

A Study on Customer Feedback by VOC Big Data Analysis of for Travel Agencies

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Abstract

VOC(Voice of Customer) is a crucial information for any business in determining its management strategies. Thus, most businesses try to enhance their relationship with customers by collecting VOC via a variety of channels including telephone calls, mails, online and offline surveys. However, a great portion of such feedbacks are in the form of atypical data and hard to analyze by conventional methods.

In particular, qualitative answers to open-ended questions in a survey are extremely difficult to analyze. The current paper attempts to propose an effective process of analyzing such qualitative VOC big data by utilizing the Buzz monitoring tool. A process of extracting risk factors from the results of such analysis is also presented by conducting a case study for a major travel agency in Korea. The findings are expected to help the agency deal with the complaints from customers and take corrective measures.

Keywords: *Travel Agency, Customer Feedback, Survey, VOC(Voice of Customer), Buzz Monitoring*

1. Introduction

It seems very natural that every business, in order to strengthen its competitiveness, exerts every effort to collect precise customer feedbacks. Various methods are used to gather VOC(Voice of Customer): most frequently used ones might be telephone calls, emails, and on-/off-line survey questions [1]. It is, however, difficult to conduct precise analysis of qualitative evaluation items, since the answers to the open-ended questions are hard to analyze, although it is possible to make a quantitative analysis of the answers to closed-ended questions. An enormous amount of customers' voices coming from various channels of social media are presently being collected and analyzed. Such data is also hard to analyze by using conventional data analysis methods, since it is mostly in the form of atypical data [2].

Many analysis tools have been recently developed to deal with the so-called big data. The tool called 'Buzz monitoring system' has made it possible to automatically search, collect, and analyze such atypical and non-structured big data [3]. It is a very efficient method of identifying real-time consumers' feedbacks to use and appeal to social big data from SNS. Thus, businesses, as a tool for effective management, have recently utilized a system analyzing big data on the social media in order to gather information on customers' feedbacks.

The current paper targets travel agencies and attempts to present a system in which atypical VOC data in the form of texts are analyzed by using the Buzz monitoring tool. Also, a process of extracting risk factors by using the results of the analysis is presented. The proposed system was applied as an empirical case study to a top travel agency in Korea. VOC data under analysis is, as mentioned above, atypical data in the form of text answers to open-ended questions.

2. Related Research

2.1. VOC

The influential power and voice of customers has been growing in importance, and it is now considered an essential key to success whether a business can deal with VOC. Thus, many businesses try to utilize VOC actively to enhance their competitiveness. VOC is an essential ingredient to identify customers' needs and to enhance customer satisfaction. It might be safe to conclude that establishment of a proper VOC analysis system should be at the heart of their competitiveness, especially in the service industry.

With operation of an organized customer feedback and VOC system, businesses can maintain high-quality communication with customers. Also, such a system may help upgrade customers' perception level to that of employees, which, in turn, can upgrade the VOC system in a circular way. Such a positive cycle would, then, play an important role in enhancing the competitiveness of a business as well as customer satisfaction.

Therefore, VOC analysis eventually targets at the goal of developing a new product or service that reflects customers' ever-changing needs. In other words, the central purpose of VOC analysis is to integrate VOC data collected from various channels, to identify the changes in customers' needs depending on individuals or regions, and to transform this information to the materials necessary for development of a new product or service. In general, VOC data takes atypical form of voices and texts. The current paper analyzes atypical VOC data, particularly answers to open-ended questions [4].

2.2. Analysis of Big Data

Big data is extremely difficult to analyze by using conventional analysis systems, since it consists of huge amount of atypical data. Collection and analysis of customers' feedbacks of VOC, however, can be done through Buzz monitoring [3]. The Buzz monitoring system can collect and accumulate VOC from customers' feedbacks, analyze it with a focus on keywords, realize public opinion on a particular issue and identify how it is spread through the public.

Businesses usually conduct surveys to gather customer's feedbacks. However, surveys in the conventional format normally consist of closed survey questions, whose crucial limitation might be that they may identify nothing but the answers to the questions. Answers to open-ended questions, in turn, are not easy to digitized. A huge amount of data from open-ended questions can not be analyzed by convention analysis methods; hence the usefulness of buzz monitoring system. This system may help collect and analyze real-time information regarding behavior, circumstances and sensitivity of users.

The process of analyzing big data can be illustrated as in Figure 1.

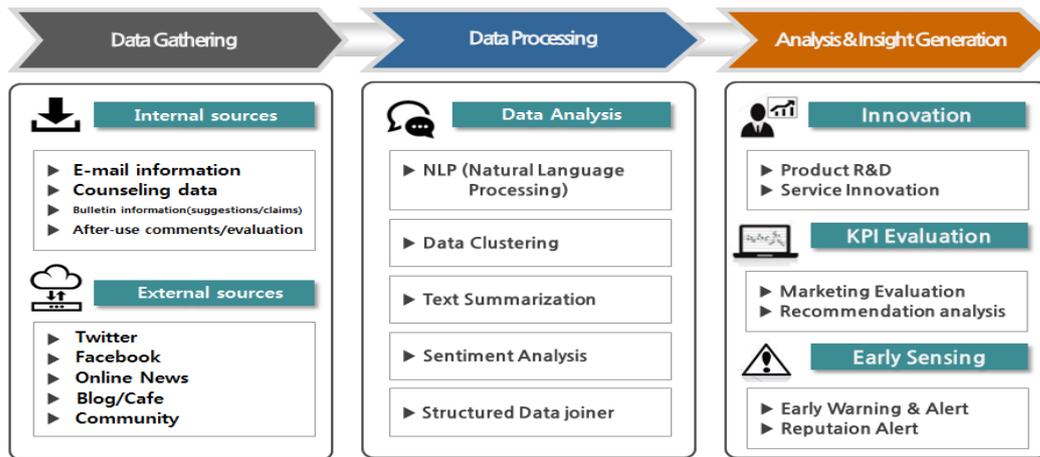


Figure 1. The Process of Analysis of Social Media Big Data Using Buzz Monitoring

Big data usually contains much atypical data and is, thus, difficult to analyze by using traditional analysis systems. At present, collection and analysis of customers' enormous data on their blogs and SNS can be done through Buzz monitoring, which requires real-time and easily usable data as it is a system-based analysis. Buzz monitoring can help businesses develop marketing strategies, since it enables us to identify customers' preference, interests and recognized images of firms by analyzing their comments and opinions placed in SNS channels and websites.

Buzz monitoring can be defined as follows: it collects and accumulates customers' online feedbacks and opinions and analyzes them by a set of keywords and identifies how public opinion is formed of a particular issue and how it is spread.

Businesses generally employ both quantitative and qualitative surveys in order to obtain consumers' feedbacks about their goods and services. However, a crucial drawback of traditional quantitative surveys is that they consist solely of pre-arranged survey questions of multiple choices. In contrast, a qualitative method, though it is not based on a closed framework like a quantitative one, can not produce an objective numerical result. Moreover, it usually applies to a small group and, as a consequence, its result can not be generalized to general public. Such limitations of both quantitative and qualitative methods can be overcome by Buzz monitoring.

First of all, it can access and analyze consumers' free and spontaneous dialogues and opinions. The users on SNS do not use stereotyped set phrases and thus their real responses to a product or service can be heard. Also, Buzz monitoring can target a great number of users and its result can be obtained in an objective numerical value. Technology to obtain and analyze data from a set of channels including websites and smart devices has been developed to identify users' real-time behavior, circumstances and emotion.

3. Analysis of VOC Big Data for Travel Agencies

3.1. Design for Analysis

Atypical VOC data for travel agencies are under analysis in the present research with the purpose of identifying customized needs for the tourism industry. To that purpose, the following steps of systematic analysis are proposed. First, discourse and risk factors for major circumstances of the tourism industry were extracted. The analysis system for thesaurus keywords, keywords, and emotion words was defined. Also, information of keywords under analysis was extracted. Detailed analysis knowledge system for the travel agency was established and evaluation items were set up, as shown in Table 1. In other words, discourse analysis was performed for the VOC data for the travel agency, as illustrated in Figure 1 [5-6].

Table 1. Evaluation Items for Travel Agencies

Classification	Evaluation Items
Analysis of Customer Discourse	1) What do customers say in each circumstance? 2) What is its portion to the discourse? 3) What are the keywords explaining the discourse?
Analysis of Customer Satisfaction	1) How much are they satisfied with each circumstance? 2) What are their positive factors? 3) What are their negative factors?
Analysis of Risk Factors	1) What contextual information accounts for the greatest amount of discourse? 2) What are the reasons for inconvenience/displeasure/negation? 3) What are the risky factors for each circumstance?

As shown in the figure below, the VOC data for evaluation items in Table1 was categorized into three circumstances: preparation, itinerary and tour sites, which contained seven detailed ranges of reservation, optional tours, guide, schedule, lodging, food and shopping.



Figure 2. Classification of Tour Customer Feedback Ranges

For each circumstance and category, customers' particular comments and sensitivity elements are analyzed. At this stage, the central purpose is to analyze customer satisfaction and identify positive and negative features for each circumstance. That is, semantic analysis of customers' perception, experiences and sensitivity for each circumstance is conducted and words expressing positive/negative feelings are extracted by analyzing types of comments.

3.2. Extraction of Risk Factors

The proposed analysis process can identify the displeasure/complaints and analyze negative feelings to extract risk factors, which need to be improved [7].

The system was designed as in Figure 3 to extract risk factors for each of the seven areas classified: reservation, optional tours, guide, schedule, lodging, food and shopping.

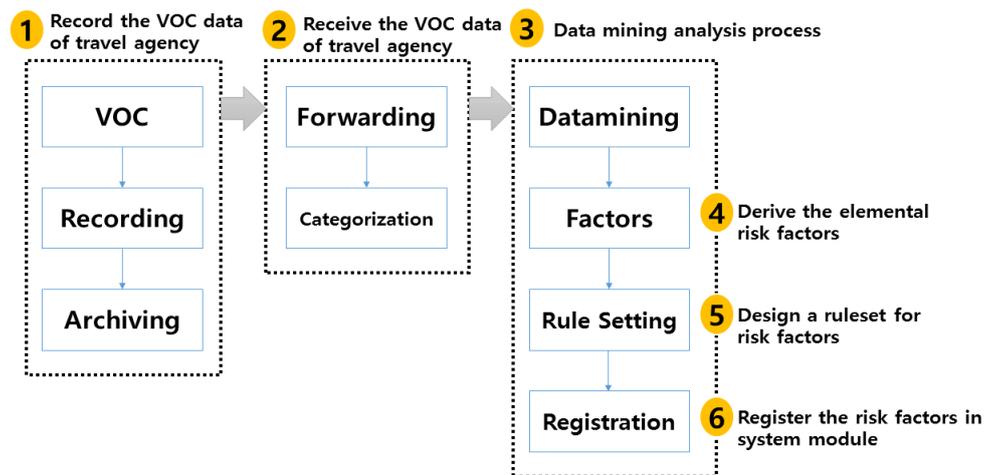


Figure 2. System for Extraction of Risk Factors

The alarm system algorithm based on the system of extracting risk factors proposed in Figure 3 can be summarized as following algorithms.

- 1) VOC coming from customers is recorded and saved.
- 2) VOC data is received and criteria to classify data is designed.
- 3) VOC data is analyzed through reset framework process.
- 4) Risk factors are extracted for each circumstance/factor from analysis results.
- 5) Rulesets for the risk factors are designed.
- 6) The designed ruleset data is registered to the system module.
- 7) Once risk issues are detected, while monitoring for a client company by collecting and analyzing realtime online big data, a push alarm message is sent to the client by email or SMS.

4. Case Study

The proposed system of analyzing VOC data and extracting risk factors was applied to a major travel agency and the following results were obtained. First, VOC data regarding the following 7 areas was analyzed: reservation process, optional tours, guides, itinerary, lodging, food and shopping. The VOC data under analysis in the current research was in the form of atypical data and consists of answers to open-ended questions on the four categories : reservation process, optional tours, lodging and food.

1) Reservation process: A set of 18,438 VOC messages related with reservation process were analyzed. Information-seeking inquires for contact points, schedule, and itinerary accounted for 22% of the VOC data. The rest of the data was questions about the following topics: guide & staff, transportation, payment & cancellation, and immigration, each accounting for a similar portion of 11 to 13 %.

2) Optional tours: A set of 8,359 VOC data associated with optional tours were analyzed. 35 % of the client's inquires had to do with the components of a package tour, free time and the types of optional tours. Specifically, much VOC was inquiries about scuba diving, cruises, and massage services. Cost-related questions on such elements as additional cost, admission fees, and overcharging accounted for 26 % of the data. A couple of risk factors for each of the two circumstances were extracted: insufficient information offering and

inadequate schedule for reservation process, and package tour price and compulsory option tours for the category of optional tours.

3) Lodging: 16,411 pieces of VOC relating lodging were analyzed. Questions about facilities, 29% of the total, were more than any others : for example, beds, rest rooms, refrigerators, air conditioners, and Wi-Fi system. Service-related inquiries of such issues as attitude of employees accounted for 19%, and those of environment including sanitary conditions, of accommodation types and of food were about the same at 12 to 15%.

4) Food: A set of 13,229 pieces of VOC data related with food were analyzed. Inquiries of menu such as Korean cuisine and cuisine accounted for the greatest portion, 38%, of inquiries of food. It was found that main keywords include pork belly, vegetables, spices and Ramen.

It was found that the identified risk factors for the two circumstances above were poor management of beds and rest rooms for the category of lodging and unkindness of employees and bad food.

5. Conclusions

Recently, IT businesses have developed a variety of tools to analyze real-time big data pouring out of various social media. Such tools can help firms collect/accumulate customers' opinions online and analyze the contents with a set of keywords, and eventually identify what public opinion is like on a particular issue and how it is spread.

Effective management requires an effective utilization of VOC. Most businesses appeal to various channels to collect VOC data. In general, conventional methods such as telephone calls, mails, and online/offline surveys have been used. Social media including bulletin boards on the internet and SNS has recently become an important source of collecting VOC data [8].

A great portion of VOC is in the form of atypical data like voice and text messages. Such enormous amount of a typical data are hard to analyze by using conventional analysis methods, and, thus, a recently developed tool called buzz monitoring is now being used to analyze big data.

The current paper proposed a systematic process in which a travel agency can effectively analyze accumulated qualitative VOC data via Buzz monitoring tool. The proposed system can help extract risk factors from analyzing customers' feedbacks.

As an empirical case study, the proposed system was applied to a top travel agency in Korea to analyze atypical VOC collected from users' answers to open-ended questions. The VOC data was classified into seven areas: reservation, tour itinerary, guide, optional tours, lodging, food and shopping. Two of the seven categories, lodging and food, were selected for analysis and extraction of risk factors in the present research. The findings are expected to help the travel agency analyze the extracted risk factors and take corrective measures. It is also expected that the proposed system can be applied to other s of the service industry such as hotels and hospitals [9-10].

Acknowledgments

Funding for this paper was provided by Namseoul University.

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