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Role of Domain Driven Data Mining (DDDM) towards Ticket Processing application

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ABSTRACT

Conventional data mining technologies face grave difficulties when technically applied in solving complex real-life business decisions. This research aims to improve the activities of business domains by analyzing and studying the latest methodological, technological, practical developments and, in some cases, data mining studies through Domain driven data mining (DDDM). The paper presented seeks to address this question: "What can real-life business applications do in domain-led data mining "In addition this research aims to provide information and the ability to bridge the gap between academic and business problems in the real world.

1. Introduction

Recently, the use of IT to improve business performance in the field of industry is all prevalent. Nonetheless, previous research shows little improvement in performance of all investments in IT made by businesses. Rather, a high level of IT investment conversion efficiency is needed to achieve tangible business targets in order to achieve a positive impact [1]. Enterprises capable of effectively transforming data in useful information will make faster and more effective decisions, thus creating better operational business strategies that provide a competitive edge. Nevertheless, designing operational business strategies is not an easy task because of field-level knowledge and expectations of key business decision makers [2]. Once the correct business strategy has been achieved, this addresses problems like the selection of people, an accurate identification of target markets, consumer desires and the effective management of the production and delivery process for products and services [3]. Businesses can effectively establish appropriate strategies by means of a balanced mix of economic theories and IT. The effective use of IT to gain business intelligence through data mining technology enables companies to analyze activities in areas such as customer relations management, staff management and finance more rapidly and accurately.

Domain Driven Design is a collection of principles and designs which enable developers to build sophisticated object systems. This will trigger abstraction of software known as domain models. These models incorporate complex logic and close the gap between business reality and code. This is an approach that links implementation with a evolving paradigm to create applications for complex requirements. Domain is nothing but a information, power or operation domain. The area where the user applies a program is the domain of the software. Data mining is one of the most important fields of information technology in this growing computerized world. Many algorithms based on both domain-independent and domain-specific techniques have been proposed. Domain Driven Data Mining is designed to develop general policies, methodologies and techniques to model and integrate extensive domain factors and the synthesization of all-informed knowledge relating to the problem field with the data mining process. In this article, we introduce domain-driven data mining in IT management services so that the workflow of our company can be minimized, problems arising in the ticket are analysed, problems are addressed and the problems resolved by the correct methodology. All these are introduced in this approach and are tested experimentally to check the validity of the paper.

2. Review of literature

Amir Mosavi et al, (2010) described that Conventional data mining technologies face grave difficulties when technically applied in solving complex real-life business decisions. This research aims to improve the activities of business domains by analyzing and studying the latest methodological, technological, practical developments and, in some cases , data mining studies through Domain driven data mining (DDDM). The paper addressed aims to address this question: What can real-life business applications do with domain-led data mining? · However, work aims to educate and fill the current void between academic study and problems in real life.

Thomas Piton et al, (2012) described that Materials retail trading practices contribute to an highly competitive industry. However, people in industry are not well aware about how and what to do in marketing. Data mining approaches may be useful for decision makers to produce substantial income and optimize their option of various marketing activities. They proposed a one-to-one marketing methodology for actionable information discovery which enables users to contact the right customer through the right channel for communication. They offered a domain-based view of the exploration of information that meets the real business requirements in order to maximize the productivity and performance of many promotions.

Palshikar et al, (2010), In the service industries, support analytics (i.e. customer supporting data statistical evaluation, modeling and mining) is very relevant. In the paper they introduced an research support approach to domain-driven data mining, with a emphasis on IT infrastructure support services (ITIS). The technique suggested will classify specific business problems and therefore minimize a new solution algorithm. The methodology was domain-based in the sense that the results generated are immediately accessible by users without expertise in data mining and easily understandable, requiring no experimentation. All this helps to increase end-

user acceptability and to make the findings generated more productive. The algorithms were implemented and satisfactory results were obtained on over 25 real-life ITIS data sets which they use for illustration purposes.

Chengqi Zhang et al, (2006), extant data mining were based on methodologies powered by evidence. The domain data extraction method involves a DDID-DB architecture that takes into account key elements such as restriction contexts, domain information integration, co-operation between humans and machines, in-depth mining, enhanced action efficiency, and an iterative process of refinement. We display as well some examples in the mining correlations in the Australian stock exchange that domain-driven data mining could further boost the capacity of trends to be used in practice by industry and company.

Longbing Cao, (2016), The key objective of conventional data mining research] is to create, demonstrate and move the application of different algorithms and models. The data mining process ends when the pattern is found. Therefore, a widespread evidence was that 1) there were many algorithms created of which very few were repeated and usable in the real world. 2) many innovations were also abused but a significant share was either common sense or of little business interest. In total, they can see that the results are not practical and that there is no soft power to solve complex problems in the real world.

To order to address these questions and to facilitate the paradigm change from data-centric discovery to domain-driven and efficient information distribution, D3 M introduced a domain-driven data mining framework. The pervasive expertise of D3M has been integrated into the mining processes and models. The corresponding problem solving framework has been developed to provide and discover knowledge. The paper offers an description of the driving forces, theoretical structures, systems, methods, case studies and open D3M issues. D3M exposes several important problems that are currently not accessible to comprehensive and detailed solutions that represent the challenges and opportunities for the new theme.

Scientists with a strong industrial commitment have recently recognized the need to move from "data mining" to "discovery of knowledge"[6][7],[8]. The goal of addressing real-world problems was to further move information exploration towards the development and provision of active information (AKD). AKD aims to provide business friendly information that business people can take over for smooth decision-making.

As a direct application of a recent research carried out by Atish et al. (2008) established that there was interaction between the classification method of data mining and domain knowledge. They concluded that the incorporation of domain knowledge has a higher influence on performance for some data mining methods than for others.

Chien et al. (2008) collaborated with Field experts develop recruiting and management techniques for human resources using technology for data mining. Our findings have been incorporated successfully in an enterprise. Zhao et al. analyzed the impact on classification efficiency of the function construction driven by domain awareness. The analysis showed that function design, based on domain awareness, improves significantly the efficiency of the classifier. There is an disparity between the number of published data mining algorithms and the very few that really are useful in a business environment. Conventional data mining has therefore not provided sufficient results for real-life decision-making. A better structure through which the current methods, techniques, software and applications can be accessed would therefore be required.

The application of data mining techniques alone is not sufficient in solving real-world business problems. Dybowski et al. (2013) investigated how data mining techniques and domain knowledge can be combined to construct more useful, efficient and effective decision support systems.

Fayyad et al. (2014)This also indicated that it is necessary to use domain knowledge at all stages of the information seeking process. Domain based data mining goes beyond conventional methods of data mining. This involves the application of relevant business intelligence (human intelligence, domain intelligence, network intelligence and corporate / social intelligence) and the integration of such relevant information in a full human-operated computer system for problem solving.

S has researched the value of human intelligence in data mining. K and Sharma. Bryson (2009). Osei-Bryson. Twelve pathways for human intelligence were established by the researchers. They suggested that data collection involves human intelligence to achieve reliable and relevant results. A recent research has shown that the classification method for data mining is interrelated with domain knowledge as a direct application of this. We concluded that the integration of domain knowledge influences some data mining methods more than others on their efficiency.

Zhao et al. (2009) examined the effects of feature construction guided by domain knowledge, on classification performance. The results of their study showed that feature construction, guided by domain knowledge, significantly improves classifier performance.

Based on the surveys presented in A. P. Sinha and H. Zhao (2008)there are several more studies showing the value of data mining domain awareness. This supports the point that domain information should be used in data mining techniques to improve their importance, productivity and performance in real business decision taking.

Risk Management in Insurance

Data mining helps to gain useful client knowledge from database trends. Theoretical and domain-based information is available in most cases. This study , conducted by Daniels and Dissel (2002), explores insurance risk management. In this case study it is observed that the effectiveness of data mining systems can be significantly enhanced by including information on the model to be developed as well as by the expertise of experienced field experts compared to data mining systems using blind searches only. There are two advantages of this strategy. First, the blind search in databases is now driven by observations of experts that contribute to significantly more accurate results. Furthermore, given that decision-making principles can not be incorporated into one risk scoring in general experts, this method provides the possibility of integrating and enhancing expert expertise in particular cases. The flow of claims and how domain experts are introduced as an extra check after a filtering of dubious claims in the data mining system is shown in Figure 1.

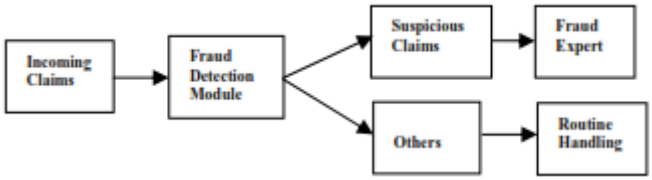

Figure 1: Flow of claims

Churn Prediction

There are several applications of data mining and algorithms to estimate churn. In this case study, the researchers demonstrated how to comply with applicable domain information and to make data mining models for churn prediction more compatible and understandable. More precisely it has shown, in order to determine whether the information found in data mining models is compatible with domain expertise and how to address any inconsistencies, the study of coefficient signs in logistic regression and the monotonic study of DTs can be used. The aim is to enable businesses to recognize which customers are more precious and also to help them identify key data elements that can make positive or negative contributions to customer relationships and thus establish strategies that will support both the business and the customer.

Personnel Selection

High-tech businesses rely on human resources to preserve competitive benefits. In order to derive useful rules from relationships between data from personal profiles and work behaviour, this research developed a data mining system. In addition, researchers built valuable approaches with field experts in the case company and implemented most of the suggestions. In the first attempt to increase retention rates and achieve improved results, companies can find the correct talents through the successful method of staff selection.

3. Conclusion

This study explored how data mining can be used to provide companies with more useful results through domain-driven data mining. The feasibility and efficiency of this approach in the business sector is illustrated in three case studies. In each case study analyzed, in addition to data mine technology, domain information was applied and the findings were substantially improved. The extension of the scope to other sectors, such as agricultural, technological and medical applications may be considered areas of potential research.

References

[1] AdeyemiAdejuwon and Amir Mosavi, —Domain Driven Data Mining – Application to Business‖, International Journal of Computer Science Issues (IJCSI), Vol. 7, Issue 4, No 2, July 2010.

[2] Thomas Piton, Julien Blanchard, Henri Briand and Fabrice Guillet, (2012) —Domain Driven Data Mining to Improve Promotional Campaign ROI and Select Marketing Channels‖, Knowledge and Decision Team.

[3] Palshikar, G.K., —Domain-Driven Data Mining for IT Infrastructure Support‖, IEEE International Conference on Data Mining workshops, 2010.

[4] Longbing Cao, Chengqi Zhang, —Domain-Driven Data Mining: A Practical Methodology‖, International Journal of Data Warehousing & Mining, 2(4), October-December 2016.

[5] Longbing Cao, —Domain-Driven Data Mining: Challenges and Prospects‖, IEEE Transactions on Knowledge and Data Engineering, Vol. 22, No. 6, June 2010.

[6] U. Fayyad and P. Smyth, —From Data Mining to Knowledge Discovery: An Overview,‖ Advances in Knowledge Discovery and Data Mining, U. Fayyad and P. Smyth, eds., pp. 1-34, 2014.

[7] M. Ankerst, —Report on the SIGKDD-2002 Panel the Perfect Data Mining Tool: Interactive or Automated?‖ ACM SIGKDD Explorations Newsletter, vol. 4, no. 2, pp. 110-111, 2002.

[8] U. Fayyad, G. Shapiro, and R. Uthurusamy, —Summary from the KDD-03 Panel—Data Mining: The Next 10 Years,‖ ACM SIGKDD Explorations Newsletter, vol. 5, no. 2, pp. 191-196, 2003.

[9] A. P. Sinha and H. Zhao, Incorporating domain knowledge into data mining classifiers: An application in indirect lending, Decision Support Systems vol.46, 2008, pp.287–299.

[10] C. Chien and L. Chen, Data mining to improve personnel selection and enhance human capital: A case study in hightechnology industry, Expert Systems with Applications, Vol. 34, 2008, pp. 280–290.

[11] H. Zhao, A. P. Sinha and W. Ge, Effects of feature construction on classification performance: An empirical study in bank failure prediction. Expert Systems with Applications Vol. 36, 2009, pp. 2633–2644

[12] Ankerst M. Report on the SIGKDD-2002 Panel the Perfect Pata Mining Tool: Interactive or Automated? ACM SIGKDD Explorations Newsletter, 4(2):110- 111, 2002

[13] R. Dybowski, K.B. Laskey, J.W. Myers and S. Parsons, Introduction to the special issue on the fusion of domain knowledge with data for decision support, Journal of Machine Learning Research Vol 4, 2013, pp. 293–294.

[14] U. Fayyad, G. Piatetsky-Shapiro and P. Smyth, From data mining to knowledge discovery in databases, AI Magazine Vol. 17 No. 3, 1996, pp. 37–54.

[15] L. Cao, P. S. Yu, C. Zhang and Y. Zhao (eds), Data Mining for Business Applications, New York: Springer Publishers, 2009.

[16] S. Sharma and K. Osei-Bryson, Role of Human Intelligence in Domain Driven Data Mining In: Data Mining for Business Applications, New York: Springer Science+Business Media, 2009.

[17] A. P. Sinha and H. Zhao, Incorporating domain knowledge into data mining classifiers: An application in indirect lending, Decision Support Systems vol.46, 2008, pp.287–299.

[18] C. Chien and L. Chen, Data mining to improve personnel selection and enhance human capital: A case study in hightechnology industry, Expert Systems with Applications, Vol. 34, 2008, pp. 280–290.

[19] H. Zhao, A. P. Sinha and W. Ge, Effects of feature construction on classification performance: An empirical study in bank failure prediction. Expert Systems with Applications Vol. 36, 2009, pp. 2633–2644

[20] H. Daniels and H. Dissel, Risk Management based on Expert Rules and Data Mining: A Case Study in Insurance. In: Proceedings of the 10th European Conference on Information Systems (ECIS), 2002, Gdansk.

