A Model of Intention to Purchase as a Component of Social CRM System

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Abstract. The advantages of Social Customer Relation Management are discussed. Elements of the theory of reasoned action are described. The Intention to Purchase model is analyzed, as well as its constituent parts – Attitude to Behavior and Subjective Norm. A fuzzy logic model for estimation of the Intention to Purchase based on the available information sources and the expert knowledge is proposed. The model adequately describes the subjective behavior of possible clients. This fuzzy model is part of a Social Customer Relationship Management system which will be developed.

Keywords: Intention to purchase, social CRM, fuzzy logic model, attitude to behaviour, subjective norm

1. Introduction

Social Customer Relationship Management refers both to a business strategy for managing customer relationships in the world of social media and the evolving technologies that help companies do this. The concept reflects the need to apply digital social interactions to business processes.

It is important for business to direct limited resources to influence most perspective clients. These are the clients whose intentions to purchase are the strongest and in a great extent they are likely to be influenced by an additional motive to perform a purchase. The theory of reasoned action provides for a well-known model for behaviour prediction based on client intentions

Based on reasoned action theory, the paper proposes a model for measuring the strength of client intentions – the Intention to Purchase (I2P) model. Fuzzy logic is used in the proposed model to account for the subjective character of the data that is obtained from the clients. The received results are suitable for use within Social CRM systems with wide application fields.

2. Social CRM

Customer Relationship Management (CRM) is a technology based framework used by companies of all sizes and by several departments - sales, marketing and support departments. The first generation of CRM focuses exclusively on data, task and transaction management. CRM is internally focused, with an emphasis on specific processes and optimization of those processes. One of the problems CRM faces is that the value to the end user is limited within the company [3].

The social customer is changing in the era of the social web. Companies are struggling to better understand how and what it means to become social themselves. Social are not about becoming friends, linked or following one another. Social business means being a viable member of and a leader within the own ecosystem of any company. A social business understands its ecosystem, leverages people as the platform and gives as much as it receives.

Any company that is able to engage itself with this new idea will be able to build and deliver better products and services and it will have better and longer lasting relationships with each member of their ecosystem.

Social Customer Relationship Management (Social CRM or SCRM) is an extension of CRM, not a replacement, and among the important benefits is that it adds value back to the users (increased adoption) and customers. It is the one part of the social business strategy that addresses how companies need to adapt to the social customer and the expectations these customers have with respect to companies they do business with. With a focus on strategy, customer engagement and relationships, SCRM moves beyond management of customers, transactions, and money.

SCRM is the use of social media services, techniques and technology to enable organizations to engage with their customers. It has been defined by Paul Greenberg [1] as: "Social CRM is a philosophy and a business strategy, supported by a technology platform, business rules, workflow, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment. It's the company's response to the customer's ownership of the conversation.".

SCRM is the process through which organizations make their clients an integral part in the management of productive relationships between a company and clients. In SCRM clients provide feedback to the company and to the other clients and users in open collaborative systems. A successive SCRM requires that these collaborative systems enable structured conversations that companies should be able to response to the client needs. Customer feedback from online interactions enables organizations to deliver products and services that meet expectations.

A SCRM system involves continual engagement between clients themselves and clients with the company. The company needs tools to manage these interactions and establish processes while users and clients can initiate interactions freely. SCRM tries to bring clients from outside media channels to internal company channels which the company owns and it converts the incoming data into a strategic asset that increases the engagement of its clients.

Any SCRM system is defined by its attributes [2]:

- Consumer Profiling - the ability to know company clients and the current relationship with each client. The clients register and share information concerning the company and their relationships. The profiling is has two main purposes regarding accumulated data – to perform actions and receive new meaning from it. While the first aim is targeted to producing concrete marketing results that boost sales, the second purpose generates a more comprehensive view of operation execution.

- Consumer Interactions - interchanges that take place between the company and its potential users or actual customers. These interactions have been identified as loyalty and awareness interactions. The first type deals with understanding actual clients, current and future needs and the second type implement SCRM applications which are designed to raise awareness, get potential clients to register and join the SCRM system.

- Analytics – defines methods and tools to assess data. Consumer profiling and consumer interactions generate data. Usually the generated data is lost in the whole volume of data that is produced by the company. Therefore, the generation of relevant conclusions and guidelines for further operational actions is the main purpose of the analytics.

Some of the following questions need finding their proper answers in order to build a successful SCRM:

- How successfully to structure a company in order to take advantage of the SCRM concept ?
- What components should such a SCRM system possess ?
- How to organize unstructured data from the social web to allow to get actionable steps ?
- How can a company take actions, based on the conversations and relationships with its clients?
- How can a SCRM be used to empower customers and grow customer base?

3. The Intention to Purchase Model

Studying the behavior of buyers, especially anticipating their specific actions, is a key marketing task. Scientists have proposed various approaches for predicting consumer behavior. In our case the Theory of reasoned action is suitable, because it allows processing of the results with powerful fuzzy logics techniques. The theory comes to light in the eighties in last century. Until then, the scientific community has known many cases of inconsistency in attitudes and behavior.

After a careful review Wicker [7] concluded that correlations between attitude and behavior were "rarely above .30". More recent works suggest that high degree of congruence can be found if appropriate conditions are met. For instance, when people are more attentive to their own behavior, attitude-behavior congruence increases [5]. In addition, attitudes that are formed through direct behavioral experience with the attitudinal object tend to be more congruent with behavior relevant to the object.

The Theory of reasoned action clarifies the nature of the relationship between attitudes and behavior [4]. In the proposed model, which has proved to be the most influential theory regarding the attitude-behavior linkage, the authors suggest that behavior is primarily a function of an intention to carry out the particular behavior relevant to an attitudinal object. According to the model, the intention is determined by two factors: the attitude towards the behavior and the perceived social pressure to carry out the behavior, termed subjective norm. (See Figure 1)
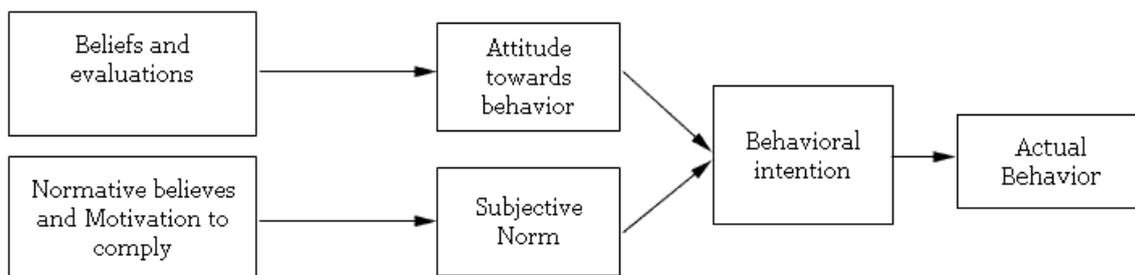

Fig. 1: Intention determining factors.

By examining the attitude and subjective norm we can successfully predict a consumer's purchase intentions, and it is ultimately their behavioral intentions that can allow us to predict their behavior (purchases) accurately. Ajzen and Fishbein state that attitudes lead straight to behavior – but that subjective norms and behavioral intentions must also be considered. The model has proven quite accurate in relating attitudes to behavior in a number of areas, including voting, political, and family planning behavior [4].

The model has been very important in pointing out the conditions under which attitudes do result in subsequent behavior. The most important factor relates to the degree of specificity of attitude and behavior. We can say that specific attitudes can be used to predict specific behaviors, while general attitudes are useful for predicting general classes of behavior.

Finally, for the purposes of this study, the model can be presented as follows:

$$I2P = w_1. AB + w_2.SN,$$

where: *I2P* is Intention to Purchase; *AB* – Attitude to Behavior (to buy, to postpone, etc.); *SN* – Subjective Norm; w_1, w_2 are weights.

From marketing point of view the information about purchase intentions is even more valuable than the information about final actions. Knowledge about the intentions' strength gives marketing managers the opportunity to identify costumers, whose additional stimulation is most likely to lead to successful outcome – purchase. For this reason we propose to collect and process information about the attitudes and subjective norms, which determine the intentions. This information should be stored and processed in the organizational information system. Through sophisticated techniques such as data-warehousing and data-mining this information should be available for effective customer relationship management.

Another important issue is how to measure attitudes. Their measurement has taken many forms over the years and still it continues to be a challenge. The basic reason is that the attitudes themselves are hypothetical

constructs. They are abstract concepts that do not exist in directly observable form. Every attempt to measure them is indirect. One of the most frequently used types of measurement techniques is the Likert-type scale [6]. This technique is a direct method of measuring an individual's evaluation of an attitudinal object. Formal Likert scales have a complicated item selection process, but in practice most researchers simply ask a question about the attitudinal object and supply the respondent with a numbered response scale. In our case we use a scale with five positions – 1, 3, 5, 7, and 9. Position 5 refers to a neutral attitude, position 1 to a strong negative, and position nine to a strong positive. Positions 3 and 5 are intermediate (slightly negative or positive attitude). By having people respond to a series of such statements, it is possible to sum the ratings across scales and get a summary score for the attitude toward the issue. In our model we weight respondent answers. Weights can be assigned by experts or derived from previous observations.

Analogically, we calculate the subjective norm too. The difference is that we determine the important people who influence the purchase intention and the strength of this influence. The answers are weighted the same way.

4. Fuzzy Logic Model for Assessment of the Intention to Purchase

The idea is to design a fuzzy logic model that efficiently describes the subjectivity in the consumer behavior prediction of several users with respect to the various factors with different weights. In order to show the model usefulness, it is applied in the area of real estate sales. The given example is for a residential real estate. The items for measuring the attitude and subjective norm, as well as the item weights are determined by experts. The same is valid for w_1 and w_2 weights too.

Here, the Intention to Purchase (*I2P*) is measured as weighted sum of the two integral factors: Attitude to Behavior (*AB*) and Subjective Norm (*SN*). It is possible to estimate the Attitude to Behavior (*AB*) on the basis of the three basic factors: Location – X_1; Conveniences – X_2; Price – X_3. The second integral factor – the Subjective Norm (*SN*) can be estimated by taking into account the following basic factors: Family – Y_1, Business Environment Colleagues – Y_2; Family Friends – Y_3.

It is introduced the linguistic variable "*The Level of the Factor*" with five fuzzy subsets, correspondingly: *Very small*, *Small*, *Medium*, *Large* and *Very large*. All variables vary in the [0, 10] interval and they are set with a trapezoid member functions. Each linguistic variable F_i (X_i or Y_i), i=1, 2, 3, has a corresponding membership function μ_{ij}, $j = 1,...,5$ to the five fuzzy subsets, as follows:

$$\mu_{i1} = \begin{cases} 1, & 0 < F_i < 1.5 \\ 2.5 - F_i, & 1.5 \le F_i < 2.5 \\ 0, & 2.5 \le F_i \le 10 \end{cases}$$

$$\mu_{i2} = \begin{cases} 0, & 0 < F_i < 1.5 \\ F_i - 1.5, & 1.5 \le F_i < 2.5 \\ 1, & 2.5 \le F_i < 3.5 \\ 4.5 - F_i, & 3.5 \le F_i < 4.5 \\ 0, & 4.5 \le F_i \le 10 \end{cases}$$

$$\mu_{i3} = \begin{cases} 0, & 0 < F_i < 3.5 \\ F_i - 3.5, & 3.5 \le F_i < 4.5 \\ 1, & 4.5 \le F_i < 5.5 \\ 6.5 - F_i), & 5.5 \le F_i < 6.5 \\ 0, & 6.5 \le F_i \le 1 \end{cases}$$

$$\mu_{i4} = \begin{cases} 0, & 0 < F_i < 5.5 \\ F_i - 5.5, & 5.5 \le F_i < 6.5 \\ 1, & 6.5 \le F_i < 7.5 \\ 8.5 - F_i, & 7.5 \le F_i < 8.5 \\ 0, & 8.5 \le F_{ki} \le 1 \end{cases}$$

$$\mu_{i5} = \begin{cases} 0, & 0 < F_i < 7.5 \\ F_i - 7.5, & 7.5 \le F_i < 8.5 \\ 1, & 8.5 \le F_i \le 1 \end{cases}$$

The complex estimation of the Intention to Purchase (*I2P*), on the basis of the proposed fuzzy logic model is calculated as follows:

$$I2P = w_1.AB + w_2.SN = w_1.\sum_{j=1}^{5} r_j \sum_{i=1}^{3} w_i^X \mu_{ij}(X_i) + w_2.\sum_{j=1}^{5} r_j \sum_{i=1}^{3} w_i^Y \mu_{ij}(Y_i).$$

The weights of the basic factors (w_i^X and w_i^Y) in integral evaluation are selected on the basis of expert knowledge and empirical observations. A node point vector $r = (r_1, r_2, r_3, r_4, r_5,)$ is introduced, which in the particular case has the following form: r = (1, 3, 5, 7, 9). For the linguistic variable of the Intention to Purchase (*I2P*), five levels are introduced as well, as shown in the Table 1.

Table 1. Levels of the Intention to Purchase.

I2P intervals	Levels of the Intention to Purchase
$8 < I2P \le 10$	"*Very large Intention to Purchase*".
$6 < I2P \le 8$	"*Large Intention to Purchase*"
$4 < I2P \le 6$	"*Medium Intention to Purchase*"
$2 < I2P \le 4$	"*Small Intention to Purchase*"
$0 < I2P \le 2$	"*Very small Intention to Purchase*"

The obtained value for *I2P* shows the level of the Intention to Purchase in the examined alternatives. The higher value of the *I2P* variable shows a higher Intention to Purchase.

5. Conclusions

The advantages of Social Customer Relation Management have been analyzed. The Intention to Purchase model is presented together with its two parts – Attitude to Behaviour and Subjective Norm. A fuzzy logic model for estimation of the Intention to Purchase based on the available information sources and the expert knowledge is proposed. The model includes five linguistic variables. The model adequately describes the strength of client intentions – the Intention to Purchase (I2P) model. This fuzzy model is part of a Social Customer Relationship Management system which will be developed.

6. Acknowledgements

7. References

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