancient China in the period of Chunqiu and Zhangguo were, in fact, wars for the capture of slaves. This determined the nature of interstate politics and diplomatic relations of the kingdoms of ancient China among themselves, as well as between these states and tribes. The Russian Sinologist V.A. Korsun in one of the articles notes that the creation of a single empire of Qin in 221 BC buried the prospect of "development in diversity" and in conditions of an equal dialogue [1], which meant the consolidation of the perception of "China as Barbarians".

From a geopolitical perspective, China has historically been surrounded by a group of smaller countries that were not capable of threatening China, but being united, they could pose a threat to China. Therefore, historically, fa oreign policy can be described as dealing with barbarians.

The second half of Zhangguo reign passed under the sign of skillful diplomacy, which reached its peak during the years of work of the two famous diplomats – Zhang Yi and Su Qin, the natives of the same school. Sima Qian in the 69 chapter of the "Historical Notes" [8] described in great detail the journey of Su Qin, who united 6 principalities into a union, his negotiating with the princes of the Qin, Zhao, Yan and others kingdoms, stressing his intelligence, and military and diplomatic art [8]. In accordance with the Chinese historical tradition, Su Qin was believed to be the founder of the idea of uniting vertically. The theme of Zhang Yi's speeches to the rulers of the kingdoms Wei, Chu, Han, Qi, Zhao, Yang was the struggle for the creation of a pro-western union horizontally as a military diplomatic union against Su Qin and his supporters.

The rulers of the ancient Chinese states were forced to unite in alliances, and in the middle of the 6$^{th}$ century BC, they concluded an agreement on which it was necessary to abandon the settlement of disputes by military force. This first "known non-aggression treaty" in the

history of diplomacy was soon broken. The existence of hostage practices, “the practice of intergrowth through cross-marriages” was a certain “guarantee of foreign policy stability” [4] in the relationship between kingdoms.

At the very beginning of the Zhangguo period, there were more than 20 kingdoms, but only 7 strongest ones survived. This was the period of development of first diplomatic ideologies, directions, formation of ideological and political schools. The authors of the book «中国外交战略和政策» (Diplomatic strategy and policy of China) noted the emergence of the two main directions against the backdrop of a complex foreign policy of that time, namely: the course of “idealists” created on the basis of Confucian, Moist and Taoist schools, and “realism”, whose adherents relied on laws and strategy of that time. The proponents of the first school chose the pacifist direction of diplomatic relations, the resolution of interstate conflicts by humane means, despite the fact that the notion of “sovereign equality” has not yet emerged. It was believed that the right of weak states to exist must be respected [11]. Adherents of the second direction believed that following “life according to the law of the jungle”, the state should rely only on its own forces, and diplomatic tactics [11]. The survival of the strongest was declared, but the right to the existence of any other state was not recognized.

It should be noted that these two scientific schools had a direct impact on diplomatic relations in the next two millennia, and were the keys to the human interpretation of specific diplomatic behavior. The nature of China’s foreign policy in 4–3 centuries BC can be described as aggressive. By uniting the entire central part of China’s modern territory along the course of the Huang He and Yangtze rivers, Ying Zheng (Emperor Qin Shih Huangdi) organized a series of expeditions to seize and enslave the neighboring tribes and nations. During the Qin Dynasty, the Chinese began to conquer Vietnam, naturally such a policy was met with fierce resistance from the conquered peoples, especially the Vietnamese [10].The actions of the Qin and Han rulers were not always successful. Initially, the Han emperors had to pay off from their northern neighbors gifts, which were a kind of tribute (and from 198 BC, rulers were forced to conclude humiliating contracts for China). The ancient Chinese strategy of “five bribery for dealing with barbarians” is to some extent used today. This is the practice of the Han dynasty, when the invading barbarians were given luxurious clothes, carriages, fine food, music, slaves, etc.

The Han Empire did not appear immediately after the fall of the Qin Empire, but only after several years of political struggle between the pretenders to the imperial throne. The Han rulers managed to contribute to the revival of the Confucian traditions and prosperity of China. In this era, all important events, including foreign policy and changes that took place inside the country were carefully recorded. The duties of the heads of Chinese embassies were to provide detailed written reports on the performance of missions entrusted to them, information about which has been stored to the present time in the writings of ancient thinkers and historians. Great contribution to the foreign policy of ancient China was made by the Emperor Wu-di (140–87 BC). The main goals and tasks of Wu-di were the conquest of the Huns to establish peace on the borders of China. At the same time, the emperor sent the embassy to the north-west, led by the military commander Zhang Qian, who after ten years of captivity managed to escape and fulfil the assignment of his ruler. The Chinese Ambassador managed to gather detailed information about the social and state system of the peoples of Central Asia and Iran, their military forces, cities, and trade routes. Subsequently, the information provided by Zhang Qian was included in the report to the emperor, and was included in one of the chapters of works by Sima Qian, a historical work that has survived to this day.

During the Han Dynasty, the Chinese made their first attempts to establish links with the

states of Central Asia, India, and Ceylon. Further development of these ties was in the period of the Song and Tang dynasties (late 6th and early 9th centuries), when China maintained quite active ambassadorial and trade relations with neighboring states. At the same time, many sources note that China wanted to emphasize the dependence of all surrounding countries and peoples on the Middle Kingdom. The Chinese authorities presented each arrival of the embassy from another country as a delegation, which came to pay homage to the ruler and presented gifts as a "tribute". Here we should again mention the idea of "Sinocentrism", which can be traced throughout the whole Chinese history, right up to the 21st century

With the fall of the empire at the turn of the 2–3 centuries, China underwent a great change: the ancient period of the history of the country ended and the Middle Ages began. For four centuries between the fall of the Han dynasty (220) and the formation of the next great Tang dynasty in 618, China was divided and became more sensitive to communication with foreign states. At this time, the Chinese were under the great influence of the countries of Central and South Asia. This period was characterized by the influence of Buddhism, which took an important place in the Chinese culture. The imperial period dates back to the 6th and 13th centuries. For this period, the revival of the imperial order and the political unification of the country were characteristic. The character of the supreme power was changing, the centralization of government was increasing, the role of the bureaucratic apparatus was growing.

As for the Chinese diplomatic ceremony, it had been formed by the 7th century, and it was based on the expression of China's superiority over the countries of Eastern and Central Asia, much of which was vassal dependent on China and paid tribute. Each time the foreign embassy arrived, the Chinese authorities perceived their arrival as the arrival of tributaries, the purpose of which was the worship of the only ruler – the Chinese Wang. The gifts of foreign guests were called "tributes", diplomas and other documents often differed in an inaccurate translation, the ceremony of admission that humiliated foreign ambassadors was conducted. It is important to note that these were the general principles of external relations worked out by the Chinese ruling elite back in antiquity. They applied to different states. In the 7th–8th centuries, in China, great importance was attached to external relations, which expanded foreign trade and cultural ties with foreign countries.

Thus, during the nearly two thousand-year history of ancient China, through the course of contacts between states and the development of international relations, the Chinese developed certain principles for building relations with distant and nearby states. At the heart of them, primarily was the concept of "Sinocentrism", the essence of which was the involvement of neighboring states in Chinese civilization with the aim of subjugating and annexing to the Chinese territory. Later, this concept "overgrew" into so-called "contractual relations", which also amounted to making more and more countries dependent on China. The diplomacy of ancient China focused on domination on international trade routes, expansion of foreign markets and conquest of neighboring peoples. In their arsenal, the Chinese had a certain stock of diplomatic methods and tools for achieving foreign policy goals [2]. Diplomats acted as experts in the balance of opposing forces [2], using the dexterity, cunning and flexibility of the mind with might and main. If it was necessary to make an important decision in political and military matters, it was customary to convene congresses of notable people. It is necessary to note the important role of stratagems in the diplomatic practice of the Chinese. Stratagems as a combination of several hieroglyphs were a strategic "manual", a kind of direction for politicians and diplomats.

Diplomatic service and diplomacy as a whole were one of the leading directions in the activities of the Chinese nobility. It was not without reason that Confucius placed the art of

diplomacy in second place after the state administration. Chinese politicians definitely succeeded in this area, as for the Chinese diplomacy, external relations were closely intertwined with the art of etiquette.

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## Становление дипломатической службы Китая

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**Ключевые слова и фразы:** дипломатия; Китай; дипломатическая служба; внешняя политика.

**Аннотация:** В статье исследуются основные этапы формирования дипломатии в Китае. С древних времен дипломатическая служба Китая выполняла внешнеполитические задачи государств, являясь одним из ведущих направлений внешнеполитической деятельности китайской знати.

UDK 33

# Problems and Directions of Development of the Military-Industrial Complex of the Russian Federation

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**Key words and phrases:** military-industrial complex; development; production;innovation; products.

**Abstract:** The article identifies the main economic and political problems of the development of the Russian military-industrial complex. The features of the military-industrial complex of Russia are shown, its main directions of development are revealed.

In 2015–2016, the military-industrial complex operated in difficult conditions of foreign economic sanctions and the systemic economic crisis that emerged in our country in 2014. Nevertheless, in recent years, the military-industrial complex has been developing steadily, constantly improving production assets, increasing the investments in R & D and innovation. All this contributes to an increase in production volumes. Various programs of state support for the military-industrial complex, state investment in the industry and the formation of a state order for military and industrial goods, supports the industry and helps it to develop.

According to the Russian government, in 2015 the volume of industrial products produced by military-industrial enterprises increased by 12.9 % (in constant prices for 2015), mainly due to the growth in production of military products (an increase of 19.7 %). The increase in production compared to the same period last year was observed in all branches of the military industry (excluding the production of conventional weapons), including the radio electronics industry, with an increase of 32.6 %; the ammunition industry and special chemistry with an increase of 22.3 %; shipbuilding industry,with an increase of 16.3 %; aerospace industry, with an increase of 7.6 %; the aviation industry, with an increase of 5.9 % [5].

Table 1 shows the dynamics of industrial production and military-industrial production. It should be noted that all relevant products had stable dynamics of production growth rates. The only exception was the decline in the growth in 2009 in production of civil defense products and manufacturing industries, which was caused by the global economic crisis.

Sales of finished products in the military industry increased due to military equipment. These deliveries grew due to the state defense order for military purposes aimed at modernizing the Russian armed forces.

As a result of the implementation of the state defense order in 2015, the share of new models of weapons and military equipment in the Armed Forces of the Russian Federation was 1.5 times higher than the planned results (30 % by the end of 2015) and averaged about 47 % [5].

**Table 1.** The growth rates of civil production, military-industrialproduction and processing industries in Russia, as % of the previous year [1]

| Industry | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|
| Military industry | 109.0 | 115.1 | 119.9 | 104.4 | 114.0 | 112.8 | 103.2 | 112.5 |
| Civil industry | 97.9 | 105.0 | 113.3 | 107.7 | 99.7 | 106.0 | 107.9 | 99.5 |
| Processing industries | 105.7 | 104.4 | 109.5 | 103.2 | 84.0 | 111.8 | 106.5 | 104.1 |
| Commodity production of military-industrial complex | 103.6 | 111.1 | 114.6 | 105.4 | 108.7 | 110.4 | 104.7 | 107.6 |

The formation of the orders is based on the participation of defense enterprises in the "State Arms Program" up to 2020, "Development of the Defense Industry Complex", including "Development of Industry and Its Competitiveness for the Period to 2020", "Development of the Aviation Industry for 2013–2025", "Development of shipbuilding for 2013–2030", "Development of electronic and radio electronic industry for 2013–2025", "Space activities of Russia for 2013–2020". State programs suggest an increase in the volume of financing in state defense order for the near future.

At present, fulfilment of state defense order is an important profitable high-yield indicator, which forms the bulk of the profits of military-industrial enterprises. It should be noted that financing of the state order is carried out without delays, with the envisaged amount of advance payment.

However, in the near future, they forecast a decrease in the growth of financing for the military industry. One of the ways out of this situation may be to enter the external and internal market of civilian products.

The production and sale of civilian products in the total structure of manufactured goods of the Russian military-industrial complex declined from 33.7 % in 2011 to 28.8 % in 2012 [1]. During the period under review, the decline in orders for knowledge-intensive civilian products was caused by the reduction in budget financing of certain sectors of the economy, primarily processing. Orders for civilian products are formed under the influence of supply and demand in the market, so this market is extremely ambiguous for the military industry enterprises. For one group of enterprises of the military industry, civilian products enjoy a steady demand among consumers, and occupy leading positions in some sectors of the market. However, for other enterprises, the segment of the market for civilian products is unstable. All this is aggravated by some ongoing negative trends in the country's economy.

The transition of military industry enterprises to mass civilian production is necessary because of the projected reduction in the financing of military products orders in the near future. Enterprises should implement measures to promote the products and commercialize technologies with an orientation to both domestic and foreign markets. The assortment of products of the enterprise should be improved and in many cases be competitive with respect to the Western counterparts.

When selling civilian products, it is necessary to focus on the creation of dealer's and distribution networks in different regions of Russia and abroad; participation in regional, national and international competitive bidding; participation in federal and regional targeted programs [2].

Another problem of military industry enterprises is the acute shortage of highly qualified

workers. The positive trend of updating fixed assets, technical re-equipment of production, emergence of high-tech jobs require professionals of a new type, with new knowledge and skills capable of responding to change. Technical universities, colleges and lyceums, training specialists (at best, narrow specialists), do not keep up with the changes taking place at many enterprises of military industry and their training is not effective.

Another problem in this sphere is aging of professionals and the unwillingness of young professionals to work in the industry, which is caused by low prestige of the job and low wages. The problems of training, attracting, retaining specialists should be solved through the dialogue of the government with the business community and be taken into account when forming the national HR policy.

To solve the problem of shortage of qualified personnel, and training based on the needs of enterprises, it is required to create new forms of integration between universities, research organizations, the establishment of training and experimental structures (bases, centers) for training of specialists to solve personnel problems [3]. As a result of this work, an effective system of training specialists for high-tech enterprises capable of generating knowledge a will be built.

The complicated political and economic situation of 2014–2015, reflected in the country's indirect isolation, affected the work of many military enterprises [4]. In the circles of Russian industry, the situation of the military industry, its dependence on supplies of materials and components of high-tech industries and on the foreign technologies used is widely discussed. At various conferences, meetings, seminars, issues related to the mechanisms and methods of import substitution of technology, successful experience in mastering new import-substituting products, mechanisms for transferring experience in the production and use of technologies used in the military-industrial complex are widely discussed.

Import substitution policy designated by President V.V. Putin and the government of the Russian Federation is aimed at the revival of domestic industry in the production of goods using modern technologies. It includes the following tasks: to organize the sale of civilian products based on the potential of the military industry in the production of high-tech products and reduce the share of imported purchases. To achieve this it is necessary:

– establish links between the enterprises of the military industry for the transfer of experience in production and use of domestic technologies, the experience of organizing import substituting industries and technologies;

– attract domestic and foreign investment in the military industry sector, which contributes to technological re-equipment of enterprises engaged in the development and production of high-tech products;

– create and implement R & D programs and their results aimed at import substitution of products and technologies;

– develop applied science, create design bureaus and scientific schools in the military industry.

In times of crisis, many companies have proven themselves as companies with sufficient scientific and production potential to address acute import substitution issues and fulfill contractual obligations to partners, which has helped to preserve old and establish new business relationships. A high level of R & D for the development of the industry has been facilitated by programs providing for advancement from the federal budget of up to 80 % of the measures for import substitution of products from the NATO member countries and the EU used in domestic weapons, military and special equipment [6].

Thus, the current state of the enterprises of the military-industrial complex of Russia has problems typical for most enterprises of the industry: reduction of state orders in the short term; shortage of qualified personnel; sanctions imposed on Russia. To solve the identified problems, it is required to support scientific research organizations in the structure of production enterprises, to develop a high-tech complex that promotes the production of science-intensive, up-to-date products for both military and civilian purposes and to secure access to domestic and foreign markets. It is necessary to create research and production associations as well as industrial and design technology parks aimed at integrating production, science and education on the basis of military industry enterprises, actively involving the leading universities of the country in their activities.

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## Проблемы и направления развития оборонно-промышленного комплекса Российской Федерации

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**Ключевые слова и фразы:** оборонно-промышленный комплекс; развитие; продукция; производство; инновации.

**Аннотация:** В статье определены основные экономические и политические проблемы развития оборонно-промышленного комплекса России. Показаны особенности оборонно-промышленного комплекса России в настоящее время, выявлены его основные направления развития.

UDK 33

# Assessment of the Level of State Social Support by Senior Citizens

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**Key words and phrases:** interviewer's effect; interaction between the interviewer and the respondent; non-verbal communication; participants' expectations; communication.

**Abstract:** The article examines the process of non-verbal communication between the interviewer and the respondent. The research hypothesis is that, in the course of personal interviews with respondents, the interviewer's effect as the "tendency of the answers obtained in the study to vary depending on the interviewers assigned to the respondents" can be observed less frequently than in the telephone interview in the absence of personal interaction between the interviewer and the respondent.

As part of writing of this article, a pilot study was conducted on the topic: "Assessing the level of state social support for older people". The study was aimed at testing the methods of collecting information, assessing issues, identifying factors that make interviewer's work difficult or the process of getting answers from the respondent for subsequent identification of the level of satisfaction of people of pre-retirement and retirement age with the quality of social support measures provided by the state. With the help of the research, difficulties that could arise in the process of carrying out an in-depth study on a given topic were identified.

## Testing of the methods of collecting information: a personal interview

In the course of the pilot study, 10 personal interviews with representatives of the older generation (people of pre-retirement age and retirement age), lasting 24–35 minutes were conducted. During the interview, which was based on the questionnaire, the interviewers encountered with a number of difficult situations. The interviewers has to expand some questions, substantiate and clarify them to several respondents (to make sure that the respondent understood the question, he was asked to rephrase the question "in his own words"). They had to ask helping questions, as well as deal with situations of emotional rejection of the answer; this was typical of the situations when questions were irrelevant for a certain number of respondents. Let me consider the above situations in detail, using the following fragments of the interview.

**Case 1.** Respondent – male, 69 years old, retired, Moscow.

*Question: What kind of social benefits do you get? (Hereafter, options for answers were*

*suggested, for example, benefits for pensioner care or disability, benefits for the poor, benefits for the need, or other types of social benefits provided by the state).*

*<…>*

*I: Do you receive social benefits?*

*P: Yes.*

*I: What kind of them? (suggested answer choices).*

*P: I do not understand very well what types of benefits ... (pause) I only have a pension and some allowances to it.*

*I: Can you be more specific?*

*P: I do not know what kind of benefits ... well, these are extra to my basic labor pension*

*I: Well, maybe this is a benefit to pensioner care. or for disability?*

*P: Yes, I get disability benefits, I have a disability, but I do not receive pensioner care benefits.*

*<…>*

In this fragment of the interview, we observe a situation that indicates the difficulties experienced by the respondent in answering the question asked by the interviewer. The respondent clearly understands that this refers to social benefits that complement the pension payments and thus increase the level of the income received by the pensioner, but when the answers are listed, the respondent is lost and can not immediately answer what types of benefits he has at his disposal. After the interviewer expands the question, sets a number of helping questions and once again focuses on the proposed answers, listing them in order, the respondent provides clear answers to each of the interviewer's questions.

**Case 2.** Respondent – female, 79 years old, Moscow.

<…>

*I: What are the most important values for you? (The interview suggested options of the answers, including the option "I find it difficult to answer").*

*P: What exactly do you mean?*

*I: I am wondering what is important to you in life ... what values are most important? What do you give priority to: family, work, perhaps, health.*

*P: Well, of course, health and family ... if you have good health, everything will be fine: work and a strong family. You want to find out what in life is most important to me … definitely health.*

*<…>*

This interview lasted about 25 minutes; there was a clear interest of the interviewee in the process of interview and enthusiasm for the topic. The respondent tried to listen carefully to the interview, concentrate on the questions and did not feel any discomfort in case the interviewer asked her to repeat the question, rephrase it in her own words for greater clarity. From this interview, it can be assumed that the respondent had enough free time for communication and was actively involved in the conversation.

The result of testing of the structured questionnaire using the method of a personal interview brings me to the following conclusions: all the requirements to the level of the language complexity were satisfied, in general, the questions were clear to the respondents; some of them encouraged the interviewer to repeat the question, expand it or modify the questions. These questions were related to the types of social benefits received, the question of the role of the state in improving the level and quality of life of the population). The questions that would allow respondents to evade from the answers were excluded from the interview. In the process of communication, those respondents who were not originally inclined to do the interview felt the need to be praised by the interviewer. It can be concluded that some of the answers were biased

for the subsequent analysis. The questionnaire was divided into thematic blocks for respondents. The respondents did not demonstrate any tiredness or fatigue in the process of personal interviews, every communicant in the course of the conversation was aware of its importance and significance, and hoped that they had an opportunity to be heard and it was their "voice" to be decisive. The interviewer's effect, directly related to the distortion of the responses received from the respondents in the communication process, was not observed. The respondents who participated in the pilot survey were interested in the topic of the interview. The answers and comments on the questions were accompanied by emotional replicas of the respondents, which were the result of joint activity of the communicants.

**Testing of the methods of collecting information: a telephone survey**

To attract and subsequently retain the attention of the interlocutor is the most essential condition to initiate communication. During the interview, respondents showed their interest, sincerely expressing their position regarding the issues formulated by the interviewer. The problem of creating motivation for participation, the willingness for communication is an extremely important methodological challenge, because depending on what meaning the respondent gives to the question, influences the effectiveness of the survey.

One of the major difficulties that the interviewer could face during the telephone survey is the time spent by the interviewer to read questions and suggest the possible answers from the table. In this situation, they are also faced with the constraint of time, and if the interviewer quickly reads the possible answers, the respondent, in turn, might not listen attentively and give short answers. Below is an example of such communication.

**Case 3.** Respondent – male, 60 years old, retired, Moscow.

*<...>*

*I: Why do you think your family income is not sufficient to cover all the expenses? (The interviewer suggests 11 options from the questionnaire).*

*P: Well … earnings …*

*I: Only this option?*

*P: You talked so fast that I did not catch the others.*

*I: I will repeat the options in order: a low level of social security, high prices, high utility tariffs …*

*R: Yes, high prices, but I also have benefits as disabled.*

*<...>*

In this fragment the interviewer, the interviewer did not have professional communication skills and gave all possible options without pauses, and the respondent lost concentration. The question was not unacceptable for the respondent, but it had too many options for the perception in the telephone conversation. A large amount of such questions in the questionnaire can make respondents get tired quickly, lose their concentration and unable to maintain a sufficient level of communication, ensuring the effectiveness of the interview.

The following excerpt from the telephone interview shows that the question was not suitable for the conversation of this type.

**Case 4.** Respondent – female, 58 years old, Moscow.

*<...>*

*I: If we assume that all your family's income is 100%, what percentage accounts for the following categories of expenses: food, clothing, housing costs …*

*P: You know, I have neither the time nor desire to count it all and in general I do not understand*

*why you need information about my budget, especially my family? … It is confidential…*

<…>

As a part of a telephone survey, the respondents do not welcome this type of questions. As can be seen from this interview, the interviewer got the respondent confused. To eliminate the negative reaction of the respondents the interviewer must be clear to which category of respondents the respondent belonged. This relates to occupation, the level and the quality of life, as the different levels of life largely determines the needs of the population.

The method of testing questionnaires in the form of a telephone survey seems to be more complicated than personal interviews with respondents. In this tested method, the interviewer must possess a great number of skills and abilities to establish and maintain communication with respondents throughout the interview. It is also important for the interviewer not to impose response options during the conversation, if the respondent loses concentration or feels tired in the communication process. In such a method of doing a survey the interviewer's effect can be observed more frequently than during a personal interview, providing direct visual contact between the communicants. The respondents did not misunderstand the questions asked during the interview. However, they felt uncomfortable when answering questions about income, expenses and sources. As opposed to personal interviews, the question "What do you feel when you have to apply to social welfare services?" did not provoke similar behavioral respondents' reactions. Perhaps, the reason was that in a telephone interview, there was no direct face-to-face contact, and the respondents gave the exact description of their experience. The research has shown that the interviewer's courtesy in a telephone survey is – the key to a successful interview.

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# Оценка уровня государственной социальной поддержки людьми старшего возраста

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**Ключевые слова и фразы:** эффект интервьюера, взаимодействие интервьюера и респондента, невербальная коммуникация, ожидания участников коммуникации.

**Аннотация:** В статье рассматривается процесс невербальной коммуникации интервьюера и респондента. Гипотеза исследования состоит в том, что в процессе личных интервью с респондентами эффект интервьюера как «тенденция полученных в исследовании ответов варьировать в зависимости от закрепленных за респондентами интервьюеров» можно наблюдать реже, чем в рамках телефонного опроса при отсутствии личного общения интервьюера и респондента.

UDK 33

# Institutional Prerequisites of the System of Social Partnership: Philosophical and Economic Aspects

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**Key words and phrases:** system; social partnership; partnership; law of human existence; social and economic relations;labor; requirements; personality.

**Abstract:** The article considers institutional prerequisites for the system of social partnership. The authors draw a conclusion that the institute of social partnership can exist in various modalities. It can be truncated, accentuated, ambivalent, priority-based, selective etc.

The most important institutional prerequisite of the system of social partnership is the priority of interests of labor as source of cumulative wealth in relation to interests of the equity. Labor is understood by economists as the basis and the cause of civilization emergence and development. In this aspect, the concept of labor and employment will be considered in the context of self-realization of the worker's personality, social peace and stability in society, and constructive social interaction. This requires a system of social partnership. Understanding the need for cooperation between the employee and the employer has long been present in science. It was E. Durkheim who formulated the theory of solidarity, in which he showed that even in undeveloped archaic societies there was communication uniting people into a single whole. His contemporary F. Bastia considered solidarity of the legal entity peculiar to human nature itself. In Russia P.A. Kropotkin paid special attention to social aspect of solidarity. Having formulated the concept of mutual assistance, he tried to prove it not only as the law of the nature, but also as the main factor of evolution of human society. P.A. Kropotkin paid special attention to social aspect of human solidarity [5, p. 281].

With development of public job specialization and transition of the world economy to industrial production, the perspective of solidarity acquired the economic meaning. D.S. Mil was one of the first who used the term «partnership» to characterize social and economic relations. In general, this concept goes back to the ideas of A. Smith, who stressed that in conditions of market economy any part of society is forced to enter partnership with the other parts [6, Ch. 1, p. 448]. However, A. Smith, assuming that partnership is a natural condition of market economy, spoke about the society living according to spiritual and moral religious instructions. In the society with weak spiritual and moral bases such partnership is problematic.

In the history of development of social partnership there were also other concepts explaining solidarity and partnership as unnatural (artificial) forms of social relations in society. Take for instance, the theory of N. Machiavelli who paid special attention to studying social conflicts and their nature. He came to conclusion that the theory of social partnership derives from the theory

of conflicts. The conflicting parties have to reach a compromise and a consentat a certain stage of the conflict. However, even today some authors consider conflict as the quality of a person, who is ready for competition [3, p. 17]. Competition is the fundamentals of the market economy.

Despite different approaches to the analysis of a phenomenon of social partnership, most authors agree that partnership is based on a certain proximity of interests of participants of this system. In this regard,we can recall that social partnership is not a new invention. For example,it was inherent to the Russian farming community. Historians determine a community as a closed local organization for which the world ends behind the village fence. The community acted as the keeper of ancient forms of social communications [2, p. 361]. Elements of social partnership can be found also in the organization of labor artels, various partnerships, cooperatives, etc. And even such especially localized forms of social interaction as clans, clusters, etc. demonstrated a significant historical experience of partnership development and social interaction of specific elements of social partnership in structure of these forms. In modern conditions of post-industrial development, the elements of social partnership can be revealed even in clusters and network structures. However, they are not a dominant in the system of social interaction of participants of such structures. As any institute, social partnership can be presented in the form of the system of the principles, regulations and rules. It is impossible to agree completely with the statement that moral standards are not institutional [1, p. 171].

Here, it is extremely important not to contrast social institute as a certain social institution to a similar social formation. The matter is that such opposition methodologically is incorrect and often leads to misstatements of social reality. For example, when it is assumed that social partnership is the action within civil society, we attribute an active role to the public [4, p. 46]. It can be inferred from this statement that social partnership already exists in civil society, but is not its compulsory element. In other words, social partnership cannot exist out of civil society and the constitutional state. But the history demonstrates that various modalities of social partnership can be found even in antique slave holding city-states, not to mention the later times. Here is an example from the Soviet history: tactical alliance of the proletariat (working industrial enterprises) and poor peasants (farm laborers). But it is known that civil society did not exist in those days. Neither did a constitutional state in its modern understanding.

Therefore, the institute of social partnership as the history witnesses can exist in the most various modalities. It can be truncated, accentuated, ambivalent, priority-based, and selective.

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## Институциональные предпосылки системы социального партнерства: философский и экономический аспекты

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**Ключевые слова и фразы:** система; социальное партнерство; партнерство; закон человеческого существования; социально-экономические отношения; работа; предпосылки; личность.

**Аннотация:** Рассмотрены институциональные предпосылки функционирования системы социального партнерства. Авторы делают вывод, что институт социального партнерства может существовать в различных модальностях. Он может быть усеченным, акцентуированным, амбивалентным, приоритетным, избирательным и т.д.

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# Hierarchy Analysis Method for Selection of Expert Groups in Competence-Based Model of Education

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**Key words and phrases:** hierarchy analysis method; expert rates; methods of forming expert groups; methods of selecting experts.

**Abstract:** The paper considers the hierarchy analysis method for selection of expert groups to rank the university courses within the defined competencies. The rationale for the number of experts is provided. An algorithm of selecting experts and forming a group of experts is described.

The existing national educational standards stress the importance of ongoing evaluation and control of competencies developed by students throughout the entire period of study. The list of necessary competencies is determined in accordance with employers' requests, the academic community requirements, and on the basis of the sociological research findings, which must be measured and monitored in the learning process.

However, a significant number of problems that need to be addressed in the formulation of learning outcomes, organization of the educational process and assessment of the results of competence-oriented educational programs remain unsolved [19]. The problems related to the competence-based model of education in the context of professional training limited to a particular course and ensuring the integrity on this model require further consideration.

Expert evaluations can be used at any stage of the study they have a sufficiently large range of applications. The involvement of experts to solve problems, as a rule, is necessitated by the fact that accurate calculations are not sufficient to achieve the results.

To manage the learning process and build high-quality training programs, it is necessary to understand how to classify disciplines by their importance and to assess the impact of each of them on the formation of specific competencies. In addition, it is necessary to have rank competencies within certain training areas. For planning of specialist training, as well as for further analysis of the learning process, it is important to establish which disciplines are most important for the development of competencies. This can be done with the help of expert assessments. In some decision-making tasks, in particular for the processing of expert assessments, various algorithms and methods can be used to determine the resulting expert judgment. The most widely used for the hierarchy analysis method (**HAM**), proposed by T. Saati [18].

This method has a number of advantages related to the problem under consideration:

- pairwise comparison of elements, which is inherent in human nature itself (see, for example, Sechenov's work [1]);
- ease of making changes to matrices of pairwise comparisons;

- presence of a verbal-numerical scale, convenient for comparing elements;
- built-in criterion for assessing the quality of the expert's comparison and expressed through the consistency relation;
- structuredness, which makes it possible to make logical conclusions;
- the universality of the method, which makes it possible to apply the method in many areas;
- flexibility, since it allows using the results of this method in further calculations, which is an important component for solving the problem of assessing the development of competencies [2; 16; 17].

A disadvantage of the method is the greater complexity of filling and calculating matrices, but this disadvantage can be considered insignificant in the framework of a high degree of automation of calculation and information gathering process. In addition, HAM makes it possible to obtain exact results of weight coefficients in the disciplines that are compared among themselves [3]. A fundamental scale for measuring the results of a pairwise comparison used in the HAM has been tested in many applications [4–6].

An important task related to the involvement of experts to solve various problems, is the formation of the structure and composition of the expert group. An expert, that is, a person capable of giving weighted assessments in a certain sphere of professional activity, can only be a person who has attained a high level of professional excellence [7]. Thus, we can say that the choice of experts is not a trivial task that requires a comprehensive review.

When working with experts, it is necessary to take into account that each expert acquires special knowledge, specific search patterns, unique models and methods of decision-making throughout long and versatile professional activity.

An integrated approach to the analysis of expert work allows us to consider an expert as a person who has a unique combination of innate abilities and professional motivation, and who needs regular practice to achieve mastery in a certain field of activity. [8] Traditionally, expert work is defined as meaningfully better performance, demonstrated on specific tasks typical of a ceratin field of activity [9; 10].

In the works of S.V. Gutsykova much attention is given to the interpretation of the essence of the expert role and the determination of the grounds that become the criteria for selecting experts [7; 11; 12]. The requirements for experts and expert groups can be multilateral. Experts in the field of education or other sphere should meet many requirements, the most important of which are:

- the ability to explain their assessments made as a result of expertise;
- professional competence and knowledge;
- long-term practice in the field of expertise in which the examination takes place;
- professional experience of an expert;
- versatility and success in professional activity.

For effective expert evaluation it is necessary to pay special attention to the methods of expert examination and the selection of an expert group, based on such indicators of each participant as:

- responsibility;
- qualifications;
- specialization of expert in the field under study, etc.

Experts can be representatives with different statuses, implementing activities in various spheres related to this field of study and belonging to different organizations. The status of experts depends on the examined field of study, namely, educational process and competences.

- Employers. According to the national educational standards, employers should take

a direct part in the educational process (in particular, in the course of public accreditation of training) and the formation of competencies. Thus, their participation in the expert group is mandatory, since they influence the training of specialists and form the requirements for future specialists, that is, they take a direct part in the process of managing the educational process. In addition, employers have the maximum knowledge of the skills that a potential graduate must have for employment.

- Administrative staff of the university. This group of experts has the necessary and relevant information about the educational process and its management. They are responsible for the construction of curricula.
- Teaching staff. This group of experts has the maximum awareness of the process of training, including the scope and content of the training material. Thus, the involvement of the teaching staff in the expert evaluation is compulsory.
- Graduates and senior students. This group of experts has the maximum awareness of the entire learning process, and acts as a consumer of information, very often correlating it with the first professional working experience. Students and graduates have the knowledge and understanding of what they need. This group has a ranked view of their skills.

To obtain a qualitative expert research material, one must adhere to the following principles:

- the principle of voluntary participation; a voluntary expert consent is required;
- the principle of authorship and personal responsibility, i.e. an expert is responsible for the information provided and its truthfulness.

Methods for selecting experts are divided into local and large-scale. Thus, in order to determine the involvement of experts to conduct research on the ranking of competencies and disciplines within the competencies, it is necessary to choose the most suitable methods.

The method of assignment is one of the most common for solving problems within local objects. This method has a significant disadvantage, contrary to the previously defined principles of obtaining quality material, namely, the principle of voluntary participation.

The most rational methods of selecting experts to solve problems on the basis of the hierarchy analysis method in the educational process are the “snowball” method and the method of quota equalization. Considering the “snowball” method, it is worth noting that it the working group conducting the research is engaged in the formation of a list of potential experts. Experts should have the maximum level of competence in the field under investigation, and recommend people from their circle of acquaintances who have the same or whiter level of competence to be experts. The method of quota equalization is used to ensure equal representation of groups previously identified.

For the selection of experts suitable by the hierarchy analysis method, it is necessary to use both an objective approach to the assessment and a subjective one, because of the specific nature of the problem being solved. The documentary approach used within the objective method allows selecting experts on the basis of documented data, such as work experience in a certain field, academic degree, position, academic title, number of publications and citation index, etc.

Within the framework of the subjective approach, the method of self-assessment of the degree of competence and objectivity is used. According to the V.I. Paniotto’s research, this method is effective, because specialists who are confident in their knowledge have a higher level of self-esteem [13]. Answering various questions concerning the knowledge of the expert in a certain area, we receive material that is easily ranked, which allows us to identify the most preferable candidates.

Based on the data obtained, the experts are ranked according to a certain sequence,

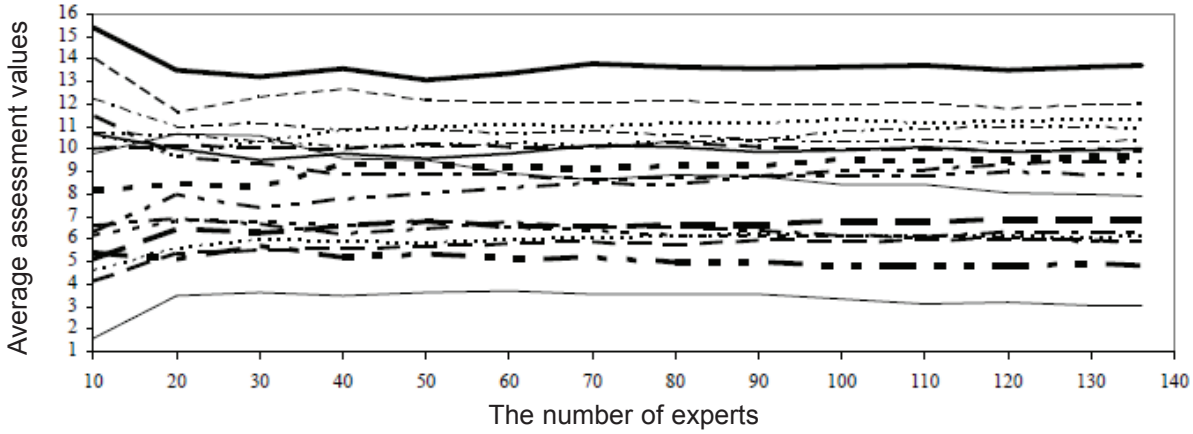


**Fig. 1.** Correlation between the expert evaluation and the number of experts

and then the necessary quantity of experts is selected and approved in the framework of the planned study.

Any expert methods are associated with high labor costs on the part of experts, both at the assessment stage and in the further research at the stage of processing information received from experts. In this connection, the question about the necessary number of experts involved to obtain a qualitative result is relevant. In S.D. Beshelev' work devoted to mathematical and statistical methods of expert estimates, the number of experts involved varies from 5 to several hundred [14].

To solve the task of ranking the competencies and disciplines within the framework of the allocated competencies, the number of experts involved was limited to 30. According to a study conducted by M.M. Kosova and M.A. Zilbergleit for the methods of pairwise comparison, the number of experts can be limited to 20. According to their study, we can conclude that the result of the pairwise comparison method varies sufficiently in the range of experts from 1 to 20 and only slightly varies in the range from 21 to 136 (Fig. 1) [15]. Thus, we can conclude that a sample of 30 experts for solving problems using the hierarchy analysis method is sufficient for pairwise comparison.

As a result of processing the data received from the expert group, we obtained a ranked list of disciplines within the framework of competencies and a ranked list of competencies. Based on the above information, it is possible to implement management actions on the educational process to increase its effectiveness, and to use the data for further application in calculating competence development [2].

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## Применение метода анализа иерархий при выборе экспертных групп в компетентностной модели обучения

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**Ключевые слова и фразы:** метод анализа иерархий; экспертные оценки; формирование групп экспертов; методика отбора экспертов.

**Аннотация:** Рассмотрена сущность метода анализа иерархий применительно к выбору экспертных групп с целью определения важности учебной дисциплины в рамках заданных компетенций. Дано обоснование по количественному составу привлекаемых экспертов, предложен алгоритм работы с экспертами и формирования группы экспертов на основе сферы деятельности.

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