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## CONTENT

### ECONOMIC SCIENCES

<i>Davaasuren Avirmed, Bat-Erdene Ochir, Batmunkh Batsukh</i> ANALYSIS ON MONGOLIA'S CURRENT ECONOMIC STABILITY.....	<i>Klaudia Lipi, Mikael Lipi</i> INSURANCE OF INVESTMENT PROJECTS AND THE ROLE OF INTERNATIONAL INSURANCE COMPANIES.....
4	9

### HISTORICAL SCIENCES

<i>Kubarev V.V.</i> THE SHROUD AND THE SAVIOR'S JOURNEYS .....
25

### MEDICAL SCIENCES

<i>Issametov Davran Rashitovich, Kurmanov Talgat Amanzholovich, Balakhnin Pavel Vasilievich</i> ARTERIAL ANATOMY OF A PREVIOUSLY UNCLASSIFIED VARIANT OF LIVER VESSELS AS A FACTOR INFLUENCING THE EFFICIENCY OF EMBOLIZATION OF SOLID TUMORS USING THE EXAMPLE OF THE ORIGIN OF THE RIGHT HEPATIC AND RIGHT RENAL ARTERIES FROM THE COMMON HEPATIC ARTERY.....	<i>Dragos F. Voicu, Adrian Drăgan</i> ETIOPATHOGENIC AND ANATOMO-CLINICAL ASPECTS IN POSTOPERATIVE EVISCERATIONS .....
42	46
	<i>Dragos F. Voicu, Adrian Drăgan</i> SURGICAL TREATMENT IN ISOLATED LIVER TRAUMA .....
	49

### PHILOLOGICAL SCIENCES

<i>Inna R. Sargsyan</i> THE CONCEPT OF STEREOTYPE IN EARLY 21ST CENTURY SCIENCE .....
52

### POLITICAL SCIENCES

<i>Elmira Kagazbaeva, Nurzhan Tabys</i> POLYCENTRIC WORLD ORDER: MAIN APPROACHES.....
56

### PSYCHOLOGICAL SCIENCES

<i>Salamova Kamala Bahazar, Hasanzadeh Fidan Tahir</i> PSYCHOLOGICAL CHARACTERISTICS OF ADOLESCENTS' PEER INTERACTIONS.....
61

### SOCIAL SCIENCES

<i>Onamusi Abiodun Babatunde, Olatunji Patrick Olanrewaju, Oreagba T. Oluwakemi, M. Trihudyatmanto</i> BUSINESS RESILIENCE AND FIRM SUSTAINABILITY: THE CONTINGENT ROLE OF DIGITAL MARKETING CAPABILITY IN EMERGING MARKET SMES .....
66

## **TECHNICAL SCIENCES**

*Jamanbalin Kadyrgali Kadyrgali,*

*Berik Jamanbalin*

DEVICES AND METHODS FOR AUTOMATED

TESTING OF ELECTRIC MOTORS ..... 77

# ECONOMIC SCIENCES

## ANALYSIS ON MONGOLIA'S CURRENT ECONOMIC STABILITY

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### Abstract

The main purpose of this article is to analyze and evaluate how well balanced the Mongolian economy is currently. The main criterion that determines the economic balance of any country is the internal balance of supply and demand. According to our research, in 2024, 76.3% of our country's total demand was met by domestic production, and the remaining 23.7% by imports. This shows that the Mongolian economy is imbalanced in its self-sustainability. As the Mongolian economy becomes more efficient and more competitive in the long run, it should become self-sustaining.

One of the main factors leading to the internal imbalance of the Mongolian economy is the underdeveloped structure of the industry. In the analysis of the economic structure, special attention is paid to the share of the primary sector, i.e. agriculture and mining, in the GDP. The high share of this primary sector in the country's economy is considered to be backward in the economic structure. According to the 2024 data of Mongolia released by the World Bank, the primary sector occupies a very high 38.5 percent of Mongolia's GDP, which indicates that Mongolia, which belongs to the low-middle income countries category, is 15.8 percent higher than the countries of this group.

The two main economic sectors of Mongolia, agriculture and mining, are highly dependent on natural and climatic conditions, and when drought and harsh winter affect the animal husbandry sector, the number of livestock decreases causing production lag. In addition to the internal imbalance of the Mongolian economy, the imbalance of external economic relations is of particular interest. First of all, this is manifested by the continuous increase in the amount of foreign debt. Another phenomenon that indicates the imbalance of the Mongolian economy is the excessive dependence on imports. It can be seen that the share of imports in the total economic resources was 23.7 percent in 2024. It is necessary to draw conclusions from this analysis and implement a policy to ensure economic balance in Mongolia for its future development.

**Keywords:** Economy, sustainable development, Mongolian economy, economic balance, economic analysis

The main goal of this paper is to analyze, evaluate and draw conclusions about the stability of the current Mongolian economy. The economy of a country at any level of development has a common factor characterized by two main parts: demand and supply. The main criterion for determining the stability of a country's economy is the internal balance of its demand and supply. At the macro level, demand consists of consumption and exports, which represents the amount of goods and services needed by an economy, both domestically

and internationally. Supply, on the other hand, represents how much of that demand is met by production and imports. Although, demand and supply should always be in balance in a given year, the internal structures could be off-balance.

According to the consolidated national accounts included in the 2024 statistical compilation of Mongolia, the indicators on supply and demand were as follows.

Table 1.

**Mongolia's macro-level demand and supply indicators for 2024 (billion tugriks, at market prices)**

DEMAND		SUPPLY	
1. Total Domestic Consumption	207732.9	1. Total Domestic Production	179568.4
Interim Consumption	99612.1		
Final Consumption	52840.4		
Savings, others	27607.9		
2. Export	55280.4	2. Import	55772.1
<b>TOTAL</b>	<b>235340.5</b>	<b>TOTAL</b>	<b>235340.5</b>

Source: Statistical Bulletin 2024 by National Statistics Office.

The table shows that in 2024, Mongolia met 76.3 percent of its total demand through domestic production, and the remaining 23.7 percent through imports. We can see that the total domestic production (TDP) was 179.5 trillion tugriks, while the total domestic consumption (TDC) was 207.7 trillion tugriks, indicating that the lack of domestic resources has been compensated by external resources. This basically shows that Mongolian economy is imbalanced and has a weak self-sustaining capacity.

The concept of economic self-sufficiency was officially mentioned in the "Economic security section" of the "National Security Concepts", an official policy document of the Mongolian state, as part of the interrelated concepts of "ensuring economic independence and development" and "building economic self-sufficiency". Economic self-sufficiency is related to the efficient operation of economic activities using internal resources. This concept is one of the main criteria for expressing the country's economic security. In addition, this concept reflects the internal stability of the economy. Unfortunately, we see the burden of external debt on the Mongolian economy continues to this day. Thus, for Mongolia to have a long-term solution to its external debt burden is to increase its economic self-sufficiency. By improving its economic efficiency and competitiveness Mongolia will eventually reach self-sufficiency.

The National Consolidated Accounts prepared by the National Statistics Office of Mongolia allows us to assess and draw conclusions about the current Mongolian economy. The first 6 of the national accounts show how the Gross Domestic Product (GDP) is created, how it is broken down into primary incomes - profits, wages, net taxes, and depreciation of fixed assets, and how the remaining primary income - gross national income and gross national property income - is transformed from there, how total savings are created, what they are spent on, and whether the country is left with money in the end. Let's look at these factors using the data from the 2024 integrated national accounts.

The formula below shows how Mongolia's GDP was formed by production in 2024. Here, by subtracting Interim Consumption (IC) from Total Domestic Production (TDP), the GDP is 79.9 trillion tugriks.

$$\begin{aligned}
 &GDP \text{ (79956.3 billion tugriks)} \\
 &= TDP \text{ (179568.4 billion tugriks)} \\
 &- IC \text{ (99612.1 billion tugriks)}
 \end{aligned}$$

The calculation below shows how National Income (NI) is generated by adjusting this GDP with factors including Net Factor Income from Abroad (NFIA) and Remittance (R) outside Mongolia.

$$\begin{aligned}
 &NI \text{ (70866.6 billion tugriks)} \\
 &= GDP \text{ (79956.3 billion tugriks)} \\
 &+ NFIA \text{ (11501.5 billion tugriks)} \\
 &- R \text{ (20591.2 billion tugriks)}
 \end{aligned}$$

Mongolia's national income (NI) in 2024 was 70866.6 billion tugriks, i.e., 9089.7 billion tugriks less than the GDP, which is due to the fact that remittances exceeded the overall inflows by this amount. Remittances include salaries, profits, and other incomes transferred to foreign entities from foreign enterprises in Mongolia.

In 2024, Mongolia's Gross National Income (GNI) was 72,382.9 billion tugriks. This is calculated by adding current transfers received from abroad to NI, and subtracting current transfers transferred to foreign countries. In addition, when final consumption expenditure (FCE) is deducted from the GNI as shown below, we can determine Mongolia's total savings.

$$\begin{aligned}
 &Total \text{ savings (19542.5 billion tugriks)} \\
 &= GNI \text{ (72832.9 billion tugriks)} \\
 &- FCE \text{ (52840.4 billion tugriks)}
 \end{aligned}$$

GNI is the total amount of distributable income owned by Mongolian government. We have seen from the above calculations that this income originates from the GDP and is transformed into NI, which then gets adjusted through current transfers to reach GNI of 72832.9 billion tugriks. By deducting FCE from this income, a residual savings of 19542.5 billion tugriks has been created. Now this total saving is first and foremost spent on fixed assets, and the rest is spent on the purchase of tangible current and valuables for the year.

When we trace the main macro-level revenues of Mongolian economy in 2024 and what they were spent on, we can see that the total savings generated in the domestic economy in 2024 amounted to 19542.5 billion tugriks. On the other hand, the Fixed Assets Savings (FAS) alone in that year reached 21430.1 billion tugriks in practice, exceeding the total savings by 1887.6 billion tugriks. This shows that the total savings generated in our economy in one year are not sufficient for the savings of fixed assets in that year and are not able to support itself. In addition, since the actual expenses of 5595.8 billion tugriks were incurred for the expenses of working capital and the purchase of valuables in that year, the total economic result was 7483.4 billion tugriks short, which was financed by external sources.

For this reason, our economy ended up with a net deficit of the above amount in 2024 as shown below.

- Deficit (-7483.4 billion tugriks)
- = Total savings (19542.5 billion tugriks)
- FAS (21430.1 billion tugriks)
- Tangible fixed assets and valuables

(5595.8 billion tugriks)

The balancing indicator of the the capital account, the 6th account of the national accounts, is determined by the percentage of net debt in the GDP and it measures the economy's ability to self-sustain.

Table 2.

Net debt as a percentage of GDP			
Year	2010	2015	2024
GDP (billion tugriks)	9756.6	23134.1	79956.3
Net debt (billion tugriks)	- 1326.3	- 1174.7	- 7483.8
Net debt as a percentage of GDP (%)	- 13.6	- 5.1	- 9.4

Table 2 shows that Mongolia's capital account has always been in the red, with a deficit of 1326.3 trillion tugriks, equivalent to 13.6 percent of its GDP, in 2010, but it increased further in 2024, reaching a deficit of 7483.8 billion tugriks. Nevertheless, in 2024, the deficit decreased to 9.4 percent of the GDP, down by 4 percent from 2010. This shows that Mongolia has used financial resources equivalent to 9.4 percent of its GDP in the form of foreign loans and aid, and that domestic resources were completely inadequate.

One of the main factors that leads to the internal imbalances in Mongolian economy is the antiquated sectoral structure. The structural analysis of the economy is carried out according to the common international methodology based on the so-called "three-sector model" developed by the famous statisticians and economists A. Fisher, K. Clark, and J. Fourastié. This three-sector model consists of the following large-scale sectors:

- **Primary i.e., agricultural (A-Agro sector) sector.** This includes agriculture and mining industries.

- **Secondary i.e., industrial (I-Industrial sector) sector.** This includes manufacturing, electricity, heat, clean water production and distribution, as well as the construction sector.

- **Tertiary i.e., service (S- Service sector) sector.** This includes all types of services.

When drawing conclusions from the analysis of the economic structure, the share of the primary sector, i.e. agriculture and mining, in GDP is given special attention. A high share of this primary sector in the economy of a country is considered to indicate that the economic structure is underdeveloped. This is because this sector, which supplies agricultural raw materials and unprocessed natural resources rather than final products, has low added value, low labor productivity, and weak competitiveness. Therefore, it is not considered to contribute significantly to the long-term development of the economy. On the contrary, service sectors account for a high percentage in the economies of developed countries.

Table 3.

#### Comparison of Mongolia's three economic sectors' shares in its GDP vs other countries' divided by income groups by World Bank in 2023 (by percentage)

	Primary	Secondary	Tertiary
Low-income countries	42.9	24.8	32.3
Lower-middle-income countries	22.7	27.6	49.7
Upper-middle-income countries	10.2	35.3	54.5
High-income countries	1.4	32.6	66.0
World average	11.8	26.4	61.8
<b>Mongolia</b>	38.5	12.9	48.6

Source: World Development Indicators by World Bank, 2024.

According to the 2023 data from the World Bank, the share of primary sector in the GDP of low-income and underdeveloped countries was highest among the sectors at 42.9 percent. As the income of countries increases, this share decreases, and the share of this sector in the economy of high-income developed countries

was only 1.4 percent. According to the data of Mongolia released by the World Bank, the share of the primary sector in Mongolia's GDP was 38.5 percent as of 2024. As a country classified as a lower-middle-income country, Mongolia is 15.8 percentage behind the average in this group, which indicates that its economic structure is lagging.

Table 4.

#### The percentage of Mongolia's economic sectors in its GDP throughout the years

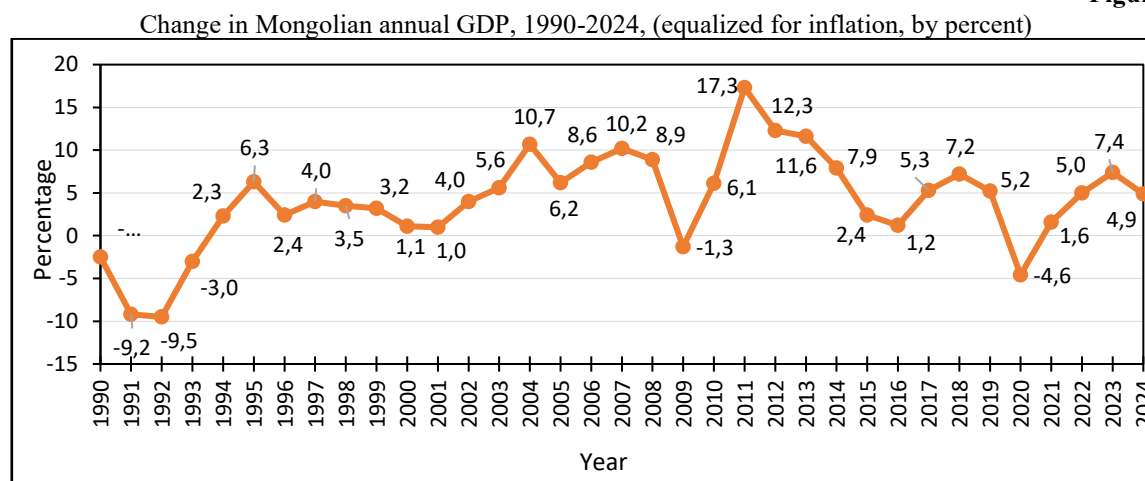
Year	1995	2016	2024
Primary sector (agriculture and mining)	50.0	32.2	35.2
Secondary sector (manufacturing and construction)	15.6	15.7	12.4
Tertiary sector (service)	34.4	52.1	52.4

Source: Statistical Bulletin 2017 and 2024 by National Statistics Office.

Due to progressive changes in the sectoral structure in Mongolia since 1995, there has been a significant decrease in the primary sector share in the GDP, from 50 percent since 1995 to 35.2 percent in 2024. The share of the service sector has also increased from 34.4 to 52.4 percent. Despite these changes, the main sector of agriculture and mining is vulnerable and have highly volatile growth. Agriculture is highly dependent on natural and climatic conditions, and when affected by

droughts and harsh winters, the livestock numbers decline, the livestock sector suffers and results in production decreases. On the other hand, the mining sector is highly dependent on commodity prices on the world market, with volatile growth that is characterized by repeated declines and recoveries. Due to this sector's volatility, Mongolia's GDP had high fluctuations over the years, which you can see from Figure 1 below.

Figure 1.



Looking at the growth and decline of Mongolia's GDP over the past 34 years, we can see that economic growth has been very unstable, with 2-3 consecutive years of growth followed by declines. On the other hand, this is an indication that the regular balance of the economy has been lost. The decline in GDP in 1990-1993 was related to the difficulties of the first years of the transition from a centrally planned economy to a market economy, while the sharp decline in 2008 to 2009 was due to the decline in the livestock sector due to the difficulties of a harsh winter. Furthermore, the sharp decline in the economy in 2020 was directly related to the pandemic. In addition, the decline in raw

material prices in the mining sector between 2013-2016 also slowed down economic growth. This shows that the two main contributors to Mongolia's economy, agriculture and mining, not only continue to have a significant impact on economic growth but also disrupt the stability and balance of its growth.

In addition to Mongolia's internal economic imbalances, the imbalances in its external economic relations are of particular concern. This is primarily manifested in the continuously increasing amount of external debt as seen in Table 5.

Table 5.

Total end of year external debt of Mongolia (by million US dollars)

Year	2020	2021	2022	2023	2024
<b>Total external debt</b>	<b>32361.8</b>	<b>33805.5</b>	<b>33344.8</b>	<b>34569.5</b>	<b>37237.4</b>
Of which: Governmental	8653.8	8454.2	8012.5	8105.1	8397.1
Central bank	2221.0	2610.0	2179.0	1784.8	1086.3
Savings institutions	1650.9	1626.5	1532.6	1733.2	2601.8
Other sectors	8430.28	8842.5	8436.0	7865.8	7897.9
Direct investments	11405.9	12272.2	13184.8	15080.6	17254.3

Source: Statistical Bulletin 2024 by National Statistics Office.

The increase in external debt was driven by the government's \$1.5 billion "Chinggis" bond sold in late 2012, the \$600 million "Samurai" bond issued in 2014, and the 1-billion-yuan bond issued in September 2015. In addition, private sector companies have borrowed significantly from abroad. Mongolia's total external debt has increased from \$21.6 billion in 2015 to \$32.3 billion by the end of 2020 and \$37.2 billion by the end of 2024.

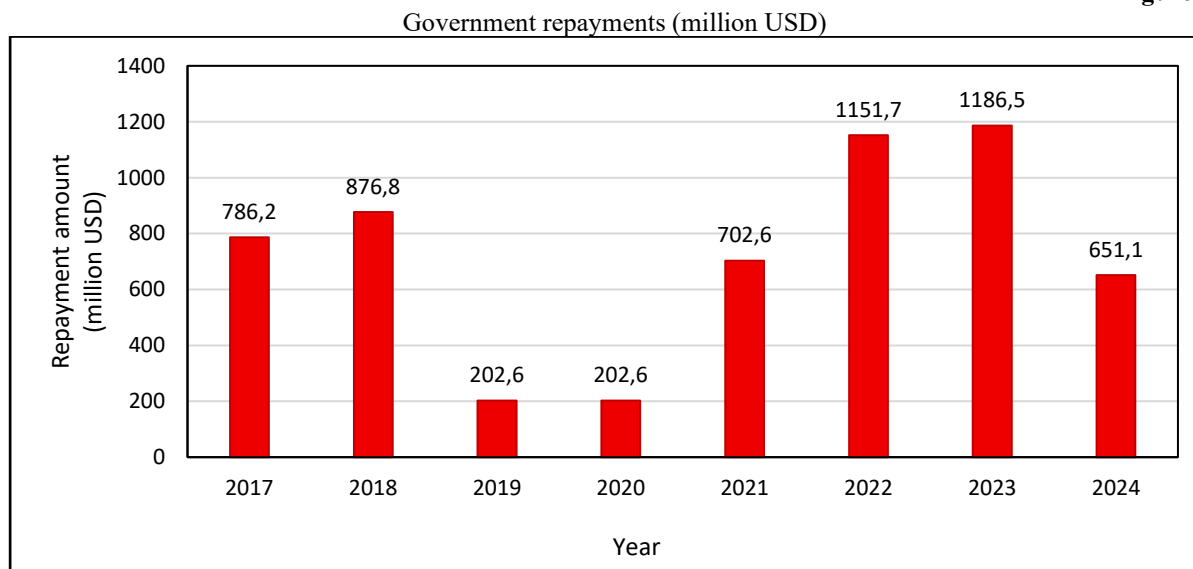
When the Mongolian government headed by prime minister Altankhuyag sold the Chinggis bond in

December 2012 and raised funds, there was no plan ready or scheduled for what exactly it would be spent on. The democratic party, which was in power at the time, spent it on various things at the request of its fractions. 40% of the funds was spent on infrastructure, such as road and energy development and the expansion of highway junctions in the capital. As a result of spending the funds raised from Chinggis bond, which was meant to be a short-term commercial loan, on things that do not yield quick returns, the debt burden has been deepened.

In recent years, Mongolia has been under heavy external debt. In 2019-2020, 202.6 million USD was paid annually towards external debts, while 600 million USD was paid in 2021 for Mazaalai bond. Continually,

the 1 billion USD Chinggis bond debt was paid off in 2022, 800 million USD towards Gerege bonds were paid in 2023, and 500 million USD in Samurai bonds were paid in 2024.

**Figure 2.**



The Parliament set the debt ceiling at 58.5 percent of the GDP in 2016. At the same time, amendments to the Law on Fiscal Stability stipulated that loans for mining, railway, and energy projects would not be included in the national debt ceiling. As of 2024, the total external debt in tugriks will reach 134 trillion tugriks, 1.6 times higher than the GDP. This shows that the debt ceiling has already been exceeded several times.

Another phenomenon that indicates the instability of the Mongolian economy is its overdependence on

imports. Article 3.2.5.1 of the Mongolian National Security Concept states that "...reducing the vulnerability of the national economy that is overdependent on imports," but this policy objective has not been sufficiently implemented. For countries with a high level of development, a high share of imports in the economy is not a problem, but for small developing countries like Mongolia, with a small population and weak overall economic potential, being heavily dependent on imports increases the risk to economic security.

Table 6.

**Share of imports in the total economic resource throughout the years**

Year	2005	2010	2015	2020	2024
<b>Total economic resource (billion tugriks)</b>	<b>7741.7</b>	<b>24447.4</b>	<b>53375.3</b>	<b>97995.1</b>	<b>235340.5</b>
Total production by basic prices (billion tugriks)	5495.3	17919.9	41154.9	73773.1	171272.4
Total import (billion tugriks)	1934.7	5529.2	10334.7	20666.1	55772.1
Share of total production (percent)	71.0	73.3	76.8	75.3	72.8
Share of total import (percent)	25.0	22.6	19.6	21.1	23.7

Source: Statistical Bulletin 201, 2015, and 2024 by National Statistics Office.

According to table 6, imports accounted for 23.7 percent of Mongolia's total economic resources in 2024. Unless the share of imports in total resources decrease significantly, Mongolia remains a country with fragile economy that heavily depends on imports.

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## INSURANCE OF INVESTMENT PROJECTS AND THE ROLE OF INTERNATIONAL INSURANCE COMPANIES

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### Abstract

This study addresses the role of insurance in investment projects, with a particular focus on international insurance companies and the specific insurance products, they offer for the investment projects worldwide. The study analyzes the importance of insurance as a risk management mechanism, its impact on promoting foreign direct investment, insurance alternatives at different stages of projects, and the ways in which insurance companies channel their funds into financial markets and especially in the insurance market.

It also examines the role of investments in the economy as a whole, the challenges related to regulation, financial stability and sustainable economic and financial development. The paper also addresses the risks covered by insurance of investment projects and their consequences, emphasizing the crucial role of available insurance products in their reduction and coverage.

The analysis is based on academic literature and national and international institutional reports (Rejda & McNamara, 2017; World Bank, 2021, etc.).

**Keywords:** investment projects, insurance, risk management, investment policies, international companies

### Introduction

Our country, with its strategic location, positioned in Southeastern Europe, promises a dynamic and growing economic development, ready for foreign and domestic investments. Over the last decade, the country has undertaken important reforms to create a business-friendly environment, making it an attractive destination for foreign investors. With its competitive tax policies, expanding infrastructure and skilled workforce, Albania presents a multitude of opportunities for businesses seeking to establish a base in the region.

In the conditions of economic globalization and increasing international competition, investment projects face numerous financial, political and operational risks. Insurance of investment projects represents an essential instrument for protecting capital and ensuring the financial sustainability of investors (Dorfman & Carther, 2013). International companies, which operate in different economic and legal environments, increasingly rely on insurance mechanisms to minimize uncertainties.

On the other hand, insurance companies are not only risk bearers, but also important institutional investors. They manage significant financial funds, which are invested in various financial instruments and economic projects, directly affecting economic development.

### Purpose of the study

The purpose of this paper is to analyze the relationship between insurance and insurance companies, evaluating the type of project insurance, risks covered by the projects insurance and their impact on financial decision-making, also the benefits of insurance of the national and international projects for investors.

### Objectives

**The main objectives of the study are:**

- a) To analyze the role of insurance in investment projects.
- b) To examine the importance of insurance by international companies.
- c) To provide suggestions on how different investment projects can be insured, based on the specific risks to which they are exposed.

### Study Methodology

The study is based on qualitative and quantitative methodologies. Theoretical analysis, scientific literature review, financial reports, and comparative analysis of insurance companies' practices at the international level are used. This is accompanied by concrete practical examples. The study also includes statistical data obtained from official information sources in Albania and beyond.

### Literature Review

Economic and financial literature emphasizes that insurance helps transfer risk and increases the credibility of projects towards investors and financial institutions (Rejda & McNamara, 2017; Dorfman & Carther, 2013). Investment project insurance functions as a financial mechanism for protecting capital and guaranteeing project continuity in the event of natural, technical or financial risks (Rejda & McNamara, 2017). Risk analysis and management are essential for capital-intensive projects, as they directly affect the net present value and the rate of return on investment (Dorfman & Carther, 2013). Investment project insurance aims to cover financial losses that may arise during the project life cycle, from planning to operation.

The main types of insurance include construction insurance (CAR/EAR), property insurance, civil liability

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ity and business interruption insurance. These instruments contribute to increasing the financial sustainability of projects (Dorfman & Carther, 2013).

According to the risk management theory, insurance serves as a mechanism for transferring risk from the investor to specialized institutions, reducing financial and operational uncertainties (Doherty, 2000). Various studies argue that the presence of insurance significantly increases the guarantee of project implementation and consider insurance as a basic condition for protecting invested capital (OECD, 2018). According to the literature, insurance companies provide advanced insurance and reinsurance products, enabling global risk distribution (Swiss Re, 2022).

A significant part of the literature focuses on the role of insurance companies as long-term institutional investors. Due to the nature of their liabilities (long-term insurance policies), insurance companies tend to invest in financial instruments with long maturities and relatively stable returns (European Insurance and Occupational Pensions Authority, 2021).

Also, according to international literature, the increased interest of insurance companies themselves in economic investment alternatives is highlighted, especially in conditions of low interest rates. According to studies by the (World Bank, 2017), investments in infrastructure, renewable energy and sustainable projects offer opportunities for long-term returns and financial stability.

## **1. Insurance and investment projects**

### **1.1 Definition of investment project insurance**

Investment project insurance represents an important financial protection mechanism, which aims to cover losses and damages that may occur throughout the life of an investment project, from the planning phase to the operation phase (Doherty, 2000). Essentially, insurance functions as a form of risk transfer, where the investor or project developer passes the financial consequences of certain risks to the insurance company in return for the payment of an insurance premium (Doherty, 2000; OECD, 2018).

This type of insurance is particularly important for projects with high financial value and increased risk, such as construction, infrastructure, industrial or energy projects. Such projects involve large capital investments, long implementation periods and complex technical processes, which significantly increase exposure to natural, technical, financial and legal risks. In the absence of insurance, these risks can lead to significant financial losses or even project failure.

From a financial perspective, investment project insurance contributes to the stability and economic viability of the project, guaranteeing its continuity even in the event of unforeseen events. It also serves as a guarantee instrument for banks and financial institutions, which often require insurance as a condition for granting loans or long-term financing.

At the same time, insurance also provides security for other parties involved in the project, such as contractors, subcontractors and consultants, by clearly defining responsibilities and coverage of damages. For this reason, investment project insurance should not be

seen simply as an additional cost, but as a strategic element of risk management and a key factor for the long-term success of the project.

### **1.2 Project phases and the relevant insurance**

Investment projects develop in several interconnected phases, each of which is characterized by different types of risks. For this reason, project insurance is not the same at each stage, but is adapted according to the nature of the activity and the level of risk exposure. Proper insurance management at each stage contributes directly to the success and sustainability of the project.

#### **a) Planning phase**

The planning phase constitutes the basis on which the entire project is built and plays a crucial role in determining the risks and the need for insurance. In this phase, the main preliminary analyses that affect the financial and organizational structure of the project are carried out.

Risk analysis is a systematic process for identifying, assessing and classifying potential risks that may arise during the implementation of the project. These risks can be technical, financial, legal, environmental or organizational. The purpose of risk analysis is to determine the probability of each risk occurring and its potential financial impact, serving as a basis for decision-making on insurance.

The feasibility study analyzes whether the project is feasible from a technical, economic and financial point of view. This study helps to identify the main risks related to costs, deadlines and return on investment. The results of the feasibility study directly influence the determination of the types of insurance needed and the level of coverage.

The determination of the need for insurance is carried out at this stage by deciding which risks should be transferred to the insurance company and which can be managed by the investor himself. This includes the selection of the types of insurance, the amount of coverage and the insurance period. At this stage, professional liability insurance for designers and consultants is often also required.

#### **b) Construction phase**

The construction phase is the most critical period of the project due to the high intensity of the works and the high exposure to physical and technical risks. At this stage, insurance plays a key role in protecting the project from unforeseen damages.

CAR (Contractors All Risks) insurance is a comprehensive insurance that covers the risks associated with civil construction works.

EAR (Erection All Risks) insurance is mainly applied to industrial and technological projects, where the focus is on the assembly and installation of mechanical and electrical equipment. At this stage, the insurance also covers physical damage, accidents and technical errors, which can be caused by human factors, technological failures or natural events. The inclusion of these coverages ensures that the project does not stop or face major financial losses.

### c) Operation phase

After the completion of construction, the project enters the operation phase, where full operation and revenue generation begin. Although physical risks are reduced compared to the construction phase, they do not disappear, but take on other forms.

Property insurance protects project assets, such as buildings, equipment and machinery, from physical damage that may occur during daily use. This insurance ensures the preservation of the value of the investment and minimizes capital losses.

Business interruption insurance covers financial losses that arise as a result of the interruption or limitation of activity due to an insured loss. This insurance is particularly important for projects that depend on uninterrupted operation to generate income.

Civil liability insurance covers bodily or material damage that the project may cause to third parties during operation. It provides legal and financial protection against possible claims and lawsuits, providing stability and security for the investor.

### 1.3 Main types of project insurance

Investment projects involve a wide range of risks, which vary according to the project phase, the nature of the activity and the value of the investment. For this reason, project insurance is not limited to a single type of insurance, but is realized through a combined insurance package, which aims at complete financial and operational protection. The main types of insurance for investment projects are as follows:

#### a) Construction and assembly insurance (CAR/EAR)

Construction and assembly insurance represents the basis of insurance for investment projects during the physical implementation phase of the project.

- CAR (Contractors All Risks) It includes physical damage to the object under construction, materials, equipment and machinery used on the site. This insurance also covers damages that may be caused to third parties as a result of construction works. CAR is considered essential for infrastructure and construction projects, as it offers broad coverage against unforeseen risks.

- EAR (Erection All Risks). This insurance is usually used in industrial, energy and technological projects, where the installation of complex equipment constitutes one of the most dangerous phases of the project. EAR covers damages resulting from assembly errors, technical defects and accidents during installation.

#### b) Property insurance (buildings, equipment, machinery)

Property insurance is one of the most important forms of insurance during the project operation phase. It aims to protect the physical assets of the project, including buildings, equipment, machineries and supporting infrastructure.

This insurance covers damages that may be caused by natural hazards, fire, explosions, accidental damage and other unforeseen events. The main purpose of property insurance is to preserve the value of the investment

and prevent capital losses that may negatively affect the financial viability of the project.

#### c) Civil liability insurance

Civil liability insurance aims to protect the project and the parties involved from legal claims of third parties. This insurance covers bodily injury, material damage and financial losses that the project may cause to other persons or entities during construction or operation.

In large projects, civil liability is one of the most important risks, as a single incident can lead to high legal costs and significant damages. For this reason, civil liability insurance is often mandatory and included in construction and investment contracts.

#### d) Materials transportation insurance

Materials transportation insurance covers the risks associated with the movement of materials, equipment and machinery from the place of production or supply to the project site. This insurance is particularly important for projects that depend on the import of expensive equipment or international transport. It covers damage that may occur during transport due to accidents, damage, theft or adverse natural conditions. Transport insurance ensures that losses during supply do not affect the project's deadlines and costs.

#### e) Business interruption insurance

Business interruption insurance

The purpose of the insurance is to protect the project from indirect financial losses resulting from the interruption or limitation of activity due to an insured damage.

This insurance covers the loss of income, fixed expenses and additional costs that the project may incur during the interruption period. It is particularly important for projects that generate continuous income and where any interruption can have serious financial consequences.

### 1.4 Risks covered by investment project insurance

Investment projects are exposed to a wide range of risks throughout their life cycle. Identifying, assessing and covering these risks through insurance is a key element of effective project management. Project insurance aims to reduce the financial consequences of risks, ensuring stability and continuity of investment activity.

#### a) Natural hazards (earthquakes, floods, fires)

Natural hazards include extraordinary events caused by forces of nature and that usually have an immediate and severe financial impact. In addition to earthquakes, floods and fires, this category also includes storms, intense rainfall, landslides and extreme temperatures.

These hazards can cause:

1. damage or complete destruction of buildings under construction,
2. loss of equipment and materials
3. interruption of works for long periods,

4. increased costs for reconstruction and repair.

Insurance against natural hazards covers the repair or reconstruction of damaged assets, avoiding major capital losses and prolonged project interruptions. In many cases, these risks are mandatory for inclusion in insurance contracts.

#### **b) Technical and engineering risks**

Technical and engineering risks are related to the technological and professional complexity of investment projects. They include design errors, incorrect engineering calculations, use of unsuitable materials, and defects during assembly or testing of equipment. These risks appear most often during the construction phase, but can also continue during the operation of the project.

The consequences of these risks are:

1. the need to revise the technical project,
2. delays in construction deadlines,
3. significant cost increases,
4. risk to the safety of employees and users of the facility.

Insurance covers the damages resulting from these problems, including repair costs and technical interventions. This allows the project to continue without long interruptions and without severe financial impacts.

#### **c) Operational and human risks**

Operational and human risks arise from the daily activity of the project and from human factors. These include accidents at work, professional errors, lack of experience, incorrect use of equipment and inefficient management. These risks are present in all phases of the project, but are particularly pronounced in phases with high work intensity.

These risks can lead to:

1. bodily injury and loss of life,
2. material damage to equipment and facilities,
3. interruption of activity,
4. legal and financial consequences for the project.

Insurance covers the financial consequences of these risks, including bodily injury, material damage and liability to third parties. In addition to the financial aspect, insurance also contributes to improving safety standards and discipline at work.

#### **d) Financial risks (delays, loss of income)**

Financial risks are related to the economic performance of the project and directly affect the return on investment. Delays in implementation, increased construction costs, lack of financing or interruption of activity can cause significant losses of planned income.

These risks include:

1. loss of expected profit,
2. difficulty in repaying loans,
3. reduced credibility with investors and banks.

Business interruption insurance and insurance for delays in starting operations help cover financial losses,

ensuring stability and economic continuity for the project.

#### **e) Legal and contractual risks**

Legal and contractual risks stem from the complex relationships between parties involved in the project, such as investors, contractors, suppliers and public authorities. Failure to comply with contractual terms, conflicts between investors and contractors, and lawsuits from third parties constitute serious financial and reputational risks.

The consequences of these risks can be:

1. lengthy legal proceedings,
2. high compensation payments
3. delays in the implementation or operation of the project.

Civil liability insurance and other specific insurances provide legal and financial protection, covering damages and legal costs. This helps maintain the financial stability and credibility of project.

The data shows that construction risks account for the largest share of coverage (around 40%), as the construction phase is the most exposed to delays, technical errors and accidents, which are among the most common causes of project losses (Project Management Institute, 2023; World Bank, 2020). Financial risks rank second (25%), reflecting concerns about costs, liquidity and return on investment, as financial uncertainty and funding constraints significantly affect project continuity and performance (International Finance Corporation, 2019). Natural risks account for around 20% of coverage, since events such as earthquakes, floods and other natural catastrophes can cause substantial material damage and project interruptions, especially in infrastructure and construction investments (Swiss Re, 2022). Meanwhile, legal risks have the lowest percentage (15%), indicating that although regulatory and contractual risks are important, they are generally perceived as less frequent compared to technical and financial risks (Allianz, 2023).

### **1.5 Risk Analysis and Management in Investment Projects**

#### **1.5.1 The Role of Risk Analysis in Investment Projects**

Investment projects constitute medium- and long-term capital commitments, which are carried out under conditions of uncertainty. For this reason, risk analysis and management are considered essential elements of the financial decision-making process. Every investment project, regardless of its size or the sector in which it is developed, is exposed to various risks that may negatively affect the achievement of financial and operational objectives. Risk analysis aims to identify sources of uncertainty and assess their potential impact, while risk management includes concrete strategies and measures to reduce, control or transfer these risks. In this context, insurance plays a key role as a financial instrument for protecting investments and ensuring economic sustainability.

- Identification of the main risks in investment projects

Identification of the main risks in investment projects constitutes the initial and most important phase of the risk management process. This process consists of systematically identifying all possible risks that may affect the investment project throughout its life cycle.

- Financial risks in investment projects

Financial risks represent the possibility that changes in financial and macroeconomic factors will negatively affect the value of the investment, cash flows and financial sustainability of the project. In medium- and long-term investment projects, these risks are particularly important, as they are directly related to the instability of financial markets and economic conditions.

*The main financial risks include:*

- a) Interest rate risk

Interest rate risk is related to the possibility that changes in interest rates in financial markets will negatively affect the cost of financing the project and the present value of cash flows. This risk is particularly important for projects financed through bank loans or debt instruments. Impact on investment projects, increasing the interest rate: increases the cost of debt service, reduces the profitability of the project, negatively affects financial indicators such as NPV - Net Present Value (Net Present Value) and IRR (Internal Rate of Return) (Internal Rate of Return) NPV and IRR are key instruments for the financial evaluation of investment projects. While NPV measures the real value created for the investor, IRR indicates the level of return on investment. The combination of these indicators provides a solid basis for financial decision-making, especially in high-risk projects). If the project has loans with a variable interest rate, the investor is directly exposed to this risk.

- b) Currency risk

Currency risk arises from changes in the exchange rate between the domestic currency and foreign currencies. This risk is present when: the investment is financed in foreign currency, income is generated in local currency, equipment or services are imported from abroad. The financial impact of the depreciation of the local currency increases: the value of foreign currency liabilities, import costs, the financial burden of the project. While the strengthening of the local currency can reduce the competitiveness of the project in international markets. Currency risk management is achieved through: matching the currency of income with the currency of expenses, long-term foreign exchange contracts, hedging currency risk, using financial hedging instruments.

- c) Liquidity risk

Liquidity risk is related to the inability of the project to meet short-term financial obligations in a timely manner, despite the fact that the project may be financially sustainable in the long term. The main causes of this risk are: delays in payments from customers, unforeseen costs, poor cash flow planning, excessive reliance on short-term financing. The consequences for the project are associated with a lack of liquidity which: in-

creases the risk of bankruptcy, negatively affects the investor's reputation, prevent the continuity of the project. Liquidity risk management includes these main measures: creating financial reserves, detailed cash flow planning, securing credit lines, insuring projects against financial disruptions.

- d) Inflation risk and the impact on investments

Inflation risk is related to the general increase in prices in the economy, which reduces the purchasing power of money and increases the operational costs of the project.

Inflation has a negative impact by: increasing the cost of materials and services, reducing the real value of income, reducing the investor's real profit. This risk is particularly pronounced in long-term infrastructure projects. Inflation risk management is achieved through: indexing contracts according to inflation including an inflation reserve in the budget, using insurance for cost increases, periodic review of the financial plan.

- e) Operational risks

Operational risks stem from the organization's internal processes and include technical failures, equipment problems, human errors, lack of qualified human resources or interruptions in the supply chain.

- f) Legal and regulatory risks.

Changes in fiscal, financial and regulatory legislation, as well as non-compliance with contracts or legal rules, constitute significant risks for investment projects, especially in the international context.

- g) Political and macroeconomic risks

Political risks are related to political instability, changes in government policies, conflicts and the risk of nationalization of assets. These risks are particularly pronounced in foreign direct investments.

### **1.5.2 Assessing the financial impact of the risk**

When identifying risks, the next step is to assess their financial impact. This process aims to analyze the probability of each risk occurring and the magnitude of the potential loss it could cause.

Qualitative risk analysis. Qualitative analysis involves classifying risks according to their importance and impact on the project (low, medium and high risk). This analysis helps determine priorities for intervention.

Quantitative risk analysis. Quantitative analysis uses financial and statistical methods to measure the concrete impact of risk. Among the most commonly used methods are: sensitivity analysis, scenario analysis, financial simulations. These methods help assess the impact of risk on the project's financial indicators, such as net present value (NPV), internal rate of return (IRR) and cash flows.

### **1.5.3 Impact on financial decision-making**

The results of risk analysis directly affect decisions to accept or reject the project, the financing structure and the choice of hedging instruments. Taking preventive measures for risk management aims to reduce the probability of risk occurrence or minimize its financial consequences.

- Diversification represents a basic risk management strategy, by distributing investments across sectors, markets and different financial instruments.

- Continuous control and monitoring, establishing internal control systems and periodic risk monitoring help in early identification of problems and taking corrective measures in time.

- Careful financial planning and ensuring sufficient liquidity help in coping with unforeseen situations and maintaining the financial stability of the project.

#### 1.5.4 Transfer of risk to the insurer

Transfer of risk through insurance consists in passing the financial burden of possible losses from the investor to the insurance company, against the payment of an insurance premium.

Investment projects, especially those with high capital and high risk (e.g. construction, infrastructure, energy, important industries), are exposed to a number of risks that can negatively affect the achievement of financial and operational objectives. Insurance is one of the main tools for managing and transferring risk, enabling protection against unforeseen losses.

#### 1.6 Types of insurance in investment projects

##### a) Property and equipment insurance.

This type of insurance covers material damage to the physical assets of the project, such as buildings, machinery, technical equipment and construction infrastructure. The insurance covers damage from natural disasters (fire, flood, landslide, earthquake). It provides for the repair or replacement of damaged equipment and assets. It often also includes business interruption as a result of material damage.

##### b) Civil liability insurance.

This insurance covers the investor's legal liability to third parties for material or personal damage that may occur during the implementation of the project. Liability for damage to persons or property of third parties is covered. It includes damage to the environment or legal consequences of accidents during work. Civil liability insurance helps avoid costly litigation.

##### c) Political risk insurance.

This insurance covers risks related to political instability and state intervention, which are among the main concerns for foreign investors in long-term infrastructure and energy projects (Multilateral Investment Guarantee Agency, 2023; United Nations Conference on Trade and Development, 2022). These risks include confiscation or expropriation of assets by the host government, legal and regulatory changes that hinder or prohibit the operation of the project, and broader political instability that increases uncertainty and reduces the security of foreign investments (Organisation for Economic Co-operation and Development, 2021). Political risk insurance is specifically designed to protect investors against financial losses resulting from such government actions or political events, ensuring continuity and financial protection of investments (World Bank, 2020).

d) Credit and financial guarantee insurance This type of insurance covers financial risks, including non-

payment by contractual partners, payment delays or defaults by creditors. It ensures liquidity and cash flows for the project. It increases the security of investors and creditors. It serves as a guarantee for bank financing and contractual agreements.

#### 1.7 The role of insurance in increasing project credibility

a) Insurance and investor confidence Investors are more willing to commit capital to insured projects, as these projects have clear risk coverage, reduce the probability of large losses and provide financial stability (Doherty, 2000; OECD, 2018). For institutional investors, insurance is not simply an operational cost, but a strategic instrument that increases the credibility, transparency and security of the investment, improving the risk-return profile of the project (World Bank, 2019).

b) Improving access to credit Banks and financial institutions consider insured projects to be less risky, as there is a formal mechanism for transferring risk to insurance and reinsurance companies (Swiss Re, 2022). This has concrete impacts: interest rates on loans are lower, repayment terms are more flexible and opportunities for securing additional funds increase (OECD, 2018). In this way, insurance helps the investor to manage financing more efficiently and improve the capital structure (World Bank, 2019).

c) Ensuring project continuity In the event of a risk (accident, natural disaster, financial disruption), insurance provides funds for repair or return to operation, enabling the project to be completed according to plan and reducing the risk of interruption of activity (Doherty, 2000). According to Swiss Re reports, 2022, reinsurance mechanisms play an essential role in coping with large catastrophic losses, ensuring financial stability even in high-impact scenarios.

d) Other benefits of credibility Insurance contributes to maintaining the reputation of the investor and the project in the market, improves relations with strategic partners and public authorities, and facilitates the negotiation of future contracts and international collaborations (OECD, 2018). Furthermore, transparency in risk management and the existence of insurance coverage increase institutional trust and the long-term sustainability of investments (World Bank, 2019).

#### 1.8 Benefits of insurance for investors

a. The role of insurance in investment projects In investment projects, especially in capital-intensive sectors such as construction, infrastructure, energy and industry, investors face a wide range of financial, technical and operational risks. Insurance is one of the main instruments of risk management and transfer, playing a fundamental role in protecting the financial interests of investors. Through insurance, the investor reduces exposure to unforeseen losses and creates safer conditions for the realization of the long-term objectives of the project. For this reason, insurance is not just an additional cost, but a strategic investment in financial stability and continuity.

b. Protection of invested capital Invested capital represents the main financial source of the project and includes investor funds, bank loans and other sources

of financing. Any unforeseen event that causes material damage, work interruptions or financial losses constitutes a direct threat to this capital. Insurance provides direct protection of capital through: compensation for material damage, coverage of financial losses, preservation of the value of the investment over time.

Practical example: In the case of an infrastructure construction project, damage to equipment or construction works by natural disasters can cause significant financial losses. By insuring the project, the investor avoids the need for additional financing and preserves the initial capital.

c. Financial security for investors Financial security is closely related to the investor's ability to predict cash flows and meet the financial obligations of the project. Insurance contributes to this by: limiting the maximum possible losses, guaranteeing financial compensation in the event of damage, stabilizing the financial balance of the project. In this way, the investor is able to better manage liquidity and maintain financial equilibrium.

d. Impact on financial planning An insured project offers safer conditions for planning: periodic payments, debt service, profit distribution. This significantly reduces the risk of financial crises during the investment life cycle.

e. Better financing opportunities Insurance as a condition for bank financing. Financial institutions, especially banks and investment funds, consider insurance as a fundamental condition for project financing. An insured project: is considered less risky, has a lower probability of failure, offers additional guarantees to creditors. As a result, investors benefit from: more favorable interest rates, longer repayment terms, more flexible credit conditions. An example in practice: In Albania, financing of infrastructure and construction projects usually requires construction insurance and civil liability insurance. Banks consider this insurance as a key element in assessing credit and financial risk.

f. Continuity of projects One of the main benefits of insurance for investors is the guarantee of project continuity, even in the presence of unexpected events. Insurance enables the repair or reconstruction of damaged assets, provides funds for the resumption of works, avoids project abandonment. Without insurance, a severe event can lead to permanent project interruption and total loss of investment.

g. Impact on the investor's reputation The continuity of the project also positively affects the investor's reputation towards: strategic partners, financial institutions, public authorities. An investor who guarantees the completion of projects is considered more reliable and more competitive in the market.

h. Reducing uncertainty and risk management Uncertainty is one of the main factors that negatively affect investment decision-making. Insurance helps to: transfer risk from the investor to the insurer, reduce financial uncertainty, increase confidence in the implementation of the project. This allows investors to focus on the strategic and operational aspects of the investment.

i. Impact on investment decision-making. Insured projects: have a higher financial assessment, have a higher probability of implementation, are more attractive to new investors. As a result, insurance has a positive impact on investment growth and economic development.

## 2. INTERNATIONAL INSURANCE COMPANIES (GLOBAL ASPECT)

### 2.1 Providing coverage for very large projects

International insurance companies have the financial and technical capacity to cover projects that require insurance with extremely high values. Infrastructure and energy projects: For example, the construction of hydroelectric power plants, highways or energy networks requires large capital and coverage for various risks, from accidents, natural disasters to engineering errors. International companies can offer special policies that cover many types of risks simultaneously. Transnational project insurance: When a project involves many countries (e.g. the construction of gas pipelines that pass through several countries), international companies can offer unified coverage for the entire project, eliminating the need to negotiate with local insurers in each country.

Financial advantage: For very large projects, the risks are high and a large capital is required to cover them. International companies have the financial reserves and capacity to guarantee the payment of large claims in the event of fatal events.

Concrete examples: Providing coverage for very large projects. (Allianz,2025), coverage for infrastructure and engineering projects.

International companies such as Allianz Global Corporate & Specialty (AGCS) specialize in insuring large construction and infrastructure projects worldwide. AGCS offers insurance policies for construction risks, business interruption, contractor equipment, machinery damage, material transportation and complex infrastructure projects. These solutions are specifically designed for sectors such as energy, mining, transportation, civil projects and industrial construction, providing financial coverage for risks that are beyond the capabilities of most local insurers. For example, providing work interruption and loss of profit when a project is delayed due to an unexpected risk is a critical element in insurance contracts for large projects. These offerings also include coverage for various risks associated with complex technologies and construction processes.

AIG (American International Group (AIG) is one of the largest global insurers, operating in over 200 countries and jurisdictions, and offers a wide range of insurance that includes coverage for major international projects) – global solutions for international projects and programs AIG has multinational insurance programs (Multinational Insurance Solutions) that help companies operating in many countries have consistent and well-coordinated policies in each market. These solutions are especially important for companies with complex cross-border projects or with large insurance needs, where local insurance is not enough.

### 2.2 Global risk spreading

One of the main roles of international insurance companies is the ability to spread risk globally. Risk diversification: By operating in many markets and sectors, companies can balance losses from one region with profits from another. For example, losses from a natural disaster in Asia can be offset by profitable projects in Europe or America.

### Global reinsurance network

International companies often use agreements with global reinsurers. This allows them to cover parts of the risk that are too large to be managed by the original company alone. Benefit for customers: For businesses with operations in many countries, this risk distribution reduces the possibility that a local event will cause catastrophic losses and increases financial stability.

Concrete example: SIGAL INSURANCE GROUP. Through reinsurance, local insurers transfer part of the risk to international companies such as Munich Re, Swiss Re, AXA, Allianz, Zurich or Lloyd's, increasing the total financial capacity to withstand large losses. This global distribution stabilizes the insurance market by reducing the risk for each individual actor and ensuring that extreme events (natural or otherwise) do not cause insurers to fail.

Example with Swiss Re. Swiss Re, one of the world's largest reinsurance companies, is working to use data and advanced technologies such as AI to develop new risk transfer instruments and offer stronger financial capacity to international clients and partners. This collaboration with new technology platforms aims to develop innovative risk placement and transfer instruments.

### 2.3 Advanced technical and financial expertise

International insurance companies do not only provide money for coverage, but also high technical and financial expertise that is essential for risk management.

*Risk assessment:* They use sophisticated actuarial models and advanced analytics to assess the probability of losses and determine optimal insurance costs.

*Financial consulting:* For large investment projects, these companies provide recommendations on financing structuring, ways to protect against financial risks and other insurance instruments such as complex policies or insurance derivatives.

*Technology and innovation:* International companies invest in technology for risk monitoring, data analysis and catastrophe prediction, giving clients more accurate and effective coverage.

Concrete example: AIG offers advanced risk management services, including consulting, risk analysis, and customized solutions that help organizations optimize the way they protect assets and reduce potential losses. Allianz Commercial also offers risk consulting and other solutions that include objective analysis and advice for better risk management in client businesses.

*Preparation and training of specialists.* Large international companies invest in staff training, the use of cutting-edge technology (e.g. AI) and the development

of new risk analysis models to improve technical capacity and decision-making capabilities, which gives them a competitive advantage in global markets. Why do large projects use international insurance companies? Large projects (infrastructure, energy, industrial and construction) often require insurance that exceeds the capacities of local insurers, so they use companies with experience and global capacity.

### 2.4 Why do large projects use international insurance companies?

#### a. Higher financial capacity

The financial capacity of an insurance company is the amount of capital it can deploy to cover large losses from a single risk or a series of events. International companies have much larger capital than local insurers, which allows them to cover projects worth hundreds of millions or billions. Why does this matter for large projects? Large infrastructure projects (such as the construction of national roads, hydroelectric power plants, seaports, etc.) pose extremely high financial risks if something goes wrong (e.g. natural disaster or technical failure). International insurers such as Munich Re, Swiss Re, Allianz or AIG have the financial capacity to withstand these losses without risking the collapse of the insurance company.

#### b. Broader insurance coverage

This is important because large projects are not exposed to just one risk (e.g. fire), but face a wide range of interconnected risks. The literature on risk management emphasizes that infrastructure and industrial projects are characterized by multiple exposures to natural hazards (earthquakes, floods), engineering errors, technical failures, third-party liability, business interruption and financial losses (Doherty, 2000; World Bank, 2019).

According to reinsurance industry analyses, the increase in technological complexity and global interconnectedness has significantly increased the interdependence of risks, causing a single event to produce chain reactions in different economic sectors (Swiss Re, 2022). For this reason, modern insurance practices promote an approach of integrated and combined risk coverage (integrated risk coverage), instead of fragmented insurance.

Global insurance and reinsurance companies play a key role in managing the complex risks of large projects. For example, Allianz Global Corporate & Specialty (AGCS) offers multidimensional insurance packages that combine coverage for property damage, civil liability, business interruption, engineering risk and financial risk in a single policy (AGCS, 2021). This comprehensive approach increases the financial security of the project and facilitates access to financing, as creditors and investors require clear risk transfer mechanisms (OECD, 2018).

#### c. Credibility for foreign investors

Foreign investors (investment funds, international banks, multilateral organizations, energy companies, etc.) require assurance that their investment will be pro-

tected in the event of risk. International insurance companies are well-known and accepted in global markets and therefore increase the credibility of the project.

1-First, they offer: International insurance standards that are widely known and accepted by investors and banks;

2-Transparent reporting and control according to world practices;

3-Policies with clear conditions and a high level of payment in case of damage

Foreign investors often require that the insurance be done with companies with high credit ratings (e.g. Standard & Poor's, Moody's), such as Swiss Re or Allianz, as this increases the chances that the insurer will be able to pay even in the most difficult cases.

How does this relate to Albania? Even projects of Albanian companies seeking financing from international institutions (e.g. World Bank or EBRD financing) often need to have insurance with companies with a global reputation, otherwise investors may refuse the financing. This reflects a common practice in international project finance markets.

#### **d. Acceptance by banks and financial institutions**

When a bank provides loans for large projects (e.g. signing loan contracts for an energy project), it requires credit security that will allow the return of funds even in the event of a financial risk or unexpected event. Banks and financial institutions more readily accept insurance policies from international companies because they are rated according to international standards and have a proven reputation for liquidity and prompt payments. Without insurance from a strong international insurer, the bank may refuse to provide the loan or require additional interest rates and strict conditions, which makes the project less attractive for investment. This is also a common practice in Albania: when a project requires bank financing (which may be supervised by the Financial Supervisory Authority), banks often require that the insurance be acceptable to both financial regulators and foreign standards, to ensure that their risk is minimal.

### **2.5 International standards and practices in insurance**

#### **a. Implementation of international insurance standards**

International insurance companies play a crucial role in capital projects and large financings, not only for financial capacity, but also for the implementation of global standards, transparency and unified contracts. These elements are crucial for ensuring the credibility and acceptability of projects by investors and banks.

They implement globally recognized standards that regulate the way risk is assessed, premiums are set and claims are paid. These standards ensure that each project is managed according to actuarial and financial insurance principles, reducing risk for clients and investors. Concrete examples: Swiss Re: Implements advanced risk assessment standards and reports according to international practices, using statistical models and simulations to predict losses.

Allianz Global Corporate & Specialty (AGCS): Uses Solvency II, an EU regulation that guarantees sufficient financial coverage and transparency in risk reporting. AIG: Provides detailed risk analysis for international projects and uses global standards to determine premium levels and coverages. In Albania: The Devoll solar energy project or the Vjosa hydropower plant uses international insurance from Allianz or AIG, to ensure that risk and capital management standards comply with the requirements of international banks and financial institutions.

#### **b. Transparency and strict regulations**

International companies are required to report transparently on capital, reserves and risk management strategies. Strict regulations require insurers to follow clear procedures for claims payment, external audits and financial reporting according to international standards (e.g., IFRS – International Financial Reporting Standards). Concrete examples: Swiss Re and Allianz: Publish annual reports on financial capacity, risk exposure and protection strategies. This transparency is essential for investors and banks financing large projects. AIG: Ensures that any insurance contract for international projects is clearly documented and complies with the laws of the countries where the project operates, including periodic transparency audits. In Albania: For projects financed by the EBRD, the World Bank or KfW, the use of international insurers guarantees that all risk and damage reporting is transparent and acceptable to international financial institutions. This level of transparency also helps in the control of public funds and increases citizens' trust in the management of infrastructure projects. In conclusion: Transparency and strict regulations reduce risk for investors and strengthen the credibility of projects.

#### **c. Unified international contracts**

International insurance contracts are standardized to ensure complete clarity on coverages, responsibilities and claim payment procedures. The use of unified contracts helps companies and investors from different countries to have the same understanding of the agreement. Concrete examples: Allianz Global Corporate & Specialty: Offers standard policies for infrastructure projects in more than 70 countries, using unified documents that facilitate international cooperation.

Lloyd's of London: Uses globally recognized contracts for the insurance of capital and high-risk projects, including natural and industrial risk.

In Albania: When a project such as the Milot-Balldren highway or the Devoll hydropower plant receives financing from an international bank, international insurance contracts are unified and acceptable to all parties: banks, insurers and Albanian authorities. This ensures that each party clearly knows its rights and responsibilities, reducing disputes and potential delays. Thus, unified international contracts facilitate global cooperation, increase credibility and ensure clear risk management.

#### **2.6 Reinsurance and its importance**

Reinsurance is a key instrument of the insurance industry, allowing insurance companies to manage large risks, spread losses and have financial stability. It

is particularly important for capital projects, local insurers and global markets.

#### a. Insuring insurance companies against large losses

Reinsurance functions as insurance for insurers. The insurance company transfers part of the risks to a reinsurance company. In case of unexpected events that cause very large damages (earthquakes, floods, major fires), the insurer does not face catastrophic losses, because a part of them is covered by reinsurance.

Concrete examples: Swiss Re and Munich Re cover the risk for insurers operating in infrastructure and energy projects worldwide. For example, after the earthquake in Haiti (2010), many local insurers had international reinsurance that helped them pay the damages without going bankrupt. In Albania: Companies like SIGAL UNIQA Group Austria use reinsurance with international partners like Munich Re and Swiss Re to cover large losses, especially for property, vehicle and infrastructure insurance. In conclusion: Reinsurance ensures that insurers do not fail financially in case of extreme events and maintains the stability of the insurance market.

#### b. Reducing risk for local insurers

Local insurers usually have limited capital, so they cannot afford very large losses from a single event or a series of related events. By using reinsurance, local insurers spread the risk among international companies

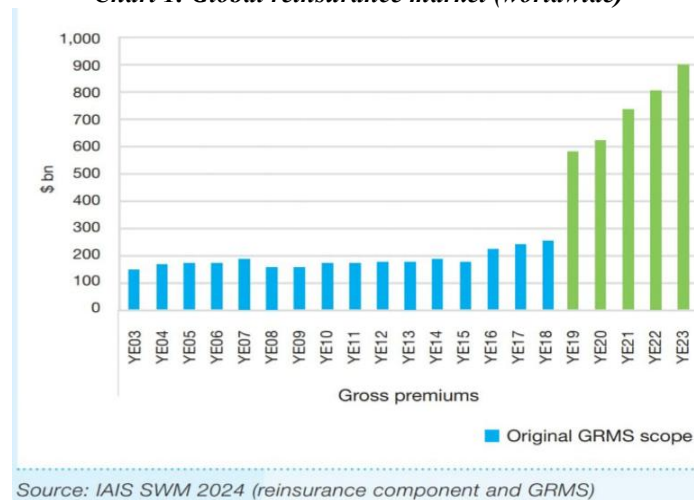
and thus reduce the risk for themselves and their clients. Concrete examples: SIGAL UNIQA in Albania: Uses international reinsurance for property and capital projects insurance, ensuring that an unexpected event (e.g. flood or industrial fire) will not endanger the company's capital. Global example: In the United States, small insurers often use reinsurance from Lloyd's of London or Swiss Re to cover natural catastrophe risk. Bottom line: Reinsurance allows local insurers to offer greater and safer coverage to their clients, increasing the credibility of the industry.

#### c. Engaging global insurance markets

Reinsurance connects local insurers to global markets, where much of the capital and expertise is located abroad. International reinsurance companies provide capital, expertise and risk management models that are not available in local markets.

Concrete examples: Swiss Re and Munich Re operate in over 150 countries and provide reinsurance to local insurers on all continents, connecting them to global capital. Albania: SIGAL UNIQA and INSIG use international reinsurance partners, connecting them to global markets and ensuring that they can handle large capital projects, such as hydroelectric plants or industrial construction. This practice of engaging in global markets increases the liquidity, stability and credibility of local companies. In conclusion: Reinsurance is a bridge between local insurers and international capital, allowing capital projects and foreign investments to be protected from major risks.

**Chart 1. Global reinsurance market (worldwide)**

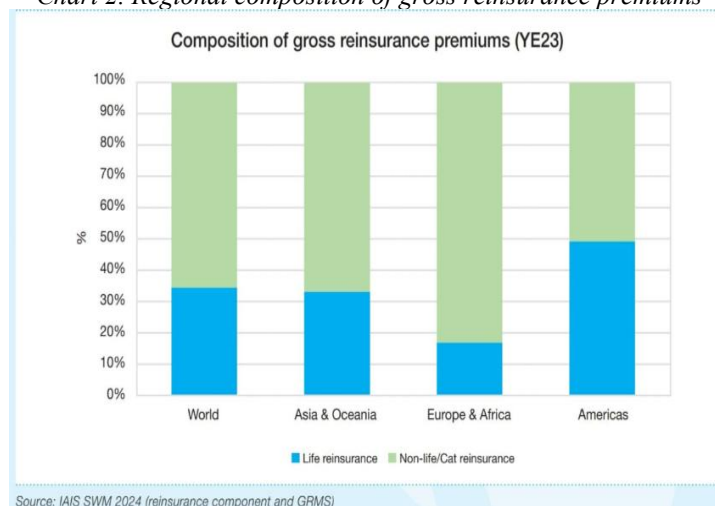


- \$900 billion – Global gross reinsurance premiums in 2023: According to the report of the International Association of Insurance Supervisors (IAIS), the global reinsurance market is around \$900 billion<sup>3</sup>. Reflecting a significant increase in activity in this sector.

About 13% of global insurance premiums are reinsurance premiums, indicating that a significant part of the world's risk is transferred from insurers to reinsurers.

<sup>3</sup> IAIS -International Association of Insurance Supervisors (IAIS)

Chart 2. Regional composition of gross reinsurance premiums



• The chart 2 shows the regional composition of gross reinsurance premiums, broken down into life and non-life reinsurance<sup>4</sup>. About 35% of reinsurance premiums are life reinsurance, while 65% are non-life/catastrophe reinsurance. The split is most pronounced in Europe and Africa (17% life, 83% non-life), while it is equally pronounced in the Americas (49% life, 51% non-life). This shows the great importance of reinsurance in coverage of natural and industrial risks.

#### ❖ **Albania Insurance Market 2025**

For 2025, gross premiums in the insurance market in Albania reached 20.18 billion lek, marking an increase of 10.37% compared to the same period last year.

The market remains oriented towards non-life insurance, which accounted for 91.69% of the total premium volume, while life insurance 8.27% and reinsurance 0.033%. In the Albanian market, reinsurance constitutes a very small part of the total insurance activity, unlike developed markets where about 1/5 of the risk is transferred to reinsurance, (Statistic Albania, 2023 xprimm).

### **2.7 Political risk insurance**

#### **a. Protection from legal and political changes**

One of the main functions of political risk insurance is to protect against unexpected legal and political changes that may directly affect the investor's economic activity (Multilateral Investment Guarantee Agency [MIGA], 2022). Political Risk Insurance (PRI) is considered a key instrument for managing exposure to sovereign risks and state interventions that undermine foreign investment (World Bank, 2020).

In many countries, especially in developing countries or those with political instability, state laws and policies can change frequently, without warning and without taking into account the interests of foreign investors. The literature on foreign direct investment highlights that institutional uncertainty and political risk are among the main factors influencing the decision-making of international investors (OECD, 2019).

These changes can have serious financial consequences, including loss of revenue, increased operating costs, and violation of contractual rights (MIGA, 2022).

These changes may include:

- sudden increases in taxes and duties (OECD, 2019)
- imposition of new customs duties (World Bank, 2020)
- restrictions on transferring profits abroad (MIGA, 2022)
- changes in labor laws (OECD, 2019)
- cancellation or non-renewal of licenses and permits (MIGA, 2022)
- prohibition of a certain economic activity for political or environmental reasons (World Bank, 2020)

Political risk insurance compensates for financial losses arising from these changes, including risks such as expropriation, restrictions on currency conversion and transfer, breach of contract by public authorities, and civil unrest (MIGA, 2022). In this way, it gives the investor a sense of security and stability, encouraging increased investment in markets with a higher level of institutional uncertainty (World Bank, 2020).

#### **b. Coverage for nationalization, confiscation and war**

One of the most serious risks that foreign investors face is direct state intervention in private property, which usually occurs in tense political situations, economic crises, regime changes or extreme ideologies. Political risk insurance is designed precisely to protect the investor from these extreme risks, which are often unpredictable and uncontrollable.

##### **1. Nationalization**

Nationalization occurs when the government of a country decides to take full control or ownership of a private investment, usually for political, economic or ideological reasons. This is often justified by the state as an action "in the public interest", but for the investor it represents a huge financial loss.

Nationalization usually affects:

- strategic industries (energy, oil, gas, mining)
- banks and financial institutions

<sup>4</sup> GRMS- Global Reinsurance Market Survey

- telecommunications
- infrastructure
- agriculture and land

In many cases, the state does not offer any compensation for the property taken, or offers a symbolic compensation that does not reflect the real value of the investment, while there are also cases when the payment of compensation is delayed for many years, causing the investor significant financial losses and ongoing uncertainty. In these circumstances, political risk insurance plays a very important role, as it protects the investor's initial capital, compensates for losses of property taken from the state, and also covers the loss of expected profits that the investor was unable to realize. Thanks to this insurance, the investor gains security and confidence to enter and operate in uncertain markets, significantly reducing the risk of major financial losses.

### **2. Confiscation**

Confiscation is an even more aggressive form of state intervention, where private property is taken without respecting legal procedures or the law is used as a political tool to drive away the investor.

Confiscation can occur in various forms:

- seizing property without a court order
- freezing bank accounts
- prohibiting access to business premises
- taking administrative control over the company
- restricting the right to sell or transfer property

Often, confiscation directly targets foreign investors and is used as a means of political pressure, while also being associated with corruption and a lack of transparency in decision-making. In these conditions, political risk insurance is of particular importance, as it compensates for financial losses caused by confiscation, covers cases when the investor loses real control over his business and offers protection even in situations where laws formally exist, but are not implemented fairly. Thanks to this insurance, the investor has the opportunity to avoid bankruptcy and more easily cope with the economic consequences of unjust state interventions.

### **3. War, civil unrest and political instability**

Wars and civil unrest are among the most destructive factors for economic activity. They create complete uncertainty and often lead to a total cessation of investments.

These risks include:

- civil or international war
- coup d'état
- violent protests
- destabilization of public order
- political terrorism

These events can lead to the destruction of property, the interruption of production, the loss of markets and the inability to continue economic activity. Political risk insurance covers these losses, compensating for material and financial damages and helping the investor to cope with the consequences of political crises and ensure the financial continuity of the investment.

### **4. Political risk insurance necessary for investments made abroad**

Investments abroad represent a great opportunity for profit, but at the same time a very high level of risk, especially in countries with fragile political stability. For this reason, political risk insurance is considered a key element of the international investment strategy.

- Why are investments abroad more risky?

Investments abroad are riskier because the foreign investor often does not have full knowledge of local laws and regulations, has no influence on political decision-making processes and does not enjoy direct institutional support in the host country. Furthermore, he faces cultural and administrative barriers, which can make communication, management and implementation of investment projects difficult. On the other hand, many host countries frequently change their economic policies, have ineffective judicial systems and are characterized by high levels of corruption, which creates constant uncertainty. Under these conditions, equal protection for foreign investors is not always guaranteed, making investing abroad a riskier and more uncertain process.

- The role of insurance in international investments

In this context, political risk insurance is essential because it significantly reduces uncertainty and financial risk. This insurance allows investors to plan long-term projects, protect their capital and avoid unexpected losses that could lead to bankruptcy. Moreover, many international banks and financial institutions require the existence of this insurance as a condition for financing projects abroad, making it an essential element in the investment process.

- Wider economic impact

Political risk insurance brings benefits not only to the investor, but also to the host country. It encourages the entry of foreign capital, increases the confidence of international markets and contributes to economic development, the creation of new jobs and the improvement of infrastructure. In this way, political risk insurance serves as a bridge between the interests of investors and the economic stability of host countries.

### **2.8 Cooperation with banks and financial institutions**

Cooperation with banks and financial institutions constitutes one of the main pillars of the implementation of investment projects, especially when it comes to high-value investments or investments that are carried out outside national borders. Banks and financial institutions operate on the basis of risk assessment and capital security, therefore, every project that requires financing must meet certain conditions to guarantee stability and return on investment. In this context, insurance plays a crucial role in building trust and reducing financial uncertainty.

#### **a) Insurance as a condition for loans and financing**

In banking and financial practice, insurance is often a mandatory condition for granting loans and financing, especially for large infrastructure, industrial projects or for investments in countries with high political and economic risk. Before approving a loan, banks analyze in detail the risks that may negatively affect the borrower's ability to repay financial obligations. If the

risk is assessed as high, the bank requires additional security measures, among which insurance is one of the most important.

Project insurance guarantees the bank that, even in the event of unforeseen events such as major political changes, confiscation of assets, interruption of activity or civil unrest, financial losses will be partially or fully covered by the insurer. This significantly reduces the risk of non-repayment of the loan and makes the project more eligible for financing.

#### **b) Guarantee for the stability of the project**

Insurance serves not only as financial protection, but also as a guarantee for the stability and continuity of the project throughout its life cycle. Investment projects, especially long-term ones, are exposed to a number of risks that may arise at different stages, such as construction, operation or expansion. Without a protective mechanism, a single negative event can lead to the complete termination of the project.

When a project is insured, the investor and financial institutions have more confidence that the project will be sustainable even in difficult conditions. Insurance helps maintain liquidity, because financial compensation can be used to repair damages, continue activity or meet obligations to banks and suppliers. In this way, insurance contributes to protecting the interests of all parties involved and ensuring the long-term success of the project.

#### **c) Support for foreign direct investment**

Insurance plays a key role in promoting and supporting foreign direct investment, which is a very important source for the economic development of host countries. Foreign investors are often exposed to political, legal and institutional risks, which can discourage the entry of foreign capital. In this context, insurance serves as a mechanism that significantly reduces the fear of large losses and creates a more favorable environment for investment.

Through insurance, foreign investors feel more confident about investing in long-term projects, bringing not only financial capital, but also technology, professional knowledge and modern management practices. International financial institutions often cooperate with insurers and local governments to support these investments, creating more stable financial structures. As a result, insurance helps to increase the confidence of international markets, strengthen economic stability and promote sustainable development.

### **2.9 Advantages of insurance for the economy and foreign investment**

#### **a) Increased foreign investment**

One of the most important benefits is the increase in foreign direct investment (FDI), which constitutes a major source of capital for host countries (World Bank, 2020). Foreign investors are often cautious about placing capital in new countries due to political, legal and economic uncertainty; however, when there is political risk insurance and support from international financial institutions, these investments become safer and more

acceptable (Multilateral Investment Guarantee Agency [MIGA], 2022).

Increased foreign investment brings a series of benefits: foreign capital can be used to expand existing industries, open new businesses and stimulate innovative sectors (OECD, 2019). It also brings new knowledge and technologies, improving the efficiency and productivity of domestic companies. International companies often transfer advanced technologies and modern management practices, increasing the competitiveness and quality of products in the domestic market (OECD, 2019).

Foreign investments create jobs and increase the state's fiscal revenues, contributing to sustainable economic development. Without mechanisms for insurance and protection against political risk, many investors would be reluctant to enter markets with high institutional uncertainty, limiting long-term economic development (MIGA, 2022).

#### **b) Economic stability**

Economic stability is another essential benefit derived from political risk insurance and cooperation with financial institutions. When investors feel protected and have the certainty that their projects will not be damaged by political or unpredictable factors, this helps maintain the continuity of economic activity and prevents sudden capital crises.

Economic stability is important because it allows the government and economic actors to plan for the long term. It creates conditions for stable fiscal and monetary policies and increases market confidence. For example, a country with high political and legal stability is more likely to attract large infrastructure or technology investments because investors feel protected and confident about the return on capital.

A stabilized economy also helps reduce the risk of unpredictable inflation, currency devaluation, and banking sector collapse. This creates a more trustworthy environment for all companies, domestic and foreign, and can stimulate economic activity and production in a sustainable manner.

#### **c) Infrastructure project development**

Securing and protecting investments does not only help individuals or companies, but has a major impact on the development of infrastructure projects, which are the basis for the country's economic development. Projects such as the construction of roads, bridges, dams, electricity, water supply, public transport or telecommunications require large investments and are often exposed to political and economic risks.

When investors have protection from risks, they are more willing to commit significant capital and invest in long-term projects. These infrastructure projects improve the quality of life of citizens, increase the efficiency of the economy and facilitate the flow of goods and services. For example, a developed and maintained road network facilitates trade, reduces transportation costs and increases competition between businesses.

Furthermore, infrastructure development stimulates other economic sectors, such as construction, energy, logistics and tourism. Investments in this area have a ripple effect, positively impacting many areas of the economy and creating new jobs and development opportunities for local communities (MIGA, 2022).

### Conclusions

From the assessment and analysis of factors that affect the insurance of investment projects of international companies, we reach several conclusions:

1. Insurance is a key element of risk management.

Investment project insurance functions as a fundamental mechanism for risk transfer and financial protection. It minimizes the consequences of natural, technical, operational, financial and political risks, ensuring stability and continuity for the project.

2. The role of insurance varies according to the project phases.

From planning to construction and operation, insurance adapts to the nature of the risks and the financial needs of the project. The construction phase requires CAR/EAR coverage, while the operation phase requires property, business interruption and civil liability insurance.

3. Political risk insurance plays a key role in protecting investors, especially in international investments, by reducing uncertainties related to legal changes, nationalization, confiscation and political instability.

4. Insurance of investment projects and investments of insurance companies play a key role in economic development and financial stability. Through effective risk management and investment diversification, insurance companies contribute to promoting investments and sustainable economic growth.

5. Insurance constitutes an essential element in protecting the interests of investors and in ensuring the success of investment projects. By protecting capital, providing financial security, improving access to financing, ensuring project continuity and reducing uncertainty, insurance becomes a strategic financial management mechanism.

6. In the context of developing economies such as Albania, the role of insurance becomes even more important in promoting sustainable and long-term investments. Investments are the foundation of the financial stability of insurance companies, and diversification and risk analysis are key to effective financial management. For our country, it is important to increase the share of investments in international markets, as well as the use of alternative instruments for increasing profits, implementing modern risk management tools.

7. The implementation of international standards guarantees that investors and lenders have high certainty about the return on capital and risk management, and transparency and strict regulations reduce the risk for investors and strengthen the credibility of projects.

8. Insurance increases financial and banking credibility.

Investors and banks use insurance to reduce financial risk and ensure the return on capital. This mechanism makes the project more acceptable for financing and reduces the probability of economic failure.

9. Insurance stimulates investment and economic development.

Protection from political, legal and financial risks increases the confidence of investors, especially foreign ones, stimulating direct investment and infrastructure development. This contributes to job creation and economic stability of the country.

10. Insurance companies such as Allianz etc. play a role not only in project insurance, but also in strategic capital investments for infrastructure, diversifying their economic portfolio.

### Recommendations

1. Develop a clear insurance strategy for each phase of the project

Investors should analyze risks at the planning stage and determine the most appropriate types of insurance for construction, assembly and operation, including CAR, EAR and property insurance

2. Use of political insurance for investments abroad

International investments should be accompanied by political risk insurance that covers nationalization, confiscation and civil unrest, to reduce uncertainty and potential losses.

3. Strengthening the regulatory framework for insurance company investments

Improving the legislation on insurer investments, further harmonizing it with international standards, so that insurance companies have a clearer framework for diversifying their investment portfolio.

4. Recommendations for promoting investments in strategic and sustainable sectors

Encouraging insurance companies to invest in infrastructure and development projects, such as transport, energy and water supply and sewerage, which offer long-term and relatively stable returns. Using international insurance and reinsurance mechanisms to reduce the risk of investments in large projects and attract foreign capital.

5. Recommendations for increasing transparency and improving risk management

Implementation of international financial and risk reporting standards, as well as risk management standards, to increase the transparency of investment activities. Strengthening internal risk management systems, including the assessment of operational, financial and market risk for each insured investment project.

6. Active cooperation with banks and financial institutions

For high-value projects, insurance should be used as a tool to secure lending, guaranteeing banks for the return of capital and helping to structure the project in a financially sustainable manner.

7. Using insurance as a stimulus for economic and infrastructure development

Authorities and investors should encourage the use of insurance for large infrastructure projects, ensur-

ing that projects are sustainable even in crisis conditions and attract foreign capital for sustainable development.

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# HISTORICAL SCIENCES

## THE SHROUD AND THE SAVIOR'S JOURNEYS

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## ПЛАЩАНИЦА И ПУТЕШЕСТВИЯ СПАСИТЕЛЯ

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### Abstract

In this article, the author analyzes data from research on the Turin Shroud, clarifies the dating of the relic's origin, and explains the origins of the diverse genetic material—mpDNA from humans and animals, as well as chloroplast cpDNA of plants from around the world. The author also briefly reconstructs Savior's journey after the Resurrection and provides a route through the planet, linked by dates and geographic locations.

### Аннотация

В статье автором проанализированы данные исследования Туринской Плащаницы, уточнена датировка появления реликвии, а также объяснена причина обнаружения разнообразного генетического материала mpDNA людей и фауны, а также хлоропластной cpDNA растений со всего мира. Также кратко изложена авторская реконструкция путешествия Спасителя после воскресения и приведен маршрут его движения по планете с привязкой по датам и географическим местам.

**Keywords:** Turin Shroud, Jesus Christ, Savior, Holy Family, Constantinople, haplogroup, mpDNA, cpDNA, haplotype, Ugrians, dating, journeys.

**Ключевые слова:** Туринская Плащаница, Иисус Христос, Спаситель, Святое Семейство, Константинополь, гаплогруппа, mpDNA, cpDNA, гаплотип, угры, датировка, путешествия.

**Main Material:** One of the most striking artifacts proving the existence and sacrificial sacrifice of Jesus Christ is the Shroud of Turin. The Catholic and Orthodox churches do not recognize this object as a relic but consider it a sacred object reflecting the image of the Son of God.

In the late XX and early XXI centuries, the Vatican authorized instrumental studies of the Shroud, including radiocarbon dating, computer image modeling, and DNA testing of substances contained within the material.

Careful examinations have proven that the Shroud cannot be dated to the I century, the time when, according to the official Christian version, the Lord lived and worked. However, the study of the Shroud has revealed a dilemma: either the Shroud of Jesus Christ was created in the XI century, according to the author's reconstruction and the true era of the New Testament, or the artifact is a forgery, and Christian churches officially insist on the traditional chronology of biblical events. At the same time, Christianity must turn a blind eye to the existence of an object that has absorbed millions of pieces of evidence of Christ's earthly exploits, evidence that cannot be falsified even by sophisticated modern technology. A rhetorical question arises: who needed to fabricate the Savior's shroud in the Middle Ages?

This article is intended to establish a truth that does not affect faith in Christ but restores historical justice. The truth exposes the falsity of modern theology and centuries of error among Christian hierarchs.

We will examine the details of the Shroud's dating, drawing on published research results, and then move on to the author's instrumentally based reconstruction of biblical events and the Savior's travels in his earthly form.

The Turin Shroud (Sindone di Torino) is a linen cloth measuring 4.37 by 1.11 meters [1]. It was first documented in 1353 in France. According to one traditional version, it is an image of the Savior, supposedly transferred to Constantinople from Edessa by Patriarch Theophylact in 944. According to the author, the image was simply one of the artistic and venerated icons of Savior in the X century.

It was only in the 1060s that the Crown of Thorns of Christ [2], like the Shroud itself, appeared in Constantinople. At the end of the XI century, altar cloths with life-size images of Christ began to be used [3]. Copies of such clothes were kept in several churches in Constantinople, as evidenced by XIII-century sources. Nicholas Mesarites (1201) claimed [4] that the Chapel of the Theotokos Pharos in Boukoleon contains "The Funeral Robe of the Lord. They are made of linen and still smell fragrant with anointing."

After the sack of Constantinople by the Crusaders in 1204, the Robe of the Lord disappeared.

The history of the artifact has been known since the XIV century, although it never left Europe.

So, the Shroud is made of an expensive material – linen, which was not used in Palestine at the beginning of the Common Era.

The shroud fabric is woven using a twill (diagonal) weave, which came into use in the XI century [5]. This fact supposedly proves the Shroud is a forgery.

Furthermore, the image of the Savior on the Shroud depicts hands folded over the pubic area. This custom first appeared in paintings from the XI century and was a "concession to modesty" at the time [6]. In contrast, Jews were buried naked, circumcised, and shaved with their arms folded over their chests. This argument was used as further evidence of the shroud's falsification.

It is worth noting that the Shroud bears the image of a man of unusually tall stature for Palestine and the entire Middle East. The subject's height was approximately 195 centimeters [7]. Below, we will show where remains with similar physical anthropology have been discovered.

We will discuss the details of the radiocarbon dating of the artifact in 1988 [8]. The radiocarbon age of the Shroud was determined to be  $691 \pm 31$  years, meaning it was created around 1297. This information shocked Christians, and the Shroud was once again declared a forgery. However, clarifying studies soon emerged, considering additional factors that slowed the artifact's aging. The first factor was a fire in 1532, when the fabric was exposed to high temperatures and low oxygen levels. The second factor is that after the fire, the Shroud was soaked in 7% linseed oil. According to researchers, the presence of linseed oil causes the fabric to be "rejuvenated" by radiocarbon dating, up to 276 years [6].

Let's do some simple calculations and add together the numbers  $691 + 276 = 967 \pm 31$  years. Thus, we arrive at the correct radiocarbon date for the Shroud as

$1021 \pm 31$  years. We are once again back to the early XI century.

The most recent and detailed instrumental study of the Turin Shroud at the beginning of the XXI century was the analysis of traces of mitochondrial mpDNA from people who encountered the artifact, chloroplast cpDNA from plants, and the DNA of living organisms absorbed into the fabric [9]. A group of scientists from the University of Padua published their results with their comments, striving to ensure the fidelity of the traditional chronology and the Vatican. Fig. 1 shows a map of the contactors' habitats indicating mpDNA haplogroups, and Fig. 2 shows a map of the distribution and names of the discovered plants [9]. The identification of DNA traces yielded mind-boggling data. For example, a sequence corresponding to 694 bp of the CO1 gene was discovered, which is attributed to a marine worm (*Cerebratulus longiceps* Coe), quite common in the northern Pacific Ocean, near Canada. Human mpDNA revealed the distribution areas of contactees from across Europe, Russia, Central Asia, the Middle East, Mesopotamia, and the Hindustan Peninsula, all the way to Indochina.

The traces of flora and fauna DNA found on the Shroud baffled scientists. In their study, they attempted to justify the presence of these substances by the story of the Shroud's journey around the world in the hands of pilgrims and by accidental contamination from believers' interactions with the relic. The scientists did not comment on the sensational nature of the obtained geographic data.

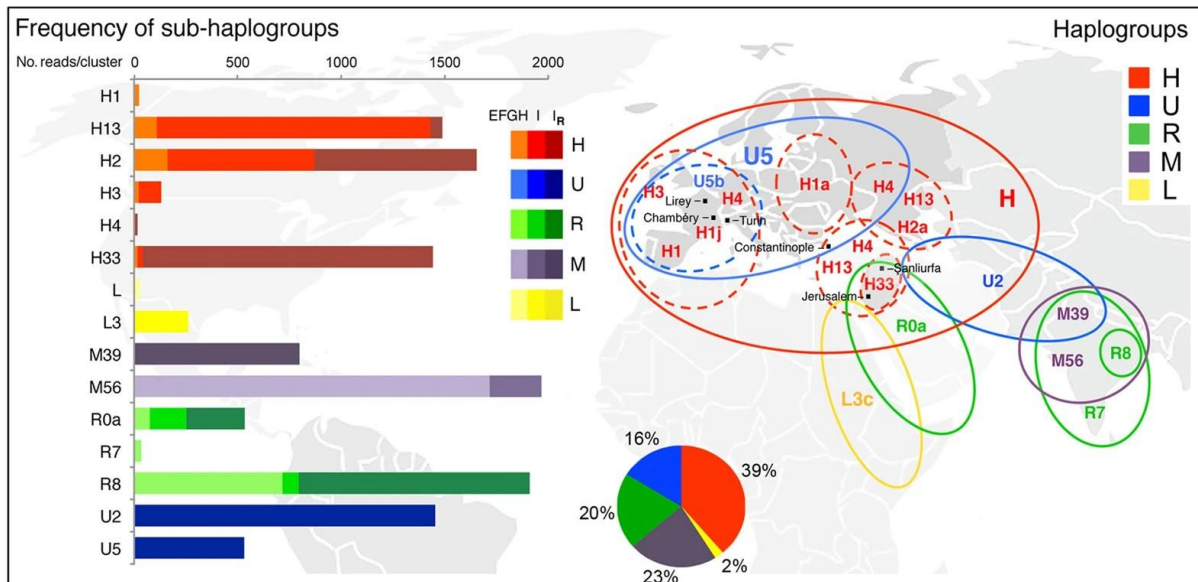


Fig. 1. Distribution map of contactees with the Shroud and their mpDNA haplogroups [9].

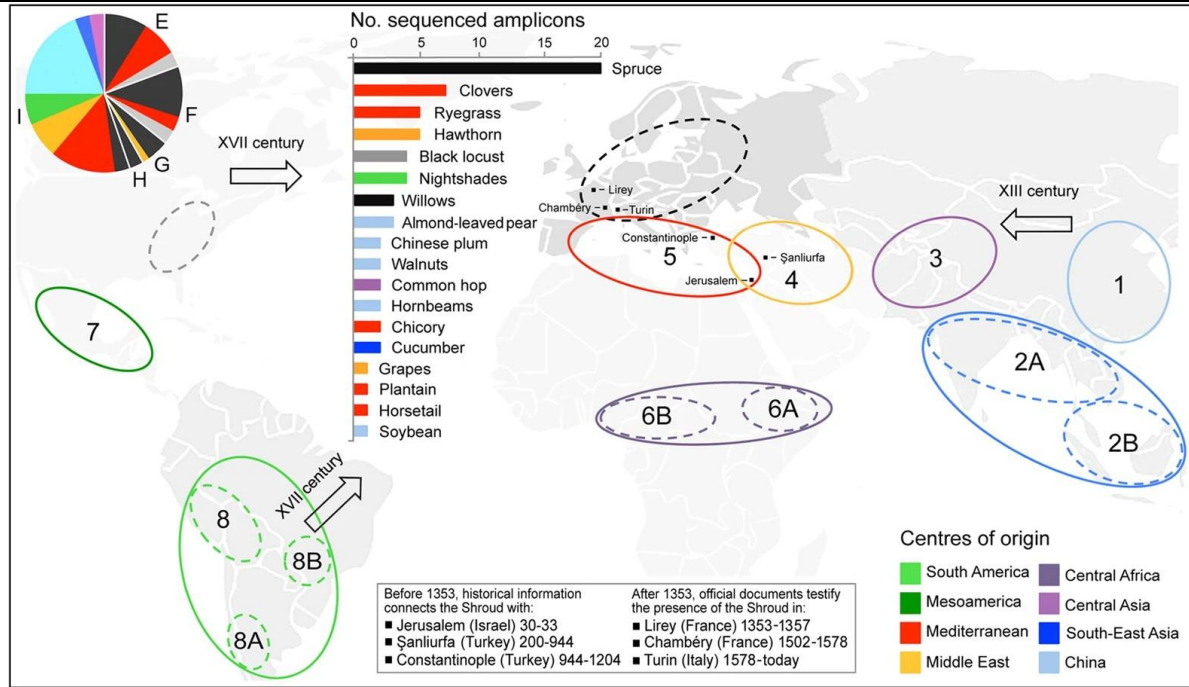


Fig. 2. Distribution map and names of discovered plants [9].

From the perspective of traditional history and theology, it is impossible to explain the presence of contactees from Russia, Northern Europe, Mesopotamia, India, and Indochina. How can Christians and the Vatican explain the presence on the Shroud of traces of plants and creature's native to China, Southeast Asia, Polynesia, Central Africa, and North, Central, and South America? There is simply no justification.

On the contrary, the author possesses a true and detailed reconstruction of the biblical events of the New Testament, revealing the secrets of the Holy Family, the Savior, and biblical relics back in 2009. All elements of the reconstruction are rigorously scientifically, historically, and instrumentally confirmed [10, 11].

Let us move on to the author's refined interpretation [11] (2024).

The Christian era (Common Era) is divided into Old Testament (I millennium) and New Testament Christianity (II millennium). Old Testament Christianity was theoretical in nature, awaiting the coming of the Savior. New Testament Christianity began in 1010 with the crucifixion and resurrection of Jesus Christ. The founder of Christianity was Emperor Titus Flavius Vespasianus (I century, born November 17, 9 AD), also known as the Ugric Khagan Tash Bash Artan and the biblical Patriarch Abraham. He spent most of his life in Palestine. Details of the chronology of Old Testament Christianity and the lives of the Patriarchs as historical figures are described in books [10, 11, 12].

Theotokos Mary (961/962–1062) was the daughter of Saint Vladimir/Emperor Basil II and Empress Anna of the Macedonian Dynasty. Mary's spiritual father was Bishop Joachim of Korsun (later Bishop of Novgorod the Great), a close friend of Anna. The Holy

Family were ethnic Ugrians (Finno-Ugrians) of the Rus' dynasty. The closest relatives of the Theotokos Mary and the Savior were the emperors of the Macedonian dynasty, rulers of Ancient Rus' and Volga Bulgaria, and they were not Jewish.

Anna, and later her daughter Mary, owned the royal palace in Blachernae, Constantinople.

Jesus Christ was born around 979/980, most likely in Prusa (the throne of the Rus' dynasty). The birth of the Savior was accompanied by the appearance of the Star of Bethlehem – Olbers's Comet (13P/Olbers) – at the end of 979. Jesus's Russian nickname was Chrysostom/Zlatoust.

In 1009 (exactly 1,000 years after the birth of Abraham), Jesus walked to Palestine and the Jordan River, where his close relative John baptized people.

Having gathered his disciples, Jesus traveled on foot and by coastal vessels to New Rome (Constantinople), preaching his teachings. On Mount Athos, he delivered the Sermon on the Mount, spurring the construction of New Testament monasteries.

In March 1010, he entered Constantinople through the Golden Gate. He lived with his disciples in the Galata Garden, crossing the Golden Horn daily to preach in the Church of Hagia Sophia. On Maundy Thursday, March 17, he prayed on the ruins of a tower in the Galata Garden, where he was arrested by soldiers and servants of the Patriarchate. The Christ Tower now stands on this site. He was brought for interrogation to the Patriarchate – the Church of All Saints/Holy Apostles (no longer extant) – and tortured. The Patriarch at the time was Sergius II the Studite. It was not Jews, but Christians, who tortured and executed Jesus.



For his execution, Jesus was dressed in purple (a cloth worth more than gold by weight) and the Crown of Thorns. The Savior's body was wrapped in a linen Shroud [1] and placed in a rock-cut tomb (Yoros Castle, Church of Nika of Jesus Christ) in a Greek cemetery, which still stands today. The hands of the dead Savior were folded on his pubic area according to local tradition, and Roman coins may have been placed over his eyes. The Empty Tomb was located three kilometers from the site of the crucifixion. Yoros is the true Jerusalem for Christians worldwide; see Figs. 6 and 7. Easter in the New Testament is astronomically tied to the vernal equinox on March 20, 1010, and cannot

move around the calendar, as the Catholic and Orthodox churches have decided.

Jesus Christ was resurrected on March 20, 1010, bid farewell to his disciples, and set out on his amazing journey across Earth, ending in 1054. The Son of God came to Earth for all humanity, not just Christians. During this campaign, the Savior carried with him—the Shroud—as proof of his resurrection.

Over 44 years of travel, the Shroud absorbed the DNA of people and the flora and fauna of the places Christ visited. However, he only showed the Shroud to people who had an understanding of Christianity and could understand the meaning of Jesus' spiritual message.



*Fig. 5. Sanctuary of Saint Yusa Kabri (Jesus Kubar) [10, 11].*

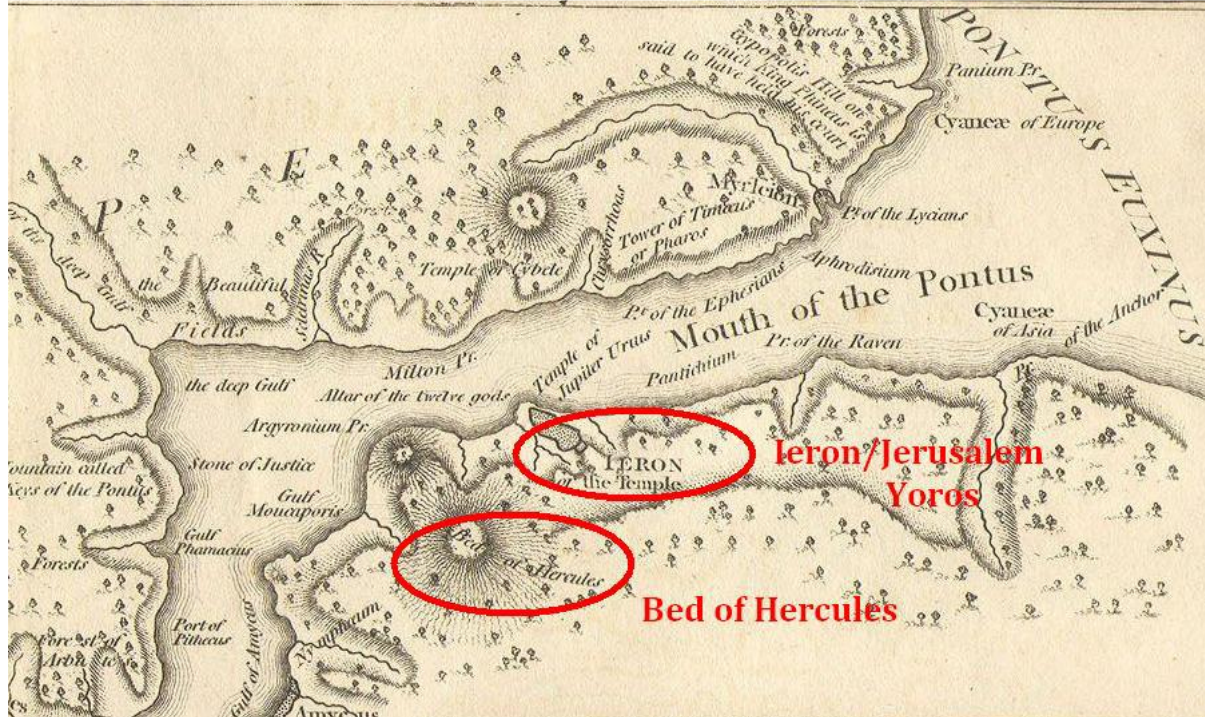


Fig. 6. Medieval map of the Propontis (Bosphorus), with Mount Bed of Hercules and the Yoros Castle and cemetery marked with red ovals [11].

After the Resurrection, the Savior and several disciples headed to Damascus, then visited Arabia, and from there moved on to Mesopotamia and Central Asia. There, he greatly influenced the development of Zoroastrianism. In the 1020s, Christ visited Europe and his homeland, Rus'. In 1024, he met the Virgin Mary in Ephesus, and they then celebrated the Dormition of the Theotokos in Constantinople/Jerusalem.

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Fig. 7. Modern view of the Yoros Castle with the ruins of the Church of Nika of Jesus Christ and a view of the biblical cemetery from space [11].

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In 1024, he moved to India, where he lived until 1035, regularly visiting the Mediterranean and Mount Athos. The Savior, through his meditations and sermons, stimulated the flourishing of Buddhism in India in the XI century. Hindus perceived him as an incarnation of Buddha.

During this time, the Son of God visited various regions of Indochina and Southeast Asia.

In 1035, the Savior moved to China and severed contact with Europe for a long time. In China, Jesus became known as Kong Qiu, as he was called Cube/Kub. The name Kong later became known to Europeans as Confucius. The Chinese did not believe in God the Father, and the canons of Christianity were unknown and incomprehensible to them. However, they believed that Kong Qiu had no father and served Heaven. In China, the Savior settled in Qufu, Shandong Province. From there, he traveled throughout the country and interacted with the local population. He acquired several disciples, the founders of the Neo-Confucian movement of the XI century.

Around 1040, Jesus moved to the village of Shingo, located on the island of Hokkaido in Japan, where the locals still consider themselves Christians. Hokkaido was formerly inhabited by the Ainu people (Finno-Ugrians), and after Jesus' arrival, the island became known as Iesu.

After 1043, the Savior gathered a contingent of Varangians from among the Japanese and set out with them on a sea voyage through the Kuril Islands, Kamchatka, and Alaska to North America, landing on the

coast of modern-day Canada (hence the traces of a marine worm from this region on the Shroud). In North America, Jesus formed a tribe of settlers, the Toltecs. From Japan, the Varangians brought horses, which quickly multiplied on the prairies of the New World. The Toltecs, led by Jesus, headed south to conquer Mesoamerica. Mormons believe that the Savior visited the Americas after his resurrection, and the indigenous peoples of the continent—the native Israelites [13]. In Central and South America, the indigenous peoples perceived the Savior as an incarnation of Quetzalcoatl, whose attributes became Christian crosses.

Around 1050, Jesus founded the Inca Empire in the Andes, in what is now Peru. From there, he traveled through South America and visited Cuba, as well as Central Africa, as evidenced by traces of African plant DNA on the Shroud. The author did not mention Africa in his books but can now confirm this based on the results of cpDNA detections of plants on the Shroud [9].

At the end of 1053, the Savior returned to Europe. He traveled from the Inca kingdom through Easter Island, New Zealand, the islands of Polynesia, Indonesia, Southeast Asia (he visited Batu Cave and Kuala Lumpur), India, Mesopotamia, and the Middle East.

In the Mediterranean, he visited Mount Athos, then the still-living Virgin Mary in Loretto (Dalmatia). At his meeting with his mother, Jesus entrusted his relics for safekeeping, which, after the Virgin Mary's passing, were taken to Constantinople by the emperors.

The Savior likely met with Pope Leo IX in Italy in early 1054.

Then, in the spring of 1054, through Eastern Europe and Ancient Rus', the Savior returned to China, to the city of Qufu, where he fell seriously ill and died of old age. The death of the Son of God was heralded by two celestial phenomena: a total solar eclipse on May 10, 1054, visible in India and China, lasting 3:02 minutes at 07:16 UT, the 103rd Saros, and the explosion of the M1 Supernova. Note that the supernova signifies the death, not the birth, of a star.

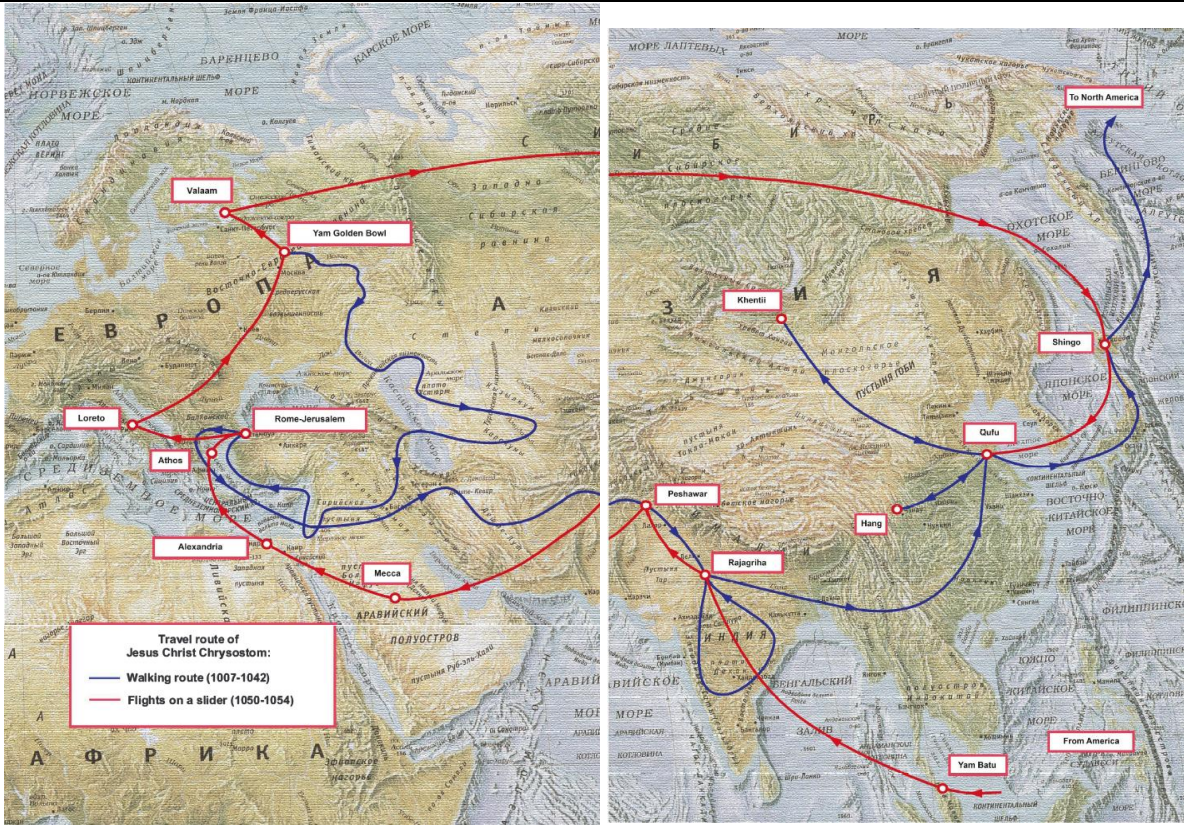


Fig. 8. The Eurasian route of the Savior [10], pp. 502–503.

The Savior, under the name Kong Qiu (Confucius), was buried in Qufu, China, in the world's largest burial complex. His tomb bears the inscription, "Tomb of the King who achieved perfect wisdom and perfection in enlightenment through great accomplishments." At the end of the XX century, Chinese scientists opened

Confucius's tomb and discovered a red-haired man with a cleft lip and a height of over 190 cm. The results of the body's examination are unknown, as is the possibility of obtaining DNA data from the remains. The routes of Jesus Christ's travels around the planet, linked to places and dates, are shown in Fig. 8 and Fig. 9.

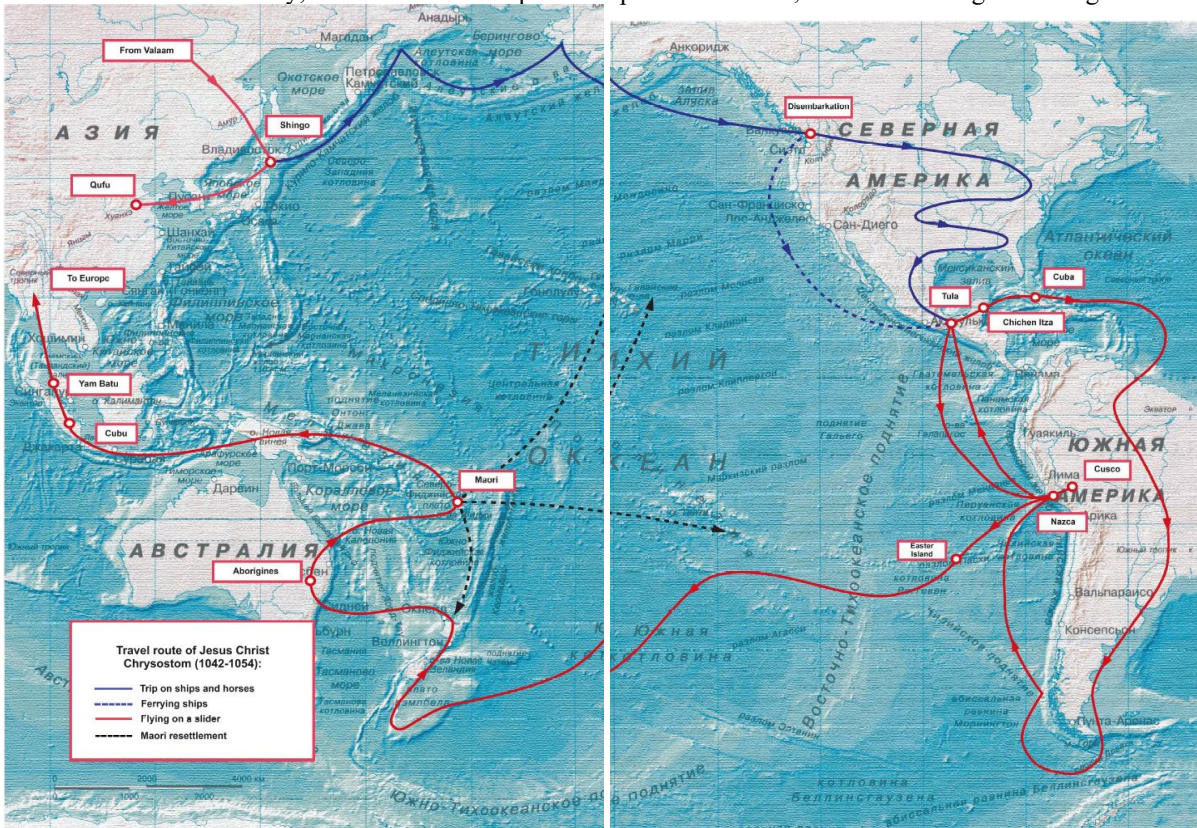


Fig. 9. The Savior's Pacific Route [10], pp. 514–515.

In his works, the author compiled a modal Y-DNA haplotype of the Savior based on 67 markers in the Family Tree DNA standard (volume 2, p. 214, [11]):

14-23-14-11-11-13-11-12-10-14-14-30-16-9-9-11-12-25-14-19-28-14-14-15-15-11-11-18-20-14-15-16-18-34-34-13-10-11-8-15-17-8-8-10-8-11-10-12-21-22-13-10-12-12-16-7-13-20-21-15-12-11-10-11-11-12-11 (1–67), allele sum 970, haplogroup N1c1 (N1).

To establish the truth, it is necessary to conduct a thorough study of the relics of the Holy Family, which have not disappeared into the abyss of history but are readily available for study.

The Savior's Y-DNA and mtDNA can be isolated from bloodstains on the Shroud, the Crown of Thorns from Notre-Dame de Paris, or an ampoule of blood from the Basilica of the Holy Blood in Bruges and compared with samples from the tomb of Confucius in Qufu.

The mtDNA samples of the Theotokos must be obtained from the relics of Saint Juliana, under whose name Mary is buried, in the Near Caves of the Kiev Pechersk Lavra. It is possible that the relics of Saints Vladimir and Anna, hidden during World War II, are also located there.

It is also interesting to study the Y-DNA and mtDNA of Bishop Joachim of Korsun, whose relics are housed in St. Sophia Cathedral in Novgorod the Great.

To summarize, the author's reconstruction is supported by chronicles, studies of the Shroud, and celestial phenomena described in the Gospels: The Star of Bethlehem and the solar eclipse during the Savior's crucifixion. Christ's death in earthly form is confirmed by a dual celestial phenomenon: a Total solar eclipse and a Supernova. The author also identified relatives of the Holy Family with famous historical figures, members of the imperial dynasty and spiritual leaders of their time.

02/17–24/2026.

**Основной материал:** Одним из самых ярких артефактов доказательства существования и жертвенного подвига Иисуса Христа является Туринская Плащаница. Католическая и православные церкви не признают этот предмет реликвией, но считают его священным предметом, отражающим образ Сына Бога.

В конце XX века и начале XXI века Ватикан разрешил провести инструментальные исследования Плащаницы, включая радиоуглеродный метод, компьютерное моделирование изображения и тестирование ДНК веществ, находящихся в материи.

Тщательные обследования доказали факт того, что Плащаница не может быть датирована I веком, когда по официальной версии христианства, жил и творил Господь. Однако изучение Плащаницы выявило дилемму, согласно которой либо Плащаница Иисуса Христа появилась на свет в XI веке, согласно реконструкции автора и истинной эпохе Нового Завета, либо артефакт является подделкой и христианские церкви официально настаивают на верности традиционной хронологии библейских

событий. При этом христианство должно закрыть глаза на существование предмета, впитавшего в себя миллионы доказательств земного подвига Христа, которые невозможно подделать даже изощренными современными технологиями. Возникает риторический вопрос – кому нужно было в средневековье фабриковать саван Спасителя?

Настоящая статья предназначена для утверждения истины, которая не затрагивает веру в Христа, но восстанавливает историческую справедливость. Правда изобличает ложность современной теологии и столетия заблуждений иерархов христианства.

Разберемся в деталях датировки Плащаницы, опираясь на опубликованные результаты исследований, а затем перейдем к авторской, инструментально обоснованной, реконструкции библейских событий и путешествий Спасителя в его земной ипостаси.

Туринская Плащаница (Sindone di Torino) это льняное полотно размером 4,37 на 1,11 метра [1]. Документально впервые была упомянута в 1353 году во Франции. По одной из традиционных версий она является образом Спасителя, якобы перенесенным Патриархом Феофилактом в 944 году в Константинополь из Эдессы. По мнению автора образ являлся просто одной из художественных и почитаемых икон Спасителя в X веке.

Только в 1060-х годах в Константинополе появился Терновый венец Христа [2], как и сама Плащаница. В конце XI века стали использоваться алтарные покровы с изображением Христа в человеческий рост [3]. Копии таких покровов хранились в нескольких церквях Константинополя, о чем говорят источники XIII века. Николай Месарит (1201 год) утверждал [4], что в часовне Богородицы Фарос в Буколеоне хранятся «Похоронные Ризы Господни. Они из полотна и ещё благоухают помазанием».

После разграбления Константинополя крестоносцами в 1204 году ризы Господни исчезли.

История артефакта известна с XIV века, при этом он никогда не покидал Европу.

Итак, Плащаница изготовлена из дорогого материала – льна, который не использовался в Палестине в начале нашей эры.

Ткань савана соткана методом саржевого (диагонального) переплетения, появившегося в обиходе в XI веке [5]. Этот факт якобы доказывает подделку Плащаницы.

Кроме того, изображение Спасителя на Плащанице зафиксировало руки, сложенные на лобковой области. Такой обычай впервые появился на картинах с XI века и был «уступкой стыдливости» того времени [6]. Напротив, евреев хоронили голыми, обрезанными и бритыми со скрещенными на груди руками. Этот аргумент использовали как очередное доказательство фальсификации савана.

Отметим, что на Плащанице отпечаталось изображение человека очень высоко роста для Палестины и всего Ближнего Востока. Рост объекта

составлял около 195 сантиметров [7]. Ниже мы покажем, где были обнаружены останки со сходной физической антропологией.

Остановимся на деталях радиоуглеродного исследования артефакта в 1988 году [8].

Радиоуглеродный возраст плащаницы был определен как  $691 \pm 31$  год, то есть она была создана около 1297 года. Эта информация повергла в шок христиан, и Плащаница была вновь объявлена подделкой. Однако вскоре появились уточняющие исследования, учитывающие дополнительные причины замедления старения артефакта. Первый фактор – это пожар в 1532 году, когда ткань была подвергнута воздействию высокой температуры при низком содержании кислорода. Второй фактор – после пожара Плащаница была пропитана 7% льняным маслом. Согласно данным исследователей, наличие льняного масла вызывает «омоложение» ткани при радиоуглеродном методе вплоть до 276 лет [6].

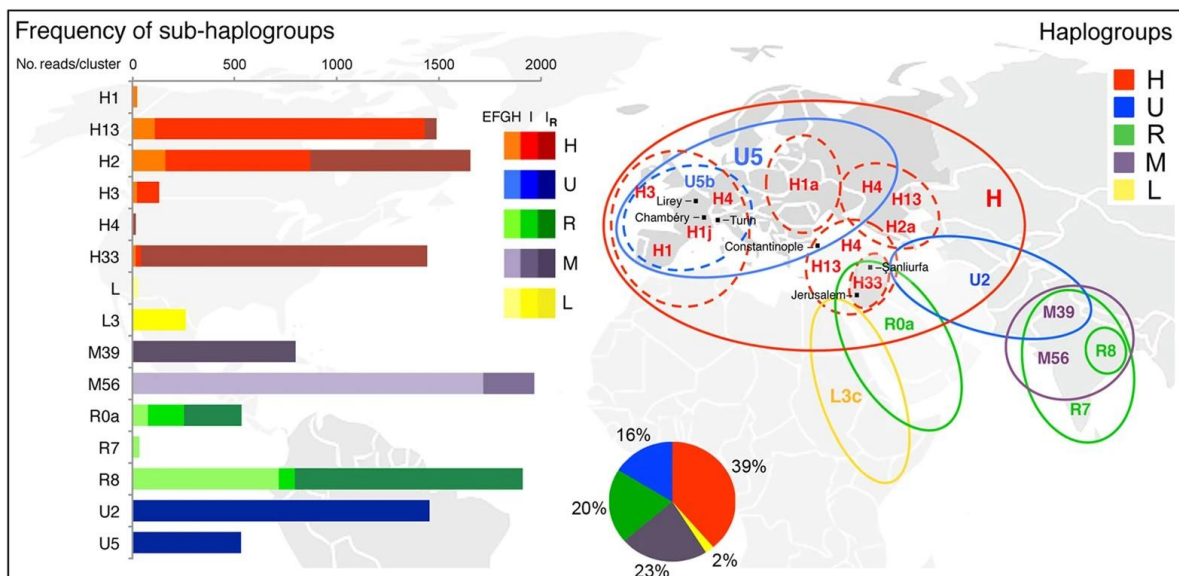
Проведем несложные подсчеты, сложив вместе цифры  $691 + 276 = 967 \pm 31$  лет. Таким образом, получаем корректную радиоуглеродную дату создания Плащаницы как  $1021 \pm 31$  год. Мы вновь попадаем на начало XI века.

Последним самым детальным инструментальным исследованием Туринской Плащаницы в начале XXI века стала работа по анализу следов ми-

тохондриальных *mtDNA* людей, вступавших в контакт с артефактом, хлоропластной *cpDNA* растений и ДНК живых организмов, впитавшихся в полотно ткани [9]. Группа ученых Падуанского университета опубликовала полученные результаты со своими комментариями, стремясь обеспечить верность традиционной хронологии и Ватикану. На Фиг. 1 показана карта обитания контактеров с указанием гаплогрупп *mtDNA* и на Фиг. 2 – карта распространения и названия обнаруженных растений [9]. Отождествление следов ДНК дали ошеломляющие разум данные. Например, была обнаружена последовательность, соответствующая 694 bp гена *CO1*, которая отнесена к морскому червю (*Cerebratulus longiceps* Coe), довольно распространённому в северной части Тихого океана, рядом с Канадой.

Человеческие *mtDNA* выявили ареалы расселения контактеров из всей Европы, России, Центральной Азии, Ближнего Востока, Месопотамии и Индостана вплоть до Индокитая.

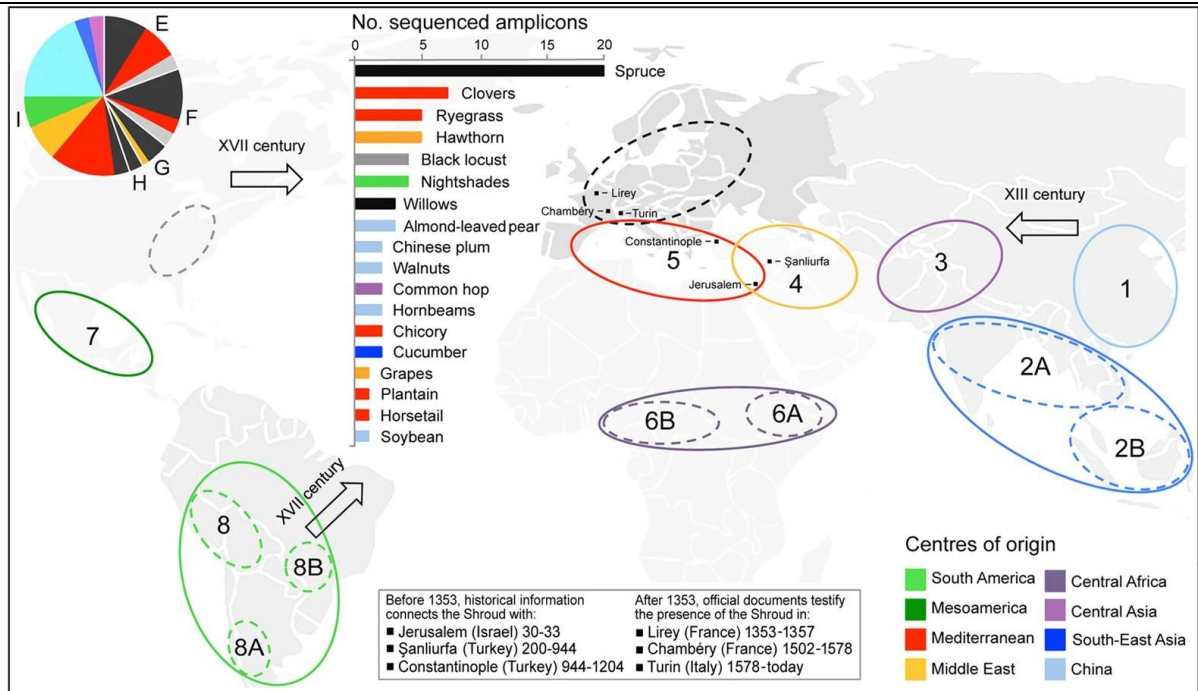
Следы ДНК флоры и фауны, обнаруженные на Плащанице, поставили ученых в тупик. В своей работе они попытались оправдать наличие этих веществ историей путешествия Плащаницы по миру в руках пилигримов и случайными загрязнениями от взаимодействия верующих с реликвией. Сенсационность полученных географических данных ученые не стали комментировать.



Фиг. 1. Карта распространения контактеров с Плащаницей и их гаплогрупп *mtDNA* [9].

Ведь с точки зрения традиционной истории и теологии, невозможно объяснить наличие контактеров из России, Северной Европы, Месопотамии, Индии и Индокитая. А как объяснить христианам и Ватикану наличие на Плащанице следов растений и

существ, обитающих в Китае, Юго-Восточной Азии, Полинезии, Центральной Африке, Северной, Центральной и Южной Америке? Аргументации просто нет.



Фиг. 2. Карта распространения и названия обнаруженных растений [9].

Напротив, автор владеет истинной и располагает подробной реконструкцией библейских событий Нового Завета, открывающих завесу тайн Святого Семейства, Спасителя и библейских реликвий еще в 2009 году. Все элементы реконструкции имеют строгое научное, летописное и инструментальное подтверждения [10,11].

Перейдем к уточненной авторской интерпретации [11] (2024 год).

Христианская эпоха (наша эра) разделяется на Ветхозаветное (I тысячелетие) и Новозаветное христианство (II тысячелетие). Ветхозаветное христианство носило теоретический характер в ожидании прихода Спасителя. Новозаветное христианство началось в 1010 году с момента распятия и воскресения Иисуса Христа.

Основоположником христианства стал император Тит Веспасиан Флавий (I век, родился 17 ноября 9 года), он же каган угров Таш Баш Артан и библейский Патриарх Авраам. Большую часть жизни он провел в Палестине. Подробности хронологии Ветхозаветного христианства и житие Патриархов как исторических фигур описаны в книгах [10,11,12].

Богородица Мария (961/962–1062) была дочерью Святого Владимира/императора Василия II и императрицы Анны из Македонской династии. Духовным отцом Марии стал епископ Иоаким Корсунянин (позднее епископ Великого Новгорода), близкий друг Анны. Святое Семейство было этническими уграми (финно-уграми) рода Руси. Ближайшими родственниками Богородицы Марии и

Спасителя являлись императоры Македонской династии, правители Древней Руси и Волжской Болгарии и они не были евреями.

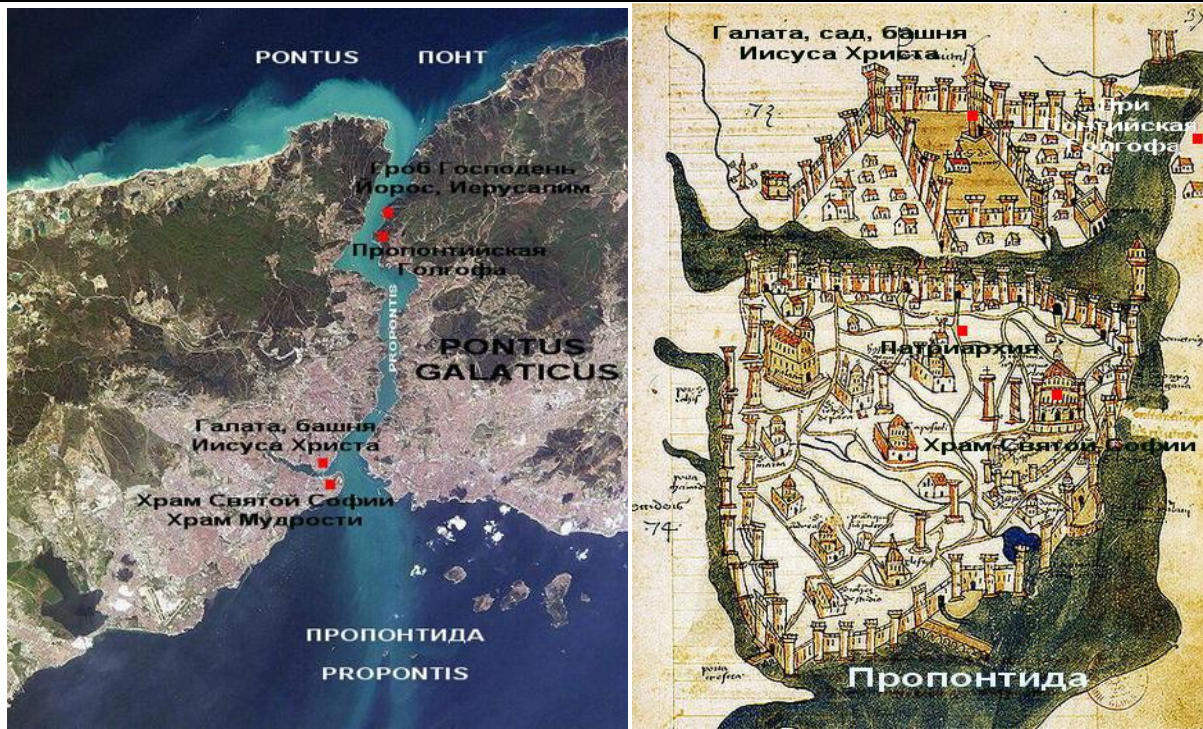
Анна, а затем её дочь Мария, владела царским дворцом во Влахернах, Константинополь.

Иисус Христос родился на стыке 979/980 годов, вероятнее всего в Прусе (Престол рода Руси). Рождение Спасителя сопровождалось явлением Вифлеемской звезды – кометы Ольберса (13P/Olbers) в конце 979 года. Русским прозвищем Иисуса было Златоуст.

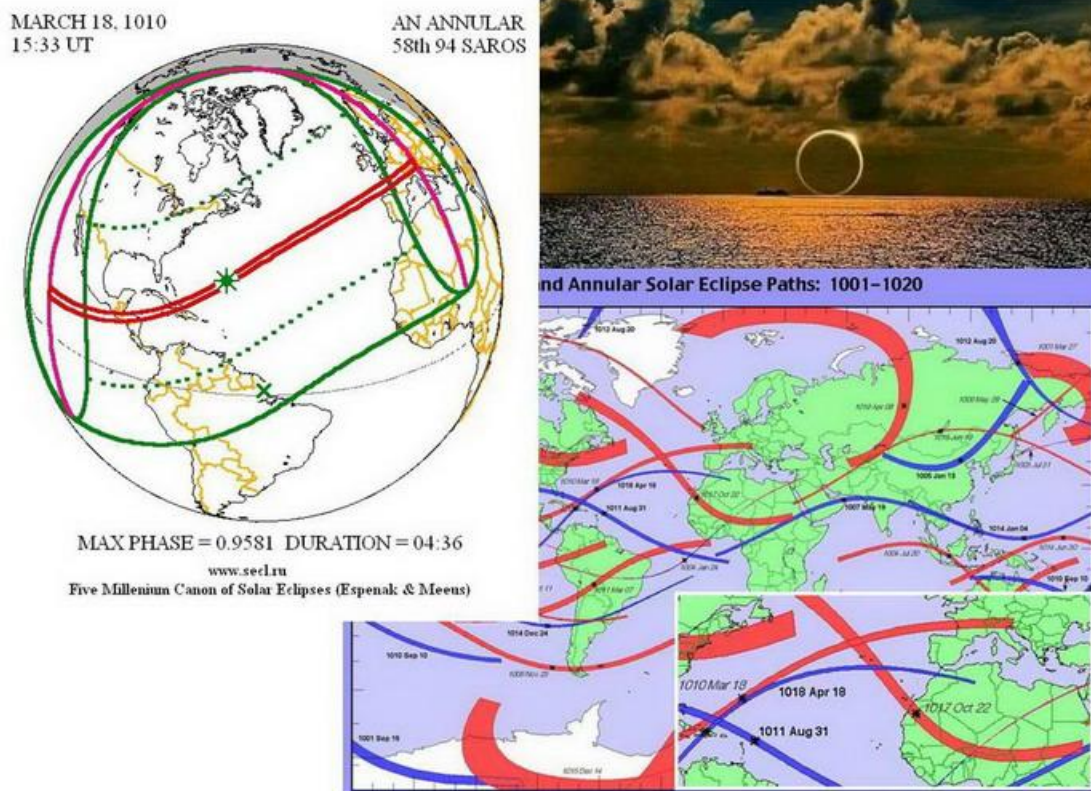
Иисус в 1009 году (ровно через 1000 лет после рождения Авраама) пешком направился в Палестину на реку Иордан, где крестил людей его близкий родственник Иоанн.

Собрав учеников, Иисус пешком и на каботажных судах направился в Новый Рим (Константинополь), проповедуя своё учение. На горе Афон произнес Нагорную проповедь, дав импульс к возведению новозаветных монастырей.

В марте 1010 года он явился в Константинополь через Золотые ворота. Проживал с учениками в Галатском саду, ежедневно пересекая Золотой Рог для проповедей в Храме Святой Софии. 17 марта в Чистый четверг молился на развалинах башни в Галатском саду, где был арестован воинами и служителями Патриархии. На этом месте ныне стоит Христова башня. Был доставлен на допрос в Патриархию – Храм Всех Святых/Святых Апостолов (не сохранился) и подвергся пыткам. Патриархом тогда был Сергей II Студит. Пытали и казнили Иисуса не евреи, а христиане.



Фиг. 3. Святые места Константинополя.



Фиг. 4. Солнечное затмение 18 марта 1010 года (An Annular 58th 94 Saros, 15:33 UT).

18 марта 1010 года Спаситель был приговорен к казни – распятию на Животворящем Кресте, как ложный Мессия, на горе Ложе Геракла (ныне гора Бейкоз), территория Галаты. Понтий Пилат не человек, а место – При Понтийская Галата, смотрите Фиг. 3.

На лодке Иисус был доставлен к месту казни. Спаситель нес свой крест от кромки воды Босфора до вершины горы Голова Адама или Ложе Геракла.

Во время распятия случилось солнечное затмение с уникальной сигнатурой, единственного за 5000 лет в Средиземноморье на закате солнца с максимальной фазой около 18 часов местного времени (An Annular 58th 94 Saros, 15:33 UT), смотрите Фиг. 4. Тьма пришла на землю в виде полутени Луны за несколько часов до максимальной фазы и продолжилась после затмения. Сейчас на горе Бейкоз находится Святилище Святого Иуши (Иисус Кабри) с

площадкой распятия и снятия с креста Спасителя размером 2x17 метров, смотрите Фиг. 5.

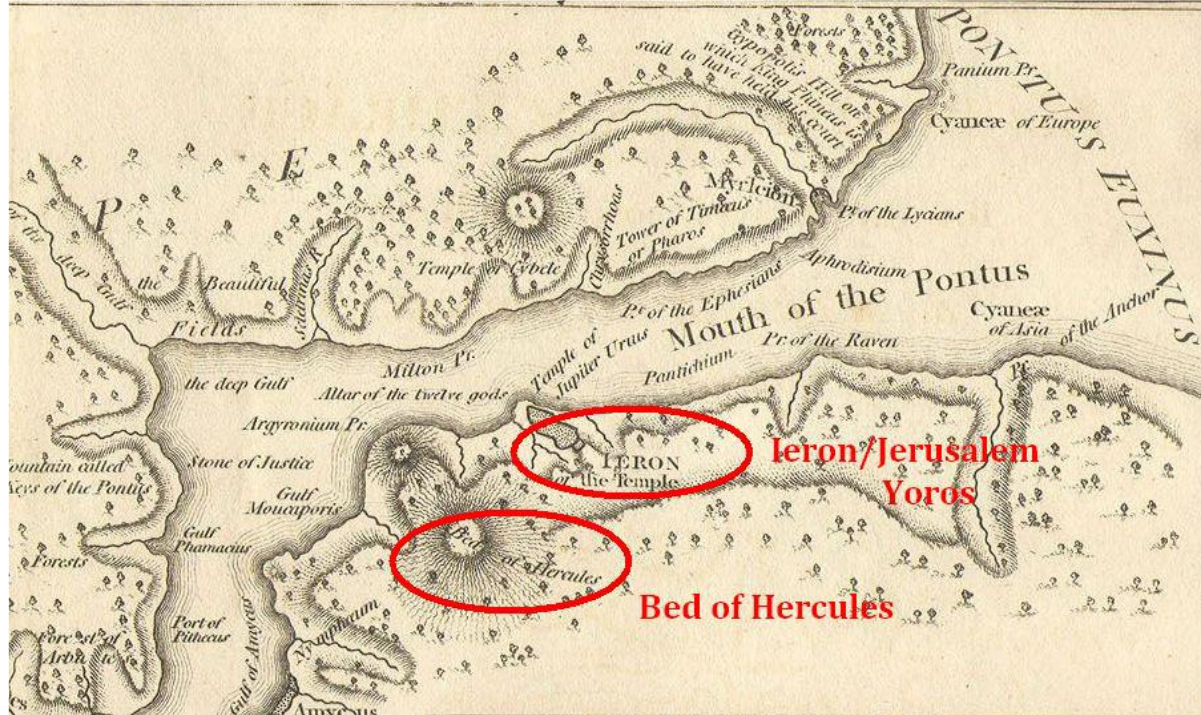
Для казни Иисус был одет в багряницу (цена ткани по весу дороже золота) и Терновый Венец. Тело Спасителя завернули в Плащаницу из льна [1] и положили в Гроб, высеченный в скале (крепость Йорос, церковь Ника Иисуса Христа) на греческом кладбище, которое сохранилось до сих пор. Руки мертвого Спасителя сложили на лобковой части согласно местным традициям, возможно поместили на глаза римские монеты. Гроб Господень находился в трех километрах от места распятия. Йорос это истинный Иерусалим для христиан всего

мира, смотрите Фиг. 6 и 7. Пасха Нового Завета астрономически привязана к дню весеннего равноденствия 20 марта 1010 года и не может гулять по календарю, как это решили католическая и православная церкви.

Иисус Христос воскрес 20 марта 1010 года, простился с учениками и отправился в своё удивительное путешествие по Земле, закончившееся в 1054 году. Сын Бога пришел на Землю для всего человечества, а не только для христиан. В этом походе Спаситель возил с собой саван – Плащаницу – как доказательство своего воскресения.



Фиг. 5. Святилище Святого Иуши Кабри (Иисус Кубар) [10,11].



Фиг. 6. Средневековая карта Пропонтиса (Босфора), красными овалами обозначены гора Ложе Геракла и крепость Йорос с кладбищем [11].



Фиг. 7. Современный вид крепости Йорос с руинами церкви Ника Иисуса Христа и вид из космоса на библейское кладбище [11].

За 44 года странствий Плащаница впитала в себя ДНК людей и ДНК флоры и фауны мест, где побывал Христос. Однако Плащаницу он демонстрировал людям только там, где они имели представление о христианстве и могли понять смысл духовного послания Иисуса.

После воскресения Спаситель с несколькими учениками направился в Дамаск, затем побывал в Аравии, отсюда перебрался в Месопотамию и Центральную Азию. Там он оказал большое влияние на формирование зороастризма. В 1020-х годах Христос побывал в Европе и на своей родине – Руси. В 1024 году он встретился с Богородицей Марией в Эфесе, затем они провели обряд Успения Богородицы в Константинополе/Иерусалиме.

В 1024 году он переселился в Индию, где прожил до 1035 года, регулярно наведываясь в Средиземноморье и Афон. Спаситель своими медитациями и проповедями стимулировал расцвет буддизма в XI веке в Индии. Индусы воспринимали его как воплощение Будды.

В это время Сын Бога посетил различные регионы Индокитая и Юго-Восточной Азии.

В 1035 году Спаситель перебрался в Китай и надолго оборвал контакты с Европой. В Китае Иисуса стали называть Кун, так как он назвался Куб. Впоследствии имя Кун для европейцев трансформировалось в Конфуций. Китайцы не верили в Бога Отца и каноны христианства были им неизвестны и непонятны. Однако они считали, что у Куна не было отца и он служил Небу. В Китае Спаситель обосновался в провинции Шаньдун, в городе Цюйфу. Оттуда он путешествовал по стране и общался с местным населением. У него появилось несколько учеников, основоположников течения неоконфуцианства XI века.

Около 1040 года Иисус переехал в Японию на остров Хоккайдо в деревню Шинго, где до сих пор местные жители считают себя христианами. В прошлом Хоккайдо населяли айны (финно-угры) и после появления Иисуса остров стал называться Йедзу (Iesu).

После 1043 года Спаситель собрал из японцев дружину варягов и отправился с ними в морской поход через Курилы, Камчатку и Аляску в Северную Америку, пристав на судах к побережью современной Канады (отсюда на Плащанице есть следы морского червя из этого региона). В Северной Америке Иисус сформировал племя переселенцев – тольтеков. Из Японии варяги привезли коней, которые быстро размножились на прериях Нового Света. Тольтеки во главе с Иисусом направились на юг – завоевывать Мезоамерику.

Мормоны считают, что Спаситель после воскресения посещал Америку и коренные народы

континента — это урожденные израильтяне [13]. В Центральной и Южной Америке автохтонные народы восприняли Спасителя как воплощение Кетцалькоатля, атрибутами которого стали христианские кресты.

Около 1050 года Иисус основал империю Инков в Андах на землях современного Перу. Оттуда он путешествовал по Южной Америке и побывал на Кубе, а также посетил Центральную Африку, о чём свидетельствуют следы ДНК африканских растений на Плащанице. В своих книгах автор не упоминал Африку, но теперь может это утверждать, опираясь на результаты обнаружения cpDNA растений Плащаницы [9].

В конце 1053 года Спаситель направился обратно в Европу. Он двигался из царства Инков через остров Пасхи, Новую Зеландию, острова Полинезии, Индонезии, Юго-Восточную Азию (бывал в пещере Бату, Куала Лумпур), Индию, Месопотамию и Ближний Восток.

В Средиземноморье он посетил Афон, затем еще живую Богородицу Марию в Лоретто (Далмация). На встрече с матерью Иисус передал на хранение свои реликвии, которые после ухода из жизни Богородицы попали в Константинополь к императорам.

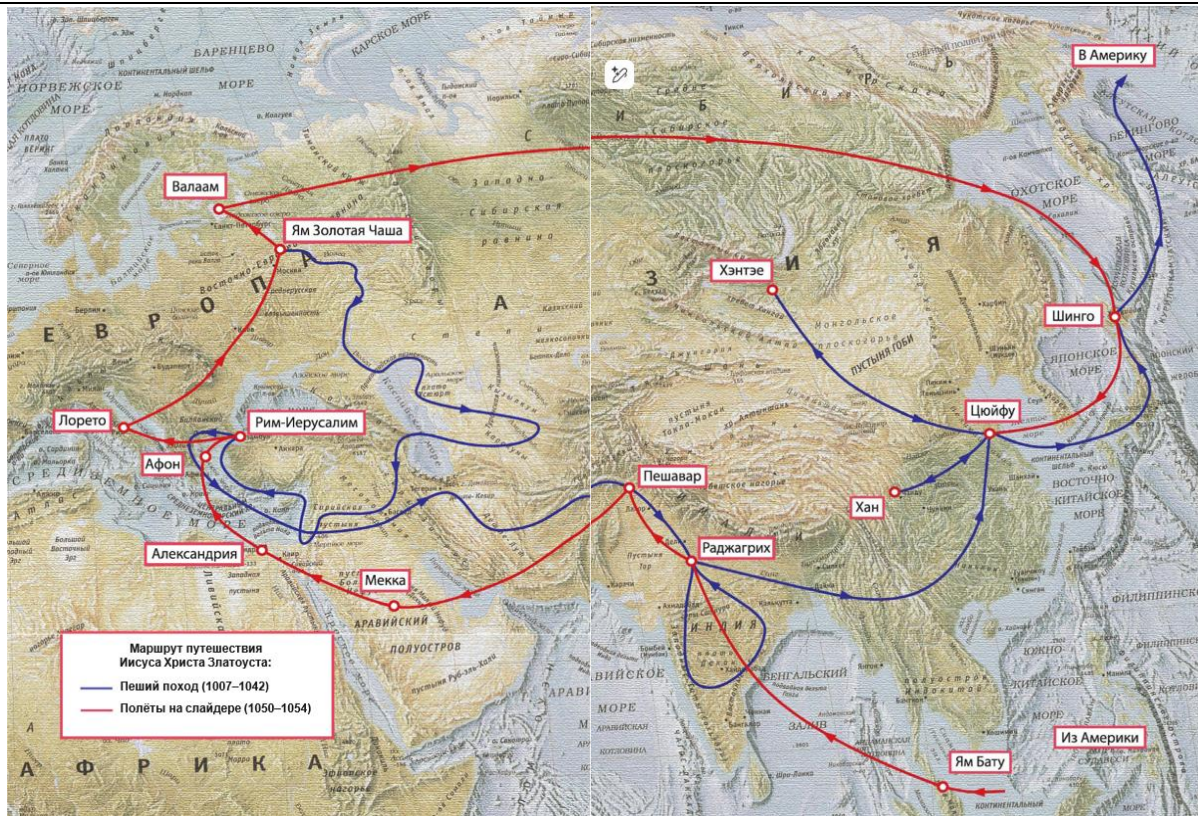
Вероятно, Спаситель встречался с Папой Римским Львом IX в Италии в начале 1054 года.

Затем весной 1054 года через Восточную Европу и Древнюю Русь Спаситель вернулся в Китай в город Цюйфу, где серьезно заболел и скончался в земной жизни от старости.

Кончину Сына Бога возвестили два небесных явления – это полное солнечное затмение 10 мая 1054, видимое в Индии и Китае, длительностью 3:02 минуты в 07:16 UT, 103-й сарос и вспышка Сверхновой звезды M1. Отметим, что вспышка Сверхновой звезды означает смерть, а не рождение светила.

Спаситель под именем Кун (Конфуций) был похоронен в Китае, Цюйфу в крупнейшем в мире погребальном комплексе. На его могиле сделана надпись «Могила Царя, достигшего великими свершениями совершенной мудрости и совершенства в просвещённости». В конце XX века китайские ученые вскрыли могилу Конфуция и обнаружили там рыжего человека с заячьей нижней губой и ростом более 190 см. Результаты исследования тела не известны, как и возможность получения данных по ДНК останков.

Схемы маршрутов путешествия Иисуса Христа по планете с привязкой по местам и датам приведены на Фиг. 8 и Фиг. 9.



Фиг. 8. Евразийский маршрут Спасителя [10], стр. 502–503.

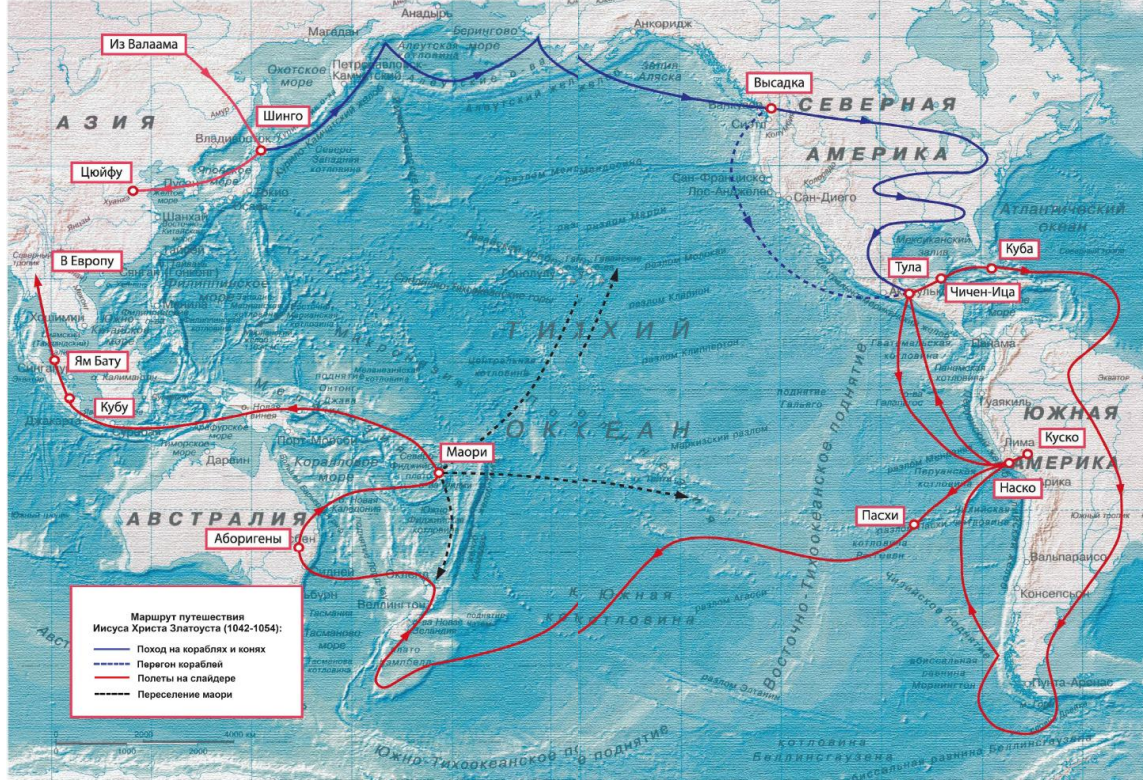
Автор в своих работах составил модалный гаплогрупп Y-DNA Спасителя по 67 маркерам в стандарте Family Tree DNA (2 том, стр. 214, [11]):

14-23-14-11-11-13-11-12-10-14-14-30-16-9-9-  
11-12-25-14-19-28-14-14-15-15-11-11  
-18-20-14-15-16-18-34-34-13-10-11-8-15-17-8-  
8-10-8-11-10-12-21-22-13-10-12-12-16-7  
-13-20-21-15-12-11-10-11-11-12-11 (1–67),  
сумма аллелей 970, гаплогруппа N1c1 (N1).

Для установления истины необходимо провести тщательные исследования мощей Святого Семейства, которые не исчезли в пучине истории, а вполне доступны для изучения.

Y-DNA и mtDNA Спасителя можно выделить из пятен крови на Плащанице, Терновом венце из Нотр-Дам де Пари или ампуле с кровью из Базилки Святой Крови в Брюгге и сравнить их с образцами из захоронения Конфуция в Цюйфу.

Образцы mtDNA Богородицы нужно получить из мощей Святой Иулиании, под именем которой покоится Мария в Ближних Пещерах Киево-Печерской Лавры. Возможно, там же находятся мощи Святого Владимира и Анны, которые были спрячтаны во время Второй Мировой Войны.



Фиг. 9. Тихоокеанский маршрут Спасителя [10], стр. 514–515.

Также интересно изучить Y-DNA и mtDNA епископа Иоакима, мощи которого лежат в Софийском соборе Великого Новгорода.

Подведем итоги. Достоверность реконструкции автора подтверждается хрониками, исследованиями Плащаницы и небесными явлениями, описанными в Евангелиях: Вифлеемской звездой и солнечным затмением во время распятия Спасителя. Смерть Христа в земной ипостаси подтверждается двойным небесным феноменом: полным солнечным затмением и вспышкой Сверхновой звезды. Также автор отождествил родственников Святого Семейства с известными историческими фигурами – членами императорской династии и духовными лидерами своего времени.

17–24.02.2026.

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# MEDICAL SCIENCES

## ARTERIAL ANATOMY OF A PREVIOUSLY UNCLASSIFIED VARIANT OF LIVER VESSELS AS A FACTOR INFLUENCING THE EFFICIENCY OF EMBOLIZATION OF SOLID TUMORS USING THE EXAMPLE OF THE ORIGIN OF THE RIGHT HEPATIC AND RIGHT RENAL ARTERIES FROM THE COMMON HEPATIC ARTERY

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### Abstract

Solid malignant tumors of the liver parenchyma represent a complex and challenging aspect of modern clinical oncology. A large number of patients already have inoperable disease at the time of diagnosis, necessitating the search for alternative, minimally invasive, and highly effective treatment methods. Liver tumor treatment remains multifaceted and multi-stage, and in recent years has focused on minimally invasive methods, which involve mechanical or chemical interventions targeting the tumor substrate via blood vessels. Tumor blood flow to the liver parenchyma, including areas of abnormal vascularization, is directly dependent on the arterial and anatomical and physiological characteristics of the hepatobiliary system, and the effectiveness of interventional treatments is directly proportional to this circumstance. In the world literature, there are only a small number of scientific publications describing the characteristics of vascular blood supply in a purely observational manner. The first to systematize this topic and identify typical anatomical variants was [Michels N.A., 1955, 1966] and identified 10 variants of celiac trunk vascular anatomy. This classification was simplified by identifying six variants of the anatomical features of the celiac hepatic vessels [Hiatt 1994]. This classification is extremely important when planning operations in the celiac hepatobiliary zone, especially during liver transplantation and resections, to maintain adequate blood supply, as well as to achieve occlusion of all main and collateral vessels feeding the liver tumor when performing X-ray endovascular interventions [1,2,3].

For example, according to a number of authors, there are no clear correlations in the literature between the number of endovascular interventions and the characteristics of the arterial blood supply to the liver described in the classification [4,5].

However, the impact of arterial anatomy variations on clinical and technical success during endovascular surgery remains controversial [6]. This article describes for the first time a previously undescribed variant of arterial blood supply to the visceral branches of the aorta and a previously undescribed variant of the origin of the right hepatic and right renal arteries.

**Keywords:** unclassifiable variant of arterial anatomy of the liver vessels, common trunk of the right hepatic and renal artery, selective emulsion, hepatocellular carcinoma.

**The aim of the study** was to demonstrate the effect of an unclassified (first identified and previously undescribed) variant of arterial anatomy of the liver vessels on the effectiveness of tumor embolization using a clinical case as an example.

**Materials and methods:** A 68-year-old patient with hepatocellular carcinoma of the liver (T3N1M0) Stage III due to chronic viral hepatitis C, with cirrhotic changes in the liver parenchyma (F II according to Metavir measured by direct elastometry) with the spread of a hypervascular tumor formation to the SVI-

SVIII segments of the liver, was recommended transarterial chemoembolization of the right hepatic artery. Aortography revealed several rare vascular anomalies in the patient: a celiac-mesenteric trunk with a separate branching of the left gastric artery from the aorta, in combination with which the replacement left hepatic artery branches off, and a separate trunk of the right renal artery from the right hepatic artery. Angiograms were performed using the Phillips Azurion apparatus. Upon further selective catheterization, a volumetric hypervascular tumor formation with pronounced accumulation of a contrast agent measuring 5.0 x 5.0 cm was visualized in the right lobe of the liver. Selective catheterization of the main trunk feeding the formation was performed with chemoembolization of an anthracycline drug, doxorubicin, at a dose of 50 mg intra-arterially with pre-embolization with microspheres measuring 710-1000 nanomicros until blood flow was subreduced and the contrast agent (Visipaque 20.0 ml) was refluxed retrogradely. Control hepatography shows occlusion of blood vessels on the main trunk feeding the formation and on the periphery.

### Results:

According to the obtained analysis of angiographic images, the procedure was effective in a patient undergoing chemoablation of the right hepatic artery, which shares a common trunk with the right renal artery. Thus, 6 weeks later, control hepatography showed persistent vascular occlusion in the right lobe of the liver without contrast accumulation. Alpha-fetoprotein levels decreased from 1235 IU/mL to 65 IU/mL, and a control CT scan of the liver with contrast showed no signs of contrast accumulation. Furthermore, the common trunk with the renal artery did not affect the organic or functional state of the right kidney. In the post-operative period, urea, creatinine, and alkaline phosphatase levels were closely monitored to assess and exclude reflux through possible collaterals into the replacement arterial collateral system. All peripheral blood parameters, according to biochemical analysis, remained within acceptable limits throughout the hospitalization period. Adverse events included post-embolic syndrome, which accompanied the patient for the first day and a half. We present the findings below:

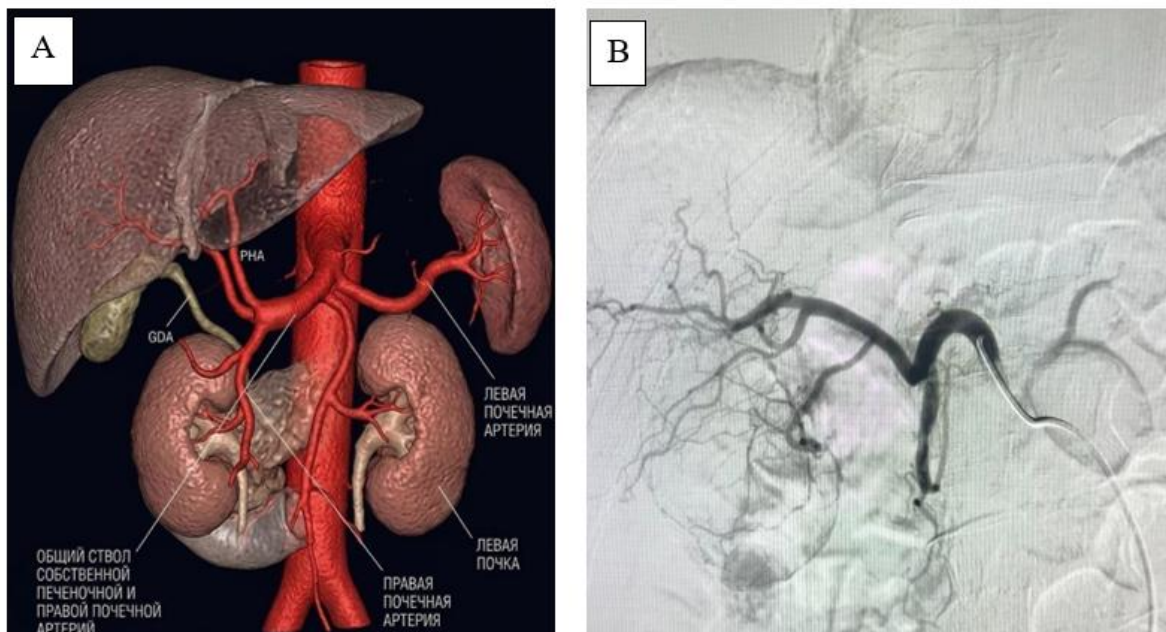
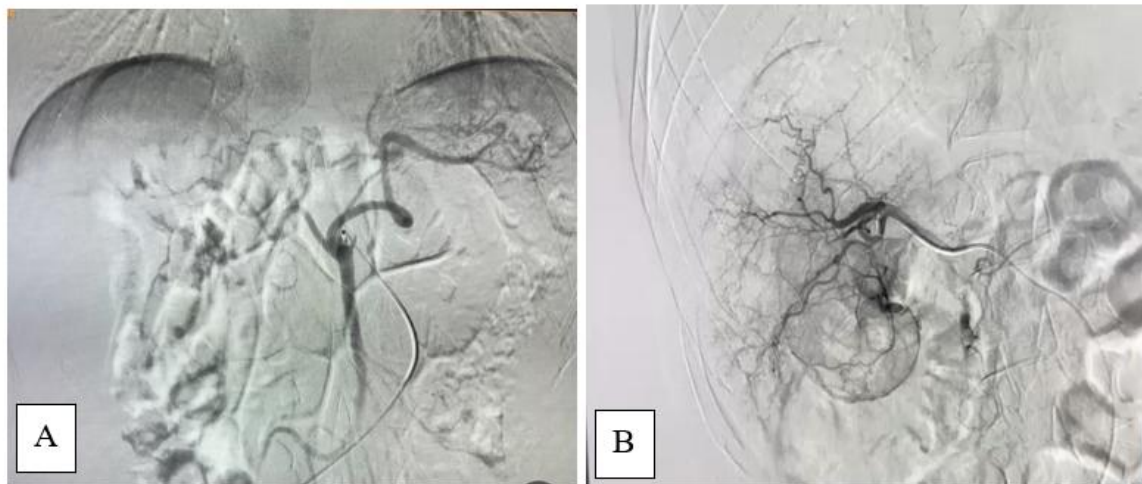
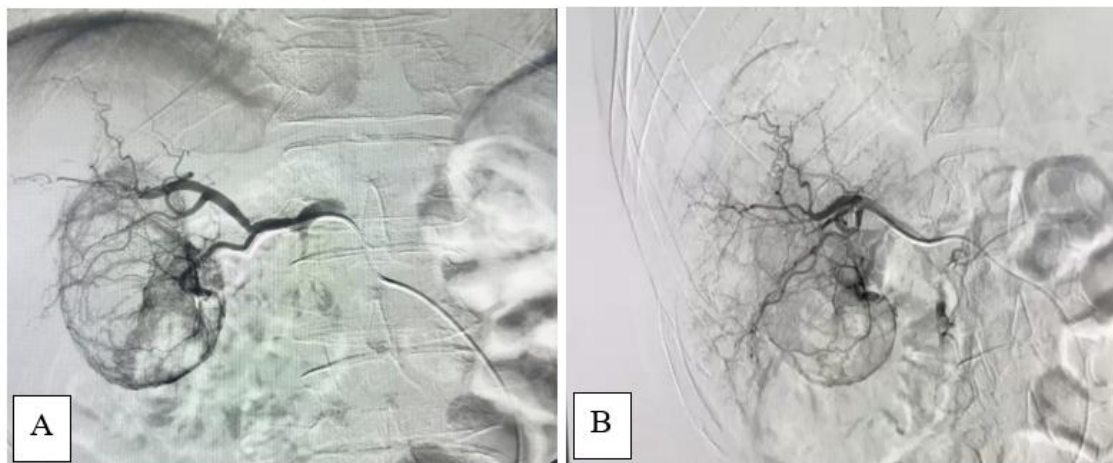


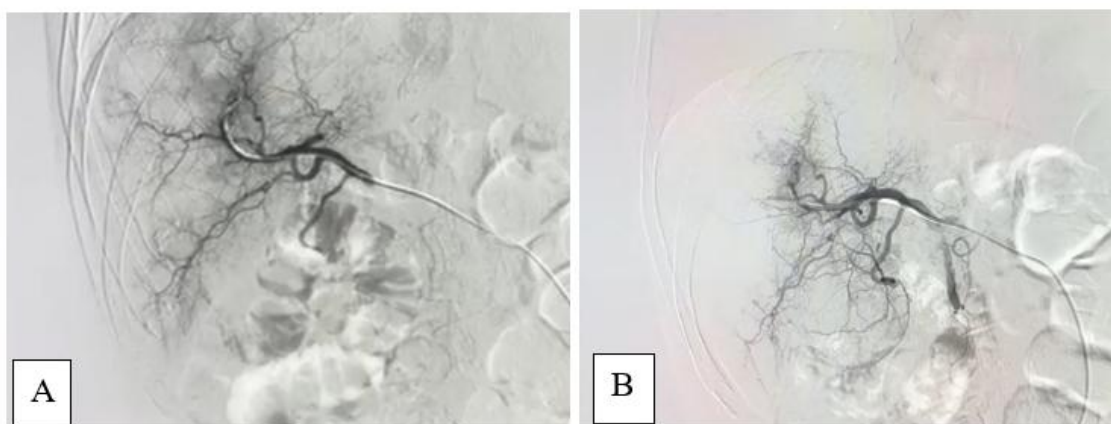
Fig. 1 - Computer 3D modeling of the arterial anatomy of the liver vessels. Variant origin of the a. hepatica dextra and a. renalis dextra from the a. hepatica communis (A). Celiac hepaticorenography angiogram (B). Unclassified and previously undescribed variant of the anatomy of the arterial visceral blood supply.



*Fig. 2 – Arteriogram of the visceral branches of the aorta.  
The celiac-mesenteric trunk and a. lienalis in the arterial phase (A). Arteria hepatica propria with vascularization of the a. renalis dextra in the parenchymal phase (B)*



*Fig. 3 - Angiogram of the visceral branches of the aorta.  
A. lienalis in the arterial phase (A). Arteria hepatica dextra with vascularization in the right lobe of the liver tumor (B)*



*Fig. 4 – Hepaticoangiography.  
(A) Hypervascular tumor of the right lobe of the liver in the arterial phase, view before embolization. (B) Hypovascular tumor of the right lobe of the liver in the arterial phase, view after embolization (B)*

**Discussion:** In his works, N. Michels noted that, according to various authors, there are other variants of origin of the hepatic arteries. In particular, the replacing RHA can originate from the cranial artery in 3.0% of cases, and from the aorta in 2.0%; in 1.5% of cases, the replacing LHA is possible from the aorta. The additional RHA can originate from the retroduodenal, dorsal pancreatic, right gastric artery or the cranial artery in 2.0%, 0.5%, 0.5% and 0.5% of cases, respectively. In addition, the author noted that an aberrant RHA can also originate from the gastric artery and cystic artery, and an aberrant LHA from the septal artery and the mesenterica superior artery.

However, all of these variants were not included in the classification, and for many years were considered "minor" and of no practical significance in surgical interventions; these studies were subsequently optimized [7,8]. At the same time, there are individual observations by various authors describing correlations between anatomical variants and the frequency and number of interventional surgical procedures performed.

**Conclusions:** Thus, the variant of arterial anatomy of the visceral branches of the aorta described by us with a separate origin of the celiac-mesenteric trunk, replacing the left hepatic artery from the left gastric artery, a separate trunk origin of the right hepatic artery with a common branch with the right renal artery is a variant of anatomy that has not been described before; there is no reliable data in the literature reviews. The chemoembolization of the right hepatic artery branches used in the above-mentioned anatomical variant was highly effective. This anatomical variant did not impede the formation of a technically impossible procedure, nor was it accompanied by retrograde or antero-grade demand for the chemical agent or embolic substrate, thereby avoiding any negative impact on either the liver or renal parenchyma. Furthermore, as our experience has shown, atypical vessel placement does not always preclude selective angiography and selective embolization; in fact, in some cases, it can lead to a technically feasible intervention.

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## ETIOPATHOGENIC AND ANATOMO-CLINICAL ASPECTS IN POSTOPERATIVE EVISCERATIONS

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### Abstract

Postoperative eviscerations involve protrusion of intra-abdominal organs through a destroyed surgical wound. They represent a rare but constant surgical complication in surgery and are associated with significant morbidity and mortality, even if managed promptly.

The paper aims to review, based on personal experience and statistics, the etiopathogenic and anatomoclinical aspects of eviscerations, as well as preventive and curative measures.

Increased awareness among surgeons and clinicians is crucial, especially given the reports of late and atypical presentations.

**Keywords:** postoperative evisceration, surgical emergencies

### INTRODUCTION

Complete postoperative eviscerations (total eviscerations) are defined as protrusions of the abdominal viscera, a consequence of dehiscence of all abdominal planes sutured after laparotomy. This complication is a constant presence in emergency surgery services, with a significant increase in the duration of hospitalization, as well as its costs.

Despite the advances made in surgery in recent decades, progress materialized in the use of biologically inert sutures, effective antibiotic therapy and efficient hemostasis methods, eviscerations still represent a problem today associated with an incidence of 0.25 – 1.5%, and with a mortality between 9 and 44%.

Evisceration is considered to be the result of a complex of factors, both local and systemic, the most common being age over 65 years, male gender, intra-abdominal or wound infections, emergency surgery, abdominal compartment syndrome, neoplasms, digestive fistulas, intestinal occlusions, hypoproteinemia or the presence of ascites. In addition, diabetes mellitus, anemic syndromes, alcoholism, cardiac or pulmonary diseases are also considered to be risk factors for the occurrence of evisceration.

Various associations of the mentioned factors include the patient in the high-risk group with regard to this complication. Evisceration is a common reason for immediate reintervention, their severity making it necessary to have a correct preoperative evaluation of the patient with regard to this risk.

### MATERIAL AND METHOD

During the period January 2015 - December 2025, in the 1<sup>st</sup> Surgery Clinic of the Brăila of the County Emergency Hospital, 16 cases of complete evisceration were recorded, out of a total of 8780 abdominal interventions (0.18%) performed.

Only cases of complete evisceration were taken into account, incomplete (blocked) eviscerations being excluded. The cases were retrospectively analyzed

from the point of view of risk factors, but also from the point of view of resolution methods, subsequent morbidity and mortality.

Thus, 9 cases were male, and in 7 cases evisceration occurred in women. The average age was 68 years, with a range between 42 and 85 years.

The initial pathology, with surgical indication, included the following types of conditions:

- colon neoplasm: 5 cases;
- acute calculous pyocholecystitis: 2 cases;
- abscessed appendiceal plastron: 2 cases;
- abdominal trauma: 2 cases;
- perforated gastric ulcer: 2 cases;
- recurrent multiple incarcerated eventrations: 2 cases;
- intestinal obstruction by strangulated inguinal-scrotal hernia: 1 case.

Regarding the risk factors cited in the literature, the following data were found in our study:

- emergency surgery: 12 cases;
- wound infections: 11 cases;
- age over 65 years: 8 cases;
- hypoalbuminemia (< 6g %): 7 cases;
- anemia: 6 cases;
- obesity: 10 cases;
- neoplasia: 5 cases;
- chronic alcoholism: 3 cases;
- diabetes mellitus: 3 cases;
- digestive fistulas: 2 cases;
- jaundice: 1 case;
- steroid use: 1 case.

From the analysis of the presented data, it emerged that in our statistics emergency surgery (75%) and wound infections (68.8%) were mainly involved as risk factors, the latter being usually justified as a result of severe intra-abdominal infections. Although we did not objectively record an abdominal hypertension syndrome in any patient, alterations in mental status were also present in 1 case (delirium tremens and postopera-

tive psychosis), with marked agitation and with a difficult response to specific medication, the episodes of agitation being obviously associated with an increase in intra-abdominal pressure.

Regarding the association of risk factors, in our study the association of several risk factors was found:

- 3 risk factors: 2 cases;
- 4 risk factors: 4 cases;
- 5 risk factors: 6 cases;
- 6 risk factors: 1 case;
- 7 risk factors: 1 case.

Regarding the surgical treatment applied, in the analyzed cases:

- in 8 cases, total threads on rubber rings were used, with the inclusion of all layers of the abdominal wall in the suture;
- in 7 cases the parietal aponeurosis was sutured and associated total threads on rubber rings; in 2 of these cases the material used was represented by metal threads;
- one single case was resolved by using a substitution mesh, to avoid abdominal compartment syndrome.

Each time, the reintervention was performed in immediate emergency and aimed at the least traumatic reinsertion of the viscera, into the peritoneal cavity, its toilet with physiological betadine serum, the minimally traumatic dissection of the postoperative formed adhesions and the placement of the omentum as widely as possible, so that it would be interposed between the abdominal viscera and the parietal suture.

At the parietal level, the intervention aimed each time the most complete excision of the gangrenous infected aponeurotic tissues, the suture being performed in full healthy tissue and avoiding the formation of that "string" of thread at the intraperitoneal level, a consequence of an incorrect loading of the abdominal parietal layers in the suture.

Postoperative complications were relatively frequent (51%):

- wound suppuration: 3 cases;
- bronchopneumonia: 2 cases;
- upper digestive bleeding: 1 case;
- evisceration (recurrence): 1 case;
- recurrence of an intestinal fistula: 1 case.

There were not recorded other complications such as mechanical-inflammatory occlusion or abdominal compartment syndrome. The free interval between the initial intervention and the moment of evisceration was on average 9 days, with values ranging 3-20 days from the initial operative moment. The average number of days of hospitalization was 21 days, with range 15-32 days.

The mortality was 2 cases, respectively 12.5%, in accordance with data from the literature.

## DISCUSSION

Postoperative eviscerations represented a relatively rare complication in our statistics, being encountered with a frequency of 0.18% compared to the number of surgical interventions.

The recorded data revealed that it appeared as a major surgical complication, which required immediate

reintervention in all situations, being usually the prerogative of patients over 65 years of age, in emergency surgery conditions and with a large surgical procedure.

Male patients were more numerous, but in a smaller proportion than those present in the literature. Thus, gender cannot be considered a strong, important, risk factor in the evaluation of each patient.

Wound infections appeared in our work as the most significant risk factor, along with emergency surgery. The occurrence of wound infection was most often justified by severe intra-abdominal infections, but in addition, hemostasis defects, intraoperative contamination, or superinfection of seromas can be incriminated. Microbial cultures from the wound usually revealed *S. Aureus* or *E. Colli*; sometimes, polymicrobial cultures were also detected.

Regarding the association of comorbidities, evident in the analyzed case series (3-5 associated predisposing factors), this can be considered an important risk in assessing the potential for postoperative evisceration.

In our study, the type of incision did not appear to be a relevant risk factor, although in the vast majority of cases it was a median incision. Although they do not appear as risk factors in the literature, in our study there was 1 case, in which patients developed post-operatively, prior to evisceration, alterations in mental status, with marked agitation, a possible risk factor due to increased intra-abdominal pressure. This complication also appears in other studies, as extremely rare (van Gelden, Poole).

Post-evisceration complications occurred with an incidence of 51%, while the mortality was 12.5%, aspects that fully justify the importance of this complication. Experience has shown that epiploic interposition at the parietal musculoaponeurotic suture level can be a technical solution for protecting the viscera, especially in the setting of a severe infectious complication of the surgical wound. However, omentum mobility and intestinal peristalsis do not always achieve this technical objective.

## CONCLUSIONS

1. Total postoperative eviscerations represent serious surgical complications, which usually require immediate emergency reintervention.

2. The patient with evisceration thus appears as a patient in a serious condition, taking into account the surgical complication presented, the possibility of co-existence of other surgical complications (digestive fistula, mechanical-inflammatory occlusion, septic state, etc.), the postoperative evolution being burdened by the frequent occurrence of new post-intervention complications.

3. The high mortality and morbidity that the patient with evisceration presents, as well as the significant increase in costs and days of hospitalization, make this problem require appropriate attention, with risk analysis of each case. So the use of total anti-evisceration sutures, careful hemostasis, abundant lavage of the peritoneal cavity and of the surgical wound are routine measures in every surgical case, especially in patients with a high risk of postoperative evisceration.

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**SURGICAL TREATMENT IN ISOLATED LIVER TRAUMA****Dragos F. Voicu***MD, PhD.,**Braila County Emergency Hospital**Associated Profesor**“Dunarea de Jos” University, Galati – Romania***Adrian Drăgan***MD., Braila County Emergency Hospital*[DOI: 10.5281/zenodo.19340112](https://doi.org/10.5281/zenodo.19340112)**Abstract**

Isolated liver trauma represents an important cause of morbidity and mortality in the context of abdominal injuries. Due to its anatomical position and rich vascularization, the liver is one of the most frequently affected organs in both blunt and penetrating abdominal trauma. Management of these injuries has evolved significantly over recent decades with the introduction of modern imaging techniques and non-operative approaches. The aim of this study is to analyze the particularities of diagnosis, classification, and surgical treatment of isolated liver trauma, as well as the factors influencing patient outcomes.

**Keywords:** liver trauma, isolated hepatic injury, surgical treatment.

**INTRODUCTION**

Isolated liver trauma represents a major public health problem, particularly among young, active individuals frequently involved in road traffic accidents, falls from height, or assaults. Because of its anatomical position beneath the diaphragm and its rich dual vascular supply from the portal vein and hepatic artery, the liver is highly susceptible to severe injury in abdominal trauma.

Recent advances in imaging, particularly contrast-enhanced computed tomography (CT), and the development of conservative management protocols have significantly changed therapeutic strategies, reducing the need for exploratory laparotomy. Nevertheless, accurate assessment of injury severity and the patient's hemodynamic stability remain essential in determining optimal management.

This work aims to provide a synthetic presentation of the epidemiological, diagnostic, and therapeutic aspects of isolated liver trauma, as well as an overview of possible complications and patient prognosis.

**MATERIALS AND METHODS**

We present the results of a retrospective, single-center study conducted between January 1, 2005 and December 31, 2024 (20 years). All patients with isolated liver trauma who underwent surgical treatment at

the First Department of General Surgery, Brăila County Emergency Clinical Hospital, were included.

**Inclusion criteria:**

Patients diagnosed with primary hepatic trauma (without significant injury to other abdominal or thoracic organs);

Surgical treatment performed at the study center within the mentioned period;

Complete clinical, imaging, and operative data available in medical charts.

**Exclusion criteria:**

Hepatic trauma associated with significant lesions of other organs (spleen, kidney, colon, lungs);

Postoperatively transferred patients lacking pre-operative data;

Missing or incomplete medical records. According to these criteria, 12 patients were included (12 cases over 20 years). Data were collected retrospectively from clinical registries and patient records. Collected variables included: age, sex, mechanism of trauma, AAST grade of hepatic lesion, type of surgical procedure, transfusion requirements, complications, and postoperative outcomes.

**Patient Characteristics and Clinical–Operative Data  
(H – length of hospitalization/days)**

Nr .	Age	Gender	Traumatic mechanism	AAS T degree	Operation type	Transfusions (U)	Complications	H	Evolution
1.	25	M	Road accident	II	Hepatorrhaphy	2	-	8	cured
2.	47	F	Precipitation	III	Hepatorrhaphy + packing	4	Minor bile leak	12	cured
3.	35	M	Direct blow trauma (sport)	I	Simple suture	0	-	7	cured
4.	52	M	Road accident	IV	Packing + Pringle	6	Rebleeding (repeat surgery)	18	cured
5.	60	F	Precipitation	III	Hepatorrhaphy + hemostats	3	-	10	cured
6.	28	M	Bull gore injury	V	Atypical hepatectomy	8	Sepsis post-operator	21	cured
7.	50	M	Penetrating trauma	V	Packing + suture	5	Rebleeding (repeat surgery) Liver abscess	19	deceased
8.	33	F	Precipitation	II	Hepatorrhaphy	2	-	9	cured
9.	44	M	Road accident	IV	Packing	6	Bile leak	16	cured
10.	52	M	Road accident	III	Hepatorrhaphy	4	-	11	cured
11.	38	F	Precipitation	II	Hepatorrhaphy	2	-	8	cured
12.	55	M	Road accident	IV	Segmentectomy	7	Recurrent hemorrhage	20	deceased

Surgical treatment was indicated mainly for patients with refractory hemodynamic instability or massive hemoperitoneum. The techniques used included hepatorrhaphy, perihepatic packing, Pringle maneuver, segmental liver resection, and the application of topical hemostatic agents. All patients underwent subhepatic drainage.

### RESULTS

Out of 12 patients, 8 (66.7%) were male and 4 (33.3%) female, with a mean age of  $42.2 \pm 10.5$  years (range 25–60 years). The most common mechanism of injury was road traffic accident (7 cases, 58.3%), followed by falls from height (4 cases, 33.3%) and penetrating trauma (2 cases, 8.4%).

Injury severity (AAS T classification):

Grade I: 1 case (8.3%)

Grade II: 3 cases (25.0%)

Grade III: 4 cases (33.3%)

Grade IV: 3 cases (25.0%)

Grade V: 1 case (8.3%)

The most frequent surgical procedures were simple hepatorrhaphy (5 cases, 41.6%) and perihepatic packing (3 cases, 25%). The Pringle maneuver was

used in 2 patients (16.6%). Segmental resections were performed in 2 cases (16.6%). The average number of transfused blood units was  $4.1 \pm 2.2$  U (range 0–8 U).

Postoperative complications occurred in 5 patients (41.6%): bile fistula in 2 cases (16.6%), hepatic abscess in 1 case (8.3%), recurrent bleeding in 2 cases (16.6%), and sepsis in 1 case (8.3%). Two patients (16.6%) required reoperation.

The average hospital stay was  $13.8 \pm 4.9$  days (range 7–21 days).

There were two deaths (16.6%), both in patients with severe hepatic injuries (grade IV–V) complicated by recurrent bleeding and sepsis.

The results indicate that conservative surgical techniques (hepatorrhaphy, packing) can provide effective hemorrhage control in most cases of isolated liver trauma. High-grade lesions (IV–V) remain associated with significant morbidity and mortality.

### DISCUSSION

Liver trauma continues to represent a major challenge in emergency surgery due to the organ's rich vascularization and the risk of massive bleeding. Over recent decades, there has been a global trend toward non-

operative management in hemodynamically stable patients; however, surgical intervention remains indispensable for unstable patients or those with massive hemoperitoneum.

Although limited by the small number of cases, our study confirms that conservative surgical techniques—hepatorrhaphy and perihepatic packing—can effectively control bleeding in low- to moderate-grade injuries. In severe cases, the Pringle maneuver and segmental resections were used as necessary interventions, carrying a higher risk of complications and mortality.

The complication rate (41.6%) aligns with the data in the literature, where reported rates range from 30–50% in surgically managed hepatic trauma. Biliary fistulas, hepatic abscesses, and secondary hemorrhages represent the dominant complications, reflecting the complexity of achieving hemostasis and the fragility of posttraumatic hepatic parenchyma. The mean hospitalization time ( $\approx$ 14 days) is consistent with other small series, and mortality (16.6%) falls within reported ranges (10–20%) for high-grade injuries (IV–V).

Advances in perioperative resuscitation, bleeding control, and intensive postoperative care have contributed to improved survival outcomes.

The study's limitations include the small sample size, single-center design, and long data collection period, during which protocols and technologies have evolved. Nevertheless, the analysis contributes to understanding the surgical management of isolated hepatic trauma in a local clinical setting.

## CONCLUSIONS

Isolated liver trauma remains a rare but potentially lethal condition.

Surgical treatment is reserved for cases with hemodynamic instability or massive hemoperitoneum.

Conservative surgical techniques (hepatorrhaphy, packing) are effective for most low- and moderate-grade injuries.

High-grade lesions (IV–V) are associated with higher morbidity and mortality, requiring multidisciplinary management and intensive support.

An individualized approach, based on hemodynamic status and injury extent, provides the best outcomes.

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# PHILOLOGICAL SCIENCES

## THE CONCEPT OF STEREOTYPE IN EARLY 21ST CENTURY SCIENCE

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## ПОНЯТИЕ СТЕРЕОТИПА В НАУКЕ НАЧАЛА XXI ВЕКА

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### Abstract

The article examines the concept of stereotype in science at the beginning of the 21st century, its structure, functions and role in intercultural communication. The article analyzes historical approaches to the definition of a social stereotype and modern interpretations in the Russian-language scientific literature. Special attention is paid to the cognitive, communicative and culturally specific nature of stereotypes, their influence on behavior and perception of social reality. The dual function of stereotypes is noted: they simplify and accelerate orientation in a new cultural environment, but they can hinder an adequate understanding of other cultures. The paper presents typologies of stereotypes, their national conditionality, as well as examples of their influence on intercultural communication and international marketing. The need for a comprehensive interdisciplinary approach to the study of stereotypes in modern society is emphasized.

### Аннотация

В статье рассматривается понятие стереотипа в науке начала XXI века, его структура, функции и роль в межкультурной коммуникации. Анализируются исторические подходы к определению социального стереотипа и современные интерпретации в русскоязычной научной литературе. Особое внимание уделяется когнитивной, коммуникативной и культурно-специфической природе стереотипов, их влиянию на поведение и восприятие социальной реальности. Отмечается двойственная функция стереотипов: они упрощают и ускоряют ориентацию в новой культурной среде, но могут препятствовать адекватному пониманию других культур. В работе представлены типологии стереотипов, их национальная обусловленность, а также примеры влияния на межкультурное общение и международный маркетинг. Подчеркивается необходимость комплексного междисциплинарного подхода к изучению стереотипов в современном обществе.

**Keywords:** stereotype, social stereotype, intercultural communication, ethnocultural representations, cognitive function, national specificity, behavioral models, heterostereotype, autostereotype, cultural shock.

**Ключевые слова:** стереотип, социальный стереотип, межкультурная коммуникация, этнокультурные представления, когнитивная функция, национальная специфика, поведенческие модели, гетеростереотип, автостереотип, культурный шок.

Особенности национального характера отражаются в системе социальных стереотипов носителей той или иной культуры. Именно поэтому изучение стереотипов, особенно в условиях стремительных социальных трансформаций, глобализации и цифровизации общества, приобретает особую актуальность.

Термин «социальный стереотип» был введён в 1922 г. американским журналистом У. Липпманом, который разработал теорию стереотипизации. Согласно этой теории, стереотип представляет собой схематизированное, упрощённое, а часто и иска-

жённое представление о социальном объекте, характерное для обыденного сознания. В социальном стереотипе порой фиксируются несущественные черты объекта, которые остаются относительно устойчивыми. «Стереотипизация — одна из самых важных характеристик понимания межличностного и межгруппового общения, отражает схематизированность и аффективную окрашенность, присущие данной форме социальной перцепции» [Харченко 1987: 207].

Существует множество определений стереотипа. Наиболее общее звучит так: «Стереотип — это схематический, стандартизированный образ

или представление о социальном явлении или объекте, обычно эмоционально окрашенное и обладающее устойчивостью. Он выражает привычное отношение человека к явлению, сложившееся под влиянием социальных условий и предыдущего опыта» [Краткий политический словарь 1987].

В большинстве исследований стереотип рассматривается через призму социального взаимодействия как своего рода «модель» поведения или действия, взаимосвязанная с конкретным национально детерминированным выбором стратегии и тактики поведения в определённой ситуации. Этот выбор определяется совокупностью мотивов и потребностей. Исходя из такого подхода, стереотипы рассматриваются как «знаки, являющиеся вербальной фиксацией определённым образом определённых потребностей социальной группы, этноса, национально-культурного ареала» и как «фиксированное отражение определённой деятельности, продукты которой выступают в роли предметов, удовлетворяющих эти потребности» [Красных 2002: 178].

В.А. Рыжков описывает стереотип как «коммуникативную единицу данного этноса, способную посредством актуальной презентации социально санкционированных потребностей оказывать побуждающее типизированное воздействие на сознание личности — социализируемого индивида, формируя в нём соответствующие мотивации» [Рыжков 1985: 16].

Ю.Е. Прохоров выделяет «стереотипы речевого общения», то есть стереотипы поведения речи. По его определению, они представляют собой «социокультурную маркированную единицу ментально-лингвального комплекса представителя определённой этнокультуры, реализуемую в речевом общении в виде нормативной локальной ассоциации к стандартной для данной культуры ситуации общения» [Прохоров 1996: 21]. Таким образом, стереотип можно рассматривать как «канон», «образец» или «модель».

По мнению В.В. Красных, стереотип — это «фиксированная ментальная «картинка», являющаяся результатом отражения в сознании личности «типового» фрагмента реального мира» [Красных 2002: 178]. Феномен стереотипов можно разделить на два вида: стереотипы поведения и стереотипы представления о ситуации или предмете, которые обозначают как стереотипы-ситуации и стереотипы-образцы. Стереотип — это своего рода фрагмент мира, устойчивое представление о ситуации или предмете, обусловленное национально-культурной спецификой [Красных 2002: 178]. Иными словами, стереотип можно охарактеризовать как «... способ хранения огромного количества информации об окружающем мире, помогающий нам ориентироваться в нём» [Чеканова 2012: 27].

Две тенденции человеческого сознания влияют на возникновение стереотипов: конкретизация (ассоциирование абстрактных понятий с конкретными образами) и упрощение (выделение ряда признаков как ведущих для обозначения явлений).

Формирование стереотипов происходит как в процессе неорганизованной передачи информации (анекдоты, слухи, поговорки), так и в процессе прямого межнационального общения. Они строятся на базе предубеждений, уходящих корнями в историю, и передаются через фольклор и художественную литературу [Федченко 2005].

#### **Роль стереотипов в межкультурном общении**

Стереотипы всегда национально окрашены, хотя иногда встречаются аналоги в разных культурах. В таких случаях важно быть внимательным, поскольку совпадая в целом, стереотипы могут различаться деталями, значимыми для успешного общения. Отличия касаются множества аспектов: темы бесед, допустимое поведение в общественных местах, отношение ко времени и т.д. Например, корейцы говорят: «Жена должна быть как лиса, а муж — как медведь», подразумевая, что жена должна быть умной и хитрой, а муж — сильным. У русских лиса — символ хитрости, но с отрицательной коннотацией; медведь — символ неуклюжести, а уже потом — силы.

Этнокультурные стереотипы можно разделить на автостереотипы (представление о своей культуре и народе) и гетеростереотипы (схематично обобщаемые взгляды на другие народы и культуры). Примеры: француз для немцев — жадность, для итальянцев — снобизм, для русских — галантность; немец для русских — пунктуальность, итальянец — эмоциональность, англичанин — сдержанность.

Разные учёные по-разному оценивают стереотипы. О.А. Леонтович отмечает, что «стереотипы — упрощённые ментальные репрезентации категорий людей, преувеличивающие сходства и игнорирующие различия... предполагают статичный взгляд на общество и человека, сведение всех людей к ограниченному числу типов» [Леонтович 2005: 236]. Однако стереотипизация не обязательно отрицательна. С.Г. Тер-Минасова утверждает, что, несмотря на обобщённость, стереотипные представления содержат первоначальные знания об иных народах, подготовившая базу для общения и смягчая культурный шок [Тер-Минасова 2000]. А.В. Павловская подчёркивает положительную роль стереотипов: «Они позволяют человеку составить представление о мире в целом, выйти за рамки узкого социального, географического и политического мира» [Павловская 1998: 17]. Е.И. Рогов рассматривает стереотип как «устойчивый и упрощённый образ явления в условиях нехватки информации, ускоряющий процесс познания» [Рогов 2006: 193].

Стереотипы помогают человеку ориентироваться в незнакомой этнической среде, снижая культурный шок и предоставляя базовые знания о поведении в различных культурах. В деловой коммуникации стереотипы формируют ожидания партнёров и потребителей. Примеры: Германия — качество, Франция — вино, косметика, Япония — технологии. Однако чрезмерная фиксация на стереотипах может стать когнитивным фильтром,

затрудняющим восприятие партнёра [Грушевицкая 2003: 327-328].

Таким образом, стереотипы обладают двойственной природой: они облегчают когнитивную ориентацию и предсказуемость поведения, но при недостаточной рефлексии могут исказить восприя-

тие и создавать барьеры. Их изучение требует интеграции когнитивного, лингвокультурного и социального подходов.

#### Эмпирический блок: примеры авто- и гетеростереотипов

Для наглядного представления приведём таблицу с примерами типичных авто- и гетеростереотипов разных культур:

Страна, культура	Автостереотипы	Гетеростереотипы
<i>Россия</i>	Сила, гостеприимство, коллективизм	Немец — пунктуальность, француз — галантность, японец — трудолюбие
<i>Франция</i>	Элегантность, галантность	Немец — дисциплина, итальянец — эмоциональность, англичанин — сдержанность
<i>Германия</i>	Пунктуальность, точность	Француз — жадность, русский — импульсивность, итальянец — артистичность
<i>Япония</i>	Трудолюбие, дисциплина	Кореец — хитрость, американец — прагматизм, француз — стиль
<i>Южная Корея</i>	Сообразительность, уважение к старшим	Русский — прямолинейность, японец — дисциплина, американец — свобода

Эти примеры показывают, как когнитивные схемы формируют ожидания и влияют на восприятие других культур.

Современные исследования подтверждают многоуровневую природу стереотипов, их влияние на когнитивное, социальное и культурное восприятие. Стереотипы выступают одновременно когнитивными схемами, культурными маркерами и коммуникативными инструментами, формируя устойчивые модели восприятия и поведения. Их ключевая особенность — когнитивная эффективность: стереотипы позволяют быстро обрабатывать социальную информацию, сокращают время реакции и обеспечивают базовое понимание культурной среды. В то же время обобщающий характер стереотипов может исказить восприятие и формировать коммуникативные барьеры.

Лингвокультурологический аспект подчёркивает, что стереотипы закрепляются в языке, фольклоре и традициях, передаваясь через устойчивые речевые конструкции, пословицы, поговорки и эпитеты. Это делает стереотип одновременно носителем этнокультурного знания и инструментом когнитивной организации опыта. Практическое значение стереотипов проявляется в профессиональной коммуникации, маркетинге, дипломатии, образовании и международной деловой деятельности. Понимание авто- и гетеростереотипов позволяет успешно прогнозировать реакцию партнёров, корректировать стратегию взаимодействия и предотвращать недопонимания и конфликты.

Таким образом, стереотипы — многомерный феномен, который нельзя рассматривать исключи-

тельно как негативный. Они заметно облегчают когнитивную обработку информации, структурируют культурный опыт и формируют базовые ожидания в межкультурной коммуникации. Их изучение требует неперенного комплексного подхода с использованием непосредственно когнитивных, лингвокультурологических и социальных методов, а также анализа практических последствий для общения, профессиональной деятельности и образования.

Дальнейшие исследования должны быть ориентированы на динамику стереотипов в условиях глобализации, трансформации культурных ценностей и интенсивного межкультурного взаимодействия. Особое внимание следует уделять когнитивным механизмам формирования стереотипов, их фиксации в языке и медиапространстве, а также влиянию на стратегии межкультурного поведения. Такой комплексный подход позволит глубже понять феномен стереотипа и эффективно использовать знания о нём в межкультурной коммуникации, развитии критического мышления и формировании компетенций, необходимых в глобальной профессиональной и научной среде.

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# POLITICAL SCIENCES

## POLYCENTRIC WORLD ORDER: MAIN APPROACHES

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## ПОЛИЦЕНТРИЧНЫЙ МИРОВОЙ ПОРЯДОК: ОСНОВНЫЕ ПОДХОДЫ

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### Abstract

The article examines theoretical approaches to understanding the polycentric world order in the context of increasing unilateral actions and power-based policies pursued by leading global actors. It argues that polycentricity cannot be reduced solely to the redistribution of material power among states. Rather, it reflects a more complex transformation of world politics, including institutional fragmentation, the rise of regional centers of influence, and multi-level interdependence. The article substantiates the claim that, under contemporary conditions, polycentricity has a conflictual character, accompanied by the weakening of universal rules and the growing importance of regional dynamics. Particular attention is paid to the conceptual distinction between multipolarity and polycentricity.

This article contributes to the theoretical debate on the nature of the contemporary world order and provides a foundation for further applied analysis of states' foreign policy strategies in a polycentric environment.

### Аннотация

В статье рассматриваются теоретические подходы к осмыслению полицентричного мирового порядка в условиях усиления односторонних действий и политики силы со стороны ведущих мировых акторов. Показано, что полицентричность не сводится исключительно к перераспределению материальной мощи между государствами. Она отражает более сложную трансформацию мировой политики, включающую институциональную фрагментацию, рост региональных центров влияния и многоуровневую взаимозависимость. Обосновывается тезис о том, что полицентричность в современных условиях носит конфликтный характер, сопровождаясь ослаблением универсальных правил и ростом региональной динамики. Особое внимание уделяется концептуальному различию между многополярностью и полицентричностью.

Данная статья вносит вклад в теоретическую дискуссию о характере современного мирового порядка и формирует основу для последующего прикладного анализа внешнеполитических стратегий государств в полицентричной среде.

**Keywords:** world order, polycentricity, multipolarity, power politics, constructivism, realism.

**Ключевые слова:** мировой порядок, полицентричность, многополярность, политика силы, конструктивизм, реализм.

В современной научной литературе для описания трансформации мирового порядка с XX и первой половине XXI веков используются различные концепты – многополярность, полицентричность, мультиплексный мир, фрагментированный порядок. Несмотря на то, что данные понятия дополняют друг друга, между ними существуют принципиальные различия. Если многополярность в классическом понимании фиксирует распределение материальной мощи между несколькими великими

державами, то полицентричность предполагает наличие множества центров влияния различной природы: государств, международных институтов, региональных объединений, негосударственных акторов, взаимодействующих на разных уровнях глобального управления.

Таким образом, актуальность теоретического осмысления полицентричного порядка обусловлена не только изменением баланса сил, но и

усложнением самой логики мировой политики. Сегодняшний мировой порядок устроен сложнее, чем раньше. В частности, в нем одновременно сосуществуют разные и нередко конкурирующие представления о правилах международных отношений и неравномерная взаимозависимость между государствами. В результате становится трудно объяснять происходящие процессы с помощью одной единственной теоретической модели. Именно поэтому особое значение приобретает использование разных теоретических подходов и их сочетание, что позволяет увидеть не только объективные ограничения, в которых действуют государства, но и пространство для их самостоятельных решений и стратегического выбора.

Анализ полицентричного мирового порядка опирается на несколько ключевых теоретических традиций в теории международных отношений. Реализм и неореализм позволяют описать полицентризм как результат перераспределения материальных ресурсов и мощи между государствами; либерализм акцентирует институционализированную взаимозависимость и многостороннее сотрудничество; конструктивизм подчёркивает роль норм, идентичностей и нарративов в формировании центров силы; теории регионализма смещают фокус с «великих держав» к региональным подсистемам.

Цель данной статьи – систематизировать и проанализировать ключевые теоретические подходы к пониманию полицентричного мирового порядка, выявить их объяснительный потенциал и ограничения, а также показать, каким образом различные теоретические традиции дополняют друг друга при анализе современной международной системы. Для достижения этой цели в статье последовательно рассматриваются интерпретации полицентричности в рамках реализма и неореализма, либерального институционализма, конструктивизма, а также теорий регионализма.

Методологической основой статьи является качественный теоретический анализ, ориентированный на сравнительное изучение ведущих парадигм теории международных отношений. Исследование опирается на междисциплинарный подход, сочетающий элементы политической теории, международных отношений и сравнительных исследований мирового порядка.

Аналитическую базу статьи составляют классические и современные научные работы по теории международных отношений, включая труды по структурному реализму, неолиберальному институционализму, конструктивизму, сравнительному регионализму.

В рамках исследования применяются сравнительно-теоретический метод, позволяющий сопоставить трактовки полицентричного порядка в различных теоретических школах и выявить их ключевые различия; структурно-аналитический метод, используемый для анализа мировой системы как совокупности взаимосвязанных уровней; концептуальный анализ, направленный на уточнение понятий «многополярность», «полицентричность» и «мультиплексный мировой порядок».

Проанализируем теории реализма и неореализма в аспекте нашей темы. Так, классический реализм исходит из предположения, что международная система по своей природе анархична, а государства опираются на собственную военную мощь и ресурсы и стремятся к безопасности и выживанию. Полярность в данной теории понимается как распределение мощи между ключевыми центрами силы, которые определяют конфликтность и устойчивость мировой системы.

Компактное и логичное понимание природы политики предлагает структурный реализм. Основателем данной теории являлся американский ученый К. Уолтц. В ее основе лежит способ упорядочивания отношений между государствами, который образует структуру, которая характеризуется следующими свойствами: анархия как отсутствие верховного суверена, главная функция государства – это защита суверенитета и неравномерное распределение силы. Если два первых свойства стабильны во времени, то распределение силы во времени колеблется, создавая главный императив внешней политики государств и меняя конфигурацию структуры: однополярная, биполярная и многополярная [1, с. 111-114].

Как и предсказал К. Уолтц в начале 1990-х годов, однополярный мир во главе с США оказался неустойчивым из-за неравномерного распределения сил [2, с. 55], даже со стороны союзников по НАТО наблюдается политика балансирования против гегемона. По К. Уолтцу мир движется к многополярности как более сбалансированной структуре и даже просматриваются две следующие супердержавы.

Реалистская традиция изучения международных отношений не дает однозначного ответа на вопрос как возникает и проявляется баланс сил. Так, в эпоху политического реализма Г. Моргентау рассматривал баланс как равновесие сил великих держав и связывал ее с многополярным устройством. Структурный реализм К. Уолтца наиболее сбалансированным считал биполярное устройство [1, с. 161-176], теория циклов Дж. Моделски [3, с. 52-53] и теория гегемонистской стабильности Р. Гилпина - об однополярном [4, с. 212-213], а историко-системное направление П. Кеннеди придерживается идеи многополярности [5, с. 110]. Таким образом, определений баланса сил как состояние системы были различными и некоторые концепции вошли в противоречие друг с другом. К примеру, К. Уолтц и П. Кеннеди подчеркивали идею равенства сил великих держав, то Р. Гилпин и Дж. Моделски приравнивали баланс сил к статус-кво, основанному на лидерстве (гегемонии) одной державы. Несмотря на указанные разногласия, все неореалисты были едины во мнении, что логика поддержания баланса сил выступает главным императивом для поведения государств.

С позиции реализма многополярность можно рассматривать как объективное отражение тенденции мирового развития: рост военного, экономического, политического потенциала незападных держав и ослабление как мирового лидера позиции

США. Неореализм рассматривает многополярность как свойство международной системы, влияющее на поведение государств [6, с. 135].

Ключевыми предпосылками формирования многополярного мира, согласно концепции реализма, являются две взаимосвязанные тенденции: рост потенциала новых центров силы и сокращение влияние в мире гегемонии США. Согласно утверждению британского исследователя Дэвида Благодена, система международных отношений возвращается к многополярности и связано это прежде всего с перемещением экономического потенциала с Запада на Восток к новым промышленным центрам (Китай, Бразилия, Россия, Индия). По мнению исследователя, при определенных условиях экономический потенциал при наличии политической воли может быть конвертирован в военную мощь [7].

То, что мир вступает в эру большей многополярности, отмечают и австралийские политики, и эксперты. В частности, в докладе 2017 года Independent Intelligence Review написано, что «геополитические последствия экономической глобализации создают новые центры и поощряют новые стратегические амбиции у государств» [8].

Однако не все исследователи соглашаются, что достаточным фактором для становления многополярности является рост экономического потенциала восходящих держав. По мнению итальянского ученого Стефано Конта глобальными игроками являются Китай, США, Россия и ЕС, а Бразилию и Индию он к ключевым игрокам не относит, утверждая, что экономического потенциала недостаточно для того, чтобы играть глобальную роль [9].

Группа европейских исследователей предложила оригинальный подход. По их мнению, многополярность формируется только в экономической сфере, в военной сохраняется однополярность, экологическую сферу характеризует интерполярность, а политико-культурную - внеполярность [10].

Как было отмечено нами выше, одним из предпосылок многополярности рассматривается снижение роли США в мире. Многополярность как один из возможных сценариев будущего связано с утверждением, что созданием Китаем и Россией альтернативного порядка, с экономическим ростом КНР США будут играть роль одной из нескольких великих держав и перестанет быть единственным арбитром в международной политике [11].

Американский исследователь Брюс Джонс утверждает, что США сохранит за собой роль ключевого игрока на международной арене и что США это не «слабеющая», но «устойчивая» держава [12, с. 78]. Более однозначную позицию занимает исследователь из Республики Корея, подчеркивающий, что полярность определяется соотношением сил на глобальном, а не региональном уровне. В связи с этим, США на глобальном уровне с точки зрения расходов и силового показателя обходят любые другие государства. Поэтому действия таких держав, как Китай и Россия, рассматриваются лишь как некая форма утверждения в мировой политике,

а не как подтверждение тенденций изменения мировой иерархии [13, с. 15].

Есть достаточное количество экспертов, которые придерживаются мнения, что мир скорее движется в сторону не многополярности, а в сторону новой биполярности. В данном контексте интерес представляют исследования российского ученого Д.А. Дегтярева, который анализируя потенциалы стран БРИКС, G7 и, США и Китая, приходит к выводу, что современный миропорядок эволюционирует скорее в сторону «новой биполярности», нежели многополярности [14].

Таким образом, ключевыми составляющими многополярности через призму политического реализма являются, во-первых, рост экономического, политического и военного потенциала новых центров силы (государств или их союзов), во-вторых, невозможность для США продолжать играть роль гегемона в мировой политике. Однако в рамках «реалистичного» подхода спорным и дискуссионным остается вопрос перехода к многополярному мировому устройству: для одних мир однополярен, для других произошел переход к многополярности и, наконец, есть эксперты, которые считают, что мир развивается в сторону биполярности.

Одним из исторических столпов теории международных отношений является либеральная парадигма. Мнения исследователей относительно значения многополярности для сохранения безопасности и мира разнятся. Французский ученый Заки Лайди многополярность описывает как «переход без гегемонии»: набирающие силу незападные государства бросают вызов гегемонии Запада, при этом они недостаточно сильны и объединены, чтобы предлагать собственную альтернативу мироустройства [15]. Схожей позиции придерживается Шон Батлер, для которого появление новых держав, стремящихся к большей автономии и независимости во внешней политике, может привести к ослаблению мультилатерализма. Формирующаяся многополярность, по мнению ученого, несет в себе угрозу стабильности международной системы, так как затрудняет решение вопросов, требующих коллективных усилий, к примеру, сохранение мира при помощи коллективных механизмов безопасности [16, с. 27].

Российский ученый А. Картунов придерживается мнения, что концепция многополярности должна остаться в прошлом, фундаментом нового мирового порядка должна быть модель многосторонности, основу которой должны составить многосторонние договоренности, международные режимы, первостепенный учет интересов более слабых государств [17]. Более того, актуальная модель многосторонности «будет складываться не в рамках старых институтов, а вокруг общих проблем и конкретных проектов» [18].

Таким образом, рассматривая многополярность с точки зрения либеральной парадигмы необходимо акцентировать внимание на следующем: с одной стороны, многополярный мировой порядок воспринимается как нежелательное явление или

даже угроза либеральным ценностям, либеральному мировому порядку и, как следствие, самой международной системе. С другой стороны, более многополярное мироустройство не обязательно должно приводить к дестабилизации международной среды, отказу новых центров силы от сотрудничества и переходу к состоянию «войны всех против всех».

С точки зрения конструктивизма, полицентричный порядок — это не только распределение материальных сил, но и совокупность конкурирующих и пересекающихся норм, идентичностей и нарративов. Различные центры силы продвигают свои собственные версии легитимного миропорядка, а государства и регионы позиционируют себя как принадлежащие к определенным нормативным «сообществам».

А. Ачарья разработал концепцию «Global IR» и подчеркивает, что регионы следует понимать как социально сконструированные пространства, основанные на общих нарративах, исторических воспоминаниях и региональных нормах [19]. В его работах о «конце американского мирового порядка» показано, что ослабление западной гегемонии сопровождается ростом альтернативных нормативных проектов и региональных «миров», что усиливает именно полицентричный, а не просто многополярный характер системы.

Далее ученые А. Ачарья, А. Эстевадеордал, Л.В. Гудман в статье 2023 года «Многополярность или мультиплексность? Способность к взаимодействию, глобальное сотрудничество и мировой порядок» для описания и анализа меняющегося мирового порядка используют новую концепцию — мультиплексность, а не многополярность или либеральная гегемония. Вместо традиционных показателей, таких как экономическая или военная мощь, в качестве ключевого показателя мирового порядка используется «способность к взаимодействию» между государствами, или относительная способность стран осуществлять лидерство и организовывать сотрудничество [20]. Концепция мультиплексности расширяет понимание все более сложной природы взаимодействия в рамках мирового порядка. Более того, она помогает лучше понять, могут ли глобальные отношения в свете усиления незападных держав стать более хаотичными и транзакционными по своей природе. Опираясь на концепцию мультиплексности, можно лучше оценить, становится ли мировой порядок более ориентированным на сделки или сотрудничество в долгосрочной перспективе. Мультиплексный порядок допускает одновременное сосуществование сотрудничества и конфронтации, а также параллельное функционирование универсальных и региональных институтов.

Рассматривая многополярность через призму конструктивизма, следует обозначить следующее: во-первых, многополярность рассматривается как внешнеполитический дискурс, социальный конструкт, претендующий как на описание, так и трансформацию реальности; во-вторых, среди при-

чин развития многополярного дискурса следует выделить стремление ряда государств проводить более независимую от либерального Запада политику, осознание изменения соотношения сил на международной арене.

В свое время Амитав Ачария утверждал, что грядущий мир следует описывать в терминах «регионополярности» (regiopolarity), нежели многополярности или других связанных с полярностью понятиях [21]. По мнению эксперта, ни одна из восходящих держав не сможет заполнить вакуум, оставляемый США на глобальном уровне, и будет привязана к своему региону [22]. Даная логика подразумевает деление мирового пространства на ограниченные зоны влияния центров силы, что в целом соотносится с идеей многополярности. Многополярность, таким образом, может формироваться и укрепляться по мере «проявления» и обособления регионов, развития региональных связей, создания уникального экономического, политического, культурного пространства внутри конкретного регионального кластера.

Работы по «сложному регионализму» подчёркивают, что современный порядок характеризуется многослойной архитектурой — пересечением глобальных, межрегиональных и субрегиональных институтов, в которых участвуют как великие державы, так и средние и малые государства [23]. В таком понимании полицентричный мир — это совокупность взаимодействующих региональных подсистем (Европа, Индо-Тихоокеанский регион, Ближний Восток, Евразия, Африка и т.д.), каждая из которых имеет собственную логику центров и периферий.

Таким образом, в академическом сообществе нет общепринятого понимания многополярности. Представители разных школ и подходов, ученые из разных стран по-разному определяют и оценивают сущностное содержание многополярности. Реализм указывает на то, что многополярность можно рассматривать как объективное отражение тенденций глобального развития. В основе многополярности лежит ослабление позиций Соединенных Штатов как мирового лидера и рост экономического, военного и политического потенциала незападных держав. Неореализм рассматривает многополярность как характеристику международной системы, которая влияет на поведение государств. Региональный подход направлен на усиление процесса регионализации, создание системы региональной интеграции, которая способствует формированию многополярности в связи с растущим потенциалом региональных держав и ослаблением позиций Соединенных Штатов в мире. Либерализм прежде всего стремится оценить влияние многополярности на стабильность и безопасность международной обстановки. В дополнение к предсказуемому отношению к многополярности как к угрозе миру и безопасности, существует и другая, более оптимистичная перспектива. Конструктивизм рассматривает многополярность как внешнеполитический дискурс и в то же время проект многих государств.

Таким образом, в совокупности рассмотренные теоретические подходы позволяют сформировать многомерную концептуальную модель анализа полицентричного мирового порядка. Реализм и неореализм фиксируют структурные ограничения, связанные с распределением мощи; либерализм акцентирует институционализированную взаимозависимость и роль многосторонних режимов; конструктивизм раскрывает нормативные и идентичностные измерения полицентризма; теории регионализма и малых государств позволяют перейти от глобального уровня к региональным подсистемам.

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# PSYCHOLOGICAL SCIENCES

## PSYCHOLOGICAL CHARACTERISTICS OF ADOLESCENTS' PEER INTERACTIONS

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### Abstract

The purpose of this study is to determine the characteristics of adolescents' peer relationships, the factors affecting their social-psychological development, and to reveal the role these relationships play in shaping the individual's personality. The survey technique was used as the data collection method during the research process. Both school-age adolescents and adolescents in vocational training participated in the study. As a method, a questionnaire consisting of 11 questions prepared by the researcher was applied. The questionnaire included questions about adolescents' peer relationships and the effects of these relationships on their social-psychological development and personality formation. According to the results obtained, it was determined that strong and positive relationships established with peers significantly contribute to adolescents' personality development and the development of their empathy and communication skills. On the other hand, it was observed that conflicts in relationships and social isolation can lead to psychological tension and decreased self-esteem.

The findings of the study emphasize that adolescents' development in a healthy social environment has a direct impact on their future quality of life.

**Keywords:** Adolescence, communication, relationship, peer

**Introduction.** Adolescence is a developmental stage that begins with the end of childhood and continues until physiological maturity is reached (Koç, 2004). According to the World Health Organization (WHO), adolescence is a period that spans approximately 10-19 years of age (World Health Organization, 2021). During this period, rapid hormonal changes occur in the individual's body, secondary gender characteristics develop, and emotional response patterns begin to change (Santrock, 2019).

Adolescence is one of the most complex and noteworthy stages of human life. This developmental phase, which has been the focus of attention in every period of society, is even more important today (Gitman & Musaelyan, 2016). This is because adolescence is the most critical period in which an individual's spiritual values, social relationships, and attitudes towards themselves, other people, and society are shaped. During this process, character traits and interpersonal behavior patterns also begin to stabilize (Oleqovna, 2021).

The tendency to model the behavior of others is quite common during adolescence. Typically, the behavior of an adult who has achieved a certain level of success or is respected is imitated. However, if critical and independent thinking skills are not sufficiently developed, the influence of such role models can have negative consequences on the adolescent's behavior.

During this period, two fundamental relationship systems emerge based on the importance of cognitive development in children: one is relationships with adults, and the other is relationships with peers. Both

types of relationships continue to develop, especially during middle school years (Oleqovna, 2021).

All these characteristics are shaped in the communication process between adolescents and the people around them. Communication becomes one of the main activities of adolescents and plays an extremely important role in the formation and development of an individual's self-perception (Oleqovna, 2021). This process also significantly changes the adolescent's worldview and social position.

Both domestic and foreign researchers' current studies increasingly emphasize the importance of this topic and address social relationships and communication processes during adolescence as a subject of scientific inquiry.

Ivanovna and Alekseevna (2014) also expressed a similar view in their study titled "Characteristics of Relationships Between Adolescents and Their Peers in Rural Schools." The researchers emphasized that adolescents' relationships with their peers play a decisive role in personality development.

Many scientists have studied this topic: A.A. Bodalev, I.S. Con, O.S. Kholodkovskaya, V.A. Pashinya, A. Alekseev, A.V. Petrovski, A. Streljanoy, B.Z. Vulfov, Yu.I. Frolov, A.Ya. Varga, and G.A. Kovalev have made significant contributions in this field.

During adolescence, individuals develop a clearer understanding of the concept of the "friendship standard." However, what is commonly seen in this age group is not close friendship with a specific peer, but rather a "friendship" relationship that offers a broader area of communication and sharing (Ivanovna & Alekseevna, 2014).

Although there are numerous studies in the psychology literature that reveal the unique characteristics of adolescents' peer relationships, the search for new and effective approaches to analyzing the dysfunctional relationships between adolescents and their social environment continues (Gitman & Musaelyan, 2016).

The transition to adolescence is characterized by the formation of a new level of self-awareness (self-consciousness) in the individual. The most important psychological indicator of this period is the individual's beginning to perceive themselves as an "adult" (Valerievna, 2015).

Adolescence is one of the most challenging stages of human life because individuals are still on the cusp between childhood and adulthood during this period. During this process, individuals turn inward, beginning to understand themselves and their surroundings more deeply. In this period of accelerated psychological development, noticeable changes are also observed in peer relationships. With the expansion of the social environment, both the diversity of the adolescent's relationships increases and the likelihood of conflict and tension rises (Vladimirovna, 2019).

The article examines the psychological characteristics of interaction between adolescents and peers (Olegovna, 2021).

#### **Methodology.**

**Research Participants:** The participants in this research were adolescents. Data was collected only from students in this age group.

**Type of Research:** The study was conducted using a mixed methods approach.

**Data Collection Process:** The research was conducted online via the Google Forms platform between May 7, 2025, and May 21, 2025. Participants were selected from among both school-age adolescents and young people in vocational training.

The main objective of the study was to determine the psychological characteristics of adolescents' peer relationships and to examine the effects of these relationships on their socialization, emotional regulation, and personality development.

A total of 107 adolescents participated in the study. The main objective of the study is to present a

comparative analysis of the psychological characteristics observed in adolescents' peer relationships.

**Data Collection Tool:** The study used an 11-question survey form prepared by the researcher. Nine of these questions were closed-ended and two were open-ended, aiming to reveal participants' personal opinions, attitudes, and experiences in detail.

The survey questions are designed to assess adolescents' levels of social adjustment, empathic tendencies, leadership behaviors, psychological responses in interpersonal relationships, and communication styles.

#### **Limitations of the Study:**

The scope of the study is limited to adolescence. Therefore, the data obtained was collected only from participants in the specified age group.

#### **Conclusion**

The study has once again revealed that the relationships adolescents establish with their peers play a critical role in their psychological and social development.

The main objective of the study was to determine the social development processes of adolescents and the main factors that play a role in peer interactions. The findings show that peer relationships have a significant impact on shaping adolescents' emotional balance, level of empathy, communication skills, and self-esteem. These results emphasize the great importance of creating appropriate social environments and supporting peer relationships so that adolescents can form healthy social bonds. The following results were obtained according to the percentages

#### **Findings: Results Regarding Adolescents' Peer Relationships**

The findings of the study cover adolescents' attitudes, thoughts, and social behavior patterns regarding their relationships with peers and the opposite gender.

Based on the responses of a total of 107 participants, the following key findings were reached:

Here is the English translation of your tables:

Table 1.

**Responses to Closed-Ended Questions.**

<b>Question №</b>	<b>Question Content</b>	<b>Answer Option</b>	<b>Count (n)</b>	<b>Percentage (%)</b>
1	Gender	Female	60	56.0
		Male	47	44.0
2	How does interacting with peers affect you?	Normal	60	56.1
		Excellent	34	31.8
		I don't want to build relationships	7	6.5
		Prefer communication with older people	6	5.6
3	How does spending time with peers affect you?	Excellent	55	51.4
		Normal	48	44.9
		No response	4	3.7
4	What is your attitude toward friendship with the opposite gender?	Normal	52	48.6
		Good	38	35.5
		Bad	14	13.1
		No response	3	2.8
5	Friendship with peers on social media	Normal	54	50.5
		Good	37	34.6
		Bad	13	12.1
		No response	3	2.8
6	Are your peers' opinions interesting to you?	Sometimes	67	62.6
		Yes	30	28.0
		No	10	9.3
7	Do you care what your peers think about you?	Yes	55	51.4
		Sometimes	32	29.9
		No	20	18.7
8	Do you share the same views as your peers?	Sometimes	72	67.3
		No	23	21.5
		Yes	12	11.2
9	If you are in the same environment, who initiates communication first?	I would start	46	43.0
		I would wait for the other person	41	38.3
		I don't want to communicate	9	8.4
		No response	11	10.3

Responses to Open-Ended Questions

Question №	Question Content	Thematic Category	Sample Response/Opinion	Number of Respondents
10	What do you think differentiates you from your peers?	No difference	"There is no significant difference between us."	~60 people
	Difference in thinking	"I think differently."	~15 people	
	Sense of humor	"My sense of humor is stronger."	~8 people	
	Sociability and openness	"I am more sociable."	~6 people	
	Social sensitivity and indifference	"I don't really care about my surroundings."	~3 people	
	Other individual perspectives	"I think more independently."	~2 people	
11	What motivates you in your relationships with peers?	Nothing motivates me	"There is nothing motivating."	~35 people
	Kindness and communication	"It's nice to talk to them, they are kind."	~20 people	
	Friendship and spending time together	"Friendship, fun, spending time together."	~15 people	
	Academic discussions	"Discussing lessons."	~10 people	
	Making new friends and sharing experiences	"I make new friends and share experiences."	~5 people	
	Emotional comfort and support	"It feels like therapy, it calms me."	~3 people	

### Overall Findings.

The research findings reveal that relationships established with peers and the opposite sex play an important role in socialization, self-expression, and personality development for adolescents. The vast majority of participants evaluated these relationships positively and demonstrated an open attitude toward social interactions. However, some differences were also observed in terms of individual approach, social pressure, and level of initiative in communication. Data obtained from open-ended questions reflected adolescents' deeper and more personal thoughts about their social behavior. Overall, the analysis of adolescents' peer relationships in this study yielded the following findings: Peer relationships contribute positively to adolescents' self-awareness processes, development of social skills, personality formation, and emotional balance. Through the friendships they form during this period, adolescents internalize fundamental human values such as mutual understanding, empathy, and friendship. The concept of friendship takes on

greater significance during this age period. Adolescents pay attention to the thoughts of their peers and their level of acceptance; at the same time, they learn the social behavior rules that are valid in society. Interactions among peers ensure the development of their communication skills and the formation of a culture of mutual respect and support, contributing significantly to their socialization processes. As a result, all these characteristics directly influence the shaping of adolescents' personalities as independent, self-expressive, and socially balanced individuals within society.

### Discussion.

In Azerbaijan, there are almost no comprehensive and empirically based studies on the psychological characteristics of adolescents' peer relationships. However, there are some studies on the role of peer relationships in the formation of adolescent personality. For example, research conducted by Aliyev (2021) examined the influence of the family environment on

the formation of adolescents' attitudes toward their peers.

The results of this study show both similarities and differences with various international studies. For example, Gitman and Musaelyan (2016) focused on conflicts among adolescents and the psychological causes of these conflicts. The researchers analyzed the causes of social adjustment disorders and the consequences of these conditions. Olegovna (2021), on the other hand, focused on social-moral development, leadership behaviors, and social role distribution within peer groups.

Focusing on the psychological characteristics of adolescents' relationships with their peers, this research approaches the subject in terms of the quality of relationships and individual psychological development. Other studies focus either on the psychological analysis of conflicts (Gitman & Musaelyan, 2016) or the functioning of the social structure (Olegovna, 2021). This difference shows that approaches to peer relationships are shaped by two main axes: individual-emotional and social-systemic.

In Gitman's research, social isolation and conflicts are seen as key factors in the emergence of behavioral disorders. Olegovna's study emphasizes that when peer relationships are not established in a healthy manner, leadership skills do not develop or emerge aggressively.

This study draws attention to the importance of social and emotional support mechanisms in adolescents' peer relationships. While other studies generally focus on preventing negative situations and psychological interventions, this research adopts a more development-oriented perspective. This difference reveals a two-pronged approach in adolescent psychology: one is protective and problem-focused, while the other is supportive and development-focused.

In general, all scientific studies addressed are dedicated to the formation of adolescent personality and agree that this period is a stage of intense emotional and social change. From this perspective, adolescence is considered a critical stage of development in which individuals undergo profound transformations both in

their relationships with their social environment and in their inner world.

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# SOCIAL SCIENCES

## BUSINESS RESILIENCE AND FIRM SUSTAINABILITY: THE CONTINGENT ROLE OF DIGITAL MARKETING CAPABILITY IN EMERGING MARKET SMES

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### Abstract

Agro-allied small and medium-sized enterprises (SMEs) play a critical role in advancing economic diversification in emerging economies, yet their long-term sustainability remains vulnerable to environmental volatility and structural constraints. Drawing on dynamic capability and contingency perspectives, this study investigates the effect of business resilience on firm sustainability and examines the contingent role of digital marketing capability in strengthening this relationship. Using survey data from 120 owner-managers of agro-allied SMEs in Osun State, Nigeria, and employing hierarchical regression analysis, the results indicate that business resilience significantly enhances sustainability outcomes. Moreover, digital marketing capability positively moderates the resilience–sustainability nexus ( $\Delta R^2 = 0.010$ ,  $\Delta F = 7.230$ ,  $p = 0.008$ ), suggesting that digitally enabled firms are better able to translate adaptive capacity into sustainable performance. These findings extend capability-based strategy research by identifying digital marketing capability as a boundary condition that conditions the effectiveness of resilience in resource-constrained environments. The study contributes novel evidence from an underexplored agro-industrial context in sub-Saharan Africa and underscores the strategic importance of integrating resilience building mechanisms with digitally enabled market responsiveness to achieve sustained competitiveness.

**Keywords:** Agro-allied SMEs, Business resilience, Digital marketing capability, Sustainability, emerging economy, Nigeria.

### 1. Introduction

The agro-allied industry occupies a pivotal position within contemporary agricultural value chains, serving as the interface between primary agricultural production and industrial transformation while simultaneously supporting employment generation, food security, and economic diversification (Food & Agriculture Organization (FAO), 2022; Olarewaju, 2025). Across both developed and emerging economies, agro-allied enterprises contribute substantially to value creation by converting raw agricultural outputs into higher-value products, strengthening supply chain resilience, and fostering rural industrialization (World Bank, 2020). Despite this strategic relevance, growing environmental volatility, market disruptions, and technological transitions have intensified pressures on agro-based industries to adopt sustainability-oriented business models capable of ensuring long-term competitiveness (Sustainable Development Solutions Network, 2023).

Globally, the sustainability imperative has reshaped the strategic priorities of agro-allied firms. Increasing climate variability, resource depletion, shifting consumer preferences toward ethically sourced products, and digital transformation have collectively altered how firms configure capabilities for survival and growth (United Nations Environment Programme (UNEP), 2021) 2021; United Nations Environment Programme, 2021). While advanced economies have leveraged technological sophistication, mechanization,

and data-driven decision-making to enhance productivity, they continue to confront structural challenges such as labor shortages, regulatory constraints, and decarbonization pressures (OECD, 2021). Conversely, many developing regions face deeper structural limitations, including infrastructure deficits, financing constraints, fragmented production systems, and institutional weaknesses (Duru et al., 2024, World Bank, 2021). These asymmetries underscore the growing scholarly consensus that firm-level capabilities particularly adaptive and reconfigurable competencies are essential for navigating turbulent operating environments and achieving sustainable outcomes (Asikhia et al., 2022; Onamusi, 2021; Teece, 2007; Wilden et al., 2019).

In Africa, the agro-allied sector is widely regarded as a catalyst for inclusive growth due to the continent's abundant agricultural resources and expanding domestic markets (AfDB, 2022). Nevertheless, productivity remains comparatively low, largely because of limited technological adoption, weak logistics networks, and insufficient integration into global value chains (World Bank, 2021). These challenges are especially pronounced in Nigeria, where the agro-allied industry is central to national economic diversification efforts amid declining dependence on oil revenues (National Bureau of Statistics, 2023). The sector contributes significantly to gross domestic product and supports millions of livelihoods through processing, input manufacturing, storage, and distribution activities (CBN, 2022).

Rising urbanization and population growth further amplify demand for processed agricultural goods, positioning the industry as a critical driver of structural transformation (United Nations, 2022).

Notwithstanding its potential, the Nigerian agro-allied industry continues to operate below its sustainable capacity. Persistent infrastructure deficiencies particularly unreliable electricity and poor transportation networks elevate operational costs and constrain efficiency (FAO, 2022). Access to affordable finance remains limited, especially for small and medium-sized enterprises (SMEs), thereby restricting investment in modern technologies and innovation (World Bank (2021). Policy inconsistency has also generated strategic uncertainty, discouraging long-term planning and capital commitment (OECD (2021). Moreover, escalating security concerns in key agricultural zones disrupt raw material supply, while climate-related shocks such as flooding, drought, and desertification threaten production stability (Olaniyi & Awotide, 2023). Collectively, these conditions create a complex risk environment that challenges the continuity and resilience of agro-allied enterprises.

Beyond economic constraints, the sustainability challenges confronting the sector are multidimensional. Social issues including rural poverty, skills shortages, and weak social infrastructure undermine workforce stability and productivity (African Development Bank (2022). Environmentally, unsustainable land-use practices, excessive reliance on chemical inputs, and biodiversity loss raise concerns about ecological degradation and long-term resource viability (IUCN, 2021). These intersecting pressures necessitate strategic responses that extend beyond traditional financial interventions toward capability-driven frameworks that enhance adaptability and organizational robustness (Eisenhardt & Martin, 2000; Teece, 2007).

Within the strategic management literature, dynamic capability theory provides a useful lens for understanding how firms integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Ibironke et al., 2025; Onamusi, 2021; Teece, 2007). From this perspective, business resilience emerges as a higher-order capability that enables firms not only to withstand shocks but also to adapt, renew, and transform in response to disruption (Duchek, 2020). Resilience is inherently multidimensional, encompassing behavioral resilience that supports adaptive human responses, operational resilience that safeguards continuity, strategic resilience that anticipates future threats, and organizational agility that enables timely strategic pivots (Hamel & Välikangas, 2003; Linnenluecke, 2017). Firms that cultivate these attributes are more likely to sustain performance under conditions of uncertainty while aligning their operations with broader sustainability objectives (Olawaju, 2025).

However, resilience alone may be insufficient in an increasingly digital marketplace. The proliferation of digital technologies has redefined how firms interact with customers, coordinate supply chains, and generate value (Bharadwaj et al., 2013; Onamusi, 2020; Vial, 2019). Digital marketing capability, in particular, has

evolved into a strategic resource that enhances market intelligence, expands customer reach, facilitates product differentiation, and supports revenue diversification (Chatterjee et al., 2020; Onamusi & Adekunle, 2025). For agro-allied firms, many of which historically relied on intermediated distribution channels, digital platforms create opportunities for direct market access, improved price discovery, and stronger stakeholder engagement (Kraus et al., 2021). By enabling data-informed decision-making and responsive marketing strategies, digital capabilities may reinforce resilience mechanisms and amplify their impact on sustainability outcomes. This study argues that digital marketing may function not merely as an operational tool but as a complementary capability that strengthens the resilience–sustainability nexus. Firms capable of integrating adaptive resilience practices with digitally enabled market responsiveness are better positioned to mitigate volatility, reduce waste, optimize production cycles, and cultivate enduring customer relationships. Such complementarities align with emerging arguments in strategic management that competitive advantage increasingly stems from the orchestration of interdependent capabilities rather than isolated resources (Barney, 1991; Helfat et al., 2007).

Despite the growing recognition of resilience and digital transformation in organizational research, empirical evidence examining their combined influence within agro-allied contexts particularly in sub-Saharan Africa remains limited. Existing studies on Nigeria's agro-industrial landscape predominantly emphasize structural barriers such as infrastructure gaps and financing constraints, offering comparatively little insight into how firm-level strategic capabilities shape sustainability trajectories (Adebiyi, 2022; World Bank, 2021). Even more limited is empirical studies investigating whether digital marketing capability strengthens the effectiveness of resilience strategies in resource-constrained environments.

This gap is especially salient in Osun State, Nigeria, where agro-allied enterprises play a vital role in regional economic development yet face persistent operational vulnerabilities (Olaniyi & Awotide, 2023; Olawaju, 2025). Understanding how these firms can leverage resilience while simultaneously deploying digital marketing capabilities may provide actionable pathways for enhancing long-term viability. Without such insight, managerial interventions risk remaining reactive rather than strategically transformative. Consequently, this study examined the interaction between business resilience and digital marketing capability in shaping the sustainability of agro-allied companies in Osun State, Nigeria. By integrating dynamic capability logic with sustainability discourse, the study advances the proposition that the alignment of adaptive organizational behaviors with digitally enabled market strategies constitutes a critical mechanism for sustaining agro-industrial enterprises in turbulent environments.

## 2. Literature Review

### *Theoretical Foundation*

This study is anchored on Dynamic Capability Theory, Survival-Based Theory, and Contingency Theory, which collectively provide a robust explanatory

framework for understanding how firms develop resilience, leverage digital capabilities, and achieve sustainability in turbulent operating environments. The integration of these perspectives supports a capability-oriented view of the firm while recognizing the adaptive resilience and contextual requirements for long-term business sustainability.

Dynamic Capability Theory serves as the primary theoretical lens by explaining how firms integrate, build, and reconfigure internal and external competencies to address environmental volatility (Teece et al., 1997; Teece, 2007). The theory posits that sustainable competitive advantage depends on an organization's ability to sense opportunities and threats, seize emerging prospects, and transform resource configurations accordingly (Teece, 2007). Within this study, business resilience is conceptualized as a higher-order dynamic capability that enables agro-allied firms to absorb shocks, maintain operational continuity, and innovate in response to disruptions such as climate variability, supply chain instability, and market uncertainty. Empirical research increasingly links dynamic capabilities with adaptability, innovation, and long-term firm performance (Fainshmidt et al., 2016; Onamusi, 2020; Wilden et al., 2016). Although the theory has been critiqued for conceptual abstraction and measurement challenges (Arend & Bromiley, 2009), its strong explanatory power in uncertain environments reinforces its suitability for examining sustainability-oriented outcomes. Thus, Dynamic Capability Theory provides the foundational logic that resilient firms are better positioned to sustain performance under conditions of rapid change.

Complementing this perspective, Survival-Based Theory emphasizes organizational continuity as the fundamental objective of strategic action. Rooted in evolutionary economics, the theory argues that firms must continuously adapt to environmental pressures or risk failure (Nelson & Winter, 1982). It foregrounds resilience as a strategic necessity rather than a discretionary capability, suggesting that organizations capable of proactive adaptation, risk management, and operational flexibility are more likely to endure and achieve sustained growth. This survival logic is closely aligned with early organizational ecology research, which demonstrates that firms unable to adjust to environmental selection pressures face a higher likelihood of exit (Hannan & Freeman, 1977). Applied to the agro-allied context where firms confront infrastructural deficits, ecological risks, and institutional uncertainty survival logic underscores the importance of embedding resilience within organizational culture and strategic processes. Critics note that survival-based arguments may overemphasize adaptation while underrepresenting managerial agency and relational dynamics; nevertheless, their focus on continuity aligns strongly with sustainability objectives, particularly in emerging markets characterized by persistent volatility.

Contingency Theory provides the contextual mechanism linking resilience to sustainability by asserting that organizational effectiveness depends on the alignment between internal capabilities and external

conditions (Donaldson, 2001). Rejecting universal strategic prescriptions, the theory maintains that performance outcomes are contingent upon the degree of fit between organizational strategies and environmental demands (Onamusi et al., 2022). In this study, digital marketing capability is positioned as a contingent strategic resource that can strengthen the resilience–sustainability relationship. Digital technologies enhance firms' ability to respond rapidly to shifting consumer preferences, expand market access, and utilize real-time data for decision-making, thereby improving strategic flexibility and adaptive capacity (Bharadwaj et al., 2013; Vial, 2019). While contingency approaches have occasionally been criticized for their perceived reactive orientation and limited predictive precision, their emphasis on strategic fit is particularly relevant in digitally evolving markets where responsiveness increasingly determines competitiveness.

These theories offer a complementary and multi-level explanation of firm sustainability. Dynamic Capability Theory explains how firms build adaptive competencies, Survival-Based Theory clarifies why continuous adaptation is necessary for organizational continuity, and Contingency Theory specifies when and under what conditions such capabilities generate superior outcomes. Their integration provides a strong theoretical basis for hypothesizing that the relationship between business resilience and the sustainability of agro-allied SMEs is significantly strengthened when firms deploy digital marketing capability as a complementary strategic resource.

#### ***Business Resilience and Sustainability***

Empirical research increasingly recognizes business resilience as a strategic capability that supports long-term organizational sustainability. Studies across diverse institutional contexts show that resilient firms are better positioned to absorb shocks, adapt to environmental turbulence, and sustain performance trajectories. For instance, Linnenluecke (2017), in a comprehensive review of resilience research in management, concludes that resilience-enhancing capabilities such as adaptive learning, resource flexibility, and strategic responsiveness significantly contribute to organizational continuity and long-term viability. Similarly, Duchek (2020), drawing on qualitative and conceptual synthesis, demonstrates that resilience operates as a meta-capability enabling firms not only to withstand disruptions but also to emerge stronger through renewal and transformation.

Recent empirical investigations reinforce this position. Using survey data from SMEs, Prayag et al. (2020) found that organizational resilience positively predicted both financial stability and strategic adaptability during periods of crisis. The authors argue that resilience strengthens a firm's capacity for proactive adjustment, thereby supporting sustainable performance outcomes. Likewise, Sabahi and Parast (2020), employing structural equation modeling within manufacturing firms, reported that resilience capabilities significantly improved operational sustainability by enhancing preparedness and recovery mechanisms.

However, the resilience–sustainability relationship is not universally deterministic. Evidence suggests

that excessive emphasis on resilience-building particularly through redundancy investments and rigid risk-control systems may inadvertently constrain innovation and strategic renewal. Duchek (2020) warns that resilience routines can become over-embedded, reducing organizational flexibility and limiting opportunity-seeking behaviors essential for long-term growth. This observation aligns with dynamic capability theory, which posits that capabilities create value only when they remain reconfigurable rather than path-dependent (Teece, 2007). Consequently, resilience contributes most effectively to sustainability when firms balance stability with adaptability. Collectively, the empirical literature positions business resilience as a valuable and difficult-to-imitate organizational resource, consistent with the Resource-Based View (Barney, 1991). Yet its sustainability-enhancing effect depends largely on how resilience capabilities are orchestrated within the broader strategic architecture of the firm.

#### ***Digital Marketing Capability as a Moderator***

Scholarly attention has increasingly shifted toward understanding how digital marketing capability strengthens the resilience–sustainability nexus. Digital marketing capability is the firm’s ability to leverage digital platforms, analytics, and interactive technologies to sense market changes, engage stakeholders, and rapidly adjust strategic responses. Empirical evidence supports its performance-enhancing role. For example, Wang et al. (2020), analyzing firms undergoing digital transformation, found that digital capability significantly improved organizational agility and competitive performance by enabling faster responses to environmental change. Similarly, Zhang, Zhao, and Lyles (2021) demonstrated that digitally enabled firms exhibited superior adaptive capacity during market disruptions, thereby reinforcing organizational resilience. At the SME level, research by Bruce et al. (2023) reported that digital marketing usage positively affected the sustainable growth of small and medium-sized enterprises in Ghana by improving customer engagement, market presence, and competitive positioning. These findings suggest that digital capability acts as a strategic amplifier, allowing firms to translate resilience into tangible sustainability outcomes.

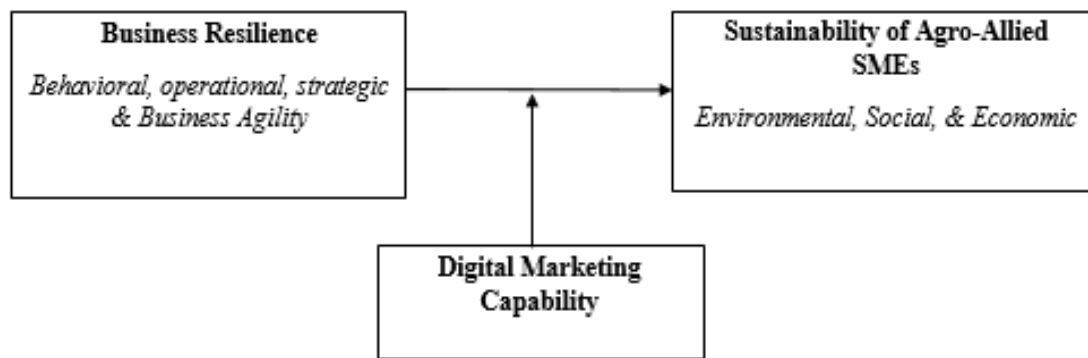
From a theoretical standpoint, this moderating role is strongly grounded in dynamic capability logic. Digital marketing tools enhance sensing (through data analytics), seizing (through targeted engagement), and transforming (through adaptive value propositions), thereby enabling firms to operationalize resilience

more effectively. When integrated appropriately, digital marketing capability becomes a VRIN-type resource that reinforces competitive advantage and long-term viability. Nevertheless, emerging empirical work cautions against assuming a universally positive effect. In a study of technology adoption among small firms, Kraus et al. (2022) found that resource constraints often limit SMEs’ ability to extract strategic value from digital investments. Firms lacking technological expertise or managerial capabilities may experience diminished returns, weakening the expected moderating influence.

Further, research on sustainability communication warns that firms relying heavily on digital messaging without substantive sustainability practices risk stakeholder skepticism and reputational damage (Testa et al., 2020). Such misalignment can erode trust and undermine long-term sustainability objectives. These findings resonate with contingency theory (Donaldson, 2001), which emphasizes that the effectiveness of organizational capabilities depends on contextual fit. Digital marketing capability therefore strengthens the resilience–sustainability relationship only when supported by adequate resources, authentic sustainability behavior, and strategic coherence.

The empirical literature yields three important insights. First, business resilience consistently emerges as a foundational driver of sustainability, enabling firms to maintain operational continuity and adapt to environmental shocks. Second, digital marketing capability functions as a strategic enhancer, improving firms’ ability to deploy resilience through stakeholder engagement, market responsiveness, and adaptive communication. Third, contextual conditions shape these relationships; resource limitations, capability misalignment, and symbolic sustainability practices can weaken the anticipated benefits. Thus, the resilience–sustainability linkage should be understood not as automatic but as capability-contingent. Firms that effectively integrate resilience with digitally enabled strategic processes are more likely to sustain competitive advantage in volatile environments. Despite growing scholarly attention, important gaps remain. Much of the empirical evidence is concentrated in developed economies, with limited investigation within agro-allied SMEs in emerging markets. Furthermore, few studies explicitly model digital marketing capability as a moderator rather than a direct predictor. Addressing these gaps provides a strong justification for examining how digital marketing capability conditions the relationship between business resilience and sustainability within the context of Nigerian agro-allied SMEs.

### Conceptual Framework



Source: Research Conceptual Model, (2026)

conceptual framework that explains the relationship between business resilience and sustainability, while positioning digital marketing capability as a moderating mechanism that conditions this relationship. The framework is theoretically grounded in Dynamic Capability, Resource Dependency, and Contingency theories, which collectively provide a multi-dimensional explanation of how firms adapt, secure critical resources, and align strategic responses with environmental demands. Business resilience is conceptualized as a multidimensional construct comprising behavioural resilience, business agility, operational resilience, and strategic resilience. These dimensions collectively reflect the firm's capacity to anticipate, absorb, adapt to, and recover from disruptions while maintaining continuity and competitiveness. The framework specifies a single moderating pathway, which examined the extent to which digital marketing capability strengthens or conditions the influence of business resilience on sustainability. The model therefore advances the proposition that resilience alone may be insufficient for achieving sustainable outcomes unless complemented by digitally enabled capabilities that enhance market responsiveness and strategic flexibility. By integrating these constructs, the framework provides a coherent basis for empirically examining how agro-allied SMEs can achieve sustainability in volatile and resource-constrained environments.

### 3. Methodology

#### Research Philosophy, Approach, and Design

This study is grounded in the positivist research philosophy, which assumes that organizational phenomena such as business resilience and economic sustainability exist as objective realities that can be measured and empirically examined through systematic scientific inquiry (Creswell & Creswell, 2018; Saunders, Lewis, & Thornhill, 2019). Positivism emphasizes theory testing, measurement reliability, and statistical generalization, making it particularly suitable for strategic management and SME research where theoretically derived constructs are analyzed using quantitative techniques (Onamusi et al., 2025; Hair et al., 2022; Umukoro et al., 2023). Prior studies investigating organizational resilience and firm sustainability have similarly

adopted positivist assumptions to model causal relationships using structured survey methods and multivariate statistical analysis (Duchek, 2020; Linnenluecke, 2017).

Consistent with this philosophical orientation, the study adopts a deductive research approach, whereby hypotheses are derived from established theoretical perspectives and subjected to empirical testing (Saunders et al., 2019; Trihudiyatmanto & Onamusi, 2023). Deduction is appropriate when research seeks to validate theoretical propositions through observable data and statistical inference. The study is informed primarily by Dynamic Capability Theory, Survival-Based Theory, and Contingency Theory, which collectively suggest that firms enhance performance and sustainability when they develop adaptive capabilities and align strategic responses with environmental conditions (Donaldson, 2001; Nelson & Winter, 1982; Onamusi, Adaptive, 2021; Teece, 2007). Within this framework, business resilience is conceptualized as a higher-order organizational capability that enables firms to anticipate disruptions, reconfigure resources, and maintain economic viability in turbulent environments.

To empirically evaluate these theoretical propositions, the study employs a cross-sectional quantitative survey design, examining the relationship between business resilience and economic sustainability among agro-allied SMEs at a single point in time. Cross-sectional designs are widely used in entrepreneurship and strategic management research because they permit the estimation of structural relationships across naturally occurring populations while remaining cost-effective and operationally feasible (Adepoju et al., 2024; Bryman, 2016; Kline, 2023). Although longitudinal designs provide stronger causal inference, cross-sectional approaches remain appropriate for theory-testing studies involving perceptual and capability-based constructs, particularly in contexts where firm-level panel data are limited (Hair et al., 2022; Oyedokun et al., 2023). This design is especially suitable in developing-economy settings, where data constraints often necessitate survey-based empirical strategies.

#### Population, Sample, and Sampling Technique

The target population for this study comprised 120 registered agro-allied SMEs operating in Osun State,

Nigeria, with owner-managers serving as the unit of analysis. Owner-managers were selected because they function as the primary strategic decision-makers responsible for resource allocation, capability development, digital positioning, and long-term sustainability initiatives. Methodological scholarship consistently recommends the use of top executives as key informants in strategic management research due to their holistic understanding of organizational processes, strategic orientations, and performance outcomes (Atuahene-Gima & Ko, 2001; Miller & Friesen, 1983). Their boundary-spanning roles place them in a unique position to provide reliable and firm-level insights that are difficult to obtain from lower-level employees.

Osun State provides an appropriate empirical setting given the increasing sustainability pressures confronting agro-allied enterprises, including market volatility, infrastructural deficits, and financing constraints typical of emerging economies. Despite these challenges, the region remains underrepresented in SME resilience scholarship, which has predominantly focused on Lagos and other major commercial centers in Southwest Nigeria. Examining firms within this context therefore contributes to improving the geographic diversity of empirical evidence in resilience and sustainability research.

Given the manageable population size and accessibility of firms, the study adopted a total enumeration (census) sampling strategy, whereby all 120 owner-managers were invited to participate in the survey. Census approaches are methodologically appropriate when the population is relatively small, identifiable, and reachable, as they eliminate sampling error and enhance the representativeness of findings (Saunders, Lewis, & Thornhill, 2019). Additionally, full population coverage improves statistical power and reduces concerns regarding sampling bias, thereby strengthening the external validity of the study within the defined geographic scope (Taherdoost, 2016). This approach aligns with best practice in SME research, where limited population sizes often justify complete enumeration rather than probabilistic sampling.

#### ***Instrument, Measurement, Pilot Study, Data Collection***

Data were collected using a structured, closed-ended questionnaire adapted from previously validated scales in resilience and sustainability literature. The instrument was organized into four sections covering demographic characteristics, business resilience dimensions, economic sustainability indicators, and relevant contextual variables. All items were measured on a six-point Likert scale ranging from *Strongly Disagree (1)*

to *Strongly Agree (6)*. The six-point format was intentionally selected to eliminate neutral responses and encourage more discriminating evaluations from respondents, thereby improving measurement sensitivity and reducing central tendency bias (Adeyemo et al., 2022; Onamusi & Olukolu, 2023).

To ensure contextual clarity and psychometric robustness, a pilot study was conducted among employees of selected agro-allied SMEs in Ibadan, a location with socio-economic characteristics comparable to Osun State. Twenty-four questionnaires were administered, representing approximately 20% of the study population, and eighteen valid responses were retrieved, yielding a response rate of 75 percent (Hair et al., 2019). Construct validity was assessed using Average Variance Extracted (AVE), with all constructs exceeding the recommended threshold of 0.50, indicating adequate convergent validity (Fornell & Larcker, 1981). Reliability was evaluated through Cronbach's alpha, and all variables recorded coefficients above 0.70, confirming satisfactory internal consistency (Oyedokun et al., 2023). Minor adjustments were subsequently made to item wording to enhance clarity prior to full-scale data collection.

Data collection was conducted through direct engagement with owner-managers over a four-week period. Participants were informed about the academic purpose of the study and assured of confidentiality and anonymity. Participation was voluntary, and informed consent was obtained before questionnaire administration. These procedures align with established ethical standards for organizational research. In all, one hundred and fourteen questionnaire were collected and considered usable.

#### **4. Analysis & Result**

The hypotheses formulated for this study were tested using Hierarchical regression analysis appropriate for examining moderating effect of digital marketing capability on the interaction between business resilience and sustainability of agro-allied SMEs in Osun State, Nigeria. Statistical significance was evaluated at the 5 percent level ( $p \leq 0.05$ ). As part of effort to ensure that Common Method Bias does not invalidate the result of the regression analysis Harman's single-factor test was conducted. All measurement items were entered into an exploratory factor analysis using an unrotated principal component solution. The results indicated that the first factor accounted for 37.1% of the total variance, which is below the recommended threshold of 50% (Onamusi & Ayo 2021). This suggests that common method bias is unlikely to threaten the validity of the study's findings.

**Table 1:**  
**Summary of Hierarchical Regression Analysis for the Moderating Effect of Digital Marketing Capability on the Relationship between Business Resilience and Sustainability of Agro-Allied SMEs in Osun State, Nigeria**

Model 1,2,3	Beta	t	Sig.	R	R <sup>2</sup>	Adj. R <sup>2</sup>	ΔR <sup>2</sup>	ΔF	Sig. F Change
(Constant) <sub>1</sub>	3.031	9.921	.000	.528 <sup>a</sup>	.279	.272	.279	43.262	.000
Business Resilience	.399	6.577	.000						
F & Anova Sig: 43.262 (1,112), p=.000									
(Constant) <sub>2</sub>	1.509	5.018	.000	.748 <sup>b</sup>	.559	.551	.280	70.484	.000
Business Resilience	.113	1.938	.055						
Digital Marketing Capability	.593	8.395	.000						
F & Anova Sig: 70.293 (2,111), p=.000									
(Constant) <sub>3</sub>	-15.085	-3.466	.001	.781 <sup>c</sup>	.610	.600	.052	14.598	.000
Business Resilience	3.647	3.936	.000						
Digital Marketing Capability	3.676	4.540	.000						
BR × DMC	-.656	-3.821	.000						
F & Anova Sig: 57.469 (3,110), p=.000									

a. Predictors: (Constant), Business Resilience

b. Predictors: (Constant), Business Resilience, Digital Marketing Capability

c. Predictors: (Constant), Business Resilience, Digital Marketing Capability, Interaction Term (BR × DMC)

d. Dependent Variable: Sustainability

Source: Researcher's Field Survey Results, 2026.

The regression analysis reveals significant insights into the moderating role of digital marketing capability on the relationship between business resilience and the sustainability of agro-allied SMEs in Osun State. Here is an interpretation of the findings, organized by each model in the analysis. The first model includes only business resilience as a predictor of sustainability, showing an R-squared value of .279, indicating that business resilience alone explains about 27.9% of the variation in sustainability. The significant F-statistic (43.262,  $p < .001$ ) indicates that business resilience has a significant effect on sustainability, with a standardized beta coefficient of .528 ( $p < .001$ ), suggesting a moderately strong positive relationship.

In the second model, digital marketing capability is added as an additional predictor alongside business resilience. This model shows a substantial improvement in the explanatory power, with an R-squared of .559, indicating that both predictors together explain 55.9% of the variance in sustainability. The change in R-squared (.280,  $p < .001$ ) reflects a statistically significant improvement in the model fit with the inclusion of digital marketing capability. Digital marketing capability has a highly significant positive effect ( $\beta = .650$ ,  $p < .001$ ), suggesting that it is a strong predictor of sustainability when combined with business resilience. However, business resilience's beta coefficient drops

from .528 to .150 ( $p = .055$ ), indicating a potential interaction effect.

The third model introduces the interaction term between business resilience and digital marketing capability, further enhancing the model's explanatory power with an R-squared of .610. This suggests that the full model, including the interaction term, explains 61% of the variance in sustainability. The interaction term itself is statistically significant ( $\beta = -.7190$ ,  $p < .001$ ), indicating that digital marketing capability significantly moderates the relationship between business resilience and sustainability, but the negative coefficient implies that the effect of business resilience on sustainability weakens as digital marketing capability increases.

The regression analysis supports rejecting the null hypothesis, as digital marketing capability has a significant moderating effect on the relationship between business resilience and sustainability. This suggests that while digital marketing capability can enhance sustainability, it simultaneously alters the influence of business resilience on sustainability, potentially requiring a balanced approach to maximize the positive outcomes for agro-allied SMEs. The findings of this study reveal several key implications for the management of agro-allied SMEs in Osun State, Nigeria. The results suggest that both business resilience and digital market-

ing capability are significant predictors of sustainability, and the interaction between these factors further influences sustainability outcomes.

### **Discussion of Findings**

The findings of this study provide strong empirical support for the proposition that business resilience constitutes a critical driver of organizational sustainability. Consistent with prior research, resilient firms demonstrate superior adaptive capacity, enabling them to respond effectively to environmental disruptions while maintaining operational continuity. For instance, Duchek (2020) conceptualizes organizational resilience as a meta-capability that allows firms not only to withstand shocks but also to renew and transform in response to adversity. Similarly, Linnenluecke (2017) argues that resilience-enhancing capabilities improve firms' preparedness, reduce vulnerability, and support long-term organizational viability.

These outcomes reinforce the central logic of Dynamic Capability Theory, which posits that sustainable performance depends on a firm's ability to sense environmental shifts, seize emerging opportunities, and reconfigure resources accordingly (Teece, 2007). Empirical evidence further suggests that dynamic capabilities are positively associated with competitive advantage and long-term performance across uncertain environments (Fainshmidt et al., 2016). Within agro-allied SMEs, resilience appears to function as a higher-order capability that embeds flexibility into strategic and operational processes, thereby strengthening environmental, economic, and social sustainability outcomes.

However, the relationship between resilience and sustainability is not universally linear. Emerging scholarship cautions that resilience initiatives overly concentrated on short-term recovery may inadvertently constrain investments in innovation and strategic renewal. Duchek (2020) notes that resilience routines can become over-institutionalized, potentially limiting organizational agility. This observation aligns with Contingency Theory, which emphasizes that organizational effectiveness depends on achieving alignment between strategic actions and contextual demands (Donaldson, 2001). Accordingly, resilience contributes most meaningfully to sustainability when it is deliberately integrated into long-range strategic planning rather than deployed merely as a reactive mechanism. This nuance underscores the importance of strategic coherence in translating adaptive capacity into sustained performance.

The study further establishes that digital marketing capability significantly moderates the resilience–sustainability nexus. Firms possessing advanced digital capabilities are better positioned to interpret market signals, maintain customer engagement during disruptions, and diversify revenue streams. Research by Bhadrwaj et al. (2013) highlights how digital technologies enhance organizational responsiveness by enabling real-time information processing and strategic agility. More recently, Vial (2019) emphasizes that digital transformation strengthens firms' adaptive capacity, allowing them to respond proactively to environmental turbulence.

From a dynamic capability perspective, digital marketing capability represents a strategic resource that enhances organizational sensing and responsiveness. By leveraging analytics, interactive platforms, and data-driven insights, firms can operationalize resilience more effectively and convert adaptive responses into sustainable value creation. Nevertheless, the moderating influence of digital marketing remains contingent upon strategic alignment. Kane et al. (2015) observe that digital initiatives generate performance benefits only when integrated with broader organizational strategies and supported by complementary capabilities. Similarly, Warner and Wäger (2019) argue that digital transformation without corresponding structural and cultural adaptation can strain organizational resources and limit performance gains. These insights reinforce the contingency argument that capabilities generate value only when appropriately configured within the firm's strategic architecture.

These findings suggest that the sustainability benefits of digital marketing emerge when it complements rather than substitutes core resilience capabilities. Firms that successfully orchestrate resilience with digitally enabled strategic processes are more likely to achieve durable competitive advantage. Overall, this study advances capability-based strategy research by demonstrating that sustainability in agro-allied SMEs is best understood through the joint deployment of resilience and digital capabilities. The findings extend dynamic capability scholarship into an underexplored emerging-market context and clarify the conditional mechanisms through which resilience translates into sustainable outcomes. By highlighting the synergistic relationship between adaptive resilience and digital responsiveness, the study contributes to a more nuanced understanding of how firms sustain performance in increasingly volatile operating environments.

### **5. Conclusion, Recommendation, Future Studies**

This study concludes that business resilience operationalized through behavioural resilience, business agility, operational resilience, and strategic resilience exerts a significant positive influence on the environmental, economic, and social sustainability of agro-allied SMEs in Osun State, Nigeria. Additionally, digital marketing capability strengthens this relationship by enhancing firms' adaptive capacity, market responsiveness, and long-term viability. The results align with Dynamic Capability Theory, Survival-Based Theory, and Contingency Theory, collectively affirming that sustainable performance depends not only on the possession of strategic capabilities but also on their alignment with environmental conditions. Resilient firms that strategically integrate digital competencies are more likely to achieve continuity, competitiveness, and sustainable growth in volatile business environments.

Agro-allied SMEs should institutionalize resilience by strengthening operational flexibility, diversifying supply chains, and embedding structured risk management and continuity planning into their strategic processes. Such measures will enhance preparedness for disruptions while supporting long-term sustainability objectives. Managers should also invest in scalable

digital marketing capabilities including data analytics, e-commerce platforms, and targeted digital communication to improve market intelligence, expand customer reach, and reinforce competitive positioning. Importantly, digital initiatives should be integrated with broader resilience strategies to avoid resource fragmentation and ensure strategic coherence. From a policy perspective, governments and industry associations should facilitate access to digital infrastructure, provide targeted training in resilience and digital strategy, and develop incentive mechanisms that encourage sustainable business practices. These interventions would strengthen the adaptive capacity of agro-allied SMEs, enhance sectoral competitiveness, and promote inclusive and sustainable economic development.

This study provides valuable insights into business resilience, digital marketing capability, and sustainability in agro-allied SMEs, but it also suggests promising future research. The cross-sectional design makes causality inference and capability development over time difficult. Longitudinal studies should examine resilience capabilities and their sustainability effects across organisational growth and environmental turbulence. Second, this study examines agro-allied SMEs in one subnational context. Replicating the model in multiple regions or emerging economies would improve external validity and allow comparisons of institutional environments and resilience–sustainability. Third, while digital marketing capability was modelled as a moderator, future research could examine its multidimensional structure by examining analytics capability, platform integration, and digital customer engagement. Such disaggregation would clarify how digital capabilities boost adaptive capacity. Fourth, future studies may add strategic capabilities like innovation, supply chain resilience, and absorptive capacity to this framework to create a more comprehensive capability orchestration perspective on SME sustainability. Finally, adding objective performance indicators to perceptual measures may improve empirical robustness and reduce method bias. Mixed-method designs using survey data and qualitative insights may illuminate resilience micro processes in resource-constrained environments. These directions would advance capability-based scholarship by improving theoretical understanding of how SMEs use complementary resources to compete in uncertain times.

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# TECHNICAL SCIENCES

## DEVICES AND METHODS FOR AUTOMATED TESTING OF ELECTRIC MOTORS

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## ПРИБОРЫ И МЕТОДЫ АВТОМАТИЗИРОВАННЫХ ИСПЫТАНИЙ ЭЛЕКТРОДВИГАТЕЛЕЙ

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### Abstract

The article discusses automated measuring equipment that ensures the consistency of their technical characteristics and operational parameters in accordance with the requirements necessary for the operation of electric motors. There are various automated testing stands for different types of electric motors. In our case, a small-sized device is proposed for determining the input and output characteristics of electric motors, which can use various devices, including electric motors, as a load. The small-sized device is designed for an operational assessment of the condition of electric machines. The proposed small-sized device allows testing of electric motors at home, in a repair shop or at the enterprise. This allows technical personnel to assess the need for repair or replacement of certain electric motors and generators by conducting both low-voltage and high-voltage tests.

### Аннотация

В статье рассматриваются автоматизированные средства измерительной техники, обеспечивающие согласованность их технических характеристик и эксплуатационных параметров в соответствии с требованиями, необходимыми для эксплуатации электродвигателей. Существуют различные автоматизированные стенды для испытания электродвигателей различных типов. В нашем случае для определения входных и выходных характеристик электродвигателей, предлагается малогабаритный прибор, в котором в качестве нагрузки может быть использованы различные приборы, в том числе и электродвигатели. Малогабаритный прибор предназначен для оперативной оценки состояния электрических машин. Предлагаемый малогабаритный прибор позволяет проводить испытания электродвигателей дома, в ремонтном цеху или на предприятии. Это позволяет техническому персоналу оценить потребность в ремонте или замене определенных электродвигателей и генераторов путем проведения как низковольтных, так и высоковольтных испытаний.

**Keywords:** active resistance, electronic load, electric power supply, small-sized device, solar panels, batteries: helium, alkaline, multimeter.

**Ключевые слова:** активное сопротивление, электронная нагрузка, источник электрического питания, малогабаритный прибор, солнечные батареи, аккумуляторы: гелиевые, щелочные, мультиметр.

### Введение

Для имитации работы электрических нагрузок широкое применение находят устройства, представляющие собой схему, поглощающую электрическую энергию источника и функционально являющиеся регулируемым эквивалентом активного сопротивления с возможностью поглощения больших мощностей. Такая электронная нагрузка (ЭН) позволяет испытывать современные полупроводниковые преобразователи электрической энергии для

реализации всевозможных схмотехнических решений. Большинство электронных нагрузок способны выполнять как роль нагрузочного элемента, так и средства измерения с возможностью отображения на дисплее различных параметров нагружаемого источника (ток, напряжение, мощность и т.д.) [1.2].

Цель настоящего исследования было создание малогабаритного прибора «Электронная нагрузка для источников питания».

Изобретение относится к направлению приборостроения, в области разработки различных источников электрического питания.

*Описание предлагаемого изобретения.*

В имеющихся аналогах приборы электронной нагрузки имеют несколько блоков различного назначения и вмонтированы в один общий блок. При этом они имеют ряд недостатков, например, они не малогабаритный, требующих особых условий эксплуатации.

В имеющихся аналогах приборы электронной нагрузки имеют несколько блоков различного назначения и вмонтированы в один общий блок. При этом они имеют ряд недостатков, например, они не малогабаритный, требующих особых условий эксплуатации.

Малогабаритный прибор: «Электронная нагрузка для источников питания» предназначенный для тестирования режимов работы различных источников питания, и отличающийся тем, что

- позволяет существенно ускорить процесс тестирования любых источников электропитания, а также обеспечить безопасность процесса и эффективность;

- может выполнять задачу нагрузочного элемента, с отображением различных параметров нагружаемого источника;

- может быть использована не только как нагрузочные элементы, но и как средства измерения основных параметров источников питания.

- тестирование различных источников питания:

- Аккумуляторов( гелиевые, щелочные, легионные);

- Лабораторных блоков питания;

- Преобразователей напряжения;

- Солнечных батарей;

- Зарядных устройств (смартфонов, планшетов, ноутбуков и других электронных приборов).

И состоящий из:

- мультиметр- измеряющий ток, напряжение потребляемой нагрузкой;

- вентилятор;

- радиатор, на котором установлены четыре полевых транзистора;

- на монтажной плате расположена четырехканальная микросхема (операционный усилитель) LM 324;

- на основе микросхемы TL 431 реализован параметрический стабилизатор напряжения;

- резистор R 23 (4,7 кОм) регулирует ток нагрузки от 0 до 10 ампер.

*Включающий* работу в различных режимах потребления:

- Режим постоянного тока потребления;

- Режим постоянной мощности;

- Режим постоянного сопротивления;

Имеющая следующие характеристики:

- Максимальная мощность нагрузки P = 150 Вт.

- Регулировка тока в пределах от 0 до 20 ампер.

- Максимальное входное напряжение – 7-вольт.

- Размеры: 160мм x 130мм x 110мм)

Внешний вид малогабаритного прибора «Электронная нагрузка для источников питания» подключённый к тестируемой нагрузкой предстален на рис.1. «Электронная нагрузка для источников питания» **собрана на операционном усилителе LM324.**



*Рис. 1 Малогабаритный прибор «Электронная нагрузка для источников питания» подключённый к тестируемой нагрузкой*

*Установка позволяет работу в независимых режимах.*

- выполнять задачу нагрузочного элемента, с отображением различных параметров нагружаемого источника

- может быть использована не только как нагрузочные элементы, но и как средства измерения основных параметров источников питания.

- позволяет подтвердить заявленную емкость аккумулятора.

В электронной нагрузке вся мощность выделяется на силовых транзисторах. При этом электронную нагрузку можно делать на любую мощность

*Результаты*

Поскольку электронные нагрузки предназначены для имитации различных режимов работы источников питания, они являются эффективным средством повышения результативности испытаний. Приведем несколько примеров. Проверка AC/DC и DC/DC преобразователей. С помощью

электронной нагрузки можно наиболее быстро и эффективно проверить работу AC/DC и DC/DC-преобразователей. ЭН может имитировать включение и выключение устройства, проверять уровни пульсаций напряжения и тока, оценивать уровень шумов и помех и т.д.

Проверка аккумуляторов. Проверка аккумулятора с помощью ЭН в режиме PPM обеспечивает постоянное потребление энергии во всем диапазоне времени тестирования и предоставляет истинные, либо максимально близкие к истинным, результаты.

Проверка солнечных батарей. С помощью ЭН, запрограммированной на имитацию различных состояний, можно проверять портативные устройства при различных состояниях питания, таких как:

«спящий» режим, энергосбережение и режим полной мощности.

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