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Application of Artificial Intelligence (AI), Internet of Things (IoT), and Big Data in Healthcare, Finance, and Transportation

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Abstract

The study has depicted the usages of IoT (Internet of things), AI (Artificial intelligence), and big data, which are mainly integrated health, financial and transportation system. IoT assist in establishing advanced connection between one device to another with the specific region with an application of sensor or wireless connection. The IoT in the healthcare help to create connection between doctors system to patient's system for mentoring the patients. This application in financial sector helps to transact confidential information, which specifically happened with block chain technology. In the transportation, the sensor or wireless connection help to develop a connection thorough airspace and this also create a better connection with land to understand the direction. Similarly, the application of AI and Big Data can help gather accurate and insightful information that can help take better decisions in each of sectors for future growth and development. To evaluate and investigate the application of artificial intelligence, the internet of things (IoT), and big data in healthcare, finance, and transportation. The paper has used secondary data to provide the required insights on the topic and address its purpose. It is quite evident from the conducted research that the application of these technologies is only going to increase in the mentioned sectors considering their positive impact on growth and development of the respective sectors.

Keywords: IoT (Internet of things); AI (Artificial intelligence); big data; technological advancement; connection; healthcare; financial sector

Application of Artificial Intelligence (AI), Internet of Things (IoT), and Big Data in Healthcare, Finance, and Transportation

28

Introduction

The application of advanced technology has been highly used in all sectors in a vast way after the since they have the highest chance of having a perfect working strategy without any obstacles. The financial, healthcare, and even transportation sector has dramatically facilitated the application of AI, the internet of things and big data (Mohamed, 2020). In this concern, the IoT is significantly creating principal value under the circumstances of identifying, and tracking authenticated objects and people in perfect medical devices for getting information about patients and further analysis is taking place with big data analytics.

Internet of Things is then wireless connectivity, which is confirmed with advanced processing that connects all the data related to the healthcare sector. The way the machine sends all the information and creates an action sequentially has changed everything, which is mainly highlighted as a big development in the healthcare sector (Khatoon, Roy, &Pranav, 2020). Artificial intelligence is also a major aspect, which delivers better lending decisions and finalizes the transformation of information through a reliable process. IoT in the financial background is mainly used with the central application of consumer product innovation (Aslam, et al. 2020).

The application of the mentioned technologies has led to the complete transformation of these sectors. Talking about transportation, the transformation of supply network, connectivity, and major business models are specifically advanced with the assistance of new technological applications (Parida, Sjödin, &Reim, 2019). All aviation companies are seeking to operate the usage of IoT, which can stimulate and schedule manufacturing flights. The transportation market has faced many issues to tackle in a perfect way due to a huge number of elements being unpredictable and diverse in all aspects. In this concern, any wireless network "communication intelligence algorithm" and data transaction process for understanding population growth may help to develop a model in the transportation and aviation industry.

Hence, with effective consideration of all these aspects, the main objective of the study is to *evaluate and investigate the application of artificial intelligence, the internet of things (IoT), and big data in healthcare, finance, and transportation*.

Method

Evaluation based on the Application of artificial intelligence, the Internet of Things (IoT), and big data in the healthcare, financial, and transportation sector is mainly conducted with the usage of secondary data. The secondary qualitative data may help in the perfect investigation and in-depth study to justify the entire topic. Secondary data collected from authentic sources such as magazines, authentic peer-reviewed journals, articles, and books help in gathering large amount of information in quick and economical manner (Ruggiano & Perry, 2019). The researcher has collected secondary information from authentic peer-reviewed journals that help to assess the entire topic, which should be strictly published after 2019. In this concern, detailed information from websites like Statista and or any other authentic sites belonging to recent source has been collected. The application of such a method creates an opportunity to take cross-sectional research design, inductive approach, and interpretivism research philosophy.

The interpretivism research philosophy may help the entire topic with the assistance of qualitative study and secondary data perfectly be justified with the belief of authenticity. The cross-sectional design can easily evaluate artificial intelligence, IoT, and big data analytics and its application in financial, healthcare, and transportation systems. The cross-section research design can easily develop the framework based on the perfect structure and several variables in the same study (Picache et al. 2019). An in-depth description can be conducted with the help of these strategies, which maintain the ethical consideration of the study. Hence, the reliability and validity can be confirmed with the inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
The study should be conducted with the help of qualitative methods.	The study should not be conducted with the help of quantitative methods.
This data or information should be gathered from the secondary sources published in English.	This data or information should not be gathered from any primary sources or secondary sources of other languages.
The researcher should give importance to the evaluation of AI, IoT, and big data in the transportation, financial, and healthcare sector, which helps to prove the objective.	The researcher should not give importance to the evaluation of another technological advancement topic for any other sector, which may not be helpful to prove the objective.
The researcher should gather secondary information from authentic peer-reviewed journals, which have been published after 2019.	The researcher should not gather information from any other peer-reviewed journals, which have been published before 2019.

Table 1: Inclusion and Exclusion Criteria.

Results

The application of the mentioned technologies on the sectors will be discussed in these sections with the help of the secondary data gathered from peer-reviewed journals and online sources. The results will be presented in three different headings discussing the application of AI, IoT and Big Data in each of the sectors individually.
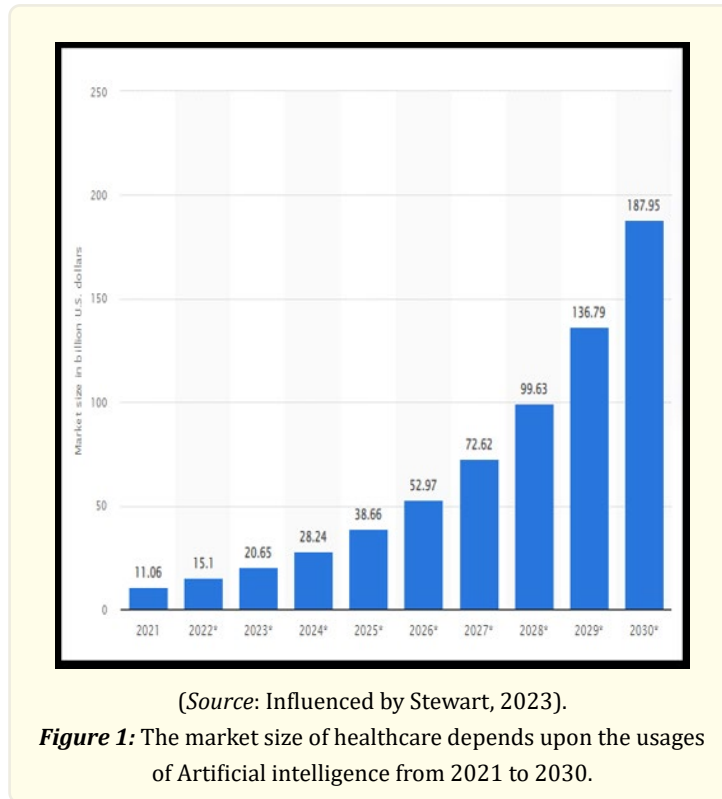
Healthcare

The rate of the massive amount of data or information regarding healthcare may be generated with the help of wearable sensor applications which may be designed as a highest medical application. The management of real time data can proceed with a variety of sources including wearable sensor touch that helps many doctors, nurses, and clinic staff (Cerchione et al. 2023) The heterogeneous information and unstructured data may be complex to understand which can easily be accessible with the help of machine learning and the "internet of things." The data analytics mainly used to tackle and motivate many staff to raise knowledge about technical advancement. The healthcare system and large amounts of real time data create better understanding in order to create better decisions.

The data analytics can be used for critical detection of diseases, which are cancer, heart diseases, and stroke. Pandemic situation has led to huge challenges and this negatively affects this sector and dramatically changes economic construction based on the organisation. The "Artificial intelligence" and IoT have brought huge chance in the working out with the better application on active advancement within the healthcare industry (Kumar, Pujari & Gupta, 2021). In this concern, perfect operation, warehousing, and extracting information within the healthcare industry seek for the advanced processing, which are IoT, AI, and data analytics. The IoT BDA offers is the most advantageous within several levels of healthcare services, which may create rapid development with perfect decision-making process (Chehbi-Gamoura et al. 2020). In addition, IoT data analytics in the healthcare system enhance the quality of life, which can deliver better service on heath.

There are other advantages of the application of IoT, which may improve productivity, reinforce accuracy with highlight the creativity of the forming advanced processing. Productivity can be developed with the application of IoT, which may help to accelerate the growth of public health and this, is depicted as online guideline processing, detection of heart diseases, which may be cured with advanced processes (Dang et al. 2019). On the other hand, big data analysis helps reduce the negative effects of pandemics through the modification of advanced processes and creating standard systems in the supportive action of the healthcare system. Real-time data analysis and the application of the highest ranges of advanced technology can help improve the patient outcome significantly. The application of advanced technological development may lead to the highest growth that is fruitfully proceeding with presence of skilful staff (Maneejuk & Yamaka, 2021). In this concern, there should be perfect enhancement of much skilled labour in the healthcare industry. This is one of the challenges being faced in the sector. The application of technological enhancement may not be fruitful at this time due to the lack of skilled labour. Further, the application of IoT creates an opportunity for the major treatment processes. Smart home

Application of Artificial Intelligence (AI), Internet of Things (IoT), and Big Data in Healthcare, Finance, and Transportation

30

technology provides remotely controlled software, which is connected with delivering smart living (Demiris & Hensel, 2008). The prominent technology services are associated with healthcare and home security. Online treatment processes have been developed at this time, which have been created with the wireless sensors; this is one of the major aspects of data analytics.

(*Source*: Influenced by Stewart, 2023).
Figure 1: The market size of healthcare depends upon the usages of Artificial intelligence from 2021 to 2030.

The market size of healthcare has increased after the pandemic situation due to technological advancement and the better usage of AI, IoT and data analytics. The market size of healthcare due to the usage of Artificial intelligence is 11.06 billion US dollars in 2021 (Stewart, 2023). This has been increased with increasing levels of technological knowledge among the stakeholders of healthcare. There is a better increasing rate of the market size in the consequent years for having much advancement in Artificial intelligence. Artificial intelligence has played a greater role in industrial development and this has made better facilities under the circumstances of profitable growth (Lee & Yoon, 2021). Adoption of AI model has given a chance to introduce better facilities for the utilization of organizational advancement. Thus, it has been forecasted that the global healthcare of AI market will increase by almost 188 billion US dollars by 2030, which has been estimated as the annual growth rate may be enhanced by 37% within the year 2022 to 2030.
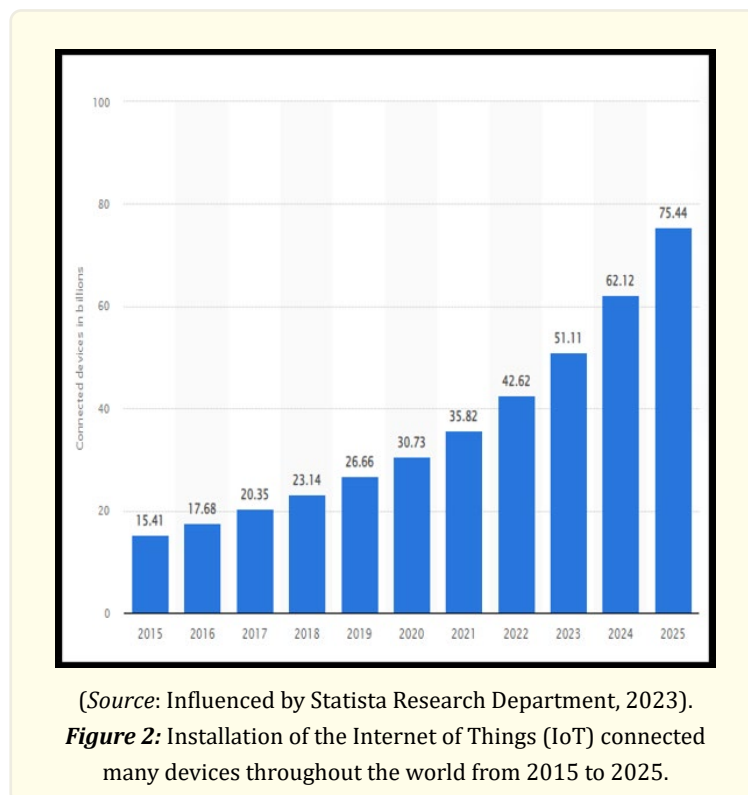
The healthcare market size has been increased due to physician working time which used with the 50-50 percentage of staff are treating patients and some administrative level of staff. On the other hand, the implementation of "Artificial intelligence" in health-care is forecasted to 20% more time to spend online patient due time burden of the administrative task may be reduced. The Zigbee automation wireless technology has significant potential for the physically challenged people in smart homes (Aburukba et al. 2016). The technological advancement has created better cultural action with the internal structure of this organisation, which facilitates the growth of the major healthcare sector (Stewart, 2023). Hence, the stress and burden on various healthcare professionals is significant-ly reduced with the use of these technologies and this in turn leads to better outcomes.

Application of Artificial Intelligence (AI), Internet of Things (IoT), and Big Data in Healthcare, Finance, and Transportation

31

Finance

IoT mainly offers many benefits on the processing of financial aspects in which digitisation has led to the highest chance to ensure perfection on transaction. IoT enables the advancement process of banking and many financial companies to meet major clients with desired expectations that allow higher profit with better experience of target customers (Mogaji & Nguyen, 2022). The financial sector can manage the assets of business, identification of fraudulent actions and security enhancement and perfect intelligence based on the usage of IoT and AI simultaneously (Bight et al. 2022). The financial sector should know about the major strategic enhancement as this helps to raise the growth of the economy. This is mainly possible through advanced development and innovation of this sector. The application of major differences in the traditional and present situation has led to huge change in the transaction process. In the modern era of traction prices, block chain technology has been enhanced which prioritizes the processing of ethical practices. This technology allows providing perfect security on data transactions and keeps privacy on saving information of many customers.

AI has some features such as machine learning and deep learning, which help in keeping better connection between two data sets. This application is continued after the processing of IoT. IoT gives wireless networks, which may help to mitigate the risk of one development of perfect connection (Ndiaye et al. 2020). The IoT has created the perfect opportunity for the financial industry, which may refer to the network devices that mainly take place in connection development. The financial industry has faced huge drastic challenges due to having complex decisions on the major brands and patterns. There are major cons in the financial industry at the time of the pandemic, which has highly expected negative effects due to the lack of financial transaction and connectivity (Khurshid, & Gadnis, 2019). Moreover, the organization has sought for perfect personnel and fruitful human resources.

The banking websites are blacked out many times due to a lack of peer connection and there is much server insecurity, which form huge conflicts on cyber. People seek an advanced networks or servers, which may secure major transactions. In this concern, the application of IoT and data analytics may help a lot with providing better network connectivity and maintenance of data safely. In big data analytics, block chain technology is the major aspect, which is maintained at a high rate.

(*Source*: Influenced by Statista Research Department, 2023).
Figure 2: Installation of the Internet of Things (IoT) connected many devices throughout the world from 2015 to 2025.

Application of Artificial Intelligence (AI), Internet of Things (IoT), and Big Data in Healthcare, Finance, and Transportation

32

Recent report has shown that many IoT devices have been installed in the financial and many industrial sectors, which assist in the growth of the organizational culture. The installation of these devices has brought a new revolution in the connection of many devices throughout the world. The major forecast has been that 75 billion IoT devices are connected with various devices that assist in better connection when several systems are within a little amount of timing. This installation has led to better connectivity among several devices, which bring advantages to the financial sector. The connectivity of the network may facilitate many customers at the best level in which customers are satisfied with getting desired transaction procedures (Statista Research Department, 2023). These types of devices are mainly used with the sensors and processor to collect and perfectly analyse major data.
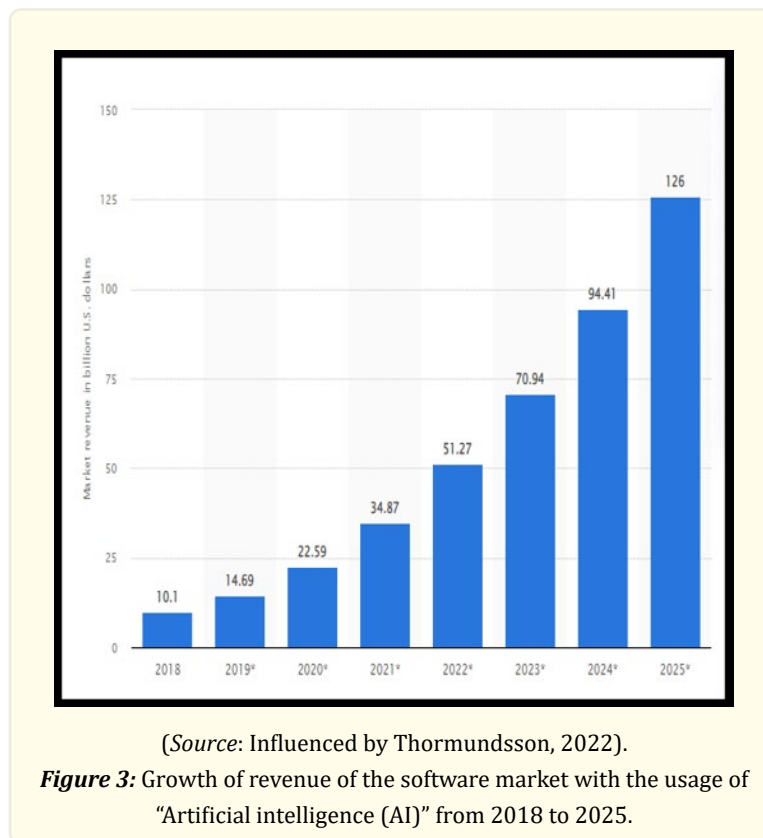
These data are mainly based on the financial documents and details of customers, which confidently proceed to get a better outcome. In this concern, there should be a gateway to execute major projects and the volume of data is created by the connection of IoT. In 2015, the installation of IoT connected 15.41 billion devices due to less intensity, though the art has been increased in consequent years, which depicts an increasing area of more devices. IoT installation and increasing rate of more advantageous conditions has raised the number of device connections, with which35.82 billion devices will be connected in 2021 (Statista Research Department, 2023). This rate has been increased in further years, which has been estimated to create the highest chance of making more device connectivity. In this concern in 2025, 75.44 billion devices may be connected throughout the world for a better degree of development tasks.

Transportation

AI, Big data and IoT are taking over the transportation industry where businesses are using them to streamline the entire process (Cong, Li & Zhang, 2021). They can freely be outputted by gathering real-time data development and this helps with achieving proper flows of goods and services. The application of advanced software development leads to the successful creation of data without any hindrance. AI and IoT together can perform various tasks that can help reduce inefficiencies within the industry and save a lot of money (Ushakov et al. 2022). These technologies can further be used for monitoring the flow of traffic and prediction of public transport travel time.

The application of these technologies has led to the development of a Data Acquisition Unit, which is a better network for road cars and helped in the management of transportation. Road cars can implement the new gadget, which is specially equipped with Bluetooth for measuring the number of engines and vehicles, which creates advanced processing (Li et al. 2019). Further, the major application of the technologies is to provide training to the air education centre with the application of the "Internet of Things (IoT)" which can provide better opportunities for all individuals with technological knowledge. In this concern, machine-to-machine learning is more effective which is vital for modern implementation. The IoT is a perfect network of interconnected devices, which may share data, execute different statements, and allow different services. The application of IoT has made a debut in transportation systems, which may be more advantageous in developing better network connections. The distribution of IT and usage of high and advanced features more effectively create better applications among the data representation.

Technological advancement and rapid wireless convergence have led to major applications of the highest development that confirm perfect mechanical establishment. The internet connection Object tubes are the most vital in the way of implementing advanced technology, which is included with PCs, smart phones and tablets, andWi-Fi sensors along with wireless devices (Gheorghiu, Iordache & Cormoş, 2021). Wireless connection helps to clarify perfect speed on data analysis and data connection this stern helps in the valuable reinforcement of the transportation industry. The application of machine learning helps in the connection of the internet. The internet connection should be aligned with the high technological application, which may proceed with the presence of the "Internet of things" (Haghnegahdar, Joshi, & Dahotre, 2022). The application of this network connectivity may focus on monitoring the data or information based on transpiration.

Application of Artificial Intelligence (AI), Internet of Things (IoT), and Big Data in Healthcare, Finance, and Transportation

33

(*Source*: Influenced by Thormundsson, 2022).

Figure 3: Growth of revenue of the software market with the usage of "Artificial intelligence (AI)" from 2018 to 2025.

Recent decades have shown the growth of revenue in the software market which has increased with the usage of AI. The market size of e-software has increased due to huge skilled labour and technological development. In this concern, software tools are installed on many devices for getting perfection on network connectivity, this also assists in huge transportation on the banking transaction systems. The software market has highlighted that the increasing rate of revenue at the time of 2020 is 22.59 US dollars, which creates a better impact on the entire organizational establishment (Thormundsson, 2022). Reinforcement has been prioritized with better action of all technical staff in a financial organization, which leads to such development.

Software development is the major part that may increase the rate of technological advancement. The major establishment has led to better opportunities for developing the perfect chances in the growth of revenue. The organisation has a better effect on the recent organization, which may increase the revenue. The estimated rate of throne growth has been depicted as 126 billion US dollars, which is the most effective in increasing the rate of economic growth (Thormundsson, 2022). The growth of the revenue is mainly prioritized with the application of machine learning, in which IoT is attached to transacting entire data without any hindrance. The financial sector may praise with getting such advancement in technological application. This is possible with active management and highest chance of huge technological growth.

Discussion

The data analysis process has been done with the help of the perfect evaluation of the major technological advancement. The application of IoT and AI in the financial, healthcare and transportation industry facilitates ingenerating higher revenue. The application of these technologies created the highest advantages in the sector; which finally enhanced production and reinforced the entire organizational value. The Healthcare sector has used these IoT, machine learning, and AI in the transaction of main information of patients, which must require the skilled action of many staff. Moreover, the pandemic situation has given the opportunity for the adoption of

Application of Artificial Intelligence (AI), Internet of Things (IoT), and Big Data in Healthcare, Finance, and Transportation

34

these types of technology and new software tools for the perfect establishment of network connections. This connection has helped in communication with doctors and even the ability to conduct confidential meetings.

The market size of healthcare depends upon the usage of Artificial intelligence, which has highlighted as the highest growth even in the successive year. This is about the technological advancement and attraction of many new patients as medical science has made a debut on the market. On the other hand, the Installation of the Internet of Things (IoT) has created better action on developing the connection of many devices, which creates the feasibility of network connection. This creates positivity to easy access to any data transaction. In addition, the usage of "Artificial intelligence (AI)" has accelerated the growth of revenue in the financial sector, which may create a value on the market. On the other hand, big data can be said to have similar applications in all of these sectors since it helps in identifying patterns and trends within a large database, which further helps with better decision making.

Conclusion

The Internet of things and big data analytics has better value in the healthcare sector, which has been maintained in the industry for the fastest treatment process. In the financial, sector the IoT and big data used crucial for ethical prices of transaction. The sequential data may be detected from the machine after that this undergoes the processing of data development. In this execution, the block chain played a great role, which assured the ethical transaction of money without having any obstacles.

The industrial revolution has led to effective growth at the level of advanced business processes. The introduction of industry 4.0 allows the certain alteration of business models and supply networks within the transportation sector.

Recommendation

Implementation of AI, IoT and big data in the healthcare, financial and transportation sector can be achieved with following recommendations:

Remote patient monitoring

Remote patient monitoring can be done with the help of online connectivity, this prices patients mainly create connection with the self-computer to doctors' computer for let those individuals on monitored through the observation of doctor. This monitoring system allowed patients not to be present at the clinics for the diagnosis. This is done with the help of sensor connectivity, which is maintained by generating high alerts about the treatment process.

Heart rate monitoring

This type of monitor is the most vital which can actively develop better action on detecting severe heart. As mentioned by Li et al. (2019), the heart rate monitoring devices mainly use electrical devices that can track heart rate through a band that wraps around the chest. This is the most vital implementation of AI, which leads the successive stage of medical science.

Advancement in machine learning

Machine learning is the major asset of AI, which can also attach to the process of IoT, which allows computers to make better decisions which experiences advancement in organizational culture. From the viewpoint of Nosratabadi et al. (2020), advanced machine learning is an aspect of computer science that mainly noticed the gateway of improving computing ability and making changes to running the program. Thai help critical technique in all organization and assist to secure huge amount data.

Investigation of warehouse transportation management

Inventory, warehouse, and transportation management has become major influencing factor that helps to consider better logistics activity on transportation. This action is entirely conducted with the entrance of perfect strategy in the warehouse. Moreover, all the machinery should be perfectly performed with inventory management. Integrating elements and high technological advancement has

Application of Artificial Intelligence (AI), Internet of Things (IoT), and Big Data in Healthcare, Finance, and Transportation

35

led to a major structure of logistics to influence the main market of transportation. Transportation management can be profitable with the application of AI, which may allow the application of automation.

Acknowledgement

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Application of Artificial Intelligence (AI), Internet of Things (IoT), and Big Data in Healthcare, Finance, and Transportation

36

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