Presented to the Interdisciplinary Studies Program:

UNIVERSITY OF OREGON
APPLIED INFORMATION MANAGEMENT

Applied Information Management
and the Graduate School of the
University of Oregon
in partial fulfillment of the
requirement for the degree of
Master of Science

Credit Union Engagement Analytics: How to Recapture the Cooperative Spirit

CAPSTONE REPORT

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May 2014

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Abstract

U.S. credit unions originally served small, homogeneous populations, were managed by members and granted tax exemption on the basis of this cooperative structure. Today, credit union membership is expanding, increasingly heterogeneous and geographically dispersed – calling the appropriateness of tax exemption into question. This annotated bibliography presents literature to examine tools and technologies to analyze operational and social media data to inform member engagement strategies with the intent to justify the continuation of the industry's tax exempt status.

Keywords: credit union member engagement, credit union analytics, credit union tax exemption, cooperative management, social media, analytics, customer engagement, knowledge management, net promoter, nonprofit analytics, analytical CRM, data analysis, business intelligence, social networks, word-of-mouth, not-for-profit customer engagement

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Introduction

Problem

Traditionally, credit unions in the U.S. have been small, not-for-profit financial cooperatives chartered with the express intent of improving the financial well-being of their members by offering their services only to members who fall within designated *bonds of association* (Cassity, 2000). Bonds of association are defined in the Federal Credit Union Act as "groups having a common bond of occupation or association, or … groups within a well-defined neighborhood, small community, or rural district" (Federal Credit Union Act, 2013, Section 1751). Cassity (2000) postulates that by restricting credit unions to offering services to specific bonds of association, legislators were encouraging the use of social pressures to ensure financial integrity:

> [A credit union] is a cooperative society, and its financial stability hinges on the interpersonal dynamics of its members: Lenders must be able to evaluate the ability and willingness of potential borrowers to pay back their loans, and borrowers must feel obligated to pay back those loans. If all of the members of a credit union share a common bond-for example, if they live in the same neighborhood or work for the same employer-they have more information about each other, and will suffer greater shame if they default on their loans. (Cassity, 2000, p.337)

This unique cooperative structure allowed credit unions to offer financial products to underserved members of communities that would, without such social pressures and accountability, represent too great a risk for mainstream financial institutions such as banks (Cassity, 2000; Federal Credit Union Act, 2013; United States Government Accountability Office, 2006). The mechanism of bonds of association also was a key factor in justifying the tax-exempt, not-for-profit status bestowed on credit unions in the United States (Federal Credit Union Act, 2013).

Since 1982, however, changes in regulations have made possible more rapid expansion of credit union membership by weakening restrictions on bonds of association; leading some critics to argue that the social bonds that once underpinned the credit union movement have now diluted due to increased anonymity amongst an ever-enlarging membership base (Cassity, 2000, p. 361). Regulators are beginning to reconsider whether credit unions can meet their chartered mission while attempting to form effective bonds of association from ever enlarging groups of people without a professional or affinity association (United States Government Accountability Office, 2006). The overriding problem this paper addresses is the risk faced by the credit union industry of regulatory revisions that would threaten to revoke its not-for-profit status due to "changes in credit union membership restrictions and the blurring of distinctions in the products and services offered by credit unions and other depository institutions" (United States Government Accountability Office, 2006, p.1). Rescinding the tax-exempt status of credit unions has been discussed at the federal level and summarized in a report by the Government Accountability Office (2005) and in the various states that currently charter credit unions as tax-exempt organizations (White, 2012). Without effective and meaningful bonds of association, credit unions are not different enough from banks to warrant their tax-exempt, not-for-profit status (Cassity, 2000; United States Government Accountability Office, 2005). A recent study (Feinberg & Meade, 2014, February) prepared for the National Association of Federal Credit Unions – a professional association that serves the credit union industry - concludes that revocation of the tax exemption from credit unions would render them unable to provide substantial benefits to their members in the forms of lower lending rates and higher dividend rates, resulting in a loss of more than 50% market share. According to an independent review (White, 2012), without the tax exemption credit unions would not be able to offer reduced loan

rates and higher deposit rates, nor could they afford to be aggressive with their rates by retaining untaxed profits. Since "credit unions' cooperative structure does not permit capital to be raised via sale of stock, […] taxation would threaten the entities' capital reserves" (White, 2012, p.1380).

Emerging technologies and approaches to analyzing operational and social media data have recently shown promise for credit unions hoping to engage their sprawling membership bases as traditional credit unions once did – with more personalized service, customized financial solutions and more attention to the member relationship (Kallerhoff, 2013; Rubin & Milesko, 2013). Engagement is here defined as "the behavioral manifestation from a customer toward a brand or a firm which goes beyond purchase behavior" (Bijmolt et al., 2010, p. 341). While this definition allows for the expression of negative behaviors as well as positive (Bijmolt et al., 2010), the focus of this study is positive member engagement by credit union members. By analyzing operational and social media data, credit unions have begun to "connect with younger consumers, engage with existing and potential members and recruit new employees" (Rubin & Milesko, 2013, p. 6). Some credit unions are even prototyping tools that help gauge member sentiment as a method of proactively addressing concerns that are never directly raised with the institutions themselves (Marlowe, Simon, Webb & Harben, 2013). Understanding the technological and analytical tools available to make use of credit union data to better engage members would be a benefit to credit union managers and members alike (Rubin & Milesko, 2013).

One of the major factors leading to the extension of tax-exempt status to credit unions has been their unique cooperative structure (Government Accountability Office, 2005), which is predicated on the active engagement of members through voting for and serving on the

voluntary board of directors, providing feedback about products and services and providing a mechanism of accountability of other members as well as staff (White, 2012). Some critics interested in tax reform of the credit union industry believe this structure is breaking down in light of rapid growth and less restrictive regulations on bonds of association (Cassity, 2000; White, 2012). Additionally, the Government Accountability Office in 2005 and again in 2006 issued guidance critical of the credit union tax exemption based on its belief that the cooperative structure whereby credit union members actively participate in the operations and management of the institutions themselves is breaking down (Government Accountability Office, 2005; Government Accountability Office). Although to date, legislators have preserved the credit union tax exemption, lobby groups are vocal in their appeal to revoke credit union not-for-profit status as is evidenced by a recent letter from the American Bankers Association to the Chairman of the House Ways and Means Committee urging revocation of "the credit union tax subsidy" (American Bankers Association, 2014, March 10, paragraph 1), which they claim is outdated in the modern credit union industry.

Encouraging member engagement may sway some critics, however (McKillop & Wilson, 2011). According to McKillop and Wilson, US credit unions have systemic problems arising from the "loosening of the common bond constraints", and as a result "the control of members over management is diluted" (p. 102). Encouraging engagement amongst members may counter this argument by inviting members to participate in the governance of the institutions (Rubin & Milesko, 2013). One means by which member engagement may be strengthened is by analyzing and acting upon social media and operational data to encourage a more active sense of ownership and cooperation amongst members who provide feedback (both positive and negative), actively participate in the management of the credit union through

traditional and new forums (such as online forums and social media) and even co-create product and service offerings (Hennig-Thurau et al., 2010; Hoyer et al., 2010). Nations (2014) defines social media as an interactive platform:

> In Web 2.0 terms, this would be a website that doesn't just give you information, but interacts with you while giving you that information. This interaction can be as simple as asking for your comments or letting you vote on an article, or it can be as complex as Flixster recommending movies to you based on the ratings of other people with similar interests. Think of regular media as a one-way street where you can read a newspaper or listen to a report on television, but you have very limited ability to give your thoughts on the matter. Social media, on the other hand, is a two-way street that gives you the ability to communicate too (What Is Social Media, paragraph 2).

Operational data is here defined as the data resulting from an organization's day-to-day transactional business operations (Isson & Harriott, 2013).

Purpose

The purpose of this annotated bibliography is to identify literature that explores the analysis and use of social media and operational data in improving credit union member engagement with the aim of instituting effective bonds of association through increased member engagement across ever-expanding fields of membership. van Doorn et al. (2010) demonstrate that firms focusing on customer engagement have shown a marked improvement in attracting and retaining long-term customers and growing overall customer loyalty and cooperation. By analyzing operational and social media data to inform engagement programs, firms can allow customers to "cocreate value, cocreate competitive strategy, collaborate in the firm's innovation process, and become endogenous to the firm" (Bijmolt et al., 2010). Libai et al. (2010) demonstrate that a more engaged customer base can even improve relationships between customers themselves. This level of member participation in credit union operations demonstrates cooperation akin to the days of smaller credit unions serving smaller, relatively homogenous groups sharing an employer or other important association (Cassity, 2000). Still,

the concept of member engagement is relatively new to the credit union industry and few credit unions have adopted an official, long-term strategy to engage members through the analysis and use of social and operational data (Rubin & Milesko, 2013).

Research Questions

Main question. As credit union membership expands beyond small, relatively homogenous groups (Cassity, 2000; Government Accountability Office, 2006), what technologies and methods can credit unions employ to analyze operational and social media data to improve member engagement as defined by van Doorn et al. (2010) in an effort to establish effective bonds of association regardless of size?

Sub-questions. What technologies currently exist to assist in the gathering and use of operational and social media data to inform customer engagement programs? What analytical and statistical methods exist to operationalize learnings from social media and operational data to better inform engagement programs?

Audience

This annotated bibliography is written for senior managers of credit unions who want to improve member engagement through the analysis of operational and social media data to form stronger bonds of association despite ever-widening membership bases. Member engagement programs have demonstrated the ability to change customer behavior in areas such as "word-of-mouth activity, recommendations, helping other customers, blogging, writing reviews, and even engaging in legal action", which should appeal to credit union management (van Doorn et al., 2010, p. 253). Additionally, member engagement programs have been shown to increase participation and cooperation amongst members themselves as well as employees (Libai et al., 2010) – duplicating the social pressures brought to bear through traditional bonds of association

amongst smaller credit unions serving homogenous populations (Cassity, 2000). Since lack of member participation in the credit union cooperative is one of the leading factors causing critics and regulators to question the tax-exempt status currently enjoyed by credit unions (Government Accountability Office, 2005; White, 2012), member engagement should also appeal to regulators. The focus of this paper could be beneficial in presenting methods and technologies that make credit union operational and social data accessible to inform member engagement programs that strengthen bonds of association regardless of the size of the membership base.

Search Report

Search strategy. Most of the sources used in this study are obtained using the University of Oregon's online article search feature - Quick Search. Searches are constrained to the topics of business and law. Business topics provide the majority of the resources addressing customer engagement and analytics tools while the databases under the Law section provide background material on credit union tax exemption and regulatory actions in the credit union industry.

Establishing indexing descriptors. The most successful searches make use of the following key phrases:

- Customer Engagement – This term is used by van Doorn et al. (2010) to describe customer behavior that exhibits affinity beyond purchasing decisions and his definition is cited in multiple subsequent sources. It focuses mainly on non-transactional behaviors such as word-of-mouth referrals, posting on blogs and other social websites and rating a firm's products and services as well as participation in cooperative forums. (Verhoef, Reinartz & Krafft, 2010).
- Credit Union Member Engagement – The term *member* is more useful when searching within literature aimed specifically at the credit union industry such as Filene. Rubin and

Milesko (2013) refer to member engagement in relation to social media interactions between credit unions and their membership bases.

- Credit Union Charter – Cassity (2000) refers to the Federal Credit Union Act and the original intentions behind the document, which is commonly referred to as the "Credit Union Charter". Use of the term in subsequent searches uncovers resources such as the original Federal Credit Union Act (Federal Credit Union Act, 2013) and the GAO report on credit union reform (United States Government Accountability Office, 2006). These resources provide background into the regulations and restrictions of credit unions in the U.S.
- Knowledge Management – This concept is discussed by Zhang, Ordonez de Pablos and Zhou (2012) and defined by García-Murillo and Annabi (2002) as the "gathering, managing and sharing [of] customer knowledge" (p.875). García-Murillo and Annabi discuss the issue from the perspective of knowledge management systems, whereas Zhang, Ordonez de Pablos and Zhou study knowledge management from the perspective of culling *customer* knowledge within the enterprise. Knowledge collection and dissemination is a key component in credit union strategic performance – including long-term initiatives such as employee and member retention, increasing employee-member interactivity and creating sources of sustainable competitive advantage (Zhang, Ordonez de Pablos & Zhou, 2012).
- Nonprofit Analytics – Since the goal of the study is to research the methods and technologies available to analyze credit union operational data to inform member engagement systems, searching for analytics in the nonprofit sector can provide relevant insight.

- Analytical CRM – Ranjan and Bhatnagar (2011) state that executives are beginning to realize the potential of analytics in managing customer relationships. "The application of the analytical approach helps the business organizations to understand the benefits that are achieved through continuing analysis of the customer data" (p. 1). This term is included to acquire resources that focus on applying internal operational data to the management of customer interactions with employees. The term CRM refers to Customer Relationship Management – a process that uses technology to track customer interactions with employees, marketing promotions and company products and services in an effort to calculate that customer's value to the organization and the value of the organization to the customer (Fuggetta, 2012).

Search engines and databases. Like many academic studies, this literature review makes use of academic databases available through the University of Oregon's library and Google Scholar. Mainly, articles are found in JSTOR, Factiva, Academic Search Premier, Business Source Complete and the University of Oregon's local catalog. Some older sources providing foundational or background information (such as the evolution of employee and executive compensation strategies) are available only in print form and are obtained from the Knight Library. Additionally, heavy use is made of the Journal of Service Research, which is identified using Google Scholar and offers an entire edition relating to customer engagement and the use of data analysis to promote customer engagement. Finally, the study makes use of research and product synopses provided by Filene – a nonprofit think tank focusing on credit union issues and research. While Filene offers products and services for a fee to credit unions, its research – including white papers, academic articles and studies and project documentation – is provided free of charge (Filene.org, 2014).

Documentation Approach

According to Antonijevic and Cahoy (2014), digital collection and organization of resources is becoming more prevalent today amongst scholars. Creswell (2009) also recommends the use of digital devices to organize academic sources. This study relies on iBooks – an application available on Apple devices such as iPads and iPhones. The application enables users to store the full text copy of documents in a variety of formats and view them, highlight sections of interest and organize multiple works into libraries defined by the user. The full text of the documents can then be stored on the devices themselves or in the cloud, enabling access to the information without the need of an internet connection. With the proliferation of the use of mobile devices in academic research (Antonijevic & Cahoy, 2014), using Apple software to store reference information makes libraries accessible from multiple connected devices. Resources are organized into various collections within iBooks according to their relevancy in addressing one or more of the research sub-questions. By organizing materials into categories and storing the full text electronically, sources can be reviewed at anytime from anywhere.

Reference Evaluation Criteria

Literature is collected that addresses the topics of *customer engagement* and *data analysis tools and technology*. Using the checklist provided by Bell and Frantz (2013), potential references are screened to ensure their authority, objectivity, quality, currency and relevancy.

- Authority – According to Bell and Frantz (2013), identifying sources from well-known publishers and/or websites can verify the authority of a source. References are included in this study that are found in refereed, published literature or are published by a reputable credit union trade association and distributed without charge.

- Objectivity – Sources demonstrating a clearly defined purpose that disclose any potential conflicts of interest are deemed sufficiently objective according to the standards set forth by Bell and Frantz (2013). Some references that are clearly biased are provided as background and an attempt is made to carefully balance opposing viewpoints where such material is included – such as the inclusion of Cassity (2000) as a proponent of credit union taxation and Feinberg and Meade (2014) as opponents of such taxation.
- Quality – References that make use of succinct argumentation, proper grammar and relevant sources are considered of sufficient quality for inclusion in this study as recommended by Bell and Frantz (2013).
- Currency – References are deemed current if they are either published in the past five years for documents outlining data analysis tools and technology or 10 years for documents addressing customer engagement in general or that are seminal works providing background. Due to the fact that social media usage is rapidly expanding (Vij & James, 2014), restricting technical results as they relate to social media usage to the past five years ensures that only the most relevant sources are included. References addressing the more technical aspects of social media data analysis methods, technologies and network analysis are restricted to the past five years.
- Relevancy – References are deemed relevant if they directly address one or both of the topics *customer engagement* and *data analysis tools and technology* in the context of non-governmental organizations. For credit union-specific information (which is relatively scarce in the academic literature), relevant industry trade journals and recognized trade association studies are used. As proxies for credit union-centered material in the academic sphere, the study draws on relevant articles focusing on

nonprofit and not-for-profit customer engagement strategies. Since credit unions are chartered as not-for-profit organizations (Federal Credit Union Act, 2013) and the retention of the not-for-profit status is a key element of the study, this strategy is suitable for expanding the scope of literature on management, compensation and analytics theory available in academic journals.

Annotated Bibliography

The following annotated bibliography examines the interplay between data analysis, social media and member engagement in credit unions. Selected sources are intended to provide tools and methods to credit union managers to engage credit union membership to counter the argument of some detractors (Cassity, 2000; Government Accountability Office, 2005; Government Accountability Office, 2006) that credit unions have outgrown their tax-exempt, not-for-profit status. References are organized into two categories addressing (a) tools and technologies for customer data analysis or (b) customer engagement programs. All ideas presented in the summary sections of the annotations that follow are those of the works' authors and not the opinions of the author of this study.

Each annotation consists of (a) a full citation of the reference, (b) the abstract provided by the publisher or author, which in some cases has been edited for length and (c) a summary of the content of the reference as it addresses the research topic of this study. These references could be used by credit union managers to better understand available tools, technologies and methods to engage members using data analysis and social media.

Category A: Tools and Technologies for Customer Data Analysis

Askan, A. & Sayin, S. (2013, January 15). SVM classification for imbalanced data sets using a multiobjective optimization framework. *Annals of Operations Research, 216*(1), 191-203. doi:10.1007/s10479-012-1300-5

Abstract. Classification of imbalanced data sets in which negative instances outnumber the positive instances is a significant challenge. These data sets are commonly encountered in real-life problems. However, performance of well-known classifiers is limited in such cases. Various solution approaches have been proposed for the class

imbalance problem using either data-level or algorithm-level modifications. Support Vector Machines (SVMs) that have a solid theoretical background also encounter a dramatic decrease in performance when the data distribution is imbalanced. In this study, we propose an L_1-norm SVM approach that is based on a three objective optimization problem so as to incorporate into the formulation the error sums for the two classes independently. Motivated by the inherent multi objective nature of the SVMs, the solution approach utilizes a reduction into two criteria formulations and investigates the efficient frontier systematically. The results indicate that a comprehensive treatment of distinct positive and negative error levels may lead to performance improvements that have varying degrees of increased computational effort.

Summary. This article describes a solution to the problem of *class imbalance* in data analysis, which occurs when one class of responses (either affirmative or negative) is vastly outweighed by the opposite class. For example, in marketing response rates, a class imbalance occurs when the number of negative responses outweighs positive responses by 10:1 or more as is often the case. The author of this article provides a statistical approach that allows for the analysis of the data as it is observed – negating the need to provide more of the underrepresented responses – known as *oversampling* – or less of the overrepresented responses – known as *undersampling* to balance the data set. Data collected from non-transactional data stores such as social media (the number of people who re-Tweet a post or Like a Facebook page, for example) is often imbalanced because only the most engaged customers exhibit the preferred behavior. By making use of the author's proposed solution, observations can be analyzed more quickly, sampling can remain random and insights can be gained even when response classes are imbalanced.

Bijmolt, T.H.A., Leeflang, P.S.H., Block, F., Eisenbeiss, M., Hardie, B.G.S., Lemmens, A. & Saffert, P. (2010, August 11). Analytics for customer engagement. *Journal of Service Research, 13*(3), 341-356. doi: 10.1177/1094670510375603

Abstract. In this article, we discuss the state of the art of models for customer engagement and the problems that are inherent to calibrating and implementing these models. The authors first provide an overview of the data available for customer analytics and discuss recent developments. Next, the authors discuss the models used for studying customer engagement, where they distinguish the following stages: customer acquisition, customer development, and customer retention. Finally, they discuss several organizational issues of analytics for customer engagement, which constitute barriers for introducing analytics for customer engagement. [ABSTRACT FROM AUTHORS]

Summary. The authors of this article focus on *customer analytics*, which refers to the intensive analysis of data at the individual customer level to drive business decisions. In particular, they review analytical methods for studying customer engagement behavior as it is manifested in the areas of (a) customer acquisition, (b) customer development, and (c) customer retention. To analyze customer acquisition, the authors recommend using probability-based models such as Pareto, Clustering, Association Rule Discovery and Fuzzy Inference Engines. This class of models makes use of the plethora of transactional data available to marketers to infer latent customer behavioral traits such as the proclivity to purchase a product or service and the magnitude of the prospect's Customer Lifetime Value (CLV), which incorporates the customer's probable future purchases from the company. For customer development analysis, the authors recommend the use of a multivariate probit (Finney, 1971) model to predict the customer demand for multiple

products from the same company. The authors specifically cite cross-selling of products in the banking services sector as a demonstrated use of this model. Furthermore, the authors note that customers adopting multiple products with the same firm are often more apt to demonstrate traits of deeper engagement. Finally, for customer retention analysis, the authors recommend neural networks. The accuracy of neural networks has improved dramatically in recent years due to the advent of newer, smarter and more sophisticated computing technologies. Such models can predict whether a disengaged customer is indeed lost to the company or whether s/he can be swayed back into engagement.

Huang, C., Tseng, T., Jiang, F., Fan, Y. & Hsu, C. (2013, April 12). Rough set theory: A novel approach for extraction of robust decision rules based on incremental attributes. *Annals of Operations Research, 216*(1), 163-189. doi:10.1007/s10479-013-1352-1

Abstract. Rough set theory is a new data mining approach to manage vagueness. It is capable to discover important facts hidden in the data. Literature indicate the current rough set based approaches can't guarantee that classification of a decision table is credible and it is not able to generate robust decision rules when new attributes are incrementally added in. In this study, an incremental attribute oriented rule-extraction algorithm is proposed to solve this deficiency commonly observed in the literature related to decision rule induction. The proposed approach considers incremental attributes based on the alternative rule extraction algorithm (AREA), which was presented for discovering preference-based rules according to the reducts with the maximum of strength index (SI), specifically the case that the desired reducts are not necessarily unique since several reducts could include the same value of SI. Using the AREA, an alternative rule can be defined as the rule which holds identical preference to the original decision rule and may

be more attractive to a decision-maker than the original one. Through implementing the proposed approach, it can be effectively operating with new attributes to be added in the database/information systems. It is not required to re-compute the updated data set similar to the first step at the initial stage. The proposed algorithm also excludes these repetitive rules during the solution search stage since most of the rule induction approaches generate the repetitive rules. The proposed approach is capable to efficiently and effectively generate the complete, robust and non-repetitive decision rules. The rules derived from the data set provide an indication of how to effectively study this problem in further investigations. [ABSTRACT FROM AUTHORS]

Summary. This article focuses on potential improvements to *Rough Set Theory* – a mathematical theory that can help make sense of vague, imprecise and incomplete data sets for statistical analysis. The article reviews a proposed solution to some of the known drawbacks to Rough Set Theory by using the *Incremental Rule-Extraction Algorithm*. The Incremental Rule-Extraction Algorithm is a statistical method that removes ambiguity and speeds processing time for data sets making use of Rough Set Theory that have newly-introduced data points. For instance, a traditional operational data set containing demographic and transactional information has a certain degree of ambiguity, missing data points and imprecision based on the processing technology and procedures employed to aggregate it. An analyst hoping to infer engagement levels from that data could use Rough Set Theory to accommodate this ambiguity. Then, making use of the proposed solution, the analyst could merge in social media data, for instance, and the model could be run incrementally – eliminating the need to reconstruct the entire model. The proposed method would benefit decision tree, association rule and neural network

models employed to analyze data sets that represent customer information such as a customer's proclivity to adopt a range of products, levels at which a customer relationship might become unprofitable based on consumption patterns and the likelihood that a given customer will disengage from the company within a determined time period.

Isson, J. & Harriott, J. (2013). Social Media Analytics in *Win with Advanced Business Analytics: Creating Business Value from Your Data* (pp. 247 – 270). Hoboken, N.J.: John Wiley & Sons.

Abstract. The authors review the role of analytics within the enterprise in light of new data stores available including social media sources. The authors review techniques, best practices and tools available for the analysis of data to inform organizational goals including human resources management, financial management and marketing management. Customer engagement is covered as it relates to social media analysis.

Summary. The authors of this chapter focus on the analytics made available by social media and how analytical methods can help business managers focus their engagement efforts, strategically employ social media, and measure its financial effect. The chapter suggests that business managers employ the following analytical methods to better understand their social media strategy:

- *Social Media Listening* – This is the process of monitoring social media activities to better understand the correlation between a company's social media engagement activities and revenues derived from those activities. Review of social media content over time will reveal changes in perception of the company, its brand, its products, its competitors and its viability in the market.

- *Social Media Scoring* – This is defined as the process of assigning proxy values to various events and actions so that readings can be compared over time – even if naming conventions change and content becomes increasingly complex. Scoring can assign values to a customer who, for example, reposts an article s/he finds on the company's Facebook page or forwards a company blog post to her/his personal contacts. Scores can then be tallied for each customer and a ranking can be given. This score can inform estimates of the degree of customer engagement and how it changes over time.
- *Social Media Modeling* – The authors define this term as the application of statistical methods to raw social media data or scored data (see Social Media Scoring above) to infer the customer's level of awareness of, favorability of and satisfaction with the company. Regression models from simple correlation analyses to decision tree models can be employed at this stage to extract meaning from social media activities.
- *Social Media Text Mining* – This is defined as the process of applying statistical methods to clusters or groupings of text gathered from social media posts from customers. By applying indexing to the language found in social media texts and by gauging the context in which it was written, analysts can review massive amounts of qualitative data to summarize and predict trends in sentiment about the company, its brand and its activities.

Kallerhoff, P. (2013, June 24). Big data and credit unions: Machine learning in member transactions. *Filene*. Retrieved from http://filene.org/research/report/big-data-credit-unions-machine-learning1

Abstract. Companies as varied as Amazon, Google, Walmart, and Wells Fargo are turning to "big data" for customer insights that will help them serve clients and capture market share. Big data is the analysis of huge data sets, and while individual credit unions may not have the resources of a corporate giant, advances in data storage and software tools mean that credit unions can start using similar tools and deriving similar value.

For this research, five credit unions in the United States and Canada proffered their members' anonymous profile information and transaction details to the researcher, who used variables as diverse as gender, product balances, credit score, income, and transaction amounts to search for revealing correlations. The findings show that some simple patterns evolve using big data and machine learning (a branch of artificial intelligence that focuses on the construction and study of systems that can learn from data). In particular, we found that members follow simple paths during their life cycle and adopt different consumer products at each stage.

The credit unions were each looking for different things, and the plasticity of big data means that, with the right tools and the right inputs, you can discover very different things. Because a machine learning project is only as helpful as the data that flow into it, the participating credit unions got the most specific insights. But their combined data still offer generalizable findings for all credit unions. You'll want to watch this trend: Big data is here to stay. [ABSTRACT FROM PUBLISHER]

Summary. This article highlights *machine learning* – the branch of information technology interested in building systems and programs capable of learning from data – and its implications for credit unions hoping to analyze massive transactional data sets. The author studies anonymized data from five credit unions in Canada and the United

States to analyze (a) how account balances, income levels and expenses can predict the next product a member is likely to adopt and (b) how member transaction magnitude and frequency can predict creditworthiness.

To predict the next best product to offer members, the author uses a k-means cluster analysis to group members into logical groups based on product ownership, transaction behavior and subsequent product adoption. The mathematical distance between each member and the center of that member's assigned cluster is calculated using a standard distance measure. External data from financial markets is incorporated to show the state of the economy and financial markets on the day of each transaction. With this data, the author is able to estimate the degree of price sensitivity for each member. Combining price sensitivity with the distance measure allows the author to calculate which products would move the member towards the center of that member's assigned cluster most efficiently.

To predict creditworthiness using transactional data, the author measures the likelihood that a particular member would switch clusters based on the frequency and magnitude of transactions with various merchants. He also measures key ratios such as balance-to-income and expense-to-income on the date of each transaction. By correlating these events with cases of actual cluster switching, he can predict with 40% accuracy the likelihood that members exhibiting similar behavior would switch clusters. Since the clusters already incorporate creditworthiness data, he is able to correlate which likely switches are predictors of decreases or increases in credit scores.

Ranjan, J. , & Bhatnagar, V. (2011). Role of knowledge management and analytical crm in business: Data mining based framework. *Learning Organization*, *18*(2), 131-148. doi:http://dx.doi.org/10.1108/09696471111103731

Abstract. Purpose - The purpose of the paper is to provide a thorough analysis of the concepts of business intelligence (BI), knowledge management (KM) and analytical CRM (aCRM) and to establish a framework for integrating all the three to each other. The paper also seeks to establish a KM and aCRM based framework using data mining (DM) techniques, which helps in the enterprise decision-making. The objective is to share how KM and aCRM can be integrated into this seamless analytics framework to sustain excellence in decision making using effective data mining techniques and to explore how working on such aCRM system can be effective for enabling organizations delivering complete solutions. Design/methodology/approach - This paper is based on focused and dedicated study of the literature present on the aCRM, KM and data mining techniques. The paper considered how to develop a strategy and operational framework that would build aCRM on the foundation of existing DM techniques and KM approach to ^meet the business challenges. Based on this research, a customized, integrated framework, to match the needs of business was designed. Findings - KM focuses on managing knowledge within the organization and aCRM focuses on gaining analytical information from the customer data. Both KM and aCRM help in the decision making process and understanding. This knowledge is difficult to uncover. Hence, this paper explains the importance of data mining tools and techniques to uncover knowledge by the integration between KM and aCRM. This paper presents an integrated KM and aCRM based framework using DM techniques. Research limitations/implications - All the firms may

not be in favor of adopting KM while implementing aCRM. The KM requires a convalesce of organizational culture, technology innovations, effective work force in culminating knowledge dissemination in all business domains. Practical implications - The organizations implementing this knowledge enabled aCRM framework would be easily ab le to convert their business knowledge via the analytical CRM to solve many business issues, such as increase response rates from direct mail, telephone, e-mail, and internet delivered marketing campaigns, increased sales and increased services. With aCRM, firms can identify their most profitable customers and use this knowledge for promotional schemes for those customers as well as identify future customers with prediction on ROI. Originality/value - The need for the integration of KM and aCRM is clear. It is written for practitioners who are looking for approaches to improve business performance and maintain high profits for their business by incorporating knowledge-enabled aCRM in their setup. [ABSTRACT FROM AUTHOR]

Summary. This article reviews *data mining, knowledge management* and *analytical customer relationship management* methodologies, tools and technologies and how they can be integrated with one another to help business managers gain useful insights into customer relationships and engagement. Data mining refers to the application of analytical methods on data to yield information to drive business decisions and provide insight into organizational operations. Knowledge management is a systematic approach to discovering, organizing and using knowledge about employees, processes and customers. Analytical Customer Relationship Management (aCRM) refers to the application of statistical methods on customer data to provide insights into how to more deeply engage customers. Making use of the Knowledge Management approach to

systematically collecting and organizing data, managers can leverage aCRM technologies and tools to better understand their customer bases. This approach provides knowledge about customers including needs, preferences, demographics and behavior; knowledge for customers including data resulting from the matching of customer needs to the potential solutions of the company; and knowledge from customers, which is gathered through surveys and focus groups or observed directly through social media interactions. Applying data mining techniques on operational data and combining it with insights collected through the aCRM produces insights into future trends of customer preference, sales forecasts, marketing predictions and solutions for better service channels that will more deeply engage customers.

Category B: Customer Engagement Programs

Fuggetta, R. (2012). Tracking in *Brand Advocates: Turning Enthusiastic Customers into a Powerful Marketing Force* (pp. 220-233). Hoboken, N.J.: Wiley.

Abstract. Brand advocates are your most loyal, passionate, and engaged customers. These enthusiastic customers don't just buy your products--they sell your products for you. Brand advocates tweet, blog, and Yelp about you; they praise you with five-star reviews on Amazon and TripAdvisor; they talk you up in social networks, online communities, and over coffee; and they defend you from detractors. According to social media firm Vitrue, a Facebook fan may be worth $3.28. But, according to a study by customer satisfaction company, Satmetrix, a single brand advocate for an enterprise software company is worth $565,000 based on his referral value. This book is the go-to resource for teaching businesses how to make their customers be one of their most effective marketing components. The book explains how to find your brand advocates by determining levels of customer loyalty, and how to use their resources and power. Once you've found your advocates, the book explains how to get them to fill the gap from customer to advocate, from enjoying their experience to actively promoting their experience. The book gives you the secrets of turning advocates into marketers. You'll learn how to discover who brand advocates are and what makes these influential customers tick; create and grow your brand army by continuously identifying advocates on Facebook, Yelp, and other online reviewer sites; energize and mobilize your brand army to spread positive Word of Mouth, create and maintain customers, and become your biggest supporters; reward your advocates by giving them what they crave most; and

keep score. You'll learn how to measure results and ROI from online marketing programs featuring brand advocates. [ABSTRACT FROM PUBLISHER]

Summary. This chapter focuses on tracking customer engagement as measured by the *net promoter score* – a metric measuring a customer's proclivity to recommend a company's products and/or services to his/her friends, family and associates. It advises managers to identify customers who are most likely to recommend the company's products and services. The author calls such customers *brand advocates*. Identifying these brand advocates helps companies to estimate the value and success of their engagement activities by creating advocate profiles, discovering how these advocates are recommending the company's products and services and evaluating the results of those recommendations. The author then provides a means of establishing the value of the engagement program based on the created *sales value* – the revenue produced by product and service sales from brand advocate recommendations – and *media value* – the value added to the company's reputation, which is created by advocates through their genuine, targeted and unsolicited recommendations of company products and services. Methods for calculating value of engagement activities are presented including the Return on Advocacy calculation represented by Total Advocacy Value – Total Advocacy Costs. Finally a number of tools are presented to collect information about company advocacy including customized customer referral campaigns embedded in social media channels and outsourced services such as RapLeaf.

Hennig-Thurau, T., Malthouse, E.C., Friege, C., Gensier, S., Lobschat, L., Rangaswamy, A. & Skiera, B. (2010, August 11). The impact of new media on customer relationships. *Journal of Service Research, 13*(3), 311-330. doi:10.1177/1094670510375460

Abstract. Recent years have witnessed the rise of new media channels such as Facebook, YouTube, Google, and Twitter, which enable customers to take a more active role as market players and reach (and be reached by) almost everyone anywhere and anytime. These new media threaten long established business models and corporate strategies, but also provide ample opportunities for growth through new adaptive strategies. This paper introduces a new "pinball" framework of new media's impact on relationships with customers and identifies key new media phenomena which companies should take into account when managing their relationships with customers in the new media universe. For each phenomenon, we identify challenges for researchers and managers which relate to (a) the understanding of consumer behavior, (b) the use of new media to successfully manage customer interactions, and (c) the effective measurement of customers' activities and outcomes. [ABSTRACT FROM AUTHOR]

Summary. This article addresses the topic of customer engagement from the standpoint of the role of new media in the customer-business relationship. In particular, the article focuses on the aspect of this new relationship that empowers customers to co-create content, review products, recommend services and generally become proactive in their consumption patterns. Further, it identifies ten phenomena relevant to marketers in the digital age who are interested in engaging with customers online. Six of the phenomena described relate to technologies, which include (a) advanced search bots and the increasing reliance upon them by consumers, leading to the need for businesses to manage their online content to make it easier to find; (b) shopping bots, which enable consumers to compare prices, product features and reviews, leading companies to consider how such data might help them better manage pricing and product placement;

(c) the proliferation of mobile technology and the reticence of some to enable permission-based services, leading to the need for marketers to consider the development of useful applications to engage customers and acquire new sources of potentially valuable data; (d) advanced recommender systems, which can influence purchasing decisions, leading companies to consider how to use such systems to inform product development; (e) the continued rise of peer-to-peer networks, leading companies to manage a balance between piracy and the legitimacy of allowing consumers to share products and services to encourage continuing engagement; and (f) online auctions, leading marketers to consider whether such buying schemes could be integrated into proprietary websites to engage customers more deeply in the purchasing process. The remaining four phenomena described deal with emerging services and information including (a) new multimedia services, leading marketers to balance the reach available through social media with the questionable behavioral affect produced by advertising schemes in this new forum; (b) digital consumer articulation including electronic word-of-mouth (EWOM) patterns and reviews, leading companies to manage their reputations in channels over which they may not have complete control; (c) consumers as retailers, which focuses on consumers selling products second-hand; and (d) online social communities, in which members interact with each other in the context of games, shared interests, professional careers, etc., leading marketers to consider the possibility of brand infusion into these communities and the creation of brand affinity amongst the members.

Libai, B., Bolton, R., Bugel, M.S., de Ruyter, K., Gotz, O., Risselada, H. & Stephen, A. (2010, August 11). Customer-to-customer interactions: Broadening the scope of word of mouth research. *Journal of Service Research, 13*(3), 267-282. doi:10.1177/1094670510375600

Abstract. The increasing emphasis on understanding the antecedents and consequences of customer-to-customer (C2C) interactions is one of the essential developments of customer management in recent years. This interest is driven much by new online environments that enable customers to be connected in numerous new ways and also supply researchers' access to rich C2C data. These developments present an opportunity and a challenge for firms and researchers who need to identify the aspects of C2C research on which to focus, as well as develop research methods that take advantage of these new data. The aim here is to take a broad view of C2C interactions and their effects and to highlight areas of significant research interest in this domain. The authors look at four main areas: the different dimensions of C2C interactions; social system issues related to individuals and to online communities; C2C context issues including product, channel, relational and market characteristics; and the identification, modeling, and assessment of business outcomes of C2C interactions. [ABSTRACT FROM AUTHOR]

Summary. The focus of this article is the customer-to-customer interactions that exist with the aid of social media. In identifying several key dimensions in customer-to-customer interactions, the authors note the trend away from one-on-one customer interaction and toward social group interactions where behaviors exhibited by customers are observable by the larger group and can signal emulation. Managers must use social media channels to engage customer groups as well as individual customers to counter behaviors that may be destructive to the company or brand. The authors then expound upon the theory of a social system formed by customer-to-customer interaction wherein individuals play different roles including those who lead opinions, which the authors call *influentials*. If companies can identify and target influentials in their marketing efforts,

customer engagement programs can be more effective, efficient and economical. Finally, the authors note that various contexts may sway social systems including customer, relational, product, channel, relational and market characteristics. Understanding these characteristics will help managers tailor social media communication to various communities by matching appropriate sensory modes, communication tone, message brevity and firm actions to amplify messaging.

Lovejoy, K., Waters, R.D. & Saxton, G.D. (2012). Engaging stakeholders through Twitter: How nonprofit organizations are getting more out of 140 characters or less. *Public Relations Review 38*(2), 313-318. doi:http://dx.doi.org/10.1016/j.pubrev.2012.01.005

Abstract. While it may seem difficult to communicate in a meaningful manner with 140 characters or less, Twitter users have found creative ways to get the most out of each Tweet by using different communication tools. This paper looks into how 73 nonprofit organizations use Twitter to engage stakeholders not only through their tweets, but also through other various communication methods. Specifically it looks into the organizations utilization of tweet frequency, following behavior, hyperlinks, hashtags, public messages, retweets, and multimedia files. After analyzing 4655 tweets, the study found that the nation's largest nonprofits are not using Twitter to maximize stakeholder involvement. Instead, they continue to use social media as a one-way communication channel as less than 20% of their total tweets demonstrate conversations and roughly 16% demonstrate indirect connections to specific users. [ABSTRACT FROM PUBLISHER]

Summary. Through the use of a content analysis of 4,655 online posts from 73 nonprofit organizations selected at random from amongst the 2009 listing of the *Nonprofit Times*,

the authors review the social media site Twitter and its use within nonprofit organizations. The focus of this article is to review the potential for Twitter to engage social communities and best practices to establish two-way dialogue between non-profit organizations and their followers. The authors recommend posting often, using external tools such as Twitpic and TwitVid to embed multimedia messages within Twitter messages, using hyperlinks to encourage furtherance of the dialogue, responding promptly to users' questions, following individuals who follow the organization to create a sense of mutuality and the use of hash tags to encode content for easier search and retrieval. While these methods and tools are available to every user of Twitter, the authors found that only about 37% of surveyed nonprofits are making use of them to adopt Twitter as a true social media tool – engaging users in dialogues and creating relationships amongst a larger community – rather than a one-way information dissemination device.

Marlowe, A., Simon, J., Webb, S. & Harben, A. (2013, September 19). Concept document: Social cowboy. *Filene*. Retrieved from http://filene.org/assets/files-i3/Social_Cowboy_2013_Filene_i3_Concept_Document_Template_(1).pdf

Abstract.

Problem: Social media has become an increasingly important window into trends, risks, and opportunities within the financial services marketplace. But, most credit unions are unable to provide tangible proof that their social media strategy is successful.

Solution: Social Cowboy empowers credit unions to monitor, filter, and leverage conversations around financial topics and their brands across social networks. The tool

also allows credit unions to tailor outbound communications in the social media realm before releasing the message.

Test Results: The i3 team tested Social Cowboy, monitoring content on understanding mortgage lender decisions, credit union taxation, and brand-specific feedback for Georgia's Own Credit Union.

Georgia's Own discovered a 3% negative sentiment rate for its brand. The credit union was able to identify the member who received poor service and turn the sentiment around.

Summary. Through the use of a prototype deployed in three separate test cases, the authors of this concept document explain how social media data can be captured, monitored and tracked in credit unions to aid in management decisions. The test cases monitor (a) discussions about the mortgage lending process; (b) conversations about potential reforms to credit union legislation that would revoke their tax-exempt, not-for-profit status; and (c) the social media influence on the brand and reputation of a specific credit union in the pilot group. The process uses a technology called Crimson Hexagon and gathers relevant social media data for each of the test cases. For the mortgage lending discussion, the authors discover a great deal of uncertainty on the part of members as to the process of acquiring a mortgage, belief that the impacts of the recent U.S. recession are influencing underwriting decisions and frustration about the perceived lack of communication between credit unions and their members throughout the mortgage lending process. With this information, the authors suggest a communication strategy that educates social media participants about the process upfront, discloses underwriting guidelines and makes use of social media channels to answer general questions and stay

in touch throughout the process. The taxation test case reveal that conversations favor the credit union industry's position that the tax-exempt status should remain in effect. Finally, the test case studying the brand impact from social media for one specific credit union is able to identify a single member who shares negative sentiments with 74 contacts. Management of this credit union is then able to intercede with the member directly to rectify the situation. All three test cases demonstrate the plasticity and range of applicability of this solution for credit union managers who want to actively manage the effects of their social media efforts.

Rubin, R. & Milesko, J. (2013, November 4). Beyond engagement: Social media drives business results. *Filene*. Retrieved from http://filene.org/research/report/beyond-engagement-social-media-drives-business-results

Abstract. It's essential for organizations, including credit unions, to not only maintain a consistent presence on social media networks, but also to create an effective social media strategy so they stay relevant in today's competitive business environment. Many potential new members and new hires will not even consider a credit union that doesn't have a consistent presence and a defined social media strategy.

The Filene-QUEsocial pilot project allowed credit unions to leverage employees who use QUEsocial's social business portal to share credit union related content, recruit new employees, and promote sales. The portal was designed to engage employees in their credit union's social activity, grow the credit union's online presence, and drive business results through the proper use of social media.

The pilot demonstrated that credit union employees are capable of spreading credit union awareness and generating "business wins" through their personal social networks. A

number of credit union participants found success in the pilot by following these best practices:

Growing their social networks

Posting frequently

Using training resources to understand the differences between social networks and utilizing them optimally

Engaging with content

This report overviews the QUEsocial pilot, interprets the results, and shares recommendations for credit unions looking to improve and leverage their social media presence and strategies. [ABSTRACT FROM AUTHORS]

Summary. The authors stress the importance to credit unions of a consistent social media strategy to engage members and employees. The article recaps a pilot project wherein 128 employees from 37 separate credit unions use their personal social media profiles to engage credit union members, drive sales and distribute information about credit unions in general. These employees are provided monetary incentives based on the performance of their networks in generating new credit union memberships, retaining pre-existing memberships and deepening relationships with members by promoting adoption of credit union products and services. The highest performers demonstrate the following best practices: a consistent social media strategy making use of frequent postings, a focus on growing the breadth of social networks, engaging (or following) other people's posts and investing in training to understand how to engage members via two-way media channels such as Facebook and Twitter.

Stone, M. & Woodcock, N. (2013, June 19). Social intelligence in customer engagement. *Journal of Strategic Marketing, 21*(5), 394 – 401. doi:10.1080/0965254X.2013.801613

Abstract. This article explains how social media channels enable brands and companies to engage with consumers. It builds on the authors' work on customer management strategies, showing how social media can be used throughout the customer management cycle. The authors suggest that for social media to be used effectively in support of the above strategies, companies must be fully aware of the effect social media are having upon marketing, develop the required social media capabilities, identify strategies which use these capabilities to support overall marketing strategy and prioritise carefully how they want to use social media. The required capabilities relate to the following areas: measurement, workflow management and agility, execution, brand and proposition management, customer experience management, partner management, data management, technology, direction and leadership, people and culture, insights and planning, and channels and media. [ABSTRACT FROM AUTHOR]

Summary. In this article, the authors focus on customer engagement by combining traditional Customer Relationship Management (CRM) methods with new social media methods. They introduce the term *social intelligence* as the insights gained from combining knowledge about customers' social media behaviors with intelligence gathered from traditional marketing sources such as operational and transactional data. Four main customer management strategies are introduced including (a) winning customers, (b) keeping customers, (c) developing customers and (d) efficiency in customer management. Companies hoping to engage customers using social intelligence should recognize changes in each of these four strategies as follows: (a) winning

customers – rather than approaching customers 1:1, managers of successful social intelligence strategies can create interest groups or communities to engage multiple likeminded consumers simultaneously, thus leveraging behavioral learning; (b) keeping customers – through a combination of data mining and social engagement, companies can identify and learn about their best customers, engage with them, cater to them and be more responsive to their concerns; (c) developing customers – using a combination of online behavior data and internal operational and transactional data stores, companies can find the best combination of products and services to offer existing members to increase their lifetime value to the company and also increase the company's utility for the customer, thus cementing more valuable relationships; (d) efficiency in customer management – social media channels can amplify marketing messages sent from the company, user groups with an affinity for the company can offer suggestions and reviews of current product offerings leading to improvements and customers can provide instant feedback about service experiences that may be beneficial to managers looking to optimize service delivery.

van Doorn, J., Lemon, K.N., Mittal, V., Nass, S., Pick, D., Pirner, P. & Verhoef, P.C. (2010, August 11). Customer engagement behavior: Theoretical foundations and research directions. *Journal of Service Research, 13*(3), 253-266. doi:10.1177/1094670510375599

Abstract. This article develops and discusses the concept of customer engagement behaviors (CEB), which we define as the customers' behavioral manifestation toward a brand or firm, beyond purchase, resulting from motivational drivers. CEBs include a vast array of behaviors including word-of-mouth (WOM) activity, recommendations, helping other customers, blogging, writing reviews, and even engaging in legal action. The

authors develop a conceptual model of the antecedents and consequences—customer, firm, and societal—of CEBs. The authors suggest that firms can manage CEBs by taking a more integrative and comprehensive approach that acknowledges their evolution and impact over time. [ABSTRACT FROM PUBLISHER]

Summary. In this article, van Doorn et al. discuss the behaviors exhibited by customers toward a brand that transcend purchase and transactional activities. In particular, they discuss the valence, mode or form, scope, impact on the firm and customer motivations behind these behaviors and several firm-based antecedents of positive customer engagement behavior. First, the authors posit that firms with strong positive public images of their brands will see that advantage reflected in customer engagement behaviors that are also strongly positive. Second, the authors recommend investing in specific platforms and technologies lending the customers voice, which could take the form of "customer get-togethers…, online chat forums, contests and sweepstakes allowing customers to share their ideas with each other, and so forth" (p. 258). Third, firms could provide rewards and other incentives to customers for referrals and other positive engagement behaviors. Consequences of customer engagement behavior for the firm can include referrals, word-of-mouth behaviors and customer blogging about company products and services.

Waters, R.D., Burnett, E., Lamm, A. & Lucas, J. (2009, June). Engaging stakeholders through social networking: How nonprofit organizations are using Facebook. *Public Relations Review 35*(2), 102-106. doi:http://dx.doi.org/10.1016/j.pubrev.2009.01.006

Abstract. Since social networking sites, such as MySpace and Facebook, began allowing organizations to create profiles and become active members, organizations have started

incorporating these strategies into their public relations programming. For-profit organizations have used these sites to help launch products and strengthen their existing brands; however, little is known about how nonprofit organizations are taking advantage of the social networking popularity. Through a content analysis of 275 nonprofit organization profiles on Facebook, this study examines how these new social networking sites are being used by the organizations to advance their organization's mission and programs. Solely having a profile will not in itself increase awareness or trigger an influx of participation. Instead careful planning and research will greatly benefit nonprofits as they attempt to develop social networking relationships with their stakeholders. [Abstract from Publisher]

Summary. The authors of this article discuss the ways in which nonprofit organizations engage their stakeholders through the use of Facebook with the aim of building relationships with these stakeholders. By analyzing the Facebook profiles of 275 nonprofit organizations, the authors identify three key strategies for engaging stakeholders through social media technologies to develop long-term relationships:

(a) Disclosure – By providing information about the organization, its mission and its operations, managers can create transparency, which can lead to trust.

(b) Usefulness – Social media sites should be useful to their intended audiences and should make use of multiple forms of media including video, pictures, hyperlinks and press releases.

(c) Interactivity – Creating opportunities to solicit feedback from stakeholders is a key component in developing dialogue.

The study finds that nonprofit organizations that use social media are falling short of employing the three strategies above. Instead, most use Facebook in the same way they would traditional one-way communication and media tools. Organizations should reconsider their social media presence using the three identified strategies if they hope to create and sustain lasting relationships with stakeholders.

Conclusion

This annotated bibliography presents tools, techniques and methods to engage customers through the use and analysis of social media and operational data. These tools, techniques and methods are meant to serve credit union managers in their efforts to engage their ever-expanding member bases in order to replicate the sense of cooperative ownership envisioned in the Federal Credit Union Act (2013) to counter arguments by critics that credit unions should be taxed as banks (Cassity, 2000; United States Government Accountability Office, 2006; United States Government Accountability Office, 2005). Since 1982, changes in regulations have made possible more rapid expansion of credit union membership by weakening restrictions on bonds of association, which are defined in the Federal Credit Union Act as "groups having a common bond of occupation or association, or … groups within a well-defined neighborhood, small community, or rural district" (Federal Credit Union Act, 2013, Section 1751). This weakening of the bonds of association has led some critics to argue that the social bonds that once underpinned the credit union movement have now diluted due to increased anonymity amongst an ever-enlarging membership base (Cassity, 2000, p. 361). Regulators are beginning to reconsider whether credit unions can meet their chartered mission while attempting to form effective bonds of association from ever enlarging groups of people without a professional or affinity association (United States Government Accountability Office, 2006).

New technologies and methods to analyze operational and social media data have recently shown promise for credit unions hoping to engage their more dispersed membership bases as traditional credit unions once did, including more personalized service, customized financial solutions and more attention to the member relationship (Kallerhoff, 2013; Rubin & Milesko, 2013). References in the Annotated Bibliography section are organized into two

themes: (a) tools and technologies for customer data analysis and (b) customer engagement programs.

Tools and Technologies for Customer Data Analysis

Although many credit unions engage their members through social media channels, few have implemented a strategic, systematic approach to analyzing the resulting data to inform decisions and track success (Marlowe, Simon, Webb & Harben, 2013). References in the annotated bibliography address tools and technologies available for the analysis of data arising from (a) operational activities of organizations (Bijmolt et al., 2010; Huang et al., 2013; Kallerhoff, 2013; Ranjan & Bhatnagar, 2011) and (b) social media activities such as Facebook and Twitter posts (Askan & Savin, 2013; Isson & Harriott, 2013; Ranjan & Bhatnagar, 2011).

Data from operational activities. Operational data stores provide a wealth of useful information that can improve marketing efforts, inform internal sales staff and lead to a deeper understanding of how to acquire, develop and retain customers (Bijmolt et al., 2010). Techniques such as Pareto analysis and cluster analysis and tools such as decision trees and association rules can help credit union managers segment their member bases using demographic and transactional data, which can inform member acquisition, development and retention efforts (Bijmolt et al., 2010; Ranjan & Bhatnagar, 2011). Beyond traditional statistical models, improved methodologies such as incremental attribute oriented rule-extraction algorithms combined with rough set theory models and learning machines have made it possible for analysts to speed the work of discovering meaning in increasingly complex data sets (Huang et al., 2013, Kallerhoff, 2013). These new technologies can also inform neural networks, decision trees and association rules to allow credit union managers to better understand how they can more deeply engage members by offering products and services relevant to those individuals (Huang et al.,

2013). In credit unions specifically, Kallerhoff (2013) has demonstrated that the analysis of operational data can inform member risk, predict default of loans, predict the next best product to offer members and assist credit union managers in understanding how transaction frequency and magnitude impact member creditworthiness. By better understanding member needs, desires and behaviors, credit union managers may be able to more deeply engage members through increasingly relevant products and services.

Data from social media activities. Analyzing social media data can lead to amplification of credit union messaging (Bijmolt et al., 2010), more targeted and successful marketing efforts (Isson & Harriott, 2013), and a deeper understanding of the needs of the customer (Ranjan & Bhatnagar, 2011). Sentiment analysis algorithms can help credit union managers interpret large datasets generated by social media activities, which can inform decision-making at all levels of the organization from product development to communication strategies (Isson & Harriott, 2013). Machine learning techniques and technologies are available to ease the analysis of extremely large and semi-unstructured data sets often produced by social media (Kallerhoff, 2013), and recent improvements to mathematical techniques such as Support Vector Machines (SVM) and Rough Set Theory can keep time-tested statistical methods relevant in the age when the plethora of data available to managers is not always cleansed and free from ambiguity (Askan & Sayun, 2013; Huang et al., 2013). Analyzing social media data can benefit interactions between credit unions and their members online and lead to deeper member engagement (Marlowe, Simon, Webb & Harben, 2013).

Customer Engagement Programs

Social media can deepen customer engagement through its ability to allow customers to (a) co-create products and services, (b) interact with each other, and (c) engage in dialogue with

the company (Hennig-Thurau et al., 2010). References in the annotated bibliography section highlight some of the features of successful customer engagement programs insofar as they stimulate engagement in one of these three critical areas.

Co-creation of products and services. Waters, Burnett, Lamm and Lucas (2009) posit that nonprofits can use social media tools such as Facebook to lend a voice to the consumer, effectively including them in critical organizational functions such as product and service development. The authors note that employing this type of targeted strategy through social media requires planning and research in order to actively engage the customer in deliberate organizational activities such as product and service development. Customer involvement in product and service creation can be incentivized through interactive contests that encourage customers to share their product and service ideas and targeted online chat forums organized by the firm for this purpose (van Doorn et al., 2010).

Customer-to-customer interaction. Beyond encouraging collaboration in product design, social media engagement programs encourage customer-to-customer interaction, which can amplify marketing messages and lead to valuable referrals of company products and services (Fuggetta, 2012). The sentiment and effect of these social media interactions is determined, to a large extent, by individuals who hold strong opinions about the company's brand and who are persuasive in advocating these opinions (Libai et al., 2010). Individuals that hold sway over the tone and direction of social media conversations - called *Brand Advocates* by Fuggetta (2012) and *influentials* by Libai et al. (2010) – should be the focus of credit union social media attention because of their ability to amplify marketing messages (Fuggetta, 2012).

As Libai et al. (2010) point out, however, credit union managers must address the various contexts in which social media is found to create messaging that will resonate with these

influentials and the broader communities that they influence. Specifically, credit union managers should seek to understand the customer, relational, product, channel and market contexts in which social media conversations take place (Libai et al., 2010). Additionally, credit union managers can use the analytical tools and techniques identified above to create profiles of these influentials, calculate the value of the probable referrals and positive image they can create for the company, and customize social media communications, contests and brand messaging according to the interests of these individuals (Fuggetta, 2012). By taking advantage of social media influentials, credit union managers can amplify messaging efforts and ultimately engage broader communities of people more efficiently.

Customer-to-business dialogue. Increasingly, social media is serving the function of a primary service channel – establishing two-way dialogue between customers and companies to solve individual, specific problems (Rubin & Milesko, 2013). A recent pilot project employing a social media solution amongst a sampling of credit unions demonstrates that, when properly informed and well-managed, a social media engagement strategy can proactively address member concerns, serving as a primary service channel for fielding these complaints (Marlowe, Simon, Webb & Harben, 2013). In order for a social media engagement strategy to be effective at addressing member service concerns and encouraging two-way communication between members and credit unions, credit union staff must constantly monitor member messages, promptly reply to those messages and invite further dialogue (Lovejoy, Waters & Saxton, 2012; Marlowe, Simon, Webb & Harben, 2013; Rubin & Milesko, 2013; Waters, Burnett, Lamm & Lucas, 2009).

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