e-ISSN: 2455-7013
Asian Journal of Management, Engineering & Computer Sciences (AJMECS)
Vol. 9(1), Jan. 2024: 14-20
URL: http://www.crsdindia.com/ajmecs.html
Email: crsdindia@gmail.com

RESEARCH PAPER

Enhancing Healthcare Access and Sustainability: The Role of MedShare

Shruti Gupta, Uday Mathur, Priyal Soni and Shreya Jangid
Department of Computer Engineering, Poornima Institute of Engineering & Technology
Jaipur, Rajasthan
Email: shruti.gupta@poornima.org

ABSTRACT

The objective of this healthcare initiative called "MedShare" is to establish an online platform aimed at gathering repurposed medication for distribution to individuals in need. The website's functionality encompasses the ability for users to list and offer repurposed medications for sale. Additionally, users can place orders for medications through this platform MedShare offers healthcare blogs for educational purposes and facilitates the scheduling of laboratory tests. The platform necessitates login credentials for users. Through medicine & document photo submission, sellers can list their medications, while buyers can browse and purchase them with assurance. The study presents the development and implementation of the MedShare platform, highlighting its user-friendly interface and secure transaction processes. Findings demonstrate the platform's effectiveness in increasing medication accessibility and reducing pharmaceutical waste.

Keywords: *Medicinal Reuse, Equipment Reuse, Buying previously owned medicines and equipment, Health Blogs, Lab Testing, Admin Dashboard*

Received: 8th Nov. 2023, Revised: 4th Dec. 2023, Accepted: 14th Dec. 2023

How to cite this article:
Shruti Gupta, Uday Mathur, Priyal Soni and Shreya Jangid (2024): Enhancing Healthcare Access and Sustainability: The Role of MedShare. AJMECS, Vol. 9(1): Jan., 2024: 14-20.

INTRODUCTION

The advancement of technologies has established a platform wherein individuals can retrieve information and avail themselves of digital services from any location and at any time. The web enables us to acquire information and digital resources effortlessly. The utilisation of medication has increased over time because of greater accessibility, availability, and affordability, as well as there is an uptick in health education and proactive health behaviours among the population.

According to the WHO, 50% of drugs are prescribed, dispensed, or marketed incorrectly, and half of all patients do not get medicines properly. When they go unused, they remain unutilized and discarded. Imagine an individual contracts an illness. They receive medication for duration of 7 days, as prescribed by a physician. However, within 4 days, the illness subsides. Subsequently, the remaining 3 days' worth of medication can be repurposed and made available for sale via this online platform. For instance, if an individual is afflicted with an ailment and seeks medical attention at a medical centre, the physician will recommend certain medications for treatment, which can typically be obtained from a local pharmacy.

However, if the same individual experiences a recurrence of the ailment with identical symptoms after a couple of months, they may attempt to retrieve the prescribed medication based on the doctor's previous recommendation. Yet, it is likely that the required medication is only stocked at the pharmacy near the medical centre. In such

scenarios, this platform proves invaluable. By utilising this online platform, the accessibility of medicines will expand & it will also enable individuals with limited financial resources to obtain pharmaceuticals at a reasonable cost. If an individual wishes to sell medication, they are required to submit photographs of the medication along with valid documentation. Once these steps are completed, the medications will be listed on the platform. Subsequently, potential buyers can purchase medications with confidence by verifying the accompanying documents. This platform also offers healthcare blogs and the option to schedule laboratory tests.

This internet platform aims to help people who require it by making medications more accessible. By doing it will contribute to reducing the amount of medicines and additionally users can access healthcare blogs and book laboratory tests through this service. These features highlight the distinctiveness of the platform.

THEORETICAL ASPECTS

A. User Interface:

The MERN stack powers MedShare, a web based commercial platform that fervently prioritizes user experience enhancement through the deployment of an interface marked by transparency and ease-of-use. A centralized hub- the user dashboard- provides users with a compacted summary of their recent orders, medication refills alerts for crucial prescriptions. Users can efficiently explore products via our comprehensive search feature which allows them to filter medications according to categories, brand names or generic equivalents. Product pages further furnish users with indepth details: medication descriptions; dosage instructions-and realtime inventory status. MedShare, integrating secure payment gateways and a diverse array of delivery options guarantees its users an impeccably seamless checkout process.

B. Security Aspects:

Valid credentials are required for user login to the MedShare portal. For medication sales, it is mandatory to upload a doctor's prescription and an accompanying photograph of the corresponding medication. The pharmacy initiates an initial validation process upon submission. A MedShare administrator then receives this information for advanced verification of the medication's legitimacy: upon confirmation by the administrator, listing on the portal follows. We implement a session-based shopping cart- an automated system that logs out users after a period of inactivity. Additionally, HTTP authentication safeguards against unauthorized portal access.

SYSTEM DESIGN

A. System Architecture:

There is a user login. Within this login, users have the ability to sell medications, purchase medications, peruse articles on health, and also arrange laboratory tests online.

MedShare leverages a MERN stack (MongoDB, Express.js, React.js, Node.js) to create a robust and scalable platform. The user-friendly interface, built with React.js, allows patients to browse medications, manage accounts, and access informative health articles.

An Express.js backend handles user requests, interacts with the MongoDB database and manages communication with pharmacy partners. Node.js acts as the runtime environment, ensuring smooth server operations. Secure payment processing is integrated through a trusted payment gateway.

B. Sell and List Medicine Module:

Users have the capability to list medications on the online platform, where medicine details will be entered into the database. Users have the ability to view whether the medication has been listed or not.

After a medication has been inputted into the system, individuals have the ability to conveniently access their medication roster to check if a particular medication has already been recorded. This feature aids in avoiding redundant entries and guarantees that all medications are included. Moreover, the system may offer the option for users to classify their medications based on factors like medical condition or dosage frequency, streamlining the process of locating necessary information. Additionally, there is a possibility that the system could conduct medication interaction assessments, 1ssisting users in steering clear of combinations that could result in adverse reactions.

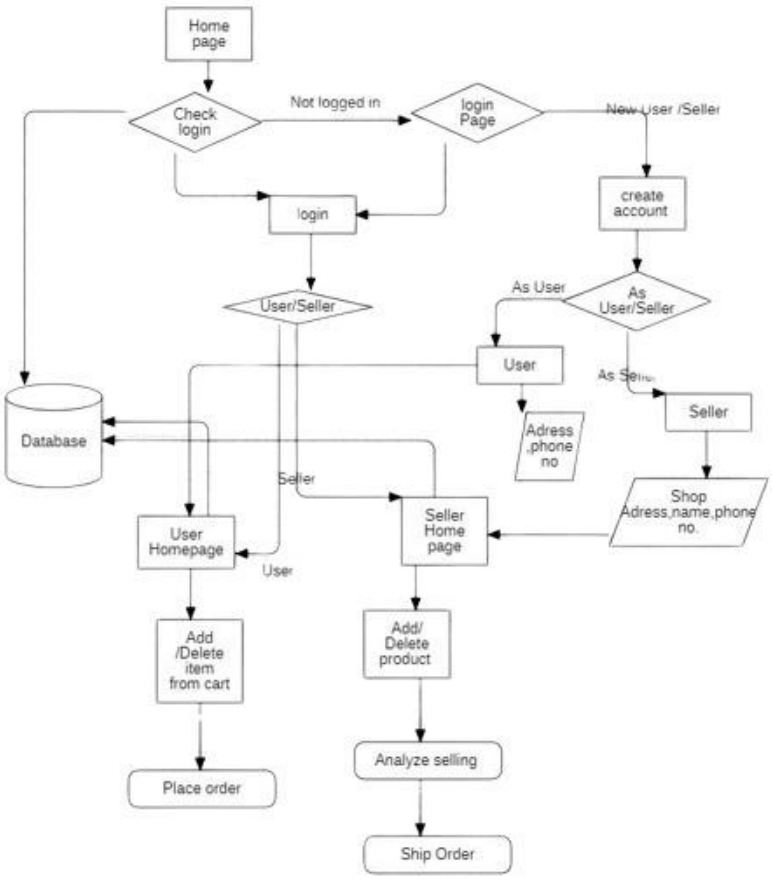

Fig. 1: System architecture

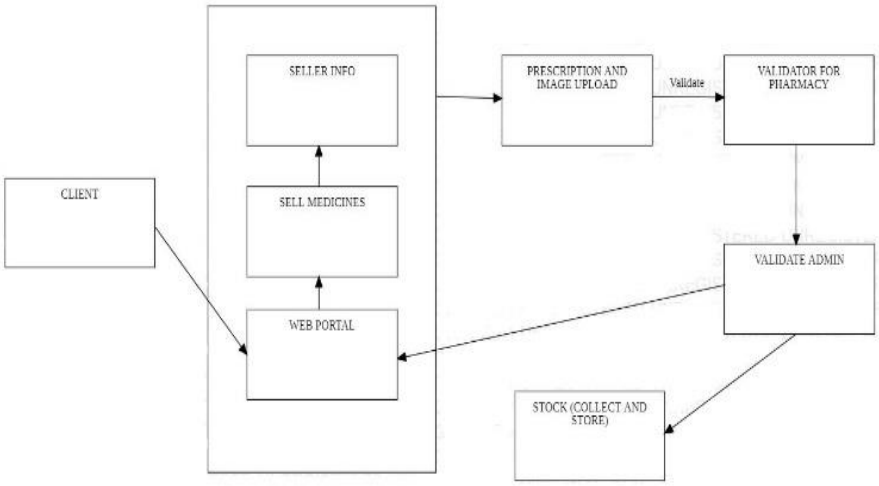

Fig. 2: Sell and List Medicine Module

C. Buying Medicine Module:

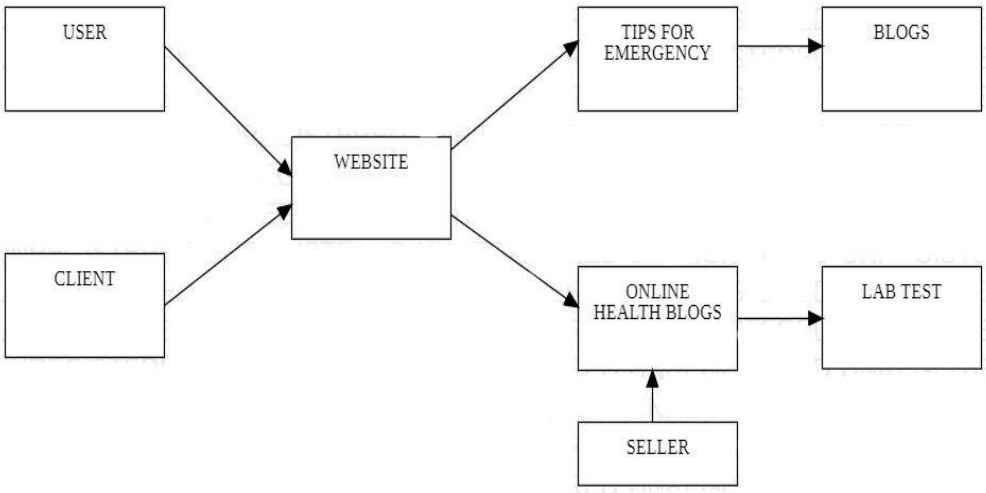

Fig. 3: Buying Medicine Module

Users have the option to purchase medication via the website. The functionality of the shopping cart will be operational during the medication purchase process. Upon proceeding to checkout, the subsequent webpage will navigate users to the billing section, where they can either cancel the order or proceed with the purchase. Then, users will be directed to the payment gateway page.

The checkout process prioritizes transparency and user control. A dedicated section provides a comprehensive breakdown of order details and the final cost. Users retain the flexibility to either cancel the order if necessary or proceed with secure payment through a secure gateway. This dedicated payment page fosters a seamless and transparent transaction experience.

D. Health Blog and Lab Test Module:

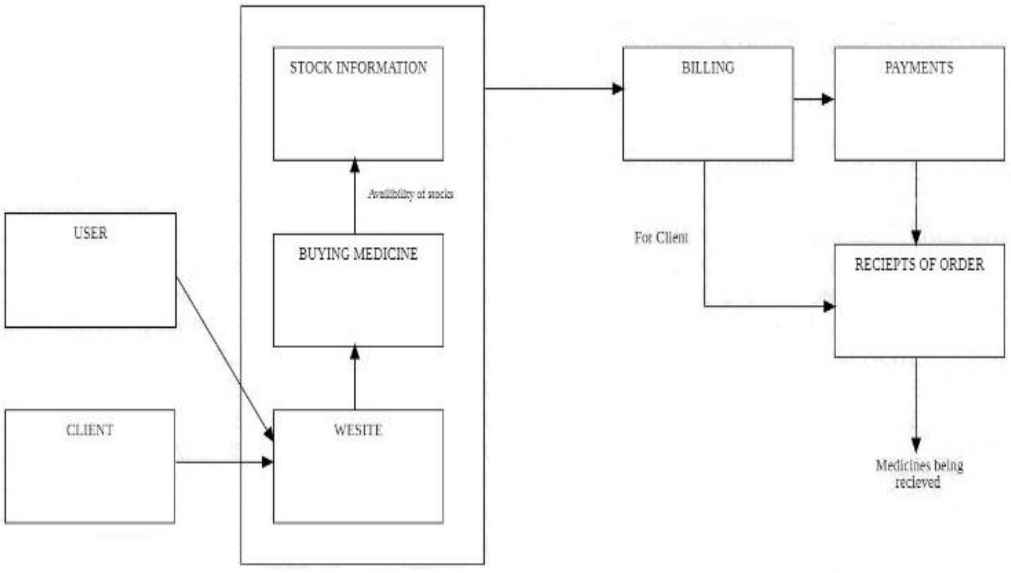

Fig. 4: Health Blog and Lab test Module

Users have the option to access the web platform for exploring informative health articles and conveniently scheduling laboratory tests online.
MedShare's web platform goes beyond medication sales, offering users a comprehensive healthcare experience. The platform features informative health articles, empowering users to stay updated on various health topics and make informed decisions about their well-being. Additionally, MedShare streamlines laboratory testing by providing a convenient online appointment scheduling system. This eliminates the need for separate appointments, simplifying the process of acquiring necessary medical tests.

E. System Use case Diagram (User, Admin, Client):

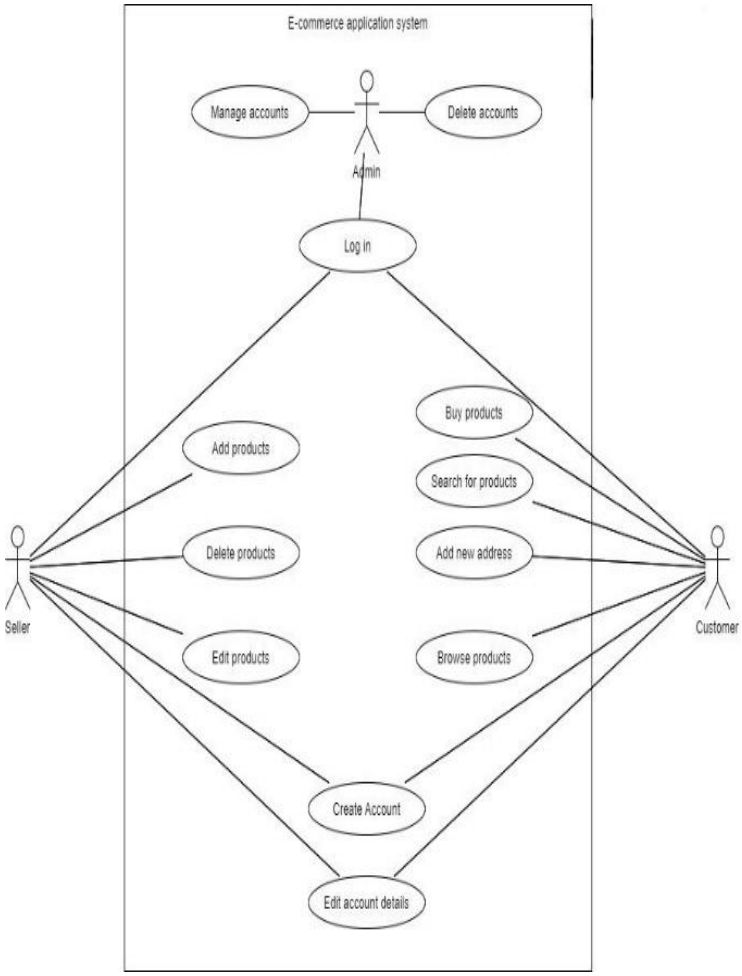

Fig. 5: System Use case Diagram

The MedShare use case diagram illustrates three primary actors: patients, pharmacies, and administrators. Patients possess the ability to peruse medications; they may scrutinize details- ultimately choosing to add selected drugs into a virtual shopping cart. The optional task of uploading prescriptions lies within their discretion as well. Then, they have the capability to finalize secure purchases and monitor the statuses of their orders. Moreover, patients can directly schedule lab tests and explore informative health articles through this platform. Pharmacies accept medication orders; furthermore if necessary they verify prescriptions for a more stringent process control. Administrators also bear the responsibility of updating order statuses; they manage user accounts, approve medication listings, and oversee lab test scheduling if integrated. The MedShare admin takes charge of content management and system monitoring as well.

CONCLUSION

The commencement of the contemporary era ushers in a period where people, regardless of their economic or educational backgrounds, prioritize health and well-being. It proves disconcerting that even with this awareness, those grappling with financial constraints often find it challenging to dedicate enough time for their healthcare needs due to limited resources. Our nation must advocate for initiatives that promote returning unused medications and establish community-based pharmacies; these steps will guarantee equitable redistribution of surplus drugs to those who require them.

The online platform actively facilitates accessibility to medications for economically disadvantaged individuals; it notably reduces pharmaceutical wastage. Future research could entail developing a mobile app for this platform, then assessing its performance against the web-based interface- thus further enhancing user convenience and effectiveness.

FUTURE WORK

By incorporating a robust search function, MedShare empowers users to formulate well-informed decisions about their medications. This feature enables users to filter through different medications based on specific health conditions, potential side effects and known interactions with other drugs. Moreover, by implementing a recommendation engine; it is possible for MedShare's platform to personalize medication suggestions according to each user's unique medical background and past purchases. This would create a more tailored experience and cater to individual needs.

Seamless integration with wearable devices and health data platforms could shape MedShare's future. This platform would harness real-time health information, such as blood pressure readings, to initiate personalized medication reminders. The potential of this integration is to offer valuable insights into a user's health and markedly enhance medication adherence.

By collaborating with telemedicine platforms, we potentially enhance the overall healthcare experience: this integration offers a more comprehensive approach. Users can conveniently seek medical advice from doctors through online consultations; they may even obtain prescriptions and directly refill medications via MedShare- a truly transformative convenience. This process of integration significantly streamlines the entire operation, enhancing its efficiency and accessibility for all patients.

Utilizing Artificial Intelligence to create a medication chatbot has the potential of providing users with round-the-clock access to detailed medication information, addressing queries about side effects, dosage and interactions. This tool could enhance user assistance significantly; it might even reduce reliance on traditional customer service methods.

The establishment of a forum or virtual community area potentially amplifies interaction and support among participants. Through the integration of educational materials- such as medication manuals and disease management guidance- directly into the platform, we can foster an active role for individuals in their healthcare progression.

User activity recognition reward programs can foster repeat business by instilling a sense of value in customers; this, in turn, fortifies their bond with the brand. Furthermore- by leveraging user data to customize deals and target promotions- it enhances the shopping experience. Based on customers' past purchases and browsing habits, businesses can recommend products or provide discounts; this strategy enhances the customer journey by creating a smoother, more enjoyable experience. Consequently, loyalty is fostered and the likelihood of repeat purchases increases.

Affiliated pharmacies require an effective inventory management system: it's a necessity to provide current medication availability information. This transparency empowers users- they can make informed decisions about prescription sources, ultimately minimizing unnecessary travel needs. Moreover; integrating real-time order tracking

enhances transparency and nurtures user confidence during the prescription fulfillment process.

A subscription service offering automatic refills and convenient home delivery could serve as a promising solution for individuals with chronic illnesses dependent on regular medication. This service, by simplifying medication management and boosting adherence, targets to improve user experience. Furthermore- not only does it benefit users but also holds potential in establishing reliable, predictable revenue streams for MedShare.

Broadening MedShare's audience reach necessitates providing multilingual support for the user interface and educational materials. Moreover, integrating accessibility features- including screen reader compatibility and dyslexia-friendly fonts utilization- is critical to ensure inclusivity for users with diverse needs.

Broadening MedShare's audience reach necessitates providing multilingual support for the user interface and educational materials; this step is essential. Moreover to ensure inclusivity for users with diverse needs: integrating accessibility features like screen reader compatibility, employing dyslexia-friendly fonts are crucial.

REFERENCES

1. Akhade G.N., Jaju S.B. and Lakhe R.R. (2013): A Review on Healthcare Service Quality Dimensions, 2013, 6th International Conference on Emerging Trends in Engineering and Technology, Nagpur, India, pp. 126-127.
2. Canthadai A.M. (2011): Shopping search and the semantic web, 2011 IEEE Consumer Communications and Networking Conference (CCNC), Las Vegas, NV, USA, pp. 699-700.
3. Çoban Ç. and Tüysüz M.F. (2019): E-Health and Privacy: Risks, Opportunities and Solutions, 2019, 4th International Conference on Computer Science and Engineering (UBMK), Samsun, Turkey, pp. 554-559.
4. Dicomidis J. and Kirby A. (2012): Reuse of Medicines: Looking Beyond the Waste Blame Game. Prescriber, 23: 13-17.
5. Han J.H. and Lee J.Y. (2021): Digital Healthcare Industry and Technology Trends, 2021 IEEE International Conference on Big Data and Smart Computing (BigComp), Jeju Island, Korea (South), pp. 375-377.
6. Herrero J.L., Lucio F. and Carmona P. (2011): Web services and web components, 2011, 7th International Conference on Next Generation Web Services Practices, Salamanca, Spain, pp. 164-169.
7. Hossain M.S. (2012): Performance evaluation web testing for ecommerce web sites, 2012 International Conference on Informatics, Electronics & Vision (ICIEV), Dhaka, Bangladesh, pp. 842-846.
8. James D. (2016): Pharmacists May Accept Re-Dispensing Medication, But Will Patients? The Conversation.
9. Joshi R. (2018): Medricstore: The Best Way of Medicine Facility for Society, 2018 Fourth International Conference on Computing Communication Control and Automation (ICCUBEA), Pune, India, pp. 1-5.
10. Kambare S.M., Kolpe P.D., Patil S.D, Pote A.M., Patil S.S. and Kokate P.D. (2023): Enhancing Healthcare Delivery in India: Emergency Medical Care and Patient History Management, 2023 International Conference on Advances in Computation, Communication and Information Technology (ICAICCIT), Faridabad, India, pp. 1099-1104.
11. Madanian S. (2016): The use of e-health technology in healthcare environment. The role of RFID technology, 2016, 10th International Conference on e-Commerce in Developing Countries: with focus on e-Tourism (ECDC), Isfahan, Iran, pp. 1-5.
12. Majid E.S.A., Kamaruddin N. and Mansor Z. (2015): Adaptation of usability principles in responsive web design technique for e-commerce development," 2015 International Conference on Electrical Engineering and Informatics (ICEEI), Denpasar, Indonesia, pp. 726-729.
13. Paglialonga A., Pinciroli F., Tognola G., Barbieri R., Caiani E.G. and Riboldi M. (2017): e-Health solutions for better care: Characterization of health apps to extract meaningful information and support users' choices, 2017 IEEE 3rd International Forum on Research and Technologies for Society and Industry (RTSI), Modena, Italy, pp. 1-6.
14. Panjwani M. and De S. (2020): Computer-Based Review Analysis to study the Shortfalls of Primary Healthcare Structure in India, 2020 IEEE Bangalore Humanitarian Technology Conference (B-HTC), Vijiyapur, India, pp. 1-6.
15. Paul S. and Srinivasan K. (2009): On-Demand Health care: A new paradigm for E-Health, 2009, 11th International Conference on e-Health Networking, Applications and Services (Healthcom), Sydney, NSW, Australia, pp. 153-160.
16. Pinandito A., Az-zahra H.M., Fanani L. and Putri A.V. (2017): Analysis of web content delivery effectiveness and efficiency in responsive web design using material design guidelines and User Centered Design, 2017 International Conference on Sustainable Information Engineering and Technology (SIET), Malang, Indonesia, pp. 435-441.
17. Pomerantz J.M. (2004): Recycling expensive medication: Why not? MedGenMed, 6: 4.
18. Prihastomo Y., Meyliana, Hidayanto A.N. and Prabowo H. (2018): The Key Success Factors in E-

Marketplace Implementation: A Systematic Literature Review, 2018 International Conference on Information Management and Technology (ICIMTech), Jakarta, Indonesia, pp. 443-448.

19. Rana V. and Singh G. (2014): Analysis of web mining technology and their impact on semantic web, 2014 Innovative Applications of Computational Intelligence on Power, Energy and Controls with their impact on Humanity (CIPECH), Ghaziabad, India, pp. 5-11.

20. Sharma B. and Vyas N. (2023): Healthcare in the Aftermath of COVID-19: Charting a Course for the Future, 2023 International Conference on Circuit Power and Computing Technologies (ICCPCT), Kollam, India, pp. 1280-1285.

21. Sinha P., Sharma U., Kumar D. and Rana A. (2020): A Conceptual Framework for Mitigating the Risk in eCommerce Websites, 2020 8th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO), Noida, India, pp. 217-221.