

Application of Business Mathematics in Finance, Marketing, Tourism and Behavioural Sciences: A Mini Review

- ✉ Khalid Al-Sulaiti¹
- ✉ Osama Aldereai²
- ✉ Imran Bashir Dar³

How to cite this article:

Sulaiti, K. A., Aldereai O., Dar, I. B. Application of Business Mathematics in Finance, Marketing, Tourism and Behavioral Sciences: A Mini Review. Application of Mathematical Sciences, 1(2), 57-66.

Received: 7 June 2022 / Accepted: 27 October 2022 / Published online: 15 December 2022
© Society of Management Research and Consultancy 2022

Abstract

The applications of business mathematics in finance, marketing research and behavioral science have played a vital role in measuring performance and sustainability. Mathematical tools help scientists to assess statistical tools in gauging the set criteria to measure the proposed hypothesized statements. This present review study deals with a concise review of the application of business mathematics in the tourism industry. The stakeholder theory and fuzzy set theory have been used by the majority of the research papers to observe various business aspects of the tourism industry. The papers were filtered based on their relevance, impact and quality of research. The findings are in the shape of themes explored from the literary reservoir available. The value of this paper is that it has shed light on this area that is largely unexplored in terms of the overlapping between the areas of the fourth industrial revolution like machine learning, AI, analytics and metrics, big data analytics and the modern application of business mathematics for the tourism industry.

Keywords: Tourism industry; Financial Analysis; Mathematical applications; Marketing research

1 Introduction

The application of business mathematics in the fields of finance, market research, tourism and behavioural science plays a vital role in measuring performance and sustainability (Abaalzat et al. [2021](#); Al-Sulaiti [2022](#); Al-Sulaiti et al. [2021](#)). Mathematical tools help scientists evaluate statistical tools to measure proposed hypothetical statements against set criteria (Khalid et al. [2005](#);

¹Al Rayyan International University College in partnership with University of Derby UK- Doha
e-mail: khalid.al.sulaiti@outlook.com

²Research Department of Bait Al Mashura Finance Consultants, P.O. Box 23471, Doha, Qatar
e-mail: Aldereai@outlook.com

³Department of business administration, Foundation University Islamabad, Pakistan
e-mail: imran.bashir.dar@outlook.com



Sulaiti et al. [2006](#)). Scholars use mathematical modelling and statistical tools to evaluate proposed hypothesized claims sustainable outcomes (Al Halbusi et al. [2022](#); Jaffar et al. [2022](#); Zhuang et al. [2022](#)). The mathematical modelling for business management and various industrial applications is not new as scholars use it for measuring sustainable performance under the proposed statistical modelling (Ali et al. [2015](#); Balsalobre-Lorente et al. [2023](#); Jaffar et al. [2019](#); Jawad et al. [2023](#); Shah et al. [2023](#)). Investigators apply modelling in behavioural research, including marketing research, health sciences and other disciplines to assess the results (Lebni et al. [2021](#); Mohammadi et al. [2021](#); Mubeen et al. [2021](#); Shoib et al. [2022](#)). However, the application of business mathematics for the tourism industry emerged on the map of impactful literature in 2007 (Hafeez et al. [2019](#); Iorember et al. [2022](#); Local Burden of Disease [2021](#); Micah et al. [2023](#); Peter et al. [2017](#)). Thus, researchers carried out most of the studies during the pandemic period to explore the likely outcomes of various factors (Farzadfar et al. [2022](#); Liu et al. [2021](#); Mansourian et al. [2019](#); Moradi et al. [2021](#); Yu et al. [2022](#); Zafar et al. [2022](#)). The major work for connecting business mathematics with various aspects of the tourism industry was done to measure the performance of tourism industry agents (Aqeel et al. [2022](#); Ge et al. [2022](#); Hussain et al. [2017](#); Schmidt et al. [2022](#); Zhang et al. [2022](#)). It started from tour operator officers to senior managers working with various organizations, including marketing, tourism, management and public administration (Asad et al. [2017](#); Geng et al. [2022](#); Li et al. [2022](#); Mubeen et al. [2021](#); Zeidabadi et al. [2022](#)). The intangible aspects were the tourism business performance were also covered in this review study (Aman et al. [2022](#); Aqeel et al. [2021](#); Tseng et al. [2019](#)). The latest research work deals with data-backed decision-making as it involves the application of various tools to assess sustainable performance (Khazaie et al. [2021](#); Rahmat et al. [2022](#); Yao et al. [2022](#)). Thus, it cannot be done without applying business mathematics for assessing the sustainable performance of health, marketing, tourism, economics and other industries performance (Hussain et al. [2021](#); Lebni et al. [2020](#); Moradi et al. [2020](#)). Business mathematics application proactively helps in mapping the tourists' decision-making, preferences and various service relationships (Anjum et al. [2017](#); Jaffar [2020](#); Maqsood et al. [2021](#)). The alliances of various state machinery actors and businesses at horizontal and vertical streams for this movement were observed (Frias et al. [2021](#); Fu et al. [2020](#); Wang et al. [2020](#)).

The stakeholder theory and fuzzy set theory have dominated the studies discussing the application of business mathematics for decision-making by tourism businesses (Horng et al. [2014](#); Lin [2021](#); Lin et al. [2009](#); Tsaur and Wang [2007](#)). The tourism industry needs everyone's full support in order to thrive. This study uses stakeholder theory to evaluate the importance of various stakeholders in a large-scale, traditional religious pilgrimage (Lin [2021](#)). Many aspects of Taiwan's tourism and gourmet industry are evaluated using the fuzzy set theory (Horng et al. [2014](#)). The service performance of the tour operators is composed of various intangible elements and has been measured successfully through fuzzy set theory (Lin et al. [2009](#)). The sustainable tourism concept was coined by applying business mathematics through fuzzy set theory (Tsaur and Wang [2007](#)). Interestingly, in the early phases of the pandemic, the triangular-fuzzy numbers were used to assess the sustainable agritourism for developing the local business value chain and promoting the eco-tourism by government support so that the environmental sustainability and economic concerns could both go hand in hand (Tseng et al. [2019](#)).

2 Methodology

The papers were selected based on the following criteria (Cooper [2016](#)):

1. The various databases were searched for articles with keywords like mathematics, tourism, business management, business math application
2. The articles were filtered based on the relevancy reflected in their abstracts

3. Only papers and conference papers written in English and having quality research studies were finalized

Based on the above scrutiny, the following is the diagrammatic progression of the number of articles:



Figure. 1. Business Mathematics Application in Tourism Management

3 Findings

The themes that emerged from the overall relevant and impactful research studies are graphically presented as under:

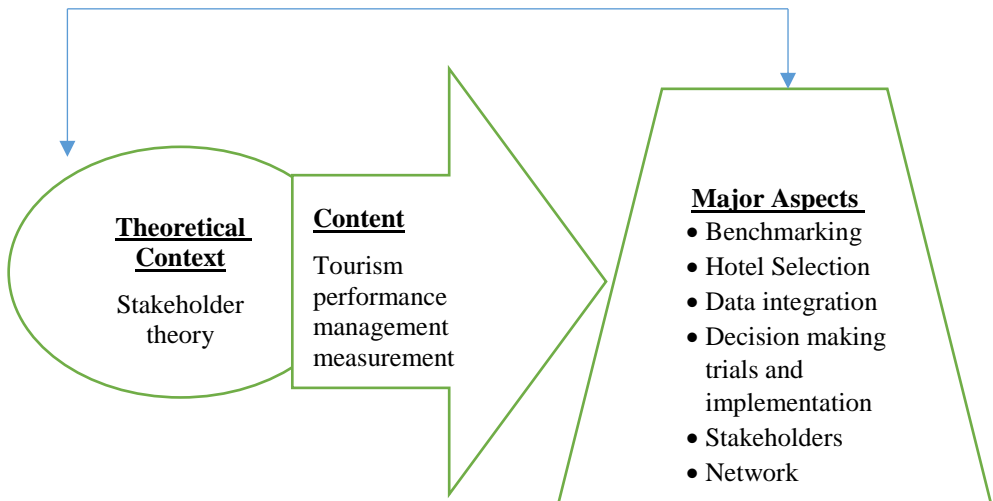


Figure. 2. The context, content and aspects' linkage

The aspects are the ‘major themes’ that have been observed by the studies that include mathematical modelling of benchmarking for performance measurement, hotel selection and tourists preferences mapping, data integration through the usage of technological assets, decision-making trials and implementation, stakeholders and network observations (Frias et al. [2021](#); Fu et al. [2020](#); Gil-Lafuente et al. [2014](#); Harmon and Viles [2013](#); Horng et al. [2014](#); Law [2007](#); Lin [2021](#); Lin et al. [2009](#); Madarász and Papp [2013](#); Mijajlović et al. [2020](#); Paneva-Marinova et al. [2017](#); Pappas [2018](#); Tsaour and Wang [2007](#); Tseng et al. [2019](#); Wang et al. [2020](#)).

4 Conclusion

The area of business mathematics application in various disciplines, such as finance, marketing, public health, economics and the tourism industry is an affluent area regarding the aspects of the subject concerned. Typically, scholars use mathematical modelling and statistical tools to measure proposed hypothesized claims. Investigators of business, marketing and finance usually use modelling to test the claimed statements. These tools and models help assist principal investigators to explore the relationships between the selected elements of the frameworks. With the applications of these mathematical tools, investigators examine whether proposed relationships are correlated or not and how they reflect their connection with in the research framework. The results of the review project show that many missing links are giving a clear call for research in term of the areas related to Industry 4.0 as the applications of business mathematics coupled with marketing research, financial development, economic modelling, public health research, computer sciences and other sciences that can open the doors for the new research based on the fruits of the fourth industrial revolution.

5 References

- Abaalzat, K. H., Al-Sulaiti, K. I., Alzboun, N. M., & Khawaldah, H. A. (2021). The Role of Katara Cultural Village in Enhancing and Marketing the Image of Qatar: Evidence From TripAdvisor. *SAGE Open*, *11*(2), 21582440211022737. [doi:10.1177/21582440211022737](https://doi.org/10.1177/21582440211022737)
- Abbas, J. (2021). Crisis management, transnational healthcare challenges and opportunities: The intersection of COVID-19 pandemic and global mental health. *Research in Globalization*, *10*, 100037. [doi:10.1016/j.resglo.2021.100037](https://doi.org/10.1016/j.resglo.2021.100037)
- Mahmood, S., Ali, H., Ali Raza, M., Ali, G., Aman, J., . . . Nurunnabi, M. (2019). The Effects of Corporate Social Responsibility Practices and Environmental Factors through a Moderating Role of Social Media Marketing on Sustainable Performance of Business Firms. *Sustainability*, *11*(12), 3434. [doi:https://doi.org/10.3390/su11123434](https://doi.org/10.3390/su11123434)
- Al-Sulaiti, I. (2022). Mega shopping malls technology-enabled facilities, destination image, tourists’ behavior and revisit intentions: Implications of the SOR theory. *Frontiers in Environmental Science*, *10*. [doi:10.3389/fenvs.2022.965642](https://doi.org/10.3389/fenvs.2022.965642)
- Al-Sulaiti, K. I., Abaalzat, K. H., Khawaldah, H., & Alzboun, N. (2021). Evaluation of Katara Cultural Village Events And Services: a Visitors’ Perspective. *Event Management*, *25*(6), 653-664. [doi:10.3727/152599521x16106577965099](https://doi.org/10.3727/152599521x16106577965099)
- Al Halbusi, H., Al-Sulaiti, K., & Al-Sulaiti, I. (2022). Assessing Factors Influencing Technology Adoption for Online Purchasing Amid COVID-19 in Qatar: Moderating Role of Word of Mouth. *Frontiers in Environmental Science*, *10*, 942527. [doi:10.3389/fenvs.2022.942527](https://doi.org/10.3389/fenvs.2022.942527)
- Ali, N., Anwer, M., & Raza, M. (2015). The cement industry of Pakistan: A swot analysis. *Journal for Studies in Management and Planning*, *1*(2).
- Aman, J., Shi, G., Ain, N. U., & Gu, L. (2022). Community Wellbeing Under China-Pakistan Economic Corridor: Role of Social, Economic, Cultural, and Educational Factors in Improving Residents’ Quality of Life. *Frontiers in Psychology*, *12*, 816592. [doi:10.3389/fpsyg.2021.816592](https://doi.org/10.3389/fpsyg.2021.816592)
- Anjum, M. N., Xiuchun, B., Shuguang, Z., & McMillan, D. (2017). Analyzing predictors of

- customer satisfaction and assessment of retail banking problems in Pakistan. *Cogent Business & Management*, 4(1), 1338842. [doi:10.1080/23311975.2017.1338842](https://doi.org/10.1080/23311975.2017.1338842)
- Aqeel, M., Raza, S., & Aman, J. (2021). Portraying the multifaceted interplay between sexual harassment, job stress, social support and employees turnover intension amid COVID-19: A Multilevel Moderating Model. *Foundation University Journal of Business & Economics*, 6(2), 1-17. [doi:https://fui.edu.pk/fjs/index.php/fujbe/article/view/551](https://doi.org/https://fui.edu.pk/fjs/index.php/fujbe/article/view/551)
- Aqeel, M., Rehna, T., Shuja, K. H., & Abbas, J. (2022). Comparison of Students' Mental Wellbeing, Anxiety, Depression, and Quality of Life During COVID-19's Full and Partial (Smart) Lockdowns: A Follow-Up Study at a 5-Month Interval. *Front Psychiatry*, 13, 835585. [doi:10.3389/fpsyt.2022.835585](https://doi.org/10.3389/fpsyt.2022.835585)
- Asad, A., Irfan, M., & Raza, H. M. A. (2017). The Impact of HPWS in Organizational Performance: A Mediating Role of Servant Leadership. *Journal of Managerial Sciences*, 11, 25-48. [doi:https://www.qurtuba.edu.pk/jms/past.html](https://doi.org/https://www.qurtuba.edu.pk/jms/past.html)
- Balsalobre-Lorente, D., He, C., Pilař, L., & Shah, S. A. R. (2023). Tourism, urbanization and natural resources rents matter for environmental sustainability: The leading role of AI and ICT on sustainable development goals in the digital era. *Resources Policy*, 82, 103445. [doi:10.1016/j.resourpol.2023.103445](https://doi.org/10.1016/j.resourpol.2023.103445)
- Cooper, H. M. (2016). Scientific Guidelines for Conducting Integrative Research Reviews. *Review of Educational Research*, 52(2), 291-302. [doi:10.3102/00346543052002291](https://doi.org/10.3102/00346543052002291)
- Farzadfar, F., Naghavi, M., Sepanlou, S. G., Saeedi Moghaddam, S., Dangel, W. J., Davis Weaver, N., . . . Larijani, B. (2022). Health system performance in Iran: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, 399(10335), 1625-1645. [doi:10.1016/S0140-6736\(21\)02751-3](https://doi.org/10.1016/S0140-6736(21)02751-3)
- Frias, A., Raskova, E., Costa, Á., & Cabral, J. (2021). Obtaining data values from tourist preferences. *Sustainability (Switzerland)*, 13(18). [doi:10.3390/su131810276](https://doi.org/10.3390/su131810276)
- Fu, Y. K., Huang, W., & Liao, C. N. (2020). The selection model for horizontal alliances between hotels and airlines: an integrated application of NGT, fuzzy TOPSIS and MCGP methods. *Tourism Review*, 75(4), 681-698. [doi:10.1108/TR-06-2019-0214](https://doi.org/10.1108/TR-06-2019-0214)
- Ge, T., Ullah, R., Abbas, A., Sadiq, I., & Zhang, R. (2022). Women's Entrepreneurial Contribution to Family Income: Innovative Technologies Promote Females' Entrepreneurship Amid COVID-19 Crisis. *Front Psychol*, 13, 828040. [doi:10.3389/fpsyg.2022.828040](https://doi.org/10.3389/fpsyg.2022.828040)
- Geng, J., Ul Haq, S., Ye, H., Shahbaz, P., Abbas, A., & Cai, Y. (2022). Survival in Pandemic Times: Managing Energy Efficiency, Food Diversity, and Sustainable Practices of Nutrient Intake amid COVID-19 Crisis. *Frontiers in Environmental Science*, 13, 945774. [doi:10.3389/fenvs.2022.945774](https://doi.org/10.3389/fenvs.2022.945774)
- Gil-Lafuente, A. M., Merigó, J. M., & Vizuete, E. (2014). Analysis of luxury resort hotels by using the Fuzzy Analytic Hierarchy Process and the Fuzzy Delphi Method. *Economic Research-Ekonomska Istraživanja*, 27(1), 244-266. [doi:10.1080/1331677X.2014.952106](https://doi.org/10.1080/1331677X.2014.952106)
- Hafeez, A., Dangel, W. J., Ostroff, S. M., Kiani, A. G., Glenn, S. D., . . . Mokdad, A. H. (2023). The state of health in Pakistan and its provinces and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet Global Health*, 11(2), e229-e243. [doi:https://doi.org/10.1016/S2214-109X\(22\)00497-1](https://doi.org/https://doi.org/10.1016/S2214-109X(22)00497-1)
- Harmon, B., & Viles, H. (2013). Beyond geomorphosites: Trade-offs, optimization, and networking in heritage landscapes. *Environment Systems and Decisions*, 33(2), 272-285. [doi:10.1007/s10669-013-9448-3](https://doi.org/10.1007/s10669-013-9448-3)
- Hornig, J. S., Liu, C. H., Chou, S. F., Yin, Y. S., & Tsai, C. Y. (2014). Developing a Novel Hybrid Model for Industrial Environment Analysis: A Study of the Gourmet and Tourism Industry in Taiwan. *Asia Pacific Journal of Tourism Research*, 19(9), 1044-1069. [doi:10.1080/10941665.2013.837399](https://doi.org/10.1080/10941665.2013.837399)



- Hussain, T., Li, B., Aman, J., & Ali, S. (2017). Natural Resource Management for the World's Highest Park: Community Attitudes on Sustainability for Central Karakoram National Park, Pakistan. *Sustainability*, 9(6), 972. [doi:10.3390/su9060972](https://doi.org/10.3390/su9060972)
- Hussain, T., Wei, Z., Ahmad, S., Xuehao, B., & Gaoli, Z. (2021). Impact of Urban Village Disamenity on Neighboring Residential Properties: Empirical Evidence from Nanjing through Hedonic Pricing Model Appraisal. *Journal of Urban Planning and Development*, 147(1), 04020055. [doi:10.1061/\(asce\)up.1943-5444.0000645](https://doi.org/10.1061/(asce)up.1943-5444.0000645)
- Iorember, P. T., Iormom, B., Jato, T. P., & Abbas, J. (2022). Understanding the bearable link between ecology and health outcomes: the criticality of human capital development and energy use. *Heliyon*, 8(12), e12611. [doi:10.1016/j.heliyon.2022.e12611](https://doi.org/10.1016/j.heliyon.2022.e12611)
- Jaffar, A. (2020). The Impact of Coronavirus (SARS-CoV2) Epidemic on Individuals Mental Health: The Protective Measures of Pakistan in Managing and Sustaining Transmissible Disease. *Psychiatr Danub*, 32(3-4), 472-477. [doi:10.24869/psyd.2020.472](https://doi.org/10.24869/psyd.2020.472)
- Jaffar, A., Al-Sulaiti, K., Balsalobre-Lorente, D., Shah, A. R. S., & Shahzad, U. (2022). Reset the industry redux through corporate social responsibility: The COVID-19 tourism impact on hospitality firms through business model innovation (1st ed.): Routledge.
- Jaffar, A., Aqeel, M., Shaheer, B., A, J., Sundas, J., & Zhang, W. (2019). The moderating role of social support for marital adjustment, depression, anxiety, and stress: Evidence from Pakistani working and nonworking women. *J Affect Disord*, 244, 231-238. [doi:10.1016/j.jad.2018.07.071](https://doi.org/10.1016/j.jad.2018.07.071)
- Jawad, A., Wang, L., Ben Belgacem, S., Pawar, P. S., Najam, H., & Abbas, J. (2023). Investment in renewable energy and electricity output: Role of green finance, environmental tax, and geopolitical risk: Empirical evidence from China. *Energy*, 269, 05115. [doi:10.1016/j.energy.2023.126683](https://doi.org/10.1016/j.energy.2023.126683)
- Khalid, A. S., Al Khulaifi, A., & Al Khatib, F. (2005). Banking services and customer's Satisfaction in Qatar: A statistical analysis. *Studies in Business and Economics*, 11(1).
- Khazaie, H., Lebni, J. Y., Mahaki, B., Chaboksavar, F., Kianipour, N., . . . Ziapour, A. (2021). Internet Addiction Status and Related Factors among Medical Students: A Cross-Sectional Study in Western Iran. *Int Q Community Health Educ*, 272684X211025438. [doi:10.1177/0272684X211025438](https://doi.org/10.1177/0272684X211025438)
- Lebni, J. Y., Toghroli, R., Kianipour, N., NeJhaddadgar, N., Salahshoor, M. R., . . . Ziapour, A. (2021). Nurses' Work-Related Quality of Life and Its Influencing Demographic Factors at a Public Hospital in Western Iran: A Cross-Sectional Study. *Int Q Community Health Educ*, 42(1), 37-45. [doi:10.1177/0272684X20972838](https://doi.org/10.1177/0272684X20972838)
- Lebni, J. Y., Toghroli, R., NeJhaddadgar, N., Salahshoor, M. R., Mansourian, M., . . . Ziapour, A. (2020). A study of internet addiction and its effects on mental health: A study based on Iranian University Students. *J Educ Health Promot*, 9(1), 205. [doi:10.4103/jehp.jehp_148_20](https://doi.org/10.4103/jehp.jehp_148_20)
- Li, Y., Khalid, A.-S., Dongling, W., & Al-Sulaiti, I. (2022). Tax Avoidance Culture and Employees' Behavior Affect Sustainable Business Performance: The Moderating Role of Corporate Social Responsibility. *Frontiers in Environmental Science*, 10. [doi:10.3389/fenvs.2022.964410](https://doi.org/10.3389/fenvs.2022.964410)
- Lin, C. P. (2021). The salience of stakeholders in religious tourism: A case study of the Dajia Mazu pilgrimage. *Annals of Tourism Research*, 86. [doi:10.1016/j.annals.2020.103091](https://doi.org/10.1016/j.annals.2020.103091)
[doi:10.1080/02642060701846762](https://doi.org/10.1080/02642060701846762)
- Liu, Q., Qu, X., Wang, D., & Mubeen, R. (2021). Product Market Competition and Firm Performance: Business Survival Through Innovation and Entrepreneurial Orientation Amid COVID-19 Financial Crisis. *Front Psychol*, 12, 790923. [doi:10.3389/fpsyg.2021.790923](https://doi.org/10.3389/fpsyg.2021.790923)
- Local Burden of Disease, H. I. V. C. (2021). Mapping subnational HIV mortality in six Latin

- American countries with incomplete vital registration systems. *BMC Med*, 19(1), 4. [doi:10.1186/s12916-020-01876-4](https://doi.org/10.1186/s12916-020-01876-4)
- Madarász, E., & Papp, Z. (2013). Delimiting the "Balaton Riviera" tourist destination by using network analysis. *Hungarian Geographical Bulletin*, 62(3), 289-312. [doi:10.1080/13683500](https://doi.org/10.1080/13683500)
- Mansourian, M., Qorbani, M., Mehr, B. R., Ziapour, A., Lebni, J. Y., & Safari, O. (2019). Secrecy in drug abusers: A qualitative study in Iran. *Journal of Postgraduate Medical Institute*, 33(3), 256-262. [doi:https://jpmi.org.pk/index.php/jpmi/article/view/2492](https://doi.org/https://jpmi.org.pk/index.php/jpmi/article/view/2492)
- Maqsood, A., Rehman, G., & Mubeen, R. (2021). The paradigm shift for educational system continuance in the advent of COVID-19 pandemic: Mental health challenges and reflections. *Current Research in Behavioral Sciences*, 2, 100011. [doi:10.1016/j.crbeha.2020.100011](https://doi.org/10.1016/j.crbeha.2020.100011)
- Micah, A. E., Bhangdia, K., Cogswell, I. E., Lasher, D., Lidral-Porter, B., Maddison, E. R., . . . Dieleman, J. L. (2023). Global investments in pandemic preparedness and COVID-19: development assistance and domestic spending on health between 1990 and 2026. *The Lancet Global Health*. [doi:https://doi.org/10.1016/S2214-109X\(23\)00007-4](https://doi.org/10.1016/S2214-109X(23)00007-4)
- Mijajlović, M., Puška, A., Stević, Ž., Marinković, D., Doljanica, D., Jovanović, S. V., . . . Beširović, J. (2020). Determining the competitiveness of spa-centers in order to achieve sustainability using a fuzzy multi-criteria decision-making model. *Sustainability* (Switzerland), 12(20), 1-17. [doi:10.3390/su12208584](https://doi.org/10.3390/su12208584)
- Mohammadi, A., Pishgar, E., Firouraghi, N., Bagheri, N., Shamsoddini, A., & Kiani, B. (2021). A geodatabase of blood pressure level and the associated factors including lifestyle, nutritional, air pollution, and urban greenspace. *BMC Res Notes*, 14(1), 416. [doi:10.1186/s13104-021-05830-2](https://doi.org/10.1186/s13104-021-05830-2)
- Moradi, F., Tourani, S., Ziapour, A., Hematti, M., Moghadam, E. J., . . . Soroush, A. (2020). Emotional Intelligence and Quality of Life in Elderly Diabetic Patients. *Int Q Community Health Educ*, 272684X20965811. [doi:10.1177/0272684X20965811](https://doi.org/10.1177/0272684X20965811)
- Moradi, F., Ziapour, A., Najafi, S., Rezaeian, S., Faraji, O., . . . Soroush, A. (2021). Comparing the Associated Factors on Lifestyle Between Type 2 Diabetic Patients and Healthy People: A Case-Control Study. *Int Q Community Health Educ*, 272684X211022158. [doi:10.1177/0272684X211022158](https://doi.org/10.1177/0272684X211022158)
- Mubeen, R., Han, D., Alvarez-Otero, S., & Sial, M. S. (2021). The Relationship Between CEO Duality and Business Firms' Performance: The Moderating Role of Firm Size and Corporate Social Responsibility. *Front Psychol*, 12, 669715. [doi:10.3389/fpsyg.2021.669715](https://doi.org/10.3389/fpsyg.2021.669715)
- Mubeen, R., Han, D., Raza, S., & Bodian, W. (2021). Examining the Relationship Between Product Market Competition and Chinese Firms Performance: The Mediating Impact of Capital Structure and Moderating Influence of Firm Size. *Front Psychol*, 12, 709678. [doi:10.3389/fpsyg.2021.709678](https://doi.org/10.3389/fpsyg.2021.709678)
- Paneva-Marinova, D., Rangochev, K., & Goynov, M. (2017). Business modeling of the application architecture of the Bulgarian folklore artery. *Paper presented at the 1st International Conference on Digital Presentation and Preservation of Cultural and Scientific Heritage*, DiPP 2011.
- Pappas, N. (2018). Hotel decision-making during multiple crises: A chaordic perspective. *Tourism Management*, 68, 450-464. [doi:10.1016/j.tourman.2018.04.009](https://doi.org/10.1016/j.tourman.2018.04.009)
- Peter, S., Aqeel, M., Akhtar, T., & Farooq, K. (2017). The moderating role of pregnancy status among coping strategies, depression, anxiety and stress across Pakistani married women. *Foundation University Journal of Psychology*, 1(2), 67-93. [doi:https://doi.org/10.33897/fujp.v1i2.55](https://doi.org/https://doi.org/10.33897/fujp.v1i2.55)



- Rahmat, T. E., Raza, S., Zahid, H., Mohd Sobri, F., & Sidiki, S. (2022). Nexus between integrating technology readiness 2.0 index and students' e-library services adoption amid the COVID-19 challenges: Implications based on the theory of planned behavior. *J Educ Health Promot*, *11*(1), 50. [doi:10.4103/jehp.jehp_508_21](https://doi.org/10.4103/jehp.jehp_508_21)
- Schmidt, C. A., Cromwell, E. A., Hill, E., Donkers, K. M., Schipp, M. F., Johnson, K. B., . . . Hay, S. I. (2022). The prevalence of onchocerciasis in Africa and Yemen, 2000-2018: a geospatial analysis. *BMC Med*, *20*(1), 293. [doi:10.1186/s12916-022-02486-y](https://doi.org/10.1186/s12916-022-02486-y)
- Shah, S. A. R., Zhang, Q., Balsalobre-Lorente, D., & Pilař, L. (2023). Technology, Urbanization and Natural Gas Supply Matter for Carbon Neutrality: A New Evidence of Environmental Sustainability under the Prism of COP26. *Resources Policy*, *82*, 103465. [doi:10.1016/j.resourpol.2023.103465](https://doi.org/10.1016/j.resourpol.2023.103465)
- Shoib, S., Gaitan Buitrago, J. E. T., Shuja, K. H., Aqeel, M., de Filippis, R., . . . Arafat, S. M. Y. (2022). Suicidal behavior sociocultural factors in developing countries during COVID-19. *Encephale*, *48*(1), 78-82. [doi:10.1016/j.encep.2021.06.011](https://doi.org/10.1016/j.encep.2021.06.011)
- Soroush, A., Ziapour, A., Jahanbin, I., Andayeshgar, B., Moradi, F., . . . Cheraghpouran, E. (2021). Effects of Group Logotherapy Training on Self-Esteem, Communication Skills, and Impact of Event Scale-Revised (IES-R) in Older Adults. *Ageing International*, *47*(4), 758-778. [doi:10.1007/s12126-021-09458-2](https://doi.org/10.1007/s12126-021-09458-2)
- Sulaiti, K. A., Ahmed, Z. U., & Beldona, S. (2006). Arab Consumers' Behavior Towards Credit Card Usage. *Journal of Transnational Management*, *12*(1), 69-86. [doi:10.1300/J482v12n01_05](https://doi.org/10.1300/J482v12n01_05)
- Tseng, M. L., Chang, C. H., Wu, K. J., Lin, C. W. R., Kalnaovkul, B., & Tan, R. R. (2019). Sustainable agritourism in Thailand: Modeling business performance and environmental sustainability under uncertainty. *Sustainability (Switzerland)*, *11*(15). [doi:10.3390/su11154087](https://doi.org/10.3390/su11154087)
- Wang, L., Wang, X. K., Peng, J. J., & Wang, J. Q. (2020). The differences in hotel selection among various types of travellers: A comparative analysis with a useful bounded rationality behavioural decision support model. *Tourism Management*, *76*. [doi:10.1016/j.tourman.2019.103961](https://doi.org/10.1016/j.tourman.2019.103961)
- Yao, J., Ziapour, A., Toraji, R., & NeJhaddadgar, N. (2022). Assessing puberty-related health needs among 10–15-year-old boys: A cross-sectional study approach. *Archives de Pédiatrie*, *29*(2). [doi:10.1016/j.arcped.2021.11.018](https://doi.org/10.1016/j.arcped.2021.11.018)
- Yu, S., Draghici, A., Negulescu, O. H., & Ain, N. U. (2022). Social Media Application as a New Paradigm for Business Communication: The Role of COVID-19 Knowledge, Social Distancing, and Preventive Attitudes. *Front Psychol*, *13*, 903082. [doi:10.3389/fpsyg.2022.903082](https://doi.org/10.3389/fpsyg.2022.903082)
- Zafar, M. Z., Shi, X., Yang, H., & Chen, J. (2022). The Impact of Interpretive Packaged Food Labels on Consumer Purchase Intention: The Comparative Analysis of Efficacy and Inefficiency of Food Labels. *Int J Environ Res Public Health*, *19*(22), 15098. [doi:10.3390/ijerph192215098](https://doi.org/10.3390/ijerph192215098)
- Zeidabadi, S., Mangolian Shahrbabaki, P., & Dehghan, M. (2022). The Effect of Foot Reflexology on the Quality of Sexual Life in Hemodialysis Patients: A Randomized Controlled Clinical Trial. *Sexuality and Disability*, *41*(1), 1-12. [doi:10.1007/s11195-022-09747-x](https://doi.org/10.1007/s11195-022-09747-x)
- Zhang, X., Husnain, M., Yang, H., Ullah, S., & Zhang, R. (2022). Corporate Business Strategy and Tax Avoidance Culture: Moderating Role of Gender Diversity in an Emerging Economy. *Front Psychol*, *13*, 827553. [doi:10.3389/fpsyg.2022.827553](https://doi.org/10.3389/fpsyg.2022.827553)
- Zhuang, D., Al-Sulaiti, K., Fahlevi, M., Aljuaid, M., & Saniuk, S. (2022). Land-use and food security in energy transition: Role of food supply. *Frontiers in Sustainable Food Systems*, *6*. [doi:10.3389/fsufs.2022.1053031](https://doi.org/10.3389/fsufs.2022.1053031)