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Spatio-Temporal Dynamics of the Global Medical Tourism

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Abstract:

The study focuses on the emergence and development of medical tourism at the global and country levels. Article provides a definition of a medical tourism, reveals the stages of its formation – from the origin at ancient cultures to modern high technologies of biomedicine. The country ranking results held on the basis of an integrated index, featuring the assessment of the level of equipment at the medical infrastructure, the maintenance of hospitals, the availability of qualified specialists is discussed. The best practices of medical tourism are analyzed. It is shown that due to lower prices and higher service quality, the geographic vector of those wishing to receive treatment abroad is shifting to Asian countries. The need to strengthen the attention of government agencies to the development of medical tourism in the public and private health sectors is noted.

Keywords: medical tourism; treatment; health resort; spa; clinic; public health; sanatorium

JEL Classification: I11; L83.

Introduction

Health preservation of the population is among the main duties of public authorities, social structures, medical, tourist and recreational institutions. Medical geographers also participate in resolving this issue, along with doctors and other specialists of the medical sector (Chistobayev and Semenova 2011). Over the years of development, the medical-geographical knowledge has undergone a significant evolution (Semenova and Chistobayev 2015). Modern medical geography studies do not only consider the influence of habitat characteristics on public health, the emergence and spread of diseases, but also the territorial organization of health care, the regional specificity of management and marketing of medical services (Semenova 2011, 2016). Several subject categories are singled out within the medical geography domain, including medical regional studies, aimed at investigating the geographic features of the formation and preservation of public health in countries and regions of the world. A specific subject of research in the field of medical geography is medical tourism – a relatively new type of activity and a new sector of the economy. The purpose of this study is to analyze and assess the prerequisites for the emergence of medical tourism in countries and regions of the world, to identify its modern functions and development path in the spatio-temporal dimension. The objectives set require clarification of the definition of medical tourism, an in-depth assessment of the history of its emergence and development, identification of best practices of medical tourism that are the cause of the geographical vector transformation in this type of practical activity.

1. Research Background

The state and dynamics of the habitat determines the profile and development level of the health sector in countries and regions. Favorable conditions for the formation and preservation of public health predetermine the rise of

medical institutions not being limited by the focus on local residents, but serving people incoming from other countries and regions, wishing to receive medical services, including clinical treatment and rehabilitation. Thus, the territorial divisions of the healthcare sector (*i.e.* territorial healthcare) acquire the signs of specialization, *i.e.* the economy sector that provides health, treatment, diagnostic and clinical services for external consumers (Chistobaev and Semenova 2017). Their quantitative set and qualitative level depend on a large number of factors of global, national and local levels.

Until the health care system was locked within the national borders, the situation on the external market of medical services was relatively constant – only a small number of countries had developed infrastructure for the development of balneological resources. Mass public globalization has forced a variety of business entities to join medical services market. Successful market penetration is achieved by those of them who have knowledge in the field of management and marketing, those thinking globally, and acting locally. The acquisition and mastering of this type of knowledge is undertaken within a geography discipline, which has an integrated approach to the understanding of natural and socio-economic factors in the development of the territory.

Medical tourism as an object of cognition can be studied from the theoretical and methodological positions of medical geography as a science of man, nature and society (Semenova 2010). First of all, within one of its sections – medical regional studies, which is aimed at studying both natural and social phenomena in the countries of the world.

2. Methodology

Scholarly research in the field of health geography and all its components, including medical geography, is a complex research area for many reasons. Firstly, medical care was predominantly locked within the state borders before the establishment of the World Health Organization (WHO 1948). Secondly, centralized statistical data on medical diagnostic and clinical services are insufficient for conducting research on territorial health care, as well as lacking information on the services rendered to medical tourists. Thirdly, information on the Internet is usually presented by advertisers, among which, in terms of medical tourism, tour operators prevail, and not doctors, which does not guarantee the reliability of the information. Considering these circumstances, current research relies on such additional sources of data as individual indicators provided by sanatoriums, health resorts, and other medical institutions, the results of the global rankings of countries on the index of medical tourism. Open-source data available on the Internet is also used (Banerjee et al. 2018). First, this refers to the indicators of prices for treatment by types of morbidity and the countries of the world.

3. On the definition of medical tourism

The term “medical tourism” appeared in the scientific literature in the 1980s (Semenova and Chistobaev 2017). The foregoing does not imply that this type of tourism did not exist previously – it was considered in the structure of balneological or health-improving tourism. Allocation of this type of activity to an independent type is contributed by a combination of factors: globalization, the development of information technology, the improvement of the quality of life, the growth of investments in health care. Medical tourism is associated with the stay of a person is not just in a health-improving institution, but in a clinic equipped with special equipment, the medical-geographical management, the duties of accrediting bodies of travel agencies. Tourist-patient can live in a hotel, boarding house or sanatorium, while being treated in a clinic (Mozokina 2014).

The medical tourism provides are not only tour operators, as is the case with other types of tourism, but also medical professionals: the tour operator provides the tourist with an exit / entry and a package of non-medical services, and the doctor conducts diagnostics, treats, operates and rehabilitates. In health tourism sector, the functions of doctors and tour operators are different: doctor of a medical center suggests on the type of natural conditions (the “what”) and the time of travel (the “when”) most suitable for health; the travel company manager selects a place for treatment in accordance with the recommendations of the doctor (the “where”); the doctor of the resort knows in what combination and by what methods to appoint baths with mineral waters, drinking treatment, mud applications, etc. – the “how” (Manshina 2014).

Medical tourism can be presented in a narrow and broad sense. In the first sense, it is the migration of people to a place of treatment, rehabilitation and recreation in another country or in another region. In the second sense, this is the sphere of medical industry and hospitality, related to a single system of markets with a developed infrastructure that unites both medical institutions and various aspects of business, namely insurance, banking, legal assistance, transport and communication (Shchekin 2013). Both understandings of medical tourism do not contradict each other, but complement and enrich the content of the definition of “medical tourism”.

Summarizing the aforesaid, the definition of medical tourism formulated as follows: *medical tourism is a specially organized departure of people outside their country or region in order to obtain the necessary clinical intervention for medical indicators*. Medical tourism is not identical to medical health tourism: the first necessarily assumes the patient's stay in the clinic, and the second performs the function of rehabilitation through recreation.

4. The medical tourism formation stages

Medical tourism has undergone a long development path (History of medical ...), dating back to the emergence of medicine, *i.e.* the time of Hippocrates (Chistobayev and Semenova 2010). Before forming into an independent scientific discipline and an economy sector six evolutionary stages of development have passed.

The first stage is the formation of ancient cultures, when the state of human health was associated exclusively with God. Religious rituals, combined with water procedures in the basins, were performed in the temples created by the Sumerians four thousand years B.C., and the belief in the divine beginning was strengthened during the healing of the patient. Two thousand years B.C. the temples were built on the territory of St. Moritz (Switzerland) with iron-enriched mineral springs, their waters were used for drinking and bathing, which gave people healing effect. In ancient Greece, at the temples of Asclepius and Epidauros there were thermal springs, snake farms and sports grounds. In ancient Rome, hot springs (thermae) served as therapeutic, trading and social centers for rich people.

The second stage covers the middle Ages, when the pilgrimage of Europeans to the countries of Asia was activated in the strive for using the achievements of oriental medicine. In the mineral springs of medieval Japan, wounds were healed and warriors recovered after the battles. In Egypt, in the city of Cairo, in the middle of the XIII century, the largest hospital of Mansuri for eight thousand people was built. Many foreigners aspired to it, regardless of their faith.

The third stage is the Renaissance (XIV – XVII centuries). At this time, there is the term “salud per aqua” (Latin), in the abbreviation – SPA, which can be interpreted as “the blessing coming with water”. SPA originated in Switzerland (St. Moritz), Germany (Baden-Baden), Czech Republic (Karlsbad, modern city of Karlovy Vary), France (Vichy), and England (Aachen and Bath).

The fourth stage (XVIII – XIX centuries) is characterized by the formation of a network of resorts in Europe (Nice in France, Monte Carlo in Monaco, Capri in Italy, Marcial Waters, Matsesta and Caucasian Mineral Waters in Russia). Now there was also a mass flow of tourists to the countries of the New World, where the art of healing was well mastered by the aborigines.

The fifth stage coincided with the industrial boom in the 20th century in European countries, the United States and Russia, which also affected the social aspect of life of the population. Tourism with therapeutic and diagnostic purposes has become fashionable for elite individuals of the ruling regimes. The struggle of workers for their rights also intensified the activities of sanatoriums and resorts – workers in trade union were resting and receiving treatment using travel vouchers. In a number of countries associations on medical specialties have been formed, whose task was to develop educational and professional principles of standards around the world.

The sixth stage – medical tourism of the XX – beginning of the XXI centuries: use of high-tech biomedicine, unification of national and international legislation, creation of a worldwide information space, the formation of an international market of medical services. Insurance companies are able to offer treatment, including operations, in other countries. People have begun to carry out “health tours” to those countries where treatment is provided with guarantees, utilizing innovative methods of operations and rehabilitation at affordable prices. Each country has gained a chance of success in a competitive struggle in the medical tourism market.

5. Medical tourism as an economic sector

Solving the problem of preserving health of the population, modern medical tourism has become a sector of the economy and a factor of sustainable social and economic development for many countries of the world (de la Hoz-Correa, Muñoz-Leiva and Bakucz 2018). Investing in this type of activity, countries motivate their state and private entities to train professional specialists, build comfortable clinics, master new technologies.

Over the past two decades, revenues from medical tourism have been steadily growing and, according to various estimates, make up between 15 to 20 % of tourism revenues in general. The annual increase in the volume of medical tourism in 2012 was 9.9 %, and in 2016 – 15 % (Marchenko 2013). The world market of medical tourism in the period from 2014 to 2016 has doubled, amounting to 120 billion US dollars by the end of the period (Chistobayev and Semenova 2017). The annual increase in the volume of medical tourism in the near future is expected to be at the level of 18 – 20 %, with the accelerated growth rates being characteristic for the countries of

Eurasia (Chistobaev and Semenova 2017). The high potential of the industry will contribute to GDP growth, job creation in the sphere of high technologies, strengthening of the state of individual and public health, which should be regarded as one of the main factors of sustainable development.

A full range of medical services for tourists can be created with government support and business interest in the development of health infrastructure. The objectives of the authorities include the creation of enabling conditions for medical institutions to receive international accreditation, quality certificates and transparency of clinic statistics, reliable operation of transport routes and communication lines, competition of prices in the market of medical services. The business objectives are to ensure the quality of the hotels and related service facilities, including beaches, sports grounds and other. Common objectives are the formation of well-trained medical personnel, the introduction of modern methods of treatment and rehabilitation.

The economic efficiency of medical tourism is achieved with the right choice of the type of services that citizens of other countries and residents of other regions of the country can use. A high level of competitiveness is characteristic for such types of clinical services as plastic and cosmetology surgery, cardiology and cardiosurgery, dentistry, orthopedics, oncology, reproductive medicine, bariatric surgery, diagnostic imaging, laboratory diagnostics (statistics and facts); each of the aforementioned types is defined by a specialization of clinics that position them in the world market. In the growing competition, those countries that have innovative technologies of operation and rehabilitation, qualified specialists, highly equipped medical and tourist service infrastructure are among the leaders.

The highly competitive international market of medical tourism has led to the formation of international associations for every specialized treatment in demand. Of the large number of them, we will single out several of the most active and gaining authority on the global level: Medical Tourism Association, European Medical Tourism Alliance, International Medical Travel Association, International Medical Travel Association, International Association for Medical Assistance to Travelers. The Russian Association of Medical Tourism has been established and is also actively operating in the Russian Federation. The associations unite professionals in the field of medical tourism organization, whose mission is to provide information on companies participating in the medical tourism market, protect consumers' interests and optimize the activities of medical organizations included in this field.

6. Leading countries in the global ranking of medical tourism

The Medical Tourism Association (MTA) together with the International Center for Health Research (IHRC) have developed the Medical Tourism Index (MTI), which determines the attractiveness of a country for foreigners interested in receiving treatment abroad (Medical tourism association 2017). The aggregate index is calculated by 30 indicators, reflecting the level of equipping hospitals with medical infrastructure, the preparedness and experience of specialists, the image and security of the country, the cost of treatment, etc. The corresponding calculations are carried out according to data for 2014 and 2015 (table 1).

Table 1. The Country ranking leaders by the conditions for medical tourism development

Rank	2014		2015				
	Country	Index score (out of 100)	Country	Index score (out of 100)	Score by subindexes*		
					1	2	3
1.	Canada	76.87	Canada	76.62	1	4	4
2.	UK	74.85	UK	74.87	2	17	5
3.	Israel	74.17	Israel	73.91	4	11	1
4.	Singapore	73.96	Singapore	73.56	3	15	6
5.	Costa-Rica	72.78	India	72.10	12	1	3
6.	Italy	72.01	Germany	71.90	5	18	2
7.	Germany	70.69	France	71.22	6	13	8
8.	Philippines	70.66	South Korea	70.16	10	19	7
9.	Japan	70.40	Italy	69.50	7	8	11
10.	France	70.22	Columbia	69.48	17	2	12

* 1 – economy, life safety, country image, exchange rate profitability; 2 – natural and cultural-historical attraction for tourists, the cost of treatment, living expenses; 3 – healthcare standards, qualification of doctors, friendliness of staff.

Source: based on Medical Tourism Index, 2016 URL: <http://www.medicaltourismindex.com> (accessed 29.07.2017).

According to the results of 2015, Canada has the highest index of favorable conditions for the development of medical tourism. Having a common border with the USA, this country attracts rich clients from its southern neighbor to its medical facilities. The attractiveness of tourists to Canada with medical purposes is facilitated by the

high competitiveness of private clinics (especially surgical and dental, equipped with high-tech infrastructure), a positive image in the world, a creative population, the friendliness of staff and doctors.

In second place in the global ranking is the UK – the developed cultural superpower with a rich and prosperous heritage. With the relatively developed manufacturing sector of the economy, the service sector accounts for 78% of GDP, with medical facilities being, in aggregate, the largest taxpayer. In all the subjects of the United Kingdom (England, Northern Ireland, Wales and Scotland), both the public and private sectors of health services are developed (Page *et al.* 2017).

The third line in the ranking is steadily occupied by Israel. This Mediterranean country is located on the shores of the unique Dead Sea, it has a technologically advanced market economy, a high level of education and creativity of the population, one of the most advanced medicine in the world. Israel is the leader in the reception of medical tourists from the countries of the former Soviet Union, which is promoted by the developed tourist service and Russian-speaking personnel.

The fourth place in the ranking is rather specific – the city-state of Singapore. Medical clinics work through medical agencies, and hotels are full partners of medical clinics, which are characterized by high technologies and quality of service standards, friendly attitude of staff, strict hygiene requirements, comprehensive treatment and rest.

India in 2015 was among the leading countries of medical tourism due to the presence of traditional eastern medicine, natural and geographical prerequisites and high qualification of specialists. The share of tourists with medical purposes in the general flow of tourists is significant – about 0.5 million people, it is steadily growing.

Germany – the most developed country in the European Union, ranks fourth in the world in terms of nominal GDP, with the share of services reaching 70%. The healthcare system includes numerous clinics, including multi-profile, as well as rehabilitation centers and certified resorts. The health system, especially rehabilitation in Bavaria, is considered one of the best in the world. Hundreds of millions of Euros are invested in the modernization of German clinics, and annual health care expenditures make up about 11% of GDP (Medical Tourism: Diagnosis ...). Because of the high prices for treatment among tourists with medical purposes, mainly elite segments of the population of developed countries are represented (Kovaleva 2015).

France is one of the leading countries of the European Union. The French shores of the Mediterranean Sea locate the widely-known resorts, making the tourism industry an important component of the service sector. At least 10% of GDP is channeled to the health sector, at the nominal – the sixth in the world. The level of health care is high, but the prices for treatment are also high.

South Korea has a high-tech economy, a developed service industry. The health system is characterized by universal insurance, funded by contributions, government subsidies and taxes on the sale of tobacco products (Rokni, Turgay, and Park 2017). A land border exists only with one country, North Korea, with which there are no diplomatic relations. All foreign tourists arrive in South Korea by air or by sea.

Italy is a Mediterranean country with a large number of World Heritage sites, high quality wines and other food products. In the total labor market, 69% falls on the service sector. The development of medical tourism is hampered by weak control over the health service by the state and the high cost of treatment.

Colombia closes the top ten of the leading countries according to 2015 estimate. The popularity of tourism in this country is given by favorable weather conditions and low cost of treatment. Constraints to the development of tourism in general and medical tourism in particular are the risks associated with drug trafficking and security.

The ranking indicators of the leading countries of medical tourism do not always correlate with the leaders in terms of the number of tourists arriving in the country, intending to use medical services in a foreign country. This is due to different levels of equipment of hospitals with high-tech equipment and doctors' qualifications, significant differentiation of prices for treatment and rehabilitation, and the changing geopolitical situation in the world. The quantitative and qualitative dynamics of these reasons caused changes in the rankings held in 2014 and 2015 (Muth 2017).

7. Best practices for medical tourism

The geographical orientation trend in medical tourism is changing: before the end of the previous century, medical services to foreigners were almost exclusively offered in Europe, recently the role of the Asia-Pacific region has increased substantially. The top ten countries leading in terms of the number of tourists coming for clinical treatment include India, Hungary, Mexico, Singapore, Thailand, Barbados, Brazil, Israel, South Korea, Turkey (Marchenko 2013). Only one European country is on the list – Hungary (Formadi, Mayer and Péntzes 2017). As for the main suppliers of clients for the medical tourism industry, the picture is reversed: more than 63% of the world market of

medical tourism falls on the five countries of North America and Europe – the USA, Germany, Japan, France and Austria (Bateneva 2014).

Table 2 shows the cost of some common surgical operations in the US and three Asian countries – Thailand, Singapore, and Malaysia. The discrepancies in prices are very significant. The increase in the cost of treatment becomes a serious problem not only for patients, but also for employers, social funds, and insurance systems; indirectly, it touched on some aspects of doing business. The countries in which medical tourism relies on quality treatment at low prices and thrilling impressions of visiting a new country win.

Table 2. Comparative prices for surgical operations in the USA, Thailand, Singapore and Malaysia (thousand US dollars)

Type of surgical operation	USA	Thailand	Singapore	Malaysia
Coronary bypass surgery	130	11	18,5	9
Cardiac valve prosthesis	160	10	12,5	9
Coronary angioplasty (vascular surgery)	57	13	13	11
Prosthesis of the hip joint	43	12	12	10
Hysterectomy (removal of the uterus)	20	4,5	6	3
Prosthesis of the knee joint	40	10	13	8
Spondylodesis (surgical intervention on the spine)	62	7	9	6

Source: Abd Mutalib *et al.* 2017; Marchenko 2013; Mohezar, Moghavvemi, and Zailani 2017

Because of the high cost of medical services, more than a million US citizens travel abroad annually for treatment and diagnostics, spending up to 5,000 USD or more on such a trip (Table 3). When choosing a place of treatment, Americans generally use information from the Joint Commission International, which checks and standardizes hospitals for foreigners around the world. Annually more than 1.5 million Americans travel to abroad with medical purposes (Marchenko 2013). The UAS is being annually visited by more than 0.5 million patients (Doctor 2016).

Table 3. Financing savings by the US citizens in the event of obtaining medical treatment abroad, %

First group of countries	Second group of countries
Thailand (50 – 75)	Taiwan (40 – 55)
Turkey (50 – 55)	South Korea (30 – 45)
Costa-Rica (45 – 65)	Singapore (25 – 40)
Mexico (45 – 65)	Brazil (20 – 30)

Source: Menshina, 2014

Medical services in Germany are used by patients from the United Kingdom, the USA, Canada, Ireland, the countries of the Persian Gulf, Bulgaria, Russia, Romania (Kovaleva 2015). The spectrum of demand is wide – from full body examination to an in-depth analysis of specific organs and systems. In the treatment of oncology, an integrated approach is used (chemotherapy, radiotherapy and, if necessary, surgical intervention). Surgery is dominated by endoscopic operations, which are based on accurate beam guidance using a computer tomograph (Medical tourism in Germany). The cost of medical services is much higher than in Asian and Eastern European countries, where medical tourism is developed.

According to World Health Organization, Japan is among the leading countries by the quality of medical services. In 2014, it was among the top-ten countries. The effectiveness of the organization of the public health system is proved by the high life expectancy of the population: men – 79 years, women – up to 86 years (Medical tourism in Japan). The state authorities by all means encourage attraction of tourists for treatment, therefore medical tourism develops rapidly, and has a high level of service. Numerous thermal springs are used to treat the nervous system, skin diseases, and internal organs. Traditional oriental medicine retains its role. Japan is the world leader in the introduction of high-tech diagnostic equipment. Among medical tourists, citizens of Russia, Australia, and China predominate.

Due to traditional methods of healing patients and development of modern technologies in the world market, South Korea retains its positions. The annual increase of tourists arriving in this country reaches 33%. Basically, these are the Chinese, Americans, Japanese, and Mongols; the flow of medical tourists from Russia is increasing. Prices for services are lower than, for example, in the US or Japan. It is expected that the flow of medical tourists by 2020 will exceed 1 million people.

Israeli medicine provides tourists with a wide range of treatments and relies on a high-level service. Medical services are based on the latest achievements of scientific developments and a professional approach to

innovation. For example, Rabin Medical Center is one of the leading clinics for cardiosurgery and lung transplantation (Rabin Medical Center 2016). Hospitals compete among themselves and rival for patients.

In Switzerland, the law enshrines compliance with the highest standards of quality of medical services, the same in all clinics. Medical centers help tourists traveling with medical purposes to obtain visa support. Medical tourists are provided with a selection of hotels located near the clinics.

Each year the flow of tourists to China is growing with a purpose to obtain medical services based on balanced methods of treatment based on classical Chinese medicine and advanced Western technologies. Chinese doctors prefer to examine a person, not a disease, believing that the disease is just a sign of an imbalance in the body. The popularity of Chinese medicine is growing rapidly among Russian citizens.

The highest rate of recovery is demonstrated by medical tourism in the United Arab Emirates, Thailand, and Turkey. Many clinics of these countries have international accreditation, they use unique techniques that combined the ancient teachings of the East with modern Western methods of diagnosis and treatment. Medical services are combined with recreation of patients at the sea (Abd Mutalib *et al.* 2017, Alsarayreh *et al.* 2017, Moghavvemi *et al.* 2017, Ormond and Sulianti 2017).

In recent years Russia has done a lot to equip clinics with high-tech equipment, not only in Moscow and St. Petersburg, but also in other cities. The cost of treatment in the regional centers is 25-35% lower than in the capitals. When forming the destination of medical tourism in St. Petersburg, the original experience in clustering medical institutions is accumulated (Levterova 2016). But so far inbound medical tourism has not been significantly developed: among the traveling Russians for obtaining clinical treatment (at least 8 million people), the dominant part is internal displacements (Erofeeva 2016). Due to the economic downturn in the country and, as a result, the decline in the standard of living of the population in the period after 2014, the number of Russians traveling abroad for treatment has drastically decreased. The average check, which the Russian leaves at reception of medical services, in 2016 in comparison with 2014 was reduced by 2.5 times (Burchakov 2016); Russians prefer to undergo diagnostics abroad, and to be treated in domestic clinics. The demand for treatment in the Great Britain, Germany, Canada, the USA, and Switzerland has noticeably fallen. The flow of medical tourists to China, India, Thailand, South Korea, as well as to some post-Soviet countries remained at the same level, and for some types of diseases even increased, which can be explained by affordable prices.

Conclusion

Medical tourism has emerged from the composition of the balneological and therapeutic-health-improving types of tourism during their evolutionary development. Its specificity is that the tourist acts as a user of both the socio-cultural complex of the tourism industry and the social institute of medicine.

The entities organizing medical tourism are both medical professionals and tour operators. The tourist-patient stays in the clinic with medical equipment and elements of medical infrastructure in order to obtain the necessary medical intervention for medical indications.

Modern medical tourism receives accelerated development in the countries of the East. The main reasons for the changing geography are affordable prices for treatment, the combination of traditional eastern medicine with the achievements of Western technologies, and the Eurasian direction of the global geopolitical vector.

The future development of medical tourism needs intensified attention of state authorities to the accreditation of medical institutions, to establishing reasonable pricing for the provision of medical services in the public and private sectors of health care, to the establishment of medical companies with foreign participation.

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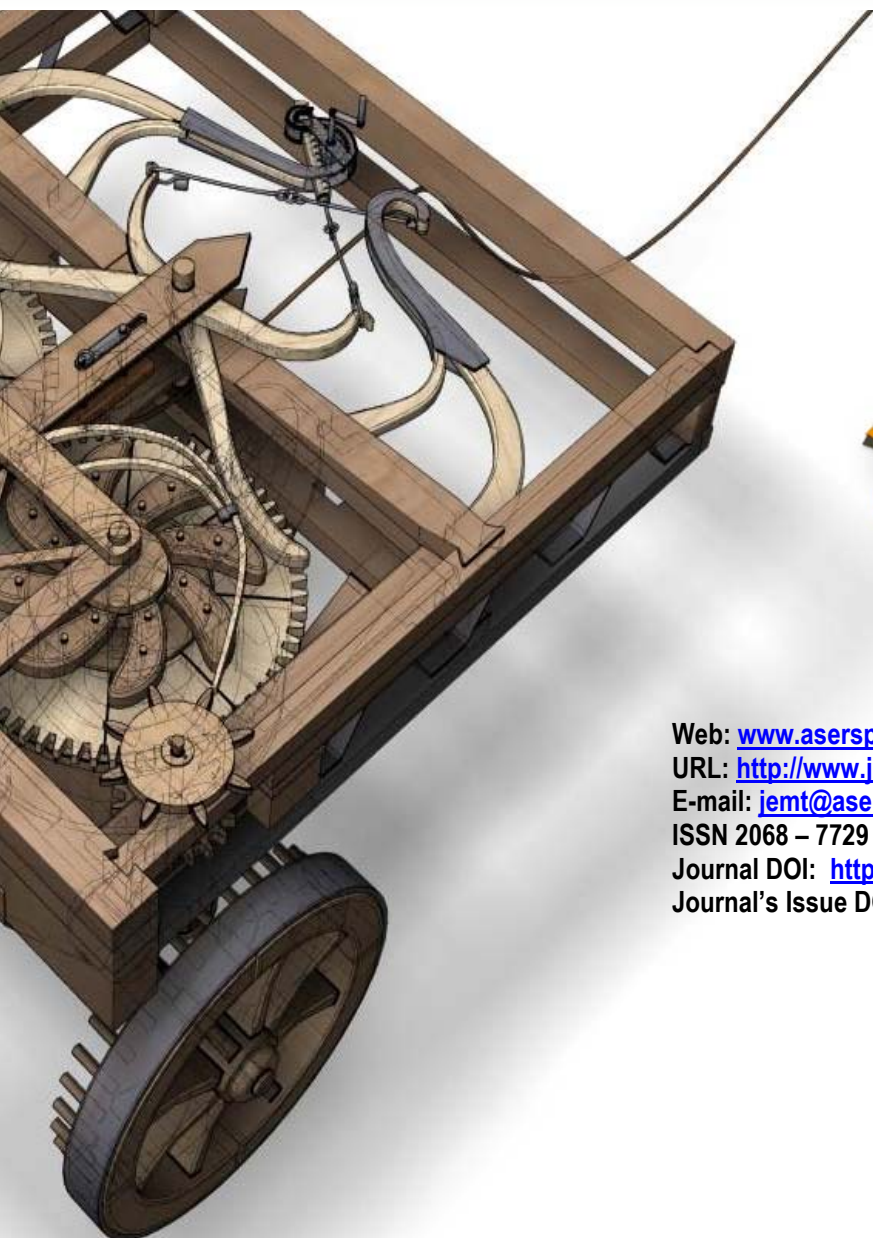
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