



Exploring Customer Knowledge from Social Media to Improve the Performance of Strategy

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Customer knowledge refers to the understanding of the customers' needs, wants, and aims. It is essential for an organization to align its processes, products, and services to build customer relationships. Managers need to understand how the acquisition and the use of customer-related knowledge create value for an organization. Customer knowledge management, which integrates knowledge management systems and customer relationship management systems, is a strategy that focuses on the task of gathering information, including finding effective ways to extract data from customers, as well as to locate and absorb information from other sources. Consequently, an organization can achieve the creation of new knowledge. This paper analyzes the categories of customer knowledge, investigates the domains of customer knowledge, and explores customer knowledge management framework of social media. Then, information retrieval and information extraction of the social media are integrated to discover customer knowledge. Finally, customer knowledge management structure for workflow integration is proposed to align and integrate the strategy maps.

Keywords: customer knowledge management, knowledge management systems, information retrieval, information extraction, social media, strategy maps

Introduction

Gaining corporate advantage depends on how quickly organizations can acquire business knowledge and fulfill customer requirements in the rapidly changing market (Dickson, 1992). Organizations have long recognized knowledge management as an important business strategy (Hull, Coombs, & Peltu, 2000). How to apply customer knowledge effectively to improve business strategy in order to enhance corporate advantage is an important challenge. With global competition, rules of the market change, thus forcing enterprises to adapt swiftly. Exploration and management of the remaining knowledge in customers' mind can help enhance the predicting, responding, and value-creating abilities of an enterprise to strengthen its competitive advantages in a dynamic environment (Gibbert, Leibold, & Probst, 2002). Jussila, Kärkkäinen, and Leino (2012), indicated that organi-

zations can increasingly quickly learn about market needs and technological solutions from customers in various ways with the use of social media to respond to the quick and often unpredictable changes in their business environment.

Knowledge is considered to be a key factor in global competition and is viewed as the foundation of potential competitive advantage for an economic entity to identify or develop core competences (Vargo & Lusch, 2004). Knowledge management is a specific systematic and organized process. The function of knowledge management is to acquire, organize, and communicate knowledge through the use of knowledge, thus creating knowledge, so that other people can use knowledge to further improve performance (Alavi & Leidner, 2001; Huber, 2001). Quaddus and Xu (2005) defined that knowledge management system is designed to handle knowledge generation, preservation, and sharing inside and outside an organization. Knowledge management systems promote value-added service for knowledge management.

Analysis of knowledge for the customers can satisfy the consumer requirements for information about products, market, and other relevant issues. Exploring knowledge about the customers can capture a customer's background, motivations, expectations, and preferences for products or services. Comprehending knowledge from the customers can help understand the patterns of the customers' needs and/or experience of a product and/or service consumption (Su, Chen, & Sha, 2006). Customer knowledge can be a critical resource of competitive advantage. In the recent years, many researchers are widely discussing customer knowledge management. Customer knowledge management is a dynamic combination and application of customer's experiences, demands, and insights in the framework of customer's contacts with a company (Harald, Malte, Lutz, & Walter, 2005). Customer knowledge management provides information related to the customers and their experiences to help organizations effectively develop strategic planning to improve competitive advantage.

In most companies, operational and management control systems are built around financial measures and targets, which bear little relation to the progress of a company in achieving long-term strategic objectives. Thus, the emphasis most companies place on short-term financial measures leaves a gap between the development of a strategy and its implementation (Kaplan & Norton, 1996a). A strategy map is a diagram that describes how an organization creates value by aligning strategic objectives in explicit cause-and-effect relationships in four balanced scorecard perspectives (financial, customer, internal processes, learning and growth) (Kaplan & Norton, 1996b). Customer knowledge can effectively provide reference and basis for strategy planning around the four perspectives.

This paper integrates information retrieval and information extraction to discover customer knowledge from the Web. Customers can provide their experience, creative ideas, and satisfaction or dissatisfaction with products or services. Having customer feedback, the system can effectively analyze, explore, and comprehend customer knowledge to assist organizations with conducting the alignment and integration of strategy objects in strategy maps.

The contribution of this paper consists of (a) analysis of the categories of customer knowledge and investigation of the domains of customer knowledge, (b) exploration of the customer knowledge management framework of social media, (c) integration of information retrieval and information extraction of social media to discover customer knowledge and (d) proposal of a customer knowledge management structure for workflow integration to align and integrate strategy maps. The remainder of this paper is organized as follows. In the second section, some related literature is reviewed. Next, we describe how to apply customer knowledge management to identify strategic objectives in the third section. Finally, the concluding remarks are presented in the fourth section.

Literature Review

According to the following literature review, we propose some different contributions to several streams of literature. Customer knowledge management can be regarded as a comprehensive concept, which integrates customer relationship management and knowledge management (Gebert, Geib, Kolbe, & Brenner, 2003). It emphasizes ‘knowledge about customers’ and can be viewed as an extension and development of customer relationship management. Customer knowledge management uses knowledge gathered through the interactions with customers required for the organization (Nazari, Ansarinejad, Miri-Nargesi, Dalfard, & Kamran, 2011). Customer knowledge management is mainly used to increase revenue, reduce potential risks, and avoid the production of products that do not match the customers’ needs. It helps to enhance mutual understanding between a company and its customers. The processes of customer knowledge management, which include acquisition, analysis, and integration of customer knowledge, can help an organization to record, analyze, share, and create customer information (Lin, Su, & Chien, 2006). Through these processes, enterprises transform data into customer information and integrate the information throughout their business model to develop customer knowledge competence (Campbell, 2003).

Customer relationship management emphasizes sustainable long-term relationship with the customers and cultivates customer loyalty that reflects a customer-oriented strategy. Customer relationship management should

be used instead of the processing of customer knowledge to pursue the goals of relationship marketing. Knowledge flows in customer relationship management processes can be classified into three categories including knowledge for the customers, knowledge about the customers, and knowledge from the customers (Rowley, Beata, & Leeming, 2007). Knowledge management emphasizes effective capturing, sharing, and diffusion of customer knowledge in an organization. Knowledge asset is an important element of creating value for an enterprise. It includes customer's information regarding products, market, and suppliers (Rowley, J., 2002). Through the interactions with the customers and by accumulating knowledge, a company can sustainably grow. This paper analyses the categories of customer knowledge and investigates the domains of customer knowledge. Next, customer knowledge management framework of social media is explored to gather tacit customer knowledge.

Data mining was proposed as a useful approach in the domains of data engineering and knowledge discovery. Recently, it has been successfully introduced into the research of web data management. Web mining is the extraction of interesting and useful knowledge and implicit information from activities related to the Web (Kosala, & Blockeel, 2000). The term 'web mining' originally denoted the use of data mining techniques to automatically discover web documents and services, extract information from web resources, and uncover general patterns on the web (Etzioni, 1996). Over several years, web mining research has been extended to cover the use of data mining to discover resources, patterns, information, and knowledge from the web and web-related data to extract, analyzes, and create new information and knowledge for an organization. This paper integrates information retrieval and information extraction of social media to discover customer knowledge.

Strategy map is a component that represents cause-effect relationships among the strategic objectives, as well as summarized depictions of the main parts of a business system that link to drive a firm's sustainable competitive advantage (Quezada, Cordova, Palominos, Godoy, & Ross, 2009). The concept of strategy mapping was originally developed by Kaplan and Norton as a part of a balanced scorecard system, a means of assessing how successful a company is in terms of delivering on stated goals. The balanced scorecard of a strategy map has four perspectives: learning and growth, financial, customer, and internal processes. Strategy map presents how a number of indicators are integrated in a company's strategy through the balanced scorecard and also develops the strategy in an efficient way. In business operations, organization must comprehend the market and meet the expectations of the target customers in order to find a unique value proposition. In other words, in the strategic planning process, an organization must find the target to implement (Kaplan & Norton, 2004). The pur-

pose of a strategy map is to help execute the strategy, that is, after drawing up the measure of indicators for the organization's strategic objectives, the employees' abilities and skills are improved in order to achieve better customer satisfaction, loyalty, and performance. The effect of the strategy map will reflect on enhancing the turnover and shareholders' value.

Methodology

Business model describes how an organization captures, creates, and delivers value. In order to maximize the customer value, it is crucial to integrate the internal and external elements to form a complete high efficiency and unique operating system with core competitiveness. Thus satisfying the customer demand and realizing customer value through optimal forms. As well as, at the same time, achieve the profitability goal. The process of business model construction is a part of a business strategy. A business provides types of products or services based on the propositions of its customers, technology, and operation. Among them, the proposition of the customer is the most difficult to comprehend. How to understand the customer requirements, meet the customer expectations, and manage the customer complaints is a challenge in strategy planning. If businesses wish to know the customer, they need not only to quantify the customer-related information, but more importantly, they need to comprehend customer knowledge by organizing and analyzing it. Integrating customer, knowledge, and management becomes a practical action to execute.

Customer knowledge management can be classified into the following four categories:

- *Management of knowledge for the customers:* this is knowledge that company provides to satisfy the customers' knowledge needs. Examples include knowledge on products, markets, suppliers or services (Gebert et al., 2003).
- *Management of knowledge about the customers:* this is accumulated knowledge to understand the customers' motivations and interests. This includes customers' profiles, connections, requirements, expectations, and their purchasing behavior (Gebert et al., 2003).
- *Management of knowledge from the customers:* this is knowledge that customers own with regard to perceptions, insights, and reactions of/to products, services, suppliers, and markets. Through interactions with the customers, this knowledge can be gathered to sustain continuous improvement (Daneshgar & Bosanquet, 2010).
- *Management of knowledge co-creating with the customers:* knowledge management seeks to facilitate the interactions between the customers and the company for the development of new knowledge (Smith & McKeen, 2005).

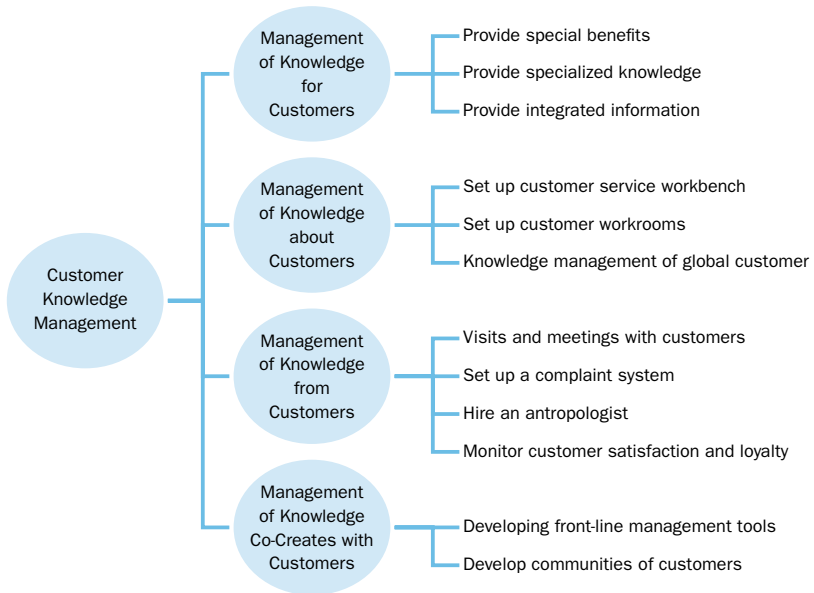


Figure 1 Conceptual Model of Customer Knowledge Management
(adapted from Rowley, F. E., 2002)

When providing products or services, we should know the customer demand first and provide the products or services that could satisfy the customer demand. Consequently, an analysis of the customer motivation of consumption should be performed to develop a good marketing plan and attract the customers. After customers use products or services, the level of customer satisfaction and customer experience should be observed. The advantages and disadvantages of products or services should be explored in order to further improve business operations. Interaction with the customers inspires innovative thinking to provide new products or services in the future. Customer knowledge follows the following process: for the customers—about the customers—from the customers and co-creating with the customers. Customer knowledge model constantly circulates to make the products or services advance and improve continuously. Figure 1 describes the management cycle of knowledge.

Customer knowledge management activities should focus primarily on knowing what the customer wants. There are three domains of knowledge related to the customers (Wayland & Cole, 1997) and each domain is defined on a psychological basis associated with the customer. These domains are:

- *Conversational knowledge*: understanding what the customers need

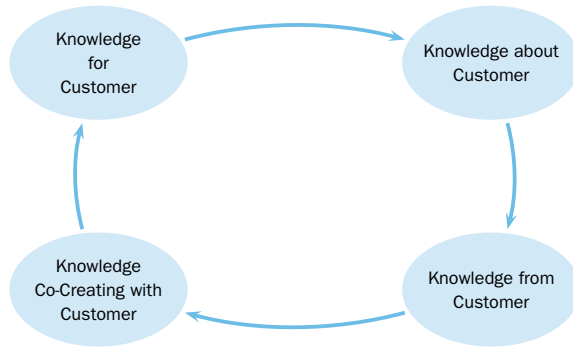


Figure 2
Management Cycle
of Knowledge

via interactions between the customers and the employees, the employees and the suppliers, and so forth;

- *Observational knowledge*: observing how the customers feel about the use products and services;
- *Predictive knowledge*: predict the customer behavior based on analytic models.

Observational knowledge is the most difficult to gather and acquire from the customers. How to observe and obtain the customers' usage of products and services is a critical point. Tacit knowledge acquisition is a very difficult task, which requires a large number of customers with direct and indirect connections in the form of observation or experience exchange. With the rise of Web 2.0, web content services move towards the emphasis on 'interactive sharing' and 'user experience.' By effectively observing, capturing, organizing and analyzing web content, we will be able to have a better understanding of the tacit customer knowledge. After the emergence of Web 3.0, we are entering the age of intelligence systems. We could predict future trends more clearly by using and analyzing the gathered intelligence

Because of increasing sophistication and changing of the customers' preferences, we should apply a dynamic customer-centric approach to observe, capture, organize, and analyze customer knowledge. Social media refers to the means of social interactions among people using online services. People can create and share information and ideas in virtual communities and networks through highly accessible and scalable web-based publishing techniques (Dutta, 2010). Social media can support a multi-way communication between organizations and their customers with relatively lower costs and higher levels of efficiency than traditional communication channels (Gallaughier & Ransbotham, 2010). Many researchers emphasize the importance of social media in bringing the customer's aspect into the customer knowledge management.

There are four emerging social media services that organizations often use to communicate with their customers. These services include micro-blogging services, social networking services, location-aware mobile services, and corporate discussion forum services.

Micro-blogging services, such as Plurk, identi.ca, Tout, Twitter, Yammer, Tumblr, and Weibo, allow the users to publish, exchange, share small elements (usually less than 140 words) of content, such as short sentences, status updates, commentaries, individual images, or video links (Kaplan & Haenlein, 2011). Micro-blogging services are different from a traditional blog. Not only in relation to its data, such as words, sounds or videos, but also due to the fact that the capacity is often smaller than that of a traditional blog. However, the users still use it at the same level for work and personal reasons. Many micro blogs provide short comments or news, which concern a company at a face to face level, for example, products and services.

Social networking services, such as Facebook, Friendster, Bebo, Quazza .com, and MySpace, provide a platform to build social networks or social relations among people who can construct and present their profiles, share their interests, activities, backgrounds or real-life connections (Gao & Bai, 2014). The main role of the social networking services is to build the social media for a group of people who have the same habits and activities. Social networking services are based on the 'Six Degrees of Separation' framework, namely to include friends of friends to expand the social network. The service is based on the Internet to provide people with every kind of connections. Social networking provides a new channel for information sharing and exchange. Recently, the social networking services have become a mainstream communication channel for their users.

Location-aware mobile services allow the users to check-in online at real-world locations and receive context-sensitive information based on their locations. Location-aware mobile services provide the push-services. Server could also initiatively provide information for the users. Location-aware service will play an important role in the next generation information systems. By capturing the relative locations of users, they could reach many services, such as service forwarding, path inquiring, image-based guidance system, and so on. Many location-aware mobile services have been proposed for public spaces, such as museums and libraries (Kaasinen, 2003; Dhar & Varshney, 2011).

Corporate discussion forum services, such as BrainKeeper's Forum Software+Wiki Software, allow the members of an organization to engage in collaborative discussions and answer questions more effectively or provide dedicated avenues for the customers to discuss the organization-specific issues. The interactive discussion platform provides a whole host of fea-

Table 1 Customer Knowledge Management Framework Supported by the Social Media

Services	Management of knowledge for the customers	Management of knowledge from the customers	Management of knowledge about the customers
Micro-blogging services (MBS)	Serve as an avenue for organizations to supply knowledge for the customers about their products, markets, offers, and also provide customer service.	Allow organizations to draw knowledge from the customers by actively seeking out customer-driven innovation in their design and production.	Keep organizations knowledgeable about their customers and better manage the potential areas of concerns among them.
Social networking services (SNS)	Help organizations provide knowledge for the customers by keeping them abreast of changes in their products and services.	Enable organizations to gain knowledge from the customers by comprehending how they react to changes.	Facilitate accumulation of a body of shared knowledge about the customers, which in turn helps promote customer loyalty.
Location-aware mobile services (LMS)	Permit organizations to provide knowledge for the customers about offers and discounts available at a particular branch, encouraging them to check-in at that location.	Allow the checked in customers to leave tips and comments, which can be a useful source of knowledge from the customers.	Separate customer and help organizations acquire knowledge about the variations in the customers' preferences based on different locations.
Corporate discussion-forum services (CDS)	Allow organizations to provide knowledge for the customers by publishing content related to their existing products and services, as well as ideas that are currently under experimentation.	Encourage the customers to express their needs, doubts, purchase intentions, and to contribute novel ideas, which are valuable knowledge that can be acquired from the customers.	Promote exchange of customer-to-customer know-how, which may be monitored to unearth knowledge about the customers in the form of opinions, preferences, and electronic word-of-mouth.

tures to make it incredibly easy to get information into the system, find relevant information, and notify the right people when essential information is added. Company members can use this platform to share their areas of expertise (Maswera, Dawson, & Edwards, 2006).

Social media supports customer knowledge management framework, which integrates the social media services to facilitate the customer knowledge management strategies (Chua & Banerjee, 2013). The framework is shown in Table 1.

The highly developed information technology at the end of the 21st century has brought another wave of revolution in the modern society. It affects our modern life at an amazing rate, E-mail, Internet, E-commerce, social media and so on are a part of our life. Digital communication has changed the

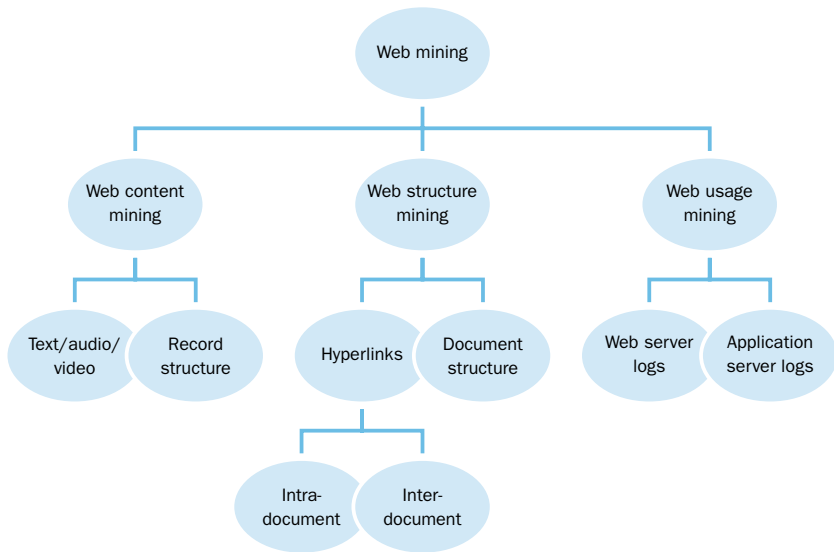


Figure 3 Types of Web Mining (adapted from Srivastava, Desikan, & Kumar, 2005)

old forms of communication, because it is not limited to time and space. However, its low cost and convenience lead to too much information. It's a big challenge to transform the information into useful knowledge. Through integrating and classifying customer knowledge and social media, as well as effectively distinguishing the social media, we could achieve the key social media in customer knowledge. In this way we could manage knowledge more efficiently in this age of information explosion.

Web mining is the application of data mining techniques to discover web content, web structure, and usage of data from the web (Eirinaki & Vazirgiannis, 2003). In 1997, the concept of web mining was proposed. With the use of web mining on the World Wide Web, we could analyze, discover, and excavate value-added information and knowledge from network data (Pal, Talwar, & Mitra, 2002) with the goal of more effective analysis of the World Wide Web data. Namely, a wealth of information is distributed everywhere on the Internet, which is convenient for people to use, but also difficult to utilize in-depth. In order to gather tacit customer knowledge from the social media, we use web mining to automatically discover and extract information from web documents and services. Web mining generally consists of web usage mining, web structure mining, and web content mining as depicted in Figure 3.

- *Web structure mining* is the process of using graph theory to analyze the node and connection structure of a website and to discover useful knowledge from hyperlinks, which represent the structure of

the web. In order to extract the link model under the web link architecture, we are using the Topology theory, because network model is structured according to hyperlink Topology architecture. Network model could effectively classify and generate the related information between websites. Besides, internet structure mining can also extract the topic, which internet formulated, and indicate the abstract of a special topic.

- *Web content mining* is the mining, extraction, and integration of useful data, information, and knowledge from web content including text, picture, and link. Furthermore, we can mine forum postings and customer reviews to discover customer opinions. In the recent years, search engines, intelligent agents, as well as some of the recommended content all use data mining in order to help users find the required contents in the immense cyberspace.
- *Web usage mining* is the process of extracting useful information from server logs and discovering user access patterns from web usage logs. WWW server saves history data and records every user's visit and interactive information. The analysis of such data could help understand user behavior, as well as improve the structure of the website or provide personalize service to the users.

Information retrieval and information extraction can be used to extract content from the web. Information retrieval is an activity of obtaining and collecting information resources relevant to the information need. Information extraction is a task of automatically extracting structured information from unstructured and semi-structured machine-readable documents. When extracting web content with the use of web mining, there are four typical steps: (1) collecting, i.e., fetching content from the web; (2) parsing, i.e., extracting usable data from formatted data; (3) analyzing, i.e., tokenizing, rating, classifying, clustering, filtering, and sorting information; and (4) producing, i.e., turning the results of analysis into something useful.

Extracting knowledge process includes extracting and arranging useful data from everywhere. After extraction, transformation, and load, analysis and mining tools are used, using appropriate query, to analyze and finally change data into knowledge. This knowledge is presented to managers; furthermore, it provides aid for managers in the decision making process for business decisions of an organization or enterprise on the operational, management, as well as strategy layer. Organizations plan their strategy to define direction and make decisions regarding the allocation of their resources according to their vision and mission. In order to determine the organization's future direction, it is necessary to understand its current position and possible avenues through which to pursue particular courses of action.

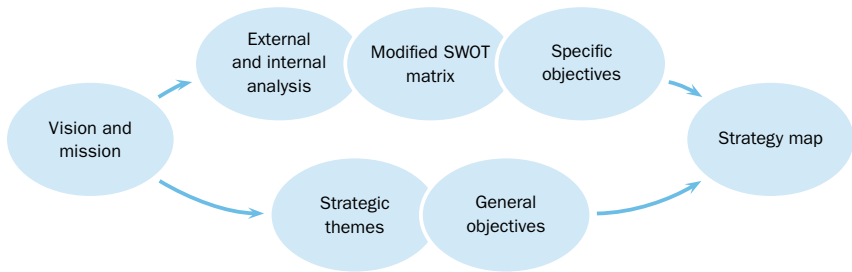


Figure 4 The Process of Strategy Map Generation

Strategy map is a diagram that is used to document the primary strategic goals pursued by an organization or management team. It also provides a visual framework for integrating the organization's objectives. Strategy map portrays the cause-and-effect relationships that link specific capabilities in human, information, and organization capital with process excellence, and process excellence with the desired outcomes in the customer and financial perspectives. Organizations pursue these strategic goals to improve their competitive advantages in a dynamic environment (Quezada et al., 2009). The process of developing a strategy map is depicted in Figure 4.

- *Definition of vision and mission.* A business establishes an organizational identity (vision) and where it wants to go (mission). The core enterprise concept and future prospect are formulated by internal organization members. With team discussion, organization consistency consensus is acquired and best actions for the future direction are formed. Through development, targeting, and implementation of the visions, an organization is built toward reaching success and maximizing the organizational power.
- *Identification of strategic themes.* Strategic themes provide vertical links through the four dimensions, seeing the strategy as a parallel and complimentary theme. Strategic themes are specific, itemized business objectives, which can link business vision to the business strategy.
- *Definition of general objectives.* General objectives are generated from the vision and mission of a business. A method to select the most important objectives will be presented later. The objective is to achieve the vision that an enterprise wants to accomplish. The objective has the functions of guide, excitation, integration, etc. It could integrate the employee actions and ensure effective planning and performance of each employee. Furthermore, the definition of the general objectives will increase economic efficiency, improve enterprise image, and ensure reaching the final mission.

- *Internal and external analysis.* Strategic internal and external analyses are carried out through SWOT analysis. SWOT analysis is a structured planning method used to evaluate the strengths, weaknesses, opportunities, and threats in a business. Through SWOT analysis, an enterprise could gather resources and actions in their own strength, as well as determined possible opportunities. Further, it could aid in clearer enterprise strategy. *Generation of specific objectives.* Specific objectives are derived from a modified SWOT matrix. The consistency between specific strategic objectives with business strategy on the one side and general objectives derived from the vision and mission on the other side should be revised.
- *Generation of the strategy map.* Strategy map is generated by establishing the cause-effect relationship between general and specific objectives. It is a long way from completed strategy to actual strategy implementation by each department. The most difficult part is to transfer the strategy into clear and specific language and present it to everyone who could understand. Strategy map is a tool used to create the steps and modes of the strategy architecture, as well as the best way to understand the strategy.

Strategy mapping encourages the managers to look beyond traditional financial measures by applying four different perspectives. The four performance perspectives are:

- *Financial:* What do investors expect and what should be followed to reach the strategic goals of the financial perspective?
- *Customer:* Which strategy goals are to be set with regard to meeting the customer needs in order to attain the financial goals?
- *Internal processes:* Which strategic goals are to be set for internal processes in order to fulfill the expectations of the customers and investors?
- *Learning and growth:* Which strategic goals are to be pursued to develop the key potentials in order to provide an excellent basis for outstanding results in the other perspectives?

Research Result

In the 21st century, successful enterprises are more and more dependent on the quality of the knowledge they have. It is always a challenge for enterprises to create and maintain competitive advantage with the use of knowledge. With the use of customer knowledge an enterprise can reach excellence in knowledge management. Through interaction with the customers, creation, communication, and application of customer knowledge

an enterprise can increase business value and maintain competitive advantage. Customer knowledge comes from customer behavior analysis through which it is possible to understand and distinguish the activities of consumption from a variety of different perspectives in order to develop products and support services to satisfy the customer requirements. Most of the customer information gathered by traditional methods, such as statistical surveys, is not adopted and properly used by organizations.

Customer knowledge includes the following domains: conversational knowledge, observational knowledge, and predictive knowledge. Observational knowledge is the most difficult to gather and acquire from the customers. Web mining is the application of data mining techniques to discover the patterns from the Web. Observational knowledge can be gathered and acquired with the mining, extraction, and integration of useful information and knowledge from web content. The goals of customer knowledge management include extracting useful information, generating useful knowledge, and creating new knowledge to achieve innovation, accomplish new product development, establish or improve customer loyalty, and develop marketing strategies.

We applied web content mining to gather and extract customer's experience when using products and services. The following four steps are typical when extracting web content information using web content mining:

- *Collecting* fetching content from the Web. Real data is very messy. The tools to collect the data do not examine the data precisely, thus resulting in the possible unavailability of collected data. Pre-process has to conduct data purification, format conversion, and table links. Furthermore, it should effectively deal with the hidden noise, inconsistency, missing and repetition of data, as well as understand the effects of time evolution.
- *Parsing* – extracting usable data from formatted data. According to plan, following pre-treatment, the required information is extracted for analysis.
- *Analyzing* – tokenizing, rating, classifying, clustering, filtering, and sorting of information. By using anomaly detection, association rule learning, clustering, classification, regression, summarization, etc. in order to find useful and interesting information or features.
- *Producing* – turning the results of the analysis into something useful. The results of the analysis are presented through reports or visualization.

We applied customer knowledge management to identify the strategic objectives in order to align and integrate the strategy maps. Financial perspec-

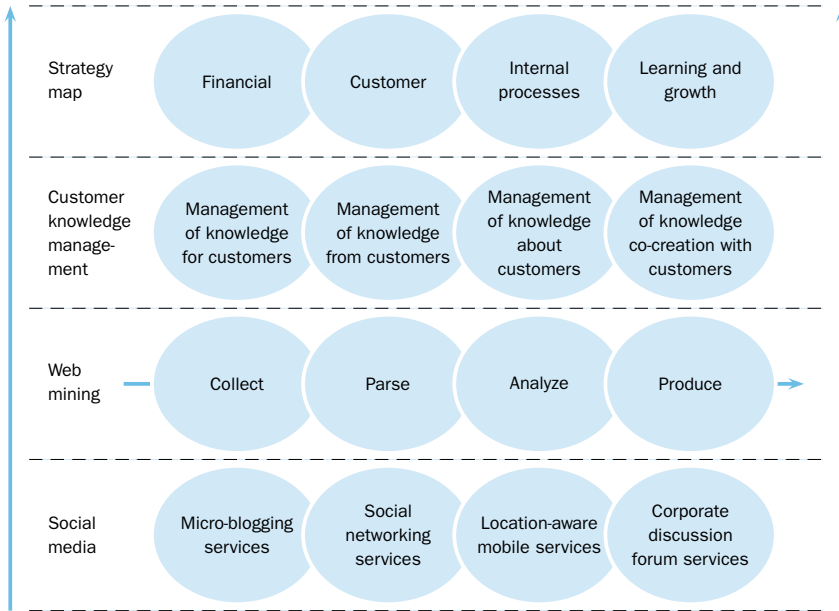


Figure 5 The Processes of Customer Knowledge Management

tive includes two important financial strategies, i.e., expansion of product markets, as well as increased productivity. Customer perspective concerns satisfaction of the customer requirements and customer expectations. Internal processes perspective refers to the transformation of intangible assets into customer and financial outcomes through operational management in order to achieve value-creating processes. Learning and growth perspective signifies that the foundation of the strategy rests on aligning and integrating intangible assets and activities to achieve value creation. We used web mining to automatically discover and extract information from the social media. Through the process of collection, parsing, analysis, and production, the customer knowledge can be extracted and organized. The process is depicted in Figure 5.

Conclusion

The key purpose of customer knowledge management is to capture, organize, share, transfer, and control customer knowledge for organizational benefits. It can help organizations address the specific needs of their customers and make them more effective in enhancing customer satisfaction (Plessis, 2007). Researchers have indicated that customer knowledge management can shorten the duration of service calls and improve the quality of the provided service, enhance knowledge transfer to the customer, resulting

in higher customer satisfaction, higher loyalty, and higher revenue, as well as facilitate more efficient content creation resulting in lower costs (Bueren, Schierholz, Kolbe, & Brenner, 2005; Dimitrova, Kaneva, & Gallucci, 2009; Dalfard, Jafari, & Alizadeh, 2012). Customer knowledge management applies the acquisition and use of customer-related knowledge through direct and indirect interactions with the customers to create value for the organization.

Strategic objectives are derived from the organization's vision and mission. They are classified into four perspectives, which include financial, customer, internal processes, and learning and growth. Clearly defined, enterprise planning falls into four spindle strategies and clarifies the relationship between the four spindle strategies to achieve specific value proposition of the action route map. The financial targets are defined from the customers' perspective. A concern about 'who is the target customer' and 'how these customers bring revenue growth,' specifically developed the countermeasures to maintain long-term relationships with the customers. In order to satisfy the customer demand, it will naturally influence the product design, brand and market development, sales and other internal process. Hoping it could create expected customer value, as well as product and service differentiation. Finally, in order to reach the objective and promote the strategy, further study of the next layer of 'organization,' 'employee,' 'training,' etc. should be performed.

Past customer knowledge management mixed with customer information and knowledge seldom explored how the enterprise obtains the information through analysis and customer interaction. Hence, an enterprise could not achieve larger contribution from customer knowledge management. The contribution of this paper is in (a) analysis of the categories of customer knowledge and investigation of the domains of customer knowledge, (b) exploring of the customer knowledge management framework of the social media, (c) integrating information retrieval and information extraction from the social media to discover customer knowledge, and (d) proposing a customer knowledge management structure for workflow integration to align and integrate the strategy maps.

Customer knowledge management is a new research topic, which is worthy of research. Knowledge is the basis of business competition in current business environment. The ability to manage customer knowledge is valued. Using information systems to obtain customer knowledge has become an important success factor in any business. We will further (1) study how customer knowledge management can result in new organizational culture in organizational learning, (2) analyze how customer knowledge management can result in greater efficiency in cross-functional departments integration, and (3) explore how customer knowledge management can be used in customer collaboration.

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