



"Predictive Analysis on availability of doctors and medicines in Government Hospital"

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ABSTRACT

In the modern era where the world is driven by modern technology in almost every field, the Healthcare field is not far behind and is rapidly improving marked by integration of various algorithm and technology. This abstract will delve how the predictive analysis will benefit the healthcare industry and how the traditional system can be transformed into an efficient system. This paper will also shed light on how the healthcare system which primarily follows the clinical approach for diagnosis can be digitalised using the appropriate analysis algorithm to ensure the information, availability of doctors and medicines, patient database and other activities. In the system that we developed, users can register with their details and will be stored in admin's database. The

users will be able to view various information regarding hospital and doctors to their best interest. The enhanced utilization of resources, along with measures to minimize fraud and abuses are contribution factor for financial performance and administrative outcome. A proper strategic and efficient healthcare information system of predictive nature amalgamated with tons of useful features running on cutting edge technology affordable by all classes of society will prove to be milestone in the public domain. Overall the contribution of predictive analysis towards the healthcare system in significant.

Keyword: Predictive analysis, healthcare system, Web application, Medicines and Doctors, Big Data, Database system, patients data, algorithm and technology, Efficiency.

I. INTRODUCTION

In the healthcare system the usage of amount of technical and scientific tools have exponentially increased in the last decade and the related information being applied in all aspects of our day-to-day life, be it superficially or in depth. The traditional healthcare system when integrated with the modern predictive analytical information and Internet revolutionised the entire healthcare system which linked our health with personal information.

During the peak time when the hospitals are congested, the management of doctors and medicines becomes tricky. Based on patients past

and present data, this application will generate a short analysis on various medicines and drugs and which specialists will be required for the particular patient. This way this system will be able to generate ample amount of data which can further make the system efficient and will make the task of hospital management smooth by running the system in accordance with the inflow of patients.

The analysis on daily workflow, vacation and weekends patterns of doctors can make it easy to get rid of unexpected absence which can benefit the hospital management. This can further hint on when a patient is likely to miss the scheduled appointment with a particular doctor and thus can

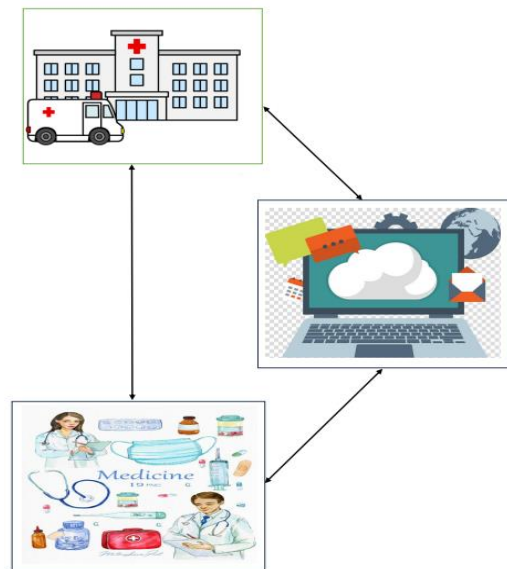


efficiently inform the patient about a likely missed appointment or to be assigned to different doctors as per patient's wish. This will prevent the hospital administration from bad reputation and negative effect on some aspects.

An algorithm based predictive analysis on healthcare database and records can substantially predict about the pattern of diseases as well. Such patterns of diseases are helpful for taking special measures before spread of diseases. This can be done by making the resources available in due time as goes with the famous quote "Prevention is better than cure". Several researches performed by various organisations and universities arrived into the conclusion that the rate of no-shows of patients can be predicted with better accuracy and precision when we maintain proper digitalised records. This indeed deviates from earlier trend when digitalised healthcare records were sidelined or not in use.

The predictive analysis also helps in engaging the patients with proper updates about their health. A more efficient system can also inform them about their future appointments with doctors or when they should visit a doctor. This will also keep the patients updated about when the

patient are most prone to certain diseases by tracking their past records. So, the patients can take certain measures in consultation with their doctors. This also enables the patients to track the availability of medicines at the clinic.



II. LITERATURE SURVEY

TITLE: More than Technical Perspective: Analysing the possibilities of Unstructured data in Healthcare industry.

BY: Yi Chuan Wang, LeeAnn Kung, Chaochi Ting

highlights a perceived lack of recognition in the healthcare sector regarding the potential benefits of technology, particularly big data technology. Despite some pioneering studies utilizing various technical approaches, the paragraph suggests that there is a gap in understanding the significant implications of big data technology in healthcare. To address this shortcoming, the research described in the paragraph focuses on examining the improvement, architecture, and features of Big Data Technology (BDT). The research also explores the potential, traceability, and inspection of Non-SQL (NOSQL) data, along with the trends of support and its forecast ability in the healthcare context. The ultimate goal is to assist healthcare workers in formulating efficient strategies based on big data. The findings of this research are expected to align healthcare organizations in responding more efficiently to challenges, transforming the

healthcare industry into a highly competitive landscape.

2. TITLE: Learning, schooling, and data analytics.
AUTHOR: Baker, R. S. J. D

From the second half of 20th century, various approaches have been used to bring relevant data from big data technology, which we call as analytics. This is also known as data mining to some. These were of significant relevance for various fields such as astronomy, chemistry, movies etc.. In recent years, the same pattern has been seen in other fields such education, research, learning analytics (LA; Ferguson, 2012) or educational data mining (EDM; Baker & Yacef, 2009). To paraphrase it, these being used to find ways to make proper utilisation of growing amount of available student and employees data to understand better the processes learning and other components related to pedagogy. The motivation is to produce innovative and better procedure of learning in the field of increasing affirmative study and research. The rise of EDM/LA can be regarded as new phenomenon. Initial meeting of researchers were Data Mining educational researches rising



from initial years of 21st century and later became yearly meetings. EDM and LA both share common objectives. In short, the peer Models of validity and the studying is primary goal which the EDM is invested on, while using results of research to bring development in practice on the part of the teachers can be considered the main goal of the communities of LA.

3. TITLE: The success pillars of analysis of prescriptive model.
AUTHOR: Basu. A

These days most of the business is dependent on structured and unstructured data i.e. numbers, categorisation. IBM an US based technological company which emphasises on various technical and data analysis fields reported that more than 85% of data generated are texts, audio, video, images which falls in the category of unstructured data. Also a lot of companies are still running on the traditional database system may find themselves dwindling in future and it may jeopardise the productivity if they stick to the traditional system. As a result the fate of these companies will remain uncertain because their clients and suppliers may move to some other companies which will provide them more efficient results by utilising a blended version of both structured as well as unstructured data. The companies which already using these innovative technology is going far ahead and is encouraging other businesses by leveraging the data being fed and thus providing them with a detailed insights and more productive result. The decision making can be improved and enhanced if we adopt the hybrid data. Those companies which did not deploy the hybrid data or the blended version may find difficult to thrive in the ongoing era of evolving technology as the traditional data only comprises below 15% of the overall data.

4. TITLE: The Big Data Technology and predictive analysis in research and education: Merits and Demerits.
AUTHOR: Ben K. Daniel

Colleges and Universities which operates in a complicated and intricate system can take advantages from the technologies. Here we have identified some major problems concerning the system and factors being encountered by universities and colleges as well as some organisations. This also brings out possible prospective of how the Big Data can be leveraged

while dealing with these pitfalls being faced by these institutions. The paper further outlines plenty of opportunities and ongoing challenges which are related with its utilisation. Thus we came to the conclusion by mentioning and directing future possibilities and associating with its redemption of such an intriguing and creative task on emerging technologies which proved to be significant importance and shall proved to be major milestone for upcoming generation. Thus we need to properly analyse so as to overcome the challenges and rightfully replace them with more innovative solutions.

5. TITLE: Big data analytics in healthcare: promises and possibilities.
AUTHOR: Raghupathi. W

In this paper we have discussed about the various benefits and assurances in the healthcare analysis using the big data technologies. It further continues to put emphasis on the analytical nature by outlining the frameworks, elaborating numerous methodologies and also accounting the architectural behaviour to briefly analyse the issues and how to overcome them. This discussion further mentions about the analytics being used in the big data domain for scientists and students in the health domain. This also applies to other employees of healthcare industries like doctors, pharmacists, nurses, laboratory technicians etc. on how to bring about the innovative system that can yield the maximum output from certain resources and this will also decrease the overall costs. Also by properly looking into the possible shortcomings and elaborating the long term benefits we can surely boast the system by diving into the insights provided by this domain. This can significantly bring the entire healthcare system into the advancement of modern era which is primarily dominated by Artificial Intelligence, Robotics, Machine Learning, Deep Learning, Blockchain etc..

6. TITLE: Digital Business Strategy: Toward the Next Generation of Insights
AUTHOR: Bharadwaj, A, El Sawy, O.A. Palou, P.A. and Venkatraman

In past thirty years, the predominant perspective on IT tactics and observations have characterized the system as a strategy which is fully digitalised and functionalised that needs alignment. This paradigm of alignment may look simple but while



diving deep into it we can confirm how such a simplistic strategy is crucial in the long run and can outperform even the sophisticated method that lacks digitalisation, a strategic business management traditionally dictated the course of old strategical business ideas which certainly no longer sustainable. We have seen a rapid transformation of the healthcare field since the global recession through fast digitalisation blending with evolving technologies. We have also taken into account the various performance metrics also play a crucial role. The results generated can be decisive and helps in outlining the roadmap of predictive nature.

Considering the changes attained from the transformative behaviour, we have proposed a re-evaluation of the role of IT strategy thus transitioning from its historical status of a traditional system with fewer functionalities to a rejuvenated multi-disciplinary secure strategic paradigm that integrates the information strategies and with a superior system, similar to an efficient data driven business model.

Furthermore, we delve into the success metrics and potential performance implications associated with the pursuit of a digital business strategy. The special issue's papers contribute valuable insights into digital strategies, offering directions for advancing our understanding and shaping future research in this dynamic and evolving landscape.

7. TITLE: A Trusted Data Governance Model For Big Data Analytics
AUTHOR: C. Mohanpriya

This paper brings a strategic discussion on the necessity for effective governance of big data , which should cater to corporate and IT governance, along with ITA or EA. Unlike traditional data governance, Big Data governance must encompass structured and unstructured data. The success of Big Data initiatives requires aligned strategies, considering the organization's vision and objectives. The proposed Big Data Governance Framework introduces new criteria for data optimisation and quality of data , emphasizing on timely management of data, reliable transfer, authorised data manipulation , an efficient continuous data flow service and most importantly the privacy and security aspect of the data . It also effectively manages private information protection and data disclosure/accountability strategies for various purposes but all these are managed through a discreet fashion with utmost care. As the data

carries lots of information a sincere and proper management is vital. The leakage of data through fraudulent activities poses a serious challenge as this may compromise the integrity of the data. All these factors are to be considered while preparing a data management portal of hospital at large so that it can predict various trends by maintaining the privacy and integrity of the patients data. The discussion goes further and mentions a special case of South Korean National Pension Service which provided a better understanding on Governance Framework of Big data. In other way we can say that the use of Big data technologies in the public domain can not be avoided for long and surely one day will come when the role of big date will be inevitable and decisive in most of the public domain as the growing rate of unstructured data is simply exponential.

8. TITLE: The Predictive and analytical Power of Big Data.
AUTHOR: Aiden, E., Michel

In the contemporary landscape, the increasing variety of data poses a significant challenge for analysis. Addressing this issue is crucial, particularly in the realm of big data, where data characteristics are complex and unstructured. Analytics, as a process, aims to uncover hidden patterns and associations within data. The objective is to extract meaningful insights from the vast and complex datasets inherent in the big data landscape. This process is fundamental for making informed decisions and gaining a deeper understanding of trends, behaviours, and relationships within the intricate fabric of contemporary data environments. This survey paper's primary goal is to offer a comprehensive overview of various predictive analytical real-time applications with strategies. These approaches are tailored to diverse perspectives based on its applications and varieties of data. The paper delves into specific applications such as big data in business management, hotel management , research and learning, small enterprise, healthcare industry, supply chain management, e-governance and other domains. It presents lots of innovative and efficient predictive strategies customized for many applications, along with associated pitfalls and recommendations.

9. TITLE: Consumer analytics based on Big Data and the market transformation
AUTHOR: Sunil Erevelles, Nobuyuki Fukawa, Linda Swayne



Consumer analytics stands at the forefront of a significant shift in handling vast amounts of data known as the Big Data revolution. Technology plays a crucial role in gathering extensive and real-time data on consumer behaviour. This process enables companies to stay abreast of evolving consumer trends, preferences, and interactions, fostering the ability to adapt strategies and offerings in response to the dynamic nature of consumer behaviour in the contemporary landscape. Consequently, there is an unprecedented availability of large, rapidly generated, and diverse raw data, commonly referred to as Big Data, sourced directly from individual consumers. To gain a deeper understanding of how Big Data influences various marketing activities and to maximize its advantages, a conceptual framework is proposed.

These requirements are likely to vary based on the industry, the scale of operations, and the specific goals of the organization in leveraging Big Data for decision-making and strategy formulation. In summary, the paper highlights the pivotal role of physical, human, and organizational resources in shaping the processes of collecting, analysing, and utilizing Big Data for enhanced business capabilities, while also underscoring the importance of understanding and addressing unique resource needs for effective implementation in different organizational contexts.

10. TITLE: The dynamic capabilities and how they are useful in management

AUTHOR: V. Ambrosini et al.

The exploration of dynamic capabilities transcends the confines of the resource-based view, shedding light on the intricate mechanisms involved in generating resources that are not only valuable but also rare, difficult to replicate, and lack perfect substitutes. Over the years, researchers and scholars have made noteworthy strides in understanding the dynamics of these capabilities. This paper critically reviews and synthesizes the existing literature to consolidate insights into the multifaceted nature of dynamic capabilities. This paper contributes to the understanding of dynamic capabilities by offering a comprehensive review and synthesis of existing literature in the field. The synthesis underscores that the dynamic abilities are shaped by a range of factors, both supportive and hindering, originating both within and outside the organizational boundaries. These factors are deeply intertwined with the perceptions and motivations of managerial personnel, adding a human dimension to the analysis. As the literature on dynamic capabilities

has evolved, certain areas of confusion and contradiction have emerged, hindering the progression of understanding in this domain. The paper addresses these challenges, offering insights into unresolved debates and proposing avenues for future research. By doing so, it aims to contribute to the refinement and advancement of the dynamic capability perspective.

In conclusion, the dynamic capability perspective provides a holistic lens through which organizations can navigate the complexities of contemporary business environments. This paper's comprehensive review and synthesis contribute to the ongoing discourse, offering a nuanced understanding of the factors influencing dynamic capabilities, the underlying processes, and the challenges that necessitate further investigation. Through this exploration, it is evident that dynamic capabilities represent a crucial facet of strategic management, requiring continual examination and refinement to stay abreast of the evolving landscape of organizational dynamics.

III. CONCLUSION

Predictive analysis helps in identifying patterns and trends in the availability of doctors and medicines. This information can be used to optimize resource allocation, ensuring that sufficient healthcare professionals and medications are present at critical times. By analyzing historical data, predictive models can forecast the demand for healthcare services and medicines. This enables hospitals to plan and stock resources accordingly, preventing shortages and ensuring continuous availability. Predictive analysis can contribute to better patient care by ensuring that there are an adequate number of doctors available to attend to patients. This reduces waiting times, enhances the quality of care, and improves overall patient satisfaction. With predictive analytics, hospitals can anticipate medicine stockouts and take proactive measures to replenish supplies before shortages occur. This prevents disruptions in patient treatment plans and ensures a consistent supply of essential medications. Enhanced Predictive models can be instrumental in emergency situations, helping hospitals prepare for sudden spikes in demand for healthcare services and medicines. This preparedness is crucial for effective emergency response and management. Predictive analysis promotes data-driven decision-making, allowing hospital administrators and policymakers to make informed choices based on accurate forecasts and insights. Regularly updating and refining predictive models based on new data



can lead to continuous improvement in healthcare resource management. This iterative process ensures that the models stay relevant and effective over time.

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