



RESEARCH ARTICLE

SOCIAL BUSINESS INTELLIGENCE IN DATA MINING

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ABSTRACT

In social business intelligence, satisfaction plays an important role. Customer satisfaction is must. Customer should make decisions that improve their business based on the trends perceived from the environment. The huge quality of information, talks, posts and papers available on the web cannot be ignored by companies. Social business intelligence is the discipline of combining corporate data with user generated content to let decision-makers improve their business. The companies cannot ignore the huge quality of information, talks, posts and papers available on the web. It refers to a managing technique that combines with another to form a whole process in order to improve existing project and products. In social business intelligence it invites customer input and feedback at early points in the process rather than after a product is released. Social business intelligence combines social media aspects and analytics to give important business insights and it a convergence of several trends. In other words it is simply business intelligence that incorporates knowledge management, social networking, plus social media monitoring and analytics, all combined into a new interface in the business intelligence environment.

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INTRODUCTION

The term social business intelligence became popular term in 1990s. In late business analytics was introduced to represent the key analytical component in business intelligence. Business intelligence is the ability to dig into data that has been acquired through different channels/sources, business activities and then identity trends, opportunities and areas where efficiency can be improved/ (or for better quality improvement) (Abdul-Aziz Rashid Al-Azmi, 2013). The planetary success of social networks and the widespread diffusion of portable devices have enabled simplified and ubiquitous forms of communication and have contributed, during the last decade, to a significant shift in human communication patterns to towards the voluntary sharing of personal information. As we can use internet anywhere, anytime and continuously send messages to a virtual community centered around blogs. Due to rapid growth of internet user, social networking sites are one of the most communications medium on the internet. Millions of messages and blogs are posted regularly on popular web-sites that provide web services such as Twitter and facebook. People read that blogs and put their opinion and suggestions corresponding to that posted blog.

They also share their personal opinions or views for that posted blog on that social media site. Analyzing their opinion and their reviews about the post related to social issue is really important. Perhaps the most readily accessible form of big data across vertical industries is that created by social media and which requires various forms of analytics to provide quantifiable and qualitative analysis of sentiment data. More liberal prognostications reveal that "the social media analytics market will grow from \$620.3 million in 2014 to \$2.73 billion in 2019, at CAGR of 34.5%."

We collect public opinion/suggestions and their feedback related to the post on the social business and based upon the threads that we have collected and after performing interlinking among them we generate the total overall score which is compared with the threshold table to determine the effectiveness of that social business. Social business intelligence is the emerging discipline that aims at effectively and efficiently combining corporate data with UGC to let decision makers analyze and improve their business based on the trends and moods perceived from the environment (Gallinucci *et al*, 2013). As in traditional business intelligence, goal of social business intelligence is to enable powerful and flexible analyses for decision makers (simply called user from now on) with a limited expertise in database and ICT. In other terms we want to apply OLAP analysis on top of a data

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warehouse storing a semantically enriched version of the UGC related to specific matter. In the context of SBI, the most widely used category of UGC is the one coming in the form of textual clips. Clips can either be messages posted on social media (such as Twitter, Facebook, blogs, and forums) or articles taken from on-line newspapers and magazines. Digging information useful for users out of textual UGC requires to set up an extended ETL process that includes (1) crawling the web to extract the clips related to a subject area; (2) enriching them in order to let as much information as possible emerge from the raw text; (3) transforming and modeling the data in order to store them in a multidimensional fashion. The subject area defines the project scope and extent, and can be for instance related to a brand or a specific market. Enrichment activities may simply identify the structured parts of a clip, such as its author, or even use sentiment analysis techniques (Uu and Zhang, 20 12) to interpret each sentence and if Possible assign a sentiment (also called polarity, Le., positive, negative, or neutral) to it. We will call SBI process the one whose phases range from web crawling to users' analyses of the results.

The semi-structured output of the crawler is turned into a structured form and loaded onto the Operational Data Store (ODS), that stores all the relevant data about clips, their authors, and their source channels; to this end, a relational ODS can be coupled with a document-oriented database that can efficiently store and search the text of the clips. The ODS also represents all the topics within the subject area and their relationships. The Semantic Enrichment component works on the ODS to extract the semantic information hidden in the clip texts. Depending on the technology adopted (e.g., supervised machine learning (Pang *et al.*, 2002) or lexicon-based techniques (Taboada *et al.*, 2011) such information can include the single sentences in the clip, its topic (s) , the syntactic and semantic relationships between words, or the sentiment related to a whole sentence or to each Single topic it contains. The ETL component periodically extracts data about clips and topics from the ODS, integrates them with the business data extracted from the Enterprise Data Warehouse (EDW), and loads them onto the Data Mart (DM).

Literature Review

It has been observed that many authors have worked on structured data using different mining techniques in social networks. Some of the observations are explained here. In Michael Goebel, Le Gruenward,(1999) "A survey of data mining and knowledge discovery software tools", SIGKDD Exploration, Vol.1,Issue 1.pg 20,ACM SIGKDD, the authors have provided an overview of Knowledge Discovery in Databases (KDD) approaches (Michael Goebel, 1999). In Chidanand Apte, Bing Liu, Edwin P.D. Pennault, Padhraic Smyth, (2002). "Buiness Appications of Data mining," Communications of the ACM, Vol.45, No8 ,it has been demonstrated how modern technologies shifted the process of decision-making (Chidanand Apte, 2002). A survey of visual data mining techniques is found in Maria C. ferreira de Oliveira and H. Levkowitz, (2003) "From Visual Data Exploration to Visual Data Mining:

A Survey" IEEE Transactions on Visualization and Computer Graphics, Vol. 9, No. 3 (Maria, 2003). The authors have stated that large data sets with complex dimensions need a better way for representation. In E.H. Chi, (2000) "A Taxonomy of Visualization Techniques Using the Data State Reference Model," In the Proceedings of the Information Visualization Symposium InfoVis 2000, pp. 69-75,related work on data visualization is reviewed and classified data visualization techniques (Chi, 2000). A. Hotho, A. Nu"rnberger, G. Paa ß, (2005).

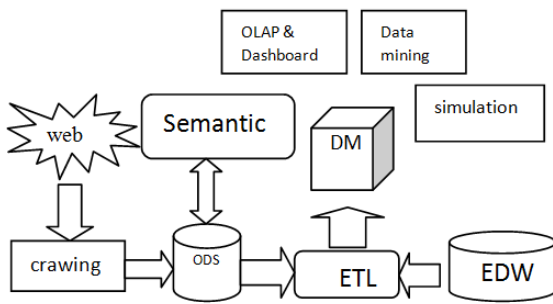


Figure 1. An architecture for social business intelligence

The architecture we propose to support our approach to SBI is depicted in Figure 1. Its main highlight is the integration between sentiment and business data, which is achieved in a non-invasive way by extracting some business flows from the enterprise data warehouse and integrating them with those carrying textual UGC, in order to provide users with 3600 decisional Capabilities. In the following we briefly comment each component. The Crawling component carries out a set of keyword-based queries aimed at retrieving the clips (and the available meta-data) that are in the scope of the subject area. The target of the crawler search could be either the whole web or a set of user-defined web sources (e.g., blogs, forums, web sites, social networks).

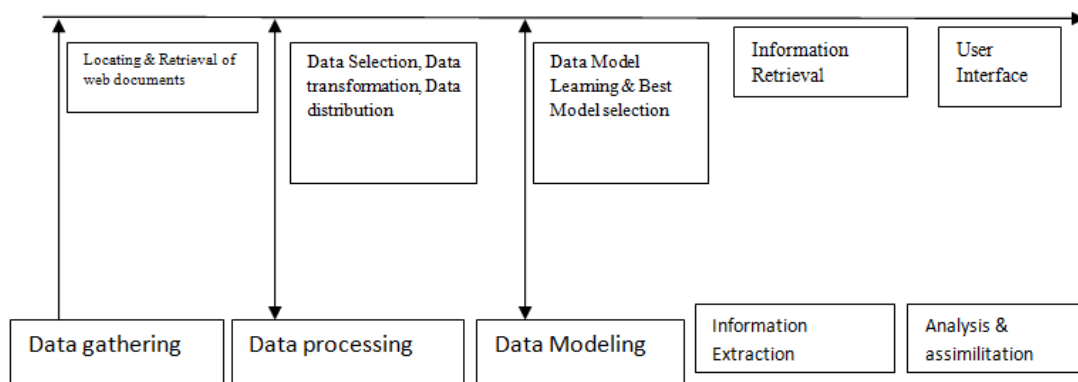


Fig. 2. Mining process for electronic data

“A Brief Survey of Text Mining” GLDV-Journal for Computational Linguistics and Language Technologies, the authors have surveyed interdisciplinary field of Text Mining. Most of the information found in computerized form are textual so it is required to extract this unstructured text into informative knowledge. Several data mining techniques have been used on traditional data customers, e.g.: regression analysis, Naïve Bayes (NB), Support Vector Machine (SVM), Neural Network (NN) (Hotho, 2005). Regression analysis is the most popular technique to predict customer satisfaction J. Hadden, A. Tiwari, R. Roy, D. Ruta, “Computer Assisted Customer Churn Management: State-Of-The-Art and Future Trends,” *Computers & Operations Research*, October 2007, vol. 34, no. 10, pp. 2902-2917 (Hadden *et al.*, 2008), and the best technique for data sample less than 1000 compare to any data mining techniques) I. Ograjensek, “Use of Customer Data Analysis in Continuous Quality Improvement of Service Processes”, In *Proceedings of the Seventh Young Statisticians Meeting, Metodološki zvezki*, 2003, vol. 21, Ljubljana: FDV (Ograjensek, 2003). For example, Mihelis *et al.* (2001) use regression model to measure customer satisfaction. Liu and Shih D. Liu, Y. Shih. Y, “Hybrid approaches to product recommendation based on customer lifetime value and purchase preferences,” *The Journal of Systems and Software*, 2005, vol. 77, pp. 181–191 develop a product recommender model to increase customer satisfaction, using weighted RFM (WRFM) and K-nearest neighbors with preference-based collaborative filtering (Liu, 2005).

Social Networking For Electronic Business Intelligence Using Data Mining

Social media tools are used for various purposes. Now a days social business networking sites are used for building and maintaining the peer relationships, instant messengers for communication, online forum for expressing your opinions, etc. Mining social media is very potential and useful for extracting more information and gaining deeper insight about customer Social business intelligence is used extensively in a wide range of application and discipline. In tis sector businesses use social network analysis to support activities such as customer interaction and analysis, anad business intelligence needs. Data mining task can be decomposed into many sub tasks when dealing with electronic business data. Fig 2 shows a typical data mining process. At first data from required sources is collected. The next most important tast is analysis of data obtained from web. This includes preprocessing, actual mining process and knowledge is presented to user. The analysis is useful for decision making, predicting user behavior, deciding business strategies also.

Conclusion

In this we discussed some of the key related to the emerging area of social business intelligence.

Although some commercial solution is ready available, this types of application deserve further investigations. Social business intelligence is at the crossroad between different disciplines, this makes researches more challenging but it potentially opens to more interesting results. Future work will focus on going deeper into examining the relationship between the techniques described and existing processes. The relevance of BI and social media integrate both domains together and motivate the articulation of a social BI research agenda towards dynamic analysis of social networks for business intelligence.

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