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Dr. Akanksha Mehta

Assistant Professor, Indira
Institute of Management
Pune, Maharashtra, India

Dr. Samrat Ray

Senior Researcher, SBES,
Pune, Maharashtra, India

Dr. Sumitra Roy

Assistant Professor, ISMS
Group of Institutes, Pune,
Maharashtra, India

Aparna Malik

Professor, International
Institute of Management
Studies, Pune, Maharashtra,
India

Corresponding Author:

Dr. Akanksha Mehta

Assistant Professor, Indira
Institute of Management
Pune, Maharashtra, India

Impact of medical tourism on Indian healthcare sector

Dr. Akanksha Mehta, Dr. Samrat Ray, Dr. Sumitra Roy and Aparna Malik

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Abstract

India is emerging as a prime destination for health and contributing a lot towards the social- economic development of the society by enhancing employment opportunities and an increase in foreign exchange earnings and helping in uplifting the living standards of the host community by developing infrastructure and high quality education system.

Medical tourism is a modern concept as it plays an important role in shaping the future of medical care globally, as the technology, economy, and other global relations are growing rapidly. There is an increase in evidence that medical tourists seek help from medical travel facilitators in order to avoid critical preparations in finding reliable providers, and ensuring trouble-free and safe travel arrangements. The practice of medical tourism mostly depends on providing information for potential patients about treatment facilities, procedure options, tourism opportunities, travel arrangements, and which country. Medical tourism in India attracts millions of foreigners and domestic tourists to visit incredible heritage of our country and enjoy the medicinal blessings as in traditional Vedas and Upanishads. India is full of well trained, qualified and experienced medical paramedical professionals and doctors.

The study aims towards the development of trends of the medical tourism and to highlight the importance of medical tourism for the development of economies. It is also focused towards the management of the international healthcare providers in adopting strategies in achieving greater medical tourists' satisfaction.

Medical tourism is an opportunity for the developing countries that should take advantage of the favorable international context and try investing in creative and promoting a new competitive medical touristic offer. Trends in medical tourism development are involving the medical service trade but also a combination of specific activities of many other sectors like travel, hospitality, safety, health system, government strategies, destination management and marketing, education, research and sustainability.

Keywords: Medical tourism, health care, development, travel, developing economics, treatment facilities, tourism opportunities, travel arrangements, international healthcare

Introduction

India offers world-class treatment at very affordable prices which is comparatively very high in USA and UK. The Indian healthcare industry is growing at a very high pace and it is expected that the sector will touch US\$238.76 billion by 2020. Medical Tourism is a very old concept dating back to ancient Greece. It is cost effective private medical care which is in collaboration with the tourism industry overseas for patients needing specialized treatment. Medical tourism is a tourism market segment in a fast developing world at global level, offering a variety of aspects for the scientific research. Globally, medical tourism has become one of the fastest growing tourism sectors with many countries carefully planning for their economic expansion. India's Yoga and Ayurveda healing techniques have attracted a thousands of people looking for health improvement, or thinking to Japan people who have travelled for around 1000 years for medical purposes to the "Onsen" the mineral springs, or pilgrims travelling to Epidural in Greece. Medical tourism has materialized from a broader concept of health tourism. Now a day medical institutions no more play a limited regional role but has become Global actors. (Sunita Reddy & Imarana Quadeer, 2010) [23]. Medical tourism is in such line with the current trend of Globalization of markets & choosing a destination for it has become very easy by using information via internet.

The term medical tourism referred to the travel of patients from underdeveloped countries to developed nations to get the proper treatment which was not available in their homeland. World Health Organization (WHO) defines Medical Tourism as a tourism associated with travel to health Spas or resort a destinations, where the primary purpose is to improve

travelers’ physical well-being and health through a process comprising of physical exercises and therapy, dietary control and medical services relevant to health maintenance. As a result of globalization, there is an increase in number of people is travelling to other countries to get quality and good treatment at affordable prices. Health care attention is required in both surgical and non-surgical procedures which are another important factor for Medical Tourism. Europe became a destination for medical tourism, due to roman baths or spa in the early 16th century tourists were mostly attracted by medical tourism due to its low costs and taking into consideration that in their countries these services and facilities were not covered by insurance policies. Medical tourism in today’s world became the newest phenomenon, despite its ancient existence, which meets equally in every developed country although in the developing economies (Amit Sen Gupta, 2008) ^[13].

In India medical treatment is very cost effective as charges are 20% less than any other country like US, UK Singapore and Thailand. Indian clinical and paramedical talent has been recognized now and JCI accreditation to some of the hospitals in India gaining the faith of foreign patients and is causing boon to Indian medical system. Medical tourists usually get a package which includes flights, hotels, treatment, post-operative vacation and rejuvenation therapies (Amit Sen Gupta, 2008) ^[13]. It is a term involving people who travel to a different place to receive treatment for a disease, ailment, or medical condition, and who are seeking for lower cost of care, higher quality of care, better access to care, or different care than they could receive at home (definition by Global Spa Summit LLC 2011). In simple words, medical tourism is the act of traveling to get medical care.

Outbound	Patients traveling from home country to other countries to receive medical care & treatment
Inbound	Patients from other countries traveling to home country to receive medical care & treatment
Intra-bound (Domestic)	Patients traveling within home country to receive medical care outside their geographic area, typically to a Center of Excellence in another state or region

Medical tourism scenario in our country

India has been the most attractive destination for the visitors to visit around the globe. But the recent trend in the tourism sector has shown a propelling growth in medical tourism. This is not only because of the heritage & attraction of the

country but also due to growing medical care facilities in India. It is developing in our country at a faster rate. India ranks second for medical tourism in world. In India, people from other countries visit for their medical and relaxation needs.



Fig 1: Medical tourism in India

This chart shows how medical tourism is affecting the economy of our country.

In year 2015, 2016, 2017 we see how foreign exchange earning has increased.

According to the data obtained from the government in December 2018, around five lakhs of foreigners visit India for wellness and medical purposes a year. The number has almost doubled between the year 2015 and 2017. It brings over \$25 billion in foreign exchange earnings. The government is promoting the medical tourism in many different ways – offering hospitals marketing, development of assistance, allowing medical visas in emergency situations, setting up facilitation at counters at major airports, launching a website to provide information on medical tourism throughout the country and is constituting in the National Medical and Wellness Tourism Board.

Patients and Medical Tourists are likely to shop for JCI-accredited hospitals with no waiting time, and specialist

surgeons in order to improve their medical health and quality of life. The aim is for the medical and tourism sectors to work in collaboration to deliver a patient-centered quality of global healthcare and ensuring pre-surgery and post-surgery continuity of care, from arrival of patient to the departure of the patient, with a positive healthcare outcome of experience abroad. The accelerated value of healthcare in western international locations and the center east has compelled many sufferers to appearance toward the East. Medical tourism is swiftly developing in growing international locations like India. Recent process of innovation and operational excellence in India makes it possible to deliver a proper healthcare at a fraction of the cost compared to the western countries. The common value for open-coronary heart surgery, as stated recently with the aid of using Narayana Health, is much less than \$2000. The identical method at a US studies medical institution generally prices approximately extra than \$100,000.

Literature review

The Scope of Medical Tourism and Health tourism consists of medical tourism and wellness tourism. Wellness tourism promotes healthier lifestyle through thermal, spa and water treatment, acupuncture, aromatherapy, beauty care, facials, diet and exercise, herbal healing, homeopathy, massage, spa treatment, and yoga which do not require medically trained staffs. Medical tourism includes medical treatments which are used for illness, reproduction and enhancement.

As defined by Gupta (2004) ^[50], medical tourism consists of cost-effective medical care for patients which are collaborated with the tourism industry. The advantage of medical surgery or treatment in a chosen destination country is that the health travelers can also vacationing at the same time. Medical tourism is a practice that depends on successfully informing potential patients regarding procedure options, treatment facilities, tourism opportunities, travel arrangements, and destination countries (Crooks, Turner, Snyder, Johnston, & Kingsbury, 2011) ^[9]. The active regions and countries delivering medical tourism services include Asia (Malaysia, Thailand, and Singapore); Mediterranean (Malta and Cyprus); Eastern Europe (Hungary and Poland); Africa (particularly South Africa); South and Central America (Costa Rica, Mexico, Brazil, and Cuba); and the Middle East (particularly Dubai and Jordan) (Carrera & Lunt, 2010) ^[51]. This clearly illustrates that there is increasing growth of supply and demand of medical tourism industry.

India ranks 2nd for medical tourism in the world. Though it spends less than 1.2% of its GDP on medical services but it makes extra efforts to provide extra care and services to the foreign tourist, while dealing with them. Medical treatment in India is very cost effective as it charges 20% less than other foreign countries for providing health facilities. It has been seen that in the recent past that patient from US, UK, and other foreign countries in a maximum number are coming to India for their treatment. At the 9th National Health Conference which took place in Rostock/Germany in 2013, medical tourism was defined as a branch of health and tourism industry contributing to maintaining and recovering health in general and wellness in particular, using authorized medical services. Medical tourism is not only a journey in order to improve health, but also it is an economic activity implying service trade, representing a merge of at least two economic sectors that is tourism and medicine (Bookman and Bookman, 2007) ^[53]. Lee (2007) ^[54] reported that the medical tourism industry has entrepreneurial opportunity into a new emerging international business. In medical tourism industry, private hospitals or private healthcare providers are funded by the medical tourist themselves which has been common for entrepreneurial ventures for increasing the revenue to remain self-sufficient in the emerging industry. Meanwhile the efforts taken by healthcare centers such as Raffles Hospital & Parkway Groups have initiated the market in Singapore's medical tourism in China, South Asia, the Middle East, Indonesia and Russia (Teh 2007) ^[55]. They show that the healthcare centers themselves are taking the initiative to promote medical tourism in order to increase their customer market which in turn increases revenue earned and optimize productivity by utilizing available resources. Whereas the hospitals in India are coordinating with the tourism industry, among national government, state government and numerous other federal bodies to promote medical tourism

in the county (Heung, 2010) ^[15].

A part from that, Turner (2007) ^[52] has reported that there is changing trend in promoting medical tourism. Attracting individual clients is time consuming and inefficient in recent times. Due to that, medical tourism agents are learning new ways to attract high volume of medical tourist by offering company packages.

The Internal Factors of Medical Tourism

Cost

In medical tourism industry the Cost has been recognized as one of the most important variable that has influenced the growth of medical tourism industry in 21st century (Deloitte Center for Health Solutions, 2011). The cost can be analyzed as a push a factor for the medical tourists from the developed countries in order to demand the medical services abroad and as a pull factor for the destination countries which supply healthcare services to the world market. This study will help to examine competitive pricing strategy based on cost leadership method which influences healthcare centers strategies and at the same time medical tourist's satisfaction.

Quality Service

Turner *et al.* (2007) ^[52] pointed out that, in medical tourism the quality which signals high standards of care have been the main concern for the medical tourism agents and medical tourism hospitals. Delivery of quality medical treatment by doctors as service personals gives the highest satisfaction to the patients (Thilagavathi & Shankar, 2010) ^[56]. Due to that, physician trained in countries which have well established medical education and venture into research and development in medical field countries such as United States, Canada, Australia and United Kingdom have become the important indicator of professional competence (Turner *et al.* (2007) ^[52]. A good patient-doctor relationship can lead to a better outcome of medical treatment and medical customer will achieve satisfaction (Thilagavathi *et al.*, 2010) ^[56].

This indicates that good communication between patient and doctor will lead to a better understanding of sickness and treatment required and will be able to tap larger international patients around the world. On the other hand, to tap the Asian and the Middle East where a variety of language are spoken, some medical hospitals in Thailand, Malaysia and Singapore are providing translators for international patients (Turner *et al.*, 2007; Cormany & Baloglu, 2011) ^[52, 57]. There is tourists friendly culture in countries like Thailand (Teh *et al.* 2007) ^[55] and Philippine, and less waiting hours (Lin *et al.* 2010) ^[58], using resorts to recuperate patients such as in country like India where the Apollo Hospital Group made arrangements with the Taj group to transfer patients to its 38 leisure hotels (Leon-Jordan, Kuruvilla, & Jacob., 2010) ^[59], and visiting exotic locations, knowing interesting new cultures (Burkett, 2007) ^[60] like traditional recreational tourism after medical treatment are also identified as internal strategies which are adopted by health care centers to promote and attract international patients.

Specialized Service

In the healthcare industry, the hospitals pursuing focus on strategy completely in a narrow segment by specifying type

of medical patients (Hlavackea, Bacharova, Rusnakova & Wagner, 2001) ^[61] such as obstetrics and gynaecology, geriatrics, paediatrics, cancer treatment and cardiac care. Meanwhile, it is focused on hospital services concentrate to single procedures. When hospitals adopt focused strategy, staffs develop an in-depth knowledge and experience which later results in delivery of a high quality service (Van Merode, Groothuis & Arie, 2004) ^[62] with a better outcome results.

The External Factors of Medical Tourism

Government Regulations

Government as the policy maker had realized that the potential of medial tourism for the local economy can be done by promoting and supporting the growth of medical tourism industry. Government of India is putting all its effort in order to promote medical tourism to medical tourists from Britain and Canada (Lancaster *et al.* 2004) ^[63]. Where the British National Health Service are subcontracted to India (Bies & Zacharia, 2007) ^[64]. Moreover, India is also providing special zoning law which helps to reduce tariffs for imported medical devices and lower corporate taxes and investing in transportation and infrastructure such as airports (Turner *et al.* 2007) ^[52] and issuing medical visas which are valid for one year for the patients and various companies (Chinai & Goswami, 2007) ^[65].

Medical Tourism Agents

Medical tourism agents or facilitators are companies that guide/helps the use of medical tourism for patients and providers. Many medical tourists find that using these facilitators to be more convenient and expedient than looking for a program on their own because the facilitators have experience in the field of medical tourism process and are able to address any concerns or questions that patients might have. Patients may even be able to get lower rates from medical facilitators than directly from clinical programs in abroad i.e. it is cost efficient.

Medical agent's website display cost comparison (Turner *et al.*, 2007) ^[52] of medical tourism hospitals which are around the world or in the region to give detailed information to medical tourists to choose affordable medical care throughout the country. Marketing can be done by advertisement; the advantage is that due to advertisement all expenses of travel are included and accommodation besides prices for medical procedures and explained. Private healthcare centers are having collaboration with medical agents to gain competitive advantage to increase the number of international patients who are travelling for medical services.

Medical tourism agents are also offering wide range of packages from 'wellness packages', to spa retreats, Ayurvedic medicine and traditional medicine to cosmetic surgeries, important orthopedic procedures, cataract surgery, dental care, surgery, organ and bone marrow transplant, and stem cell injections (Turner *et al.*, 2007) ^[52]. Some medical tourism agents are specialize in arranging travel to single countries such as Raleigh-based on Indus health which are arranging trips to hospitals in New Delhi, Chennai, Bangalore and Mumbai due to favorable currency exchange rate and Merit Global Health arrange package to hospitals in Buenos Aires by taking advantage of the economic crises (Turner *et al.* 2007) ^[52].

Medical tourist's Satisfaction

According to the expectancy disconfirmation theory (Oliver, 1980) ^[66], which has been tested and confirmed in several studies (Tse & Wilton 1988) ^[67] explain that the customers purchase goods and services with pre-purchase expectations are about to be anticipated performance. Once the product or service has been purchased and used or under use, outcomes are compared against expectations. Disconfirmation occurs only when there are differences between expectations and outcomes. Negative disconfirmation occurs when the product/service performance is less than what is expected. Positive disconfirmation occurs when the product/service performance is better than what is expected. Satisfaction is caused due to confirmation or positive disconfirmation of consumer expectations, and dissatisfaction is caused due to negative disconfirmation of consumer expectations. In today's challenging world business environment, competitive advantage lies in delivering notable high-quality service that results in satisfied customers (Shamwell, Yavas & Bilgin, 1998) ^[68]. In the healthcare industry, the competitiveness among health care organizations depends upon the patients' satisfaction.

Conclusion

Medical tourism has emerged as one of the quickest developing phase of scientific tourism enterprise in India regardless of the worldwide downturn in economic. India is the country which is offering low-cost treatments not only to Indians but also to the other foreigners. Patient from countries like USA and UK are coming to India to look for an alternative and cost-effective destinations to get their treatments done. The Indian medical tourism is currently at blossoming stage, however it has a significant capacity for the destiny boom and the development. India 's scientific tourism quarter is predicted to revel in an annual boom with the aid of using 30%, making it a Rs. 9,500-crore enterprise with the aid of using the 12 months 2015. In just span of five years medical tourism in India has made remarkable position in the world medical tourism map, and is recognized as a reputed health tourist destination all around the world. India is a place which offers the services by well-trained health practitioners, with fluent English speaking medical staff, and a good stuff of herbal, natural, allopathic medicines, and alternative system of medicines. Private/internationally accredited and super specialty and multispecialty hospitals of India are serving global health tourist with their specialized services and are helping in earning the million dollars. In India a health tourist needs to spend less on different surgeries in comparison to other developed countries.

The Indian Government plays a significant role in enhancing the benefits of medical tourism for the medical tourists. There are facilities wherein the Tourist can be granted a quicker visa or visa on arrival so that they can make hassle free travel and can contact the Immigration Department at any point of entry for quick clearance. Acknowledging the importance of medical tourism, the Government has granted several reductions, exemptions and tax incentives to for the service providers. There are some challenges also faced by Indian medical industry like no post treatment care possible when required, inequalities in government hospitals and private hospitals, because lack of industry standards leading to brain drain and increase the

costs for the local people. Travelling abroad for medical treatment and surgery is one of the fastest growing exports of healthcare services now possible in India like recently in 2020 Indian Government had sent medical facilities like medical staff, equipments, test kits to various countries which were badly affected due to COVID-19. The elements that make a vacation spot as a desired scientific tourism vacation spot is value, quality, language, and simplicity of travel.

The practical implication of the study is focused on the management of the medical tourism in hospitals in adopting the new strategies in order to achieve a greater medical tourists' satisfaction. According to the research, majority of the patients visit India only to get medical treatment but a small number of them were attracted by the tourist destinations of India, as well. Thus, medical treatment tends to combine with travel and tourism along with the medical procedure. Thus, it's far much less unified phenomenon however a complicated permutation and aggregate of clinical (medical) tourism. Also, not much data is available through IPS, and the Ministry of Tourism, and the Government of India, should conduct a comprehensive survey on medical tourism, which would likely help the healthcare providers in competing at the international level by having more tie-ups with foreign travel services, the foreign hospitals, the embassies and insurance industries which are across the globe. The international accreditation and the certification turn into a very important factor in developing the medical tourism. Factors influencing the medical tourism demand vary depending upon the typology of the sender country (developed and developing countries), differentiated by motivations and requirements. Future research could be paying attention on analyzing the medical tourism in developing country, as trigger for the augmentation of tourism destination awareness.

References

1. Bagga T, Vishnoi SK, Jain S, Sharma R. Medical tourism: Treatment, therapy and tourism. *International Journal of Scientific and Technology Research*. 2020;9(3):4447-4453.
2. Cham TH, Lim YM, Sia BC, Cheah JH, Ting H. Medical tourism destination image and its relationship with the intention to revisit: A study of Chinese medical tourists in Malaysia. *Journal of China Tourism Research*. 2021;17(2):163-191. <https://doi.org/10.1080/19388160.2020.1734514>.
3. De Arellano ABR. Patients without borders: The emergence of medical tourism. *International Journal of Health Services*. 2007;37(1):193-198. <https://doi.org/10.2190/4857-468G-2325-47UU>.
4. Fetscherin M, Stephano RM. The medical tourism index: Scale development and validation. *Tourism Management*. 2016;52:539-556. <https://doi.org/10.1016/j.tourman.2015.08.010>.
5. Ghosh T, Mandal S. Medical tourism experience: Conceptualization, scale development, and validation. *Journal of Travel Research*. 2019;58(8):1288-1301. <https://doi.org/10.1177/0047287518813469>.
6. Guiry M, Vequist DG. Traveling abroad for medical care: US medical tourists' expectations and perceptions of service quality. *Health Marketing Quarterly*. 2011;28(3):253-269. <https://doi.org/10.1080/07359683.2011.595644>.
7. Pekkaya M, Pulat İmamoğlu Ö, Koca H. Evaluation of healthcare service quality via SERVQUAL scale: An application on a hospital. *International Journal of Healthcare Management*. 2019;12(4):340-347. <https://doi.org/10.1080/20479700.2017.1389474>.
8. Qolipour M, Torabipour A, Khiavi FF, Malehi AS. Assessing medical tourism services quality using SERVQUAL model: A patient's perspective. *Iranian Journal of Public Health*. 2018;47(1):103-110.
9. Turner LG. Quality in health care and globalization of health services: Accreditation and regulatory oversight of medical tour - ism companies. *International Journal for Quality in Health Care*. 2011;23(1):1-7. <https://doi.org/10.1093/intqhc/mzq078>.
10. Wang I, Shieh C. The relationship between service quality and customer satisfaction: The example of CJCU library. *Journal of Information Optimization Services*. 2006;27(1):193-209. <https://doi.org/10.1080/02522667.2006.10699686>.
11. Wong KM, Musa G. Medical tourism in Asia: Thailand, Singapore, Malaysia, and India. *Medical tourism: The ethics, regulation, and marketing of health mobility*. Routledge; c2012.
12. Whittaker. *Pleasure and pain: Medical Travel in Asia*, Global public health. 2008;3(3):271- 290.
13. Gupta AS. Medical tourism in India: Winners and losers, *Indian Journal of medical ethics*. 2008;5(1):4-5.
14. De Arellano, Annette B, Ramirez. Patients without borders: the emergence of medical tourism. *International Journal of Health Services*. 2007;37(1):193-198.
15. Heung, Vincent CS, Kucukusta D, Song H. A conceptual model of medical tourism: Implications for future research. *Journal of Travel & Tourism Marketing*. 2010;27(3):236- 251.
16. Hudson, Simon, Xiang Li. Domestic medical tourism: A neglected dimension of medical tourism research. *Journal of Hospitality Marketing, Management*. 2012;21(3):227-246.
17. Mukherjee W. Mookerji M. Hospitals busy tying up with Hospitality Inc. *The Economic Times*. 2004, 6.
18. Vinothini C, Dr. Saravanabavan V, Dr. Balaji D. Travel pattern of health utilization to primary health care centres in Madurai district. *Int. J Geogr Geol Environ*. 2021;3(2):144-151.
19. Bhat, Jain. Factor Affecting the Demand for Health Insurance in a Micro Insurance Scheme, *Indian institute of management, Ahmedabad W.P. No; c2006*. 2006-07-02.
20. CII-McKinsey: *Health Care in India: The Road Ahead*, CII, McKinsey and Company and Indian Healthcare Federation, New Delhi; c2002.
21. Medical tourism hamstrung by obsolete visa rules', *Business Standard*; c2013.
22. Mathieson, Alister, Wall G. *Tourism, economic, physical and social impacts*. Longman; c1982.
23. Reddy, Sunita, Qadeer I. Medical tourism in India: Progress or predicament. *Economic and Political Weekly*. 2010;45(20):69-75.
24. Peacock L. *Medical Tourism in India*, Smart Travel Asia; c2009. Accessed from [Http://www.smarttravelasia.com/medicalTourism.htm](http://www.smarttravelasia.com/medicalTourism.htm)
25. Horowitz M, Rosenweig J. *Medical Tourism-health care in the global Economy*, The Physician Executive;

- c2007. p. 24-30.
26. Inthavong P, Rehman KU, Masood K, Shaukat Z, Hnydiuk-Stefan A, Ray S, *et al.* Impact of organizational learning on sustainable firm performance: Intervening effect of organizational networking and innovation. *Heliyon*. 2023, 9(5).
 27. Rajendran R, Sharma P, Saran NK, Ray S, Alanya-Beltran J, Tongkachok K, *et al.* An exploratory analysis of machine learning adaptability in big data analytics environments: A data aggregation in the age of big data and the internet of things. In 2022 2nd International Conference on Innovative Practices in Technology and Management (ICIPTM). IEEE. 2022;2:32-36.
 28. Elkady G, Samrat R. An analysis of Blockchain in Supply Chain Management: System Perspective in Current and Future Research. *International Business Logistics*. 2021, 1(2).
 29. Korchagina E, Desfontaines L, Ray S, Strekalova N. Digitalization of Transport Communications as a Tool for Improving the Quality of Life. In *International Scientific Conference on Innovations in Digital Economy*. Cham: Springer International Publishing; c2021. p. 22-34.
 30. Kumar A, Nayak NR, Ray S, Tamrakar AK. Blockchain-based Cloud Resource Allocation Mechanisms for Privacy Preservation. In *The Data-Driven Blockchain Ecosystem*. CRC Press; c2022. p. 227-245.
 31. Wawale SG, Bisht A, Vyas S, Narawish C, Ray S. An overview: Modeling and forecasting of time series data using different techniques in reference to human stress. *Neuroscience Informatics*. 2022;2(3):100052.
 32. Batool A, Ganguli S, Almashaqbeh HA, Shafiq M, Vallikannu AL, Sankaran KS, *et al.* An IoT and Machine Learning-Based Model to Monitor Perishable Food towards Improving Food Safety and Quality. *Journal of Food Quality*; c2022.
 33. Verma K, Sundararajan M, Mangal A, Ray S, Kumar A. The Impact of COVID-19 to the Trade in India Using Digital, IOT and AI Techniques. In 2022 2nd International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE). IEEE; 2022. p. 01-05.
 34. Bangare JL, Kapila D, Nehete PU, Malwade SS, Sankar K, Ray S, *et al.* Comparative Study on Various Storage Optimisation Techniques in Machine Learning based Cloud Computing System. In 2022 2nd International Conference on Innovative Practices in Technology and Management (ICIPTM). IEEE. 2022;2:53-57.
 35. Kiziloglu M, Ray S. Do we need a second engine for Entrepreneurship? How well defined is entrepreneurship to handle challenges during COVID-19? In *SHS Web of Conferences*. EDP Sciences. 2021;120:02022.
 36. Samajpaty S, Ray S. Innovation strategies in health economics: a force that makes blood move and game of gravity in it-futuristic economic plans. *Московский экономический журнал*. 2020;(9):397-409.
 37. Nikam RU, Lahoti Y, Ray S. A Study of Need and Challenges of Human Resource Management in Start-up Companies. *Mathematical Statistician and Engineering Applications*. 2023;72(1):314-320.
 38. Yanbin X, Jianhua Z, Wang X, Shabaz M, Ahmad MW, Ray S, *et al.* Research on optimization of crane fault predictive control system based on data mining. *Nonlinear Engineering*. 2023;12(1):20220202.
 39. Ray S, Abinaya M, Rao AK, Shukla SK, Gupta S, Rawat P, *et al.* Cosmetics Suggestion System using Deep Learning. In 2022 2nd International Conference on Technological Advancements in Computational Sciences (ICTACS). IEEE; c2022. p. 680-684.
 40. Bhaskar T, Shiney SA, Rani SB, Maheswari K, Ray S, Mohanavel V, *et al.* Usage of Ensemble Regression Technique for Product Price Prediction. In 2022 4th International Conference on Inventive Research in Computing Applications (ICIRCA) IEEE; c2022. p. 1439-1445.
 41. Kanade S, Surya S, Kanade A, Sreenivasulu K, Ajitha E, Ray S, *et al.* A Critical analysis on Neural Networks and Deep Learning Based Techniques for the Cloud Computing System and its Impact on Industrial Management. In 2022 2nd International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE) IEEE; c2022. p. 325-331.
 42. Pallathadka H, Tongkachok K, Arbune PS, Ray S. Cryptocurrency and Bitcoin: Future Works, Opportunities, and Challenges. *ECS Transactions*. 2022;107(1):16313.
 43. Li YZ, Yu YH, Gao WS, Ray S, Dong WT. The Impact of COVID-19 on UK and World Financial Markets. *Jundishapur Journal of Microbiology*; c2022. p. 373-399.
 44. Samrat R, Elkadyghada EG, Rashmi N, Elena K. Upskilling and reskilling for a greener global business ecosystem: WEB 4.0 PERSPECTIVE. *Журнал прикладных исследований*. 2022;1(11):49-60.
 45. Ray S. Fraud detection in e-Commerce using machine learning. *BOHR International Journal of Advances in Management Research*. 2022, 1(1).
 46. Samrat R. Why Entrepreneurial University fails to solve poverty eradication? *Вестник Тувинского государственного университета. № 1 Социальные и гуманитарные науки*. 2021;(1):35-43.
 47. Ray S. Are Global Migrants At Risk? A Covid Referral Study of National Identity. In *Трансформация идентичностей: опыт Европы и России*; c2021. p. 26-33.
 48. Saravanan A, Venkatasubramanian R, Khare R, Surakasi R, Boopathi S, Ray S, *et al.* Policy trends of renewable energy and nonrenewable energy.
 49. Varma A, Ray S. Revolutionizing the Indian market through eco-friendly sustainable products: The rise of vegan beauty inspired by nature. *Int. J Res Marketing Manage Sales*. 2023;5(2):18-26. DOI: 10.33545/26633329.2023.v5.i2a.128
 50. Gupta S, Lehmann DR, Stuart JA. Valuing customers. *Journal of marketing research*. 2004;41(1):7-18.
 51. Lunt N, Carrera P. Medical tourism: assessing the evidence on treatment abroad. *Maturitas*. 2010;66(1):27-32.
 52. Turner BL, Lambin EF, Reenberg A. The emergence of land change science for global environmental change and sustainability. *Proceedings of the National Academy of Sciences*. 2007;104(52):20666-20671.
 53. Bookman M. *Medical tourism in developing countries*. Springer. 2007, 6.
 54. Lee BS, Simpson JM, Craig JC, Bhuta T. Methenamine hippurate for preventing urinary tract infections.

- Cochrane Database of Systematic Reviews. 2007, (4).
55. Teh SH, Nagorney DM, Stevens SR, Offord KP, Therneau TM, Plevak DJ, *et al.* Risk factors for mortality after surgery in patients with cirrhosis. *Gastroenterology*. 2007;132(4):1261-1269.
 56. Thilagavathi K, Shankar C, Jayaraman M. Competitive advantage and customer satisfaction in health industry: A study in private hospitals in Malaysia. Saarbrücken, Germany: LAP LAMBERT Academic Publishing; c2010.
 57. Cormany D, Baloglu S. Medical travel facilitator websites: An exploratory study of web page contents and services offered to the prospective medical tourist. *Tourism management*. 2011;32(4):709-716.
 58. Havens DS, Vasey J, Gittel JH, LIN WT. Relational coordination among nurses and other providers: impact on the quality of patient care. *Journal of nursing management*. 2010;18(8):926-937.
 59. León-Jordán J, Kuruvilla A, Jacob R. Healthcare in foreign hands: Trends, issues, and directions. *Review of Business Research*. 2010;10(5):54-68.
 60. Burkett L. Medical tourism: concerns, benefits, and the American legal perspective. *The Journal of legal medicine*. 2007;28(2):223-245.
 61. Hlavacka S, Bacharova L, Rusnakova V, Wagner R. Performance implications of Porter's generic strategies in Slovak hospitals. *Journal of Management in Medicine*. 2001;15(1):44-66.
 62. Van Merode GG, Groothuis S, Hasman A. Enterprise resource planning for hospitals. *International journal of medical informatics*. 2004;73(6):493-501.
 63. Lancaster GA, Dodd S, Williamson PR. Design and analysis of pilot studies: recommendations for good practice. *Journal of evaluation in clinical practice*. 2004;10(2):307-12.
 64. Bies W, Zacharia L. Medical tourism: Outsourcing surgery. *Mathematical and computer modelling*. 2007;46(7-8):1144-1159.
 65. Chinai R, Goswami R. Medical visas mark growth of Indian medical tourism. *Bulletin of the World Health Organization*. 2007;85:164-165.
 66. Oliver RL. A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of marketing research*. 1980;17(4):460-469.
 67. Tse DK, Wilton PC. Models of consumer satisfaction formation: An extension. *Journal of marketing research*. 1988;25(2):204-212.
 68. Shemwell DJ, Yavas U, Bilgin Z. Customer-service provider relationships: an empirical test of a model of service quality, satisfaction and relationship-oriented outcomes. *International journal of service industry management*. 1998;9(2):155-168.
 69. Carrera P, Bridges J. Globalization and healthcare: Understanding health and medical tourism. *Expert Review Pharmacoeconomics Outcomes Research*. 2006;6:447-454.