AMERICAN JOURNALS
Open Access, Peer Reviewed Journals

American Journal of Business Management, Economics and Banking
**ISSN (E): 2832-8078** Volume 1, | June, 2022

# ROLE OF ARTIFICIAL INTELLIGENCE IN BUSINESS RISK MANAGEMENT

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***A B S T R A C T***

In the current technological development Artificial Intelligence (AI) has received acceptance level and seen drastic growth and applications in various domains. Financial Sector (FS) that includes Financial Markets (FM), institutions and policies have major impacts of AI. Another important benefit of application of AI is in Cost Modelling (CMD) which helps in determining the success factors of any business operations. AI aids in understanding and measuring the variable for CMD. AI technology brings massive transformation to the entire financial industry, which creates a series of new financial services such as intelligent consultant, intelligent lending, monitoring and warning, and intelligent customer service. This paper reviews the development and application of AI and its impacts on macroeconomics and microeconomics to show the advantages of AI in FS generally and in FM precisely. Risk Management's (RM) competencies have enhanced by the application of AI, this paper coves the reasons for growth of AI in general scenario and for RM specifically. This paper also describes three methods and challenges for CMD based on AI techniques. Three methods are Analog, Analytical and Parametric method for cost estimation and modelling. Results suggest the strategies and application of AI for financial RM and CMD.

***K E Y W O R D S***

AI; Financial markets; Cost Modelling; Risk Management; Analog Method ; Analytical Method; Parametric Method

## INTRODUCTION

Artificial Intelligence (AI) is presented as the most innovative and strong tool for other disciplines for their effective applications and benefits because in the current scenario this is the only tool or technology which is compared with the intelligence of humans and can be trusted for its results to quite an extent. The growth and applications of AL is increasing every day and we witness new roles of AI in different sectors as a result the dependence on AI is increasing drastically. The business opportunities and growth are expanding and they explore more market for their services and products,

in this situation AI is able to provide many benefits to meet business objectives. AI facilitates in integrating the technology and concepts in the real time environment and give better return on investments and other tangible as well as intangible advantages. These advantages may include cost analysis, risk assessment, market development, strategic analysis, etc. There are many benefits of AI and as of another sphere, there are many concerns too. AI has aggravated the problems of computing ethics, increased digital divide, and lead to biased decisions. Apart from these concerns AI also has to be checked for its unambiguous working, complexities in algorithms and cyber threats. Similarly AI has to be monitored for strategic planning at organizational level as well as industrial level.

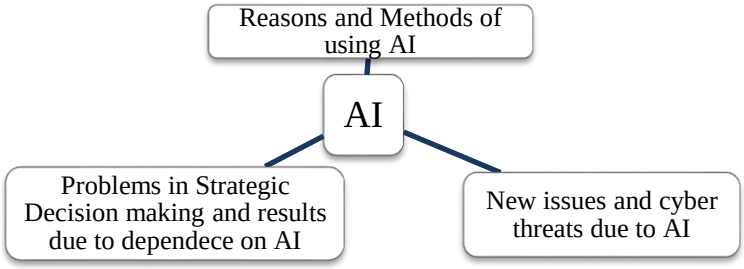


Figure 1. Reasons to apply AI

In the current digital technology, AI has become the stimuli for increasing the level of competition at all places such as firms, government, international businesses, education, etc. The growth of Internet and IS and IT financial analysis is no longer depending on statistical methods of its results, applications and benefits. There are many applications introduced by AI which have integrated the statistical methods for analyzing effectively and efficiently the applications of finance and some of the examples are given in figure 2.

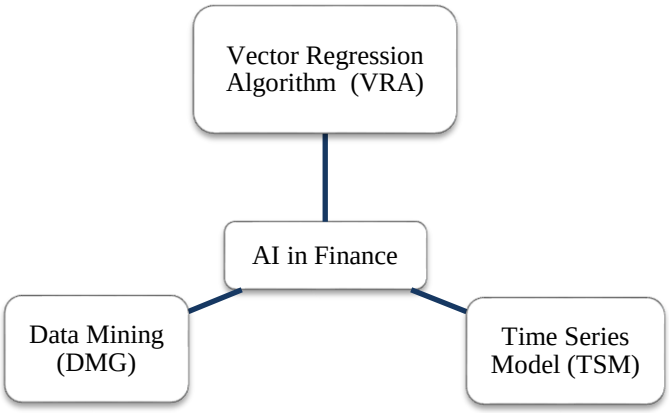


Figure 2. Examples of AI in finance

AI has been using VRA and TSM for measuring financial performance for the firm and aids in developing the future model for the growth and development for the firm financial structure. TSM has its own advantages and AI use this for prediction of outcomes, problem solving, and methods of resolving errors and do accurate Financial Data Analysis (FDA).

AI in the stock investment of financial market and FDA plays a great role because people aspires to know the risk and returns and both are easily and accurately calculated by AI. Financial experts at all levels of industry use AI in analyzing good investment decisions and also apply techniques of DMG in FDA and in Stock Market Analysis (SMA). This helps in measuring good investment decisions, SMA, cost analysis, forecasting market trends and methods for profit maximization. AI is extensively applied in FDA and some of the areas are listed in figure 3.

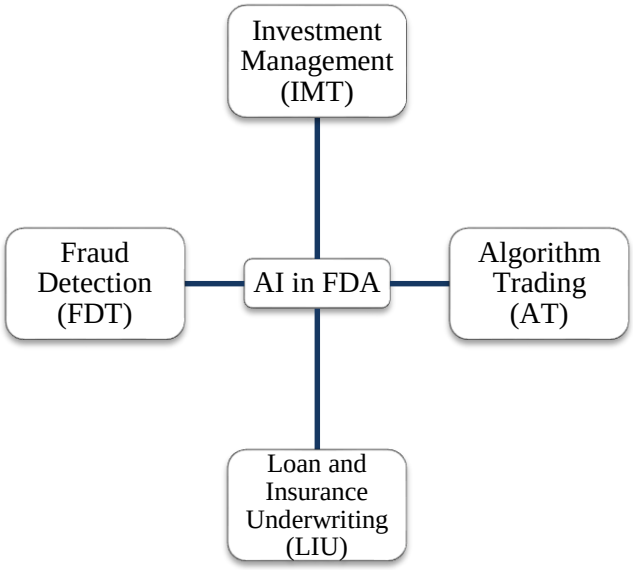


Figure 3. AI application in FDA

AI has many impacts in FDA and also influence in financial laws and regulations (FLR). AI helps to measure the effective of FLR that can aid in building the regulations, describing the legal and illegal compliances, etc. Ai follows retrospective trends to measure the FDA and FLR and use it for monitoring the AT, LIU, FDT and IMT. This research focus on the development and role of AI in FM and FS for doing the study of RM and CMD.

CMD is an important area in FDA and AI plays an important role in this estimation. AI calculates the cost required to invest and deploy for any successful business, resources and time management and over all estimation of the cost and budget analysis.

AI identifies the factors and techniques needed for CMD and how retro- septic FDA can aid to the process. The method is based on FDA where AI calculates the costing in numerical terms and with the help of DMG process the need for cost requirements in the business and also RM needed in the sector. This research is a descriptive study based on qualitative analysis which is divided into four parts; first part will cover the related studies of AI's role in CMD and RM and general growth and development of AI. The second part discusses the roles, advantages and challenges in CMD and RM. Third part presents the recommendation and general advantages of AI in CMD and RM. Fourth part concludes the general scenario of AI and specific competitive advantages in CMD and RM.

## 1. LITERATURE REVIEW

*2.1 The Development of Artificial Intelligence in Financial Field*

With the rapid development of artificial intelligence technology, AI is widely popularized in financial field. Factors that accelerate the Fintech development, promote the development of artificial intelligence and machine learning in financial field, and drive financial institution to reduce cost, management risk, improve quality of service and increase profit by using AI and machine learning. In early 1960s, one of the algorithms in machine learning-Bayesian Statistics become famous, it has been widely used in financial area until now [4]. Moreover, the reason that Bayesian Theory become popular in financial area, is its application in auditing area. In the auditing field, judgment made by auditor, used to rely on professional knowledge and experience, but different cases have different situations. Various uncertain factors need to be considered in the decision-making of auditing. Therefore,

Bayesian model provides objective and rational probability to auditor and help them to make more accurate assessment, as well as reducing the misjudgment caused by auditor's personal emotion [5]. In the initial stage of cooperation between artificial intelligence and financial industry, it focuses on reducing the workload of financial practitioners by computing power of computers. Until 1980s, Expert System (intelligence system based on knowledge) is used in the financial industry to predict the trend of market and provide customize financial plan. A basic Expert System includes six components, which are knowledge base, data base, inference engine, explanation facility, knowledge acquisition and user interface, as figure 1 shown. Hodgkinson and Walker [7] raised a rule-based Expert System to achieve decision-making process, which helps financial intuitions to make decision on credit application of cooperate credit loan. Shue et al. [8] establish Expert System contains domain knowledge base and operational knowledge base, to credit ranking of listed companies in Taiwan stock market. Janulevicius and Goranin [9] built up a risk management Expert System to help middle and small-sized enterprise to solve the problem of lack of access to professional data security analysis due to limited fund.

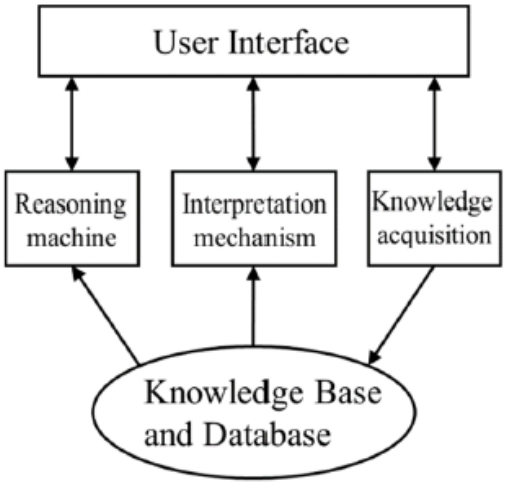


Figure 4. Levels of Expert System

In 1990s, due to improved computing power of computer, a series of artificial technologies are used in financial fraud detection. Artificial intelligence trying to analyze massive amount of data and find out the outlier to determine financial fraud. [10] As the increasing computing power of computer and continuous improvement of artificial intelligence algorithm, the integration of artificial intelligence and financial industry will be higher and higher, and it will also be applied to more aspects in financial field.

### 2.2 Application of Artificial Intelligence in Financial Field

The application of artificial intelligence and machine learning in financial field can be divide into four aspects. Firstly, it is customer-oriented (front-end) applications, including credit scoring, insurance and customer-oriented service robot; secondly, management level (back-end) applications, including capital optimization, risk management and market impact analysis; thirdly, financial market transactions and portfolio management; lastly, AI and machine learning are used in financial institutions for "RegTech" or financial regulators for "SupTech". In addition, AI and machine learning are widely used in specific scenarios such as quantitative transactions in the financial field, natural language processing, and semantic search and intelligence investment consultants.

"Artificial intelligence (AI) systems are software (and possibly also hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal. AI systems can either use symbolic rules or learn a numeric model, and they can also adapt their behavior by analyzing how the environment is affected by their previous actions.

As a scientific discipline, AI includes several approaches and techniques, such as machine learning (of which deep learning and reinforcement learning are specific examples), machine reasoning (which includes planning, scheduling, knowledge representation and reasoning, search, and optimization), and robotics (which includes control, perception, sensors and actuators, as well as the integration of all other techniques into cyber-physical systems)."

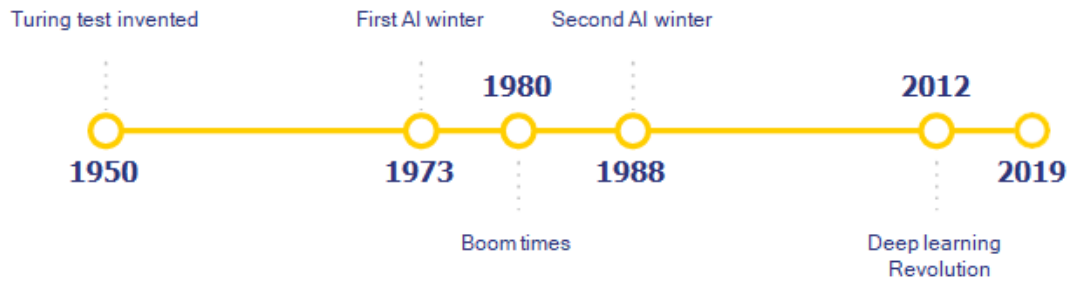


Figure 5. Growing role of AI

Companies in many industries are now using AI techniques to exploit data and optimize business and production processes. They process information in more productive ways and create value, with faster and more accurate decisions, reduced operational costs and personalized customer experiences. Increasing capacity for data storage and new software for data-driven AI solutions are yielding paradigm changes in the analytic environment.

As a result, both companies and governments have heavily increased their investments, which are driving today's boom and achievements in AI.

No data, no AI! The very first requirement for a successful AI solution is a sufficient amount and quality of data. Data can be a text, number, image, audio or video.

Generally speaking, a three-fold data capacity problem arises for companies: they have too much data, too little data or they have not yet collected data.

- **Variety and veracity** mostly inform about the quality of the existing data.
- **Volume and velocity** determine which data ecosystem must be used in the AI solution. The ecosystem is the set of infrastructure, analytics and applications used to capture and analyses data.
- **Velocity and value** have role in the determination of algorithmic components of the solution.
- When the organization has the data, it must adapt its infrastructure to better explore the quantity and quality of information available.

The base of the software cost estimation was established by Lawrence H. Putnam and Ann Fitzsimmons [4], although the first approaches were carried out during the sixties. The more important progresses were performed within the big companies of the epoch. So, Frank Freiman, from RCA, developed the concept of parametric estimation with his tool named PRICE. Norman Peter, from

IBM,developed a model based on adjusted curves [5].

During the seventies the number of software projects and its size suffered a big increment. Most projects performed during this epoch failed. Due to this, more people focused on project estimation. Using statistic techniques (mainly correlations), people researchedabout the factors influencing over project effort. In this way, the more emblematic model, COCOMO, was developed by Barry W. Boehm [6]. Most of thesemodels consider the effort (*E*) as result of an equationbased on:

In the nineties, Boehm developed a new version of COCOMO, named COCOMO 2.0 [12], adapted tothe new circumstances of the software (object oriented, transactions, software reusing, etc.) Until the nineties, most of the improvement efforts were address to disaggregate the components of the modelsand proceed to adjust the parameters usingregressions. Other approaches were also used, in example rule systems were used by Mukhopadhyay, [13], or decision trees by Porter [14][15]. But the results were not satisfactory and the application of these techniques presented some problems. With the explosion of the AI techniques in the beginning of thenineties, new approaches were used: Fuzzy Logic,Genetic Algorithms, Neural Networks and so on. The new modelling techniques allow a most suitable selection of variables and the study and work with more representative datasets. Additionally, the use of these techniques is useful combining the knowledgeof the domain (those information we have about the problem) with the processing of large datainformation.

Although the existing methods have improved significantly the way in which estimation is performed, they don't reach the required accuracy. The limitations of the existing models are derivedfrom the difficult to quantify the factors, as well asthe simplifications done in the models. The datasets used to adjust the models shall be representative. Finally, considering the non-linear of the process and the dependencies of non-quantified parameters, the problem is suitable to be studied under the framework of the AI techniques.

## 2. DISCUSSION

*Impacts of artificial intelligence on microeconomic*

The rapid development of artificial intelligence has brought new impacts and vitality to various industries. In addition to the practice field of traditional artificial intelligence- the Internet industry, it also brought new impact and vitality to traditional industries, such as manufacturing and service industries.

1) Artificial intelligence can automate "programmable work". Once the cost of this automation is much lower than the labor cost, industry will not hesitate to use artificial intelligence to replace this part of the labour force. It will result in a large number of "programmable" practitioners unemployed. Moreover, most of the unemployed "programmable" practitioners are low-level skill and educated practitioner, which is difficult to re-educated to satisfy the new position. On the other hand, artificial intelligence brings new vitality to employment, even though AI will replace most of the "programmable work" practitioners. The demand to "non-programmable work" practitioners will increase. Practitioners with high-level education and skill practitioners will increase in the long term and in large numbers as well.

2) Since the artificial intelligence changes the structure of labor market, it promotes the redistribution of internal income distribution among labor. There will be more significant differences in the income of labor with different skill levels. The change of income distribution also reflects on the component

(industry). The industry with less "programmable" work is less affected by artificial intelligence, and the change in income distribution is also less than other industries.
3) Upgrading and transforming with the industry structure of market: every technological innovation brings a new industry replacement and upgrade. From the financial, manufacture in the past to Internet and Technology Company nowadays. The arrival of artificial intelligence will strengthen the dominant position of technology and Internet companies; therefore, traditional industries must transform and integrate new technology to avoid being eliminated by the wave of development. [19]
4) The impact of artificial intelligence on the innovation ability of enterprises: As the labor force develops toward high technology and high knowledge, enterprises need strong innovation ability and speed to maintain core competitiveness. Enterprise managers must be keenly aware of the cutting-edge technology and be bold to use new technology to innovate products. [19]
5) The impact of artificial intelligence on human resources: As enterprises need innovation to maintain core competitiveness, high-end talent resources will be particularly popular, artificial intelligence expert will become an important asset of enterprises. Companies will also attract talent through more favorable conditions. [19]

***The impacts of AI on macroeconomic***

1) The impact of artificial intelligence on economic growth: Artificial intelligence is mainly embodying in the automated processing of "programmable" work, thereby by reducing labor costs and improving production efficiency in the production process, it brings the profits. However, it will lead to cost increase in non-automated sector, which will reduce the share of capital return in the economy.
2) The impact of artificial intelligence on industrial organization: The first channel is the direct impact of technology, and second channel is the change of enterprise structure caused by technology. With the development of artificial intelligence, the trend of mergers and acquisitions of downstream enterprises by the large platform enterprises will become more obvious. Large-scale platform enterprises are not competing for direct market profits and shares, but the data resources of entire industry chain, so as to better develop artificial intelligence.
3) The impact of artificial intelligence on trade: Since artificial intelligence has significant impact on factor returns, and changes the relative returns between different elements, so that the dynamic advantages of countries change. High-tech, high-knowledge talents are vital factors in the development of artificial intelligence, therefore, talents will become important targets of trade.
4) The impact of artificial intelligence on GDP: Artificial intelligence can play an important role in e-commerce recommendation system, which could change people's consumption habit and promoting consumption. It can satisfy the requirement of stimulating domestic demand and become a new carriage that drives consumption.
5) The impact of artificial intelligence on public policy: Based on the negative impact of artificial intelligence on the labor market, the government should formulate targeted public policies to ensure that overall social welfare is not impaired and alleviate the pressure caused by income inequality, which could better enjoy the productivity growth brought by artificial intelligence and the economic growth by social stability.
6) The impact of artificial intelligence on macroeconomic research methods: Traditional economic research methods focus on the small samples and low-dimensional data, which make the traditional economic model have certain limitations. After applying AI in it, when researching new economic

models, it is possible to use large-sample, high-dimensional data to verify. Artificial intelligence will greatly promote the development of economics.

***General benefits for risk management***

Across industries, AI is ever more recognized for its potential. It will change people's day-to-day activities, including in risk and insurance management. Insights, that now become visible only when losses occur, can in future emerge before then through learning from large volumes of historical data. For risk management, key benefits will relate to:

- **Data processing**: Usage of not only structured but also unstructured data in massive amounts; combinations of datasets and updating patterns.
- **Improving efficiency**: Reducing cost by automating day-to-day assistance and guidance in therisk management processes.
- **Real-time and predictive**: Awareness of new exposures, increasing preventative risk advices, faster response time in critical situations.
- **Business decisions**: Better decision-making through greater (predictive) insights and visibility of risk (also for top management).

***AI action guide for risk managers***

This "AI Action Guide for Risk Managers" has been developed to support the risk manager in identifying key areas to apply AI methods. Risk managers can use this matrix according to their organization's specificrequirements and areas of benefit, especially according to the available data, the risk management steps to be improved, claims occurring, and lines of business and total cost of risk (TCOR).

***Relevant competences for the risk manager of tomorrow***

Faced with the progress of AI, risk managers need to position themselves as value drivers within theorganization and as AI risk advisers to senior management and the board. The risk manager will not usually be a technical subject expert. He or she will add value from a combination of risk management skills, knowledge of the organization and a level of broad digital understanding.

The current risk management skills – a thorough understanding of a wide range of risk management techniques, people management and communication skills – remain essential. The risk manager willalso need a minimum level of digital knowledge, which will require continuing updating.

***Traditional Costing Model***

1. The Analog Method

This method estimates the cost of a new product by comparison with similar products produced or purchased in the past. This method is unreliable, but can be used in extremely upstream phases (feasibility study) when the characteristics of the project or service are not yet known. We will not dwell on this type of basic estimate in this article.

2. The Analytical Method

It estimates the cost of a product by modeling the industrial production process. This method is based on the cost structure of the product, of which it estimates each intermediate element on the basis of the

materials & components involved, the process costs (machine and labor), as well as the additional structural costs.

3. The Parametric Method

This method estimates the cost of a product or service by statistical modeling. This method uses the histories of similar products or services to define equations or statistical laws which make it possible to model the evolution of the cost as a function of certain parameters known as "cost drivers".

## 4. RESULTS

**The statistical method**, which is more consistent because it is based on the observation of real data, makes it possible to obtain a rapid and precise assessment in order to make the right decisions in the product design or redesign processes. Simple to implement, it allows a large number of families of products and services to be modeled in a non-intrusive manner and without the need to acquire advanced technological expertise.

**The analytical method** makes it possible to obtain an estimate precisely reflecting the reality (or the simulation) of a manufacturing process. More tedious to implement, it does, however, make it possible to define cost targets to be reached with explanatory factors based on the observed industrial parameters and benchmarks. In this sense, **it is more appropriate for quantifying technological breakthroughs and leading supplier industrial progress plans in order to bring them to the target.** It is also more relevant for quantifying technological innovations for which the company does not have a history.

Nevertheless, self-study algorithms and deep learning open up new horizons and fields of application for the use of statistical models, in particular through the sharing of information between companies or between them and their suppliers.

## 5. CONCLUSION

As a new field full of opportunities and challenges, artificial intelligence is an inevitable outcome of the development of science and technology, but at the same time, there are corresponding challenges in applying artificial intelligence. Therefore, the financial system should completely understand artificial intelligence and make its application system in the financial field more consummate. In order to design a complete artificial intelligence, it is necessary to set guiding principles firstly, which aims to guide the whole process of artificial intelligence development, design, use, management and control, and carefully promote artificial intelligence applications in the field of financial risk management. In the field of financial risk management, the used of artificial intelligence for information collection must follow certain criteria to ensure the legitimacy of information collection and the interests of those who do not harm the information source. The types and strength of artificial intelligence information collection and behavior of information collection are standardized. What's more, we should focus on R&D and application of user information encryption technology and strengthen the application of artificial intelligence in the field of financial risk management.

## REFERENCES

1. Naim, A., Sattar, R. A., Al Ahmary, N.., & Razwi, M. T. (2021) Implementation of Quality Matters Standards on Blended Courses: A Case Study. FINANCE INDIA Indian Institute of Finance Vol. XXXV No. 3, September 2021 Pages—873 – 890

2. Naim, A. (2021). Application of Quality Matters in Digital Learning in Higher Education. Texas Journal of Multidisciplinary Studies, 1(1), 3-12.
3. Khan, N., Naim, A., Hussain, M. R., Naveed, Q. N., Ahmad, N., & Qamar, S. (2019, May). The 51 v's of big data: survey, technologies, characteristics, opportunities, issues and challenges. In Proceedings of the international conference on omni-layer intelligent systems (pp. 19-24).
4. Naim, A., & Alahmari, F. (2020). Reference model of e-learning and quality to establish interoperability in higher education systems. International Journal of Emerging Technologies in Learning (iJET), 15(2), 15-28.
5. Naim, A., Alahmari, F., & Rahim, A. (2021). Role of Artificial Intelligence in Market Development and Vehicular Communication. Smart Antennas: Recent Trends in Design and Applications, 2, 28
6. Naim, A., Hussain, M. R., Naveed, Q. N., Ahmad, N., Qamar, S., Khan, N., & Hweij, T. A. (2019, April). Ensuring interoperability of e-learning and quality development in education. In 2019 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT) (pp. 736-741). IEEE.
7. Naim, A., Khan, M. F., Hussain, M. R., & Khan, N. (2019). "Virtual Doctor" Management Technique in the Diagnosis of ENT Diseases. JOE, 15(9), 88.
8. Naim, A. (2020). Realization of diverse Electronic tools in learning and teaching for students with diverse skills. Global Journal of Enterprise Information System, 12(1), 72-78.
9. Naim, A., & Bashir, A. (2016). Application of Quality Matters Standards on Supportive and Online Module in Higher Education Program. Research Revolution, 5(3), 6-12.
10. Naim, A. (2018). Strategies to Achieve Students' Centric Approach in Blended Learning. International Journal of Engineering and Management Research (IJEMR), 8(2), 214-219.
11. Hussain, M. R., Naim, A., & Khaleel, M. A. (2020). Implementation of Wireless Sensor Network Using Virtual Machine (VM) for Insect Monitoring. Innovations in Electronics and Communication Engineering: Proceedings of the 8th ICIECE 2019, 107, 73.
12. Hussain, M. R., Quadri, N. N., Ahmad, N., Qamar, S., Khan, N., Naim, A., & Hussain, M. E. (2019, April). Effective cost optimization approach in Healthcare to Minimize the treatment cost of Brain-tumor Patients. In 2019 International Conference on Computer and Information Sciences (ICCIS) (pp. 1-5). IEEE.
6. Naim, A. (2021). Green Information Technologies in Business Operations. Periodica Journal of Modern Philosophy, Social Sciences and Humanities, 1, 36-49.
7. Naim, A. (2021). Applications of MIS in building Electronic Relationship with customers: A case-based study. Periodica Journal of Modern Philosophy, Social Sciences and Humanities, 1, 1-8.
8. Naim, A. (2021). New Trends in Business Process Management: Applications of Green Information Technologies. British Journal of Environmental Studies, 1(1), 12-23.
9. Arshi Naim, & Mohammad Faiz Khan. (2021). Measuring the Psychological Behavior of Consumers for Medical Services. Zien Journal of Social Sciences and Humanities, 2, 119–131. Retrieved from http://zienjournals.com/index.php/zjssh/article/view/316
10. Naim, A. (2021). Applications of Marketing Framework in Business Practices. Journal of Marketing and Emerging Economics, 1(6), 55-70.

11. Naim, A. . . (2021). Green Business Process Management. International Journal of Innovative Analyses and Emerging Technology, 1(6), 125–134. Retrieved from http://openaccessjournals.eu/index.php/ijiaet/article/view/651
12. Naim, A. (2021). Applications of MIS in building Electronic Relationship with customers: A case-based study. Periodica Journal of Modern Philosophy, Social Sciences and Humanities, 1, 1-8.
13. Naim, A., & Alqahtani, K. (2021). Role of Information Systems in Customer Relationship Management. Pulse, 2(2).
14. Bashir, M. A., & Naim, A. ICT Adoption Analysis for Innovation in Higher Education Sector.
15. Naim, A. . (2022). Neuro- Marketing Techniques for Proposing Information Driven Framework for Decision Making. International Journal of Innovative Analyses and Emerging Technology, 2(2), 87–94. Retrieved from http://openaccessjournals.eu/index.php/ijiaet/article/view/1060
16. Naim, A. . (2022). Neuro- Marketing Techniques for Proposing Information Driven Framework for Decision Making. International Journal of Innovative Analyses and Emerging Technology, 2(2), 87–94. Retrieved from http://openaccessjournals.eu/index.php/ijiaet/article/view/1060
17. Naim, A. . (2022). Economies of Scale for Antenna's Applications in Interior Regions. International Journal of Innovative Analyses and Emerging Technology, 2(2), 77–82. Retrieved from http://openaccessjournals.eu/index.php/ijiaet/article/view/1058
18. Arshi Naim. (2021). Applications of E-Learning tools for Achieving Students Learning Outcomes. Journal of Pedagogical Inventions and Practices, 2(2), 75–82. Retrieved from https://zienjournals.com/index.php/jpip/article/view/320
19. Naim, A., Muniasamy, A., Clementking, A., Rajkumar, R. (2022). Relevance of Green Manufacturing and IoT in Industrial Transformation and Marketing Management. In: Lahby, M., Al-Fuqaha, A., Maleh, Y. (eds) Computational Intelligence Techniques for Green Smart Cities. Green Energy and Technology. Springer, Cham. https://doi.org/10.1007/978-3-030-96429-0_19
20. Arshi Naim. (2022). MAPPING OF SOCIAL CUSTOMER RELATIONSHIP MANAGEMENT WITH ELECTRONIC CUSTOMER RELATIONSHIP MANAGEMENT. European Journal of Interdisciplinary Research and Development, 2, 14–25. Retrieved from https://ejird.journalspark.org/index.php/ejird/article/view/10
21. Naim, A. (2022). E-Learning Engagement through Convolution Neural Networks in Business Education. EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION, 2(2), 497-501.
22. Naim, A. (2022). Measurement Consumer Mood and Emotions for Fast Moving Consumer Goods. International Journal of Innovative Analyses and Emerging Technology, 2(2), 83-86.
23. Naim, A. (2022). Neuro-Marketing Techniques for Proposing Information Driven Framework for Decision Making. International Journal of Innovative Analyses and Emerging Technology, 2(2), 87-94.
24. Naim, A. (2022). Economies of Scale for Antenna's Applications in Interior Regions. International Journal of Innovative Analyses and Emerging Technology, 2(2), 77-82.
25. Arshi Naim. (2022). PUBLIC ENTERPRISES: THEIR ROLE, IMPORTANCE AND NEED IN ECONOMIC DEVELOPMENT. American Journal of Business Management, Economics and Banking, 1, 1–11. Retrieved from https://americanjournal.org/index.php/ajbmeb/article/view/7

26. Arshi Naim (2022) ROLE OF ACCOUNTING AND FINANCE IN PERFORMANCE APPRAISAL. American Journal of Sociology, Economics and Tourism, 1-17 Retrieved from 2022 https://americanjournal.org/index.php/ajset/issue/view/4
27. Arshi Naim (2022) ISLAMIC PHILOSOPHY BASED BUSINESS MODEL. American Journal of Research in Humanities and Social Sciences, 1-5. Retrieved from https://americanjournal.org/index.php/ajrhss/issue/view/2
28. Arshi Naim. (2022). MAPPING OF SOCIAL CUSTOMER RELATIONSHIP MANAGEMENT WITH ELECTRONIC CUSTOMER RELATIONSHIP MANAGEMENT. European Journal of Interdisciplinary Research and Development, 2, 14–25. Retrieved from https://ejird.journalspark.org/index.php/ejird/article/view/10