Data Mining Technique Based Building Intelligent Shopping For Web Services

Seema Rani, Department of Computer Science & Engineering, RDEC, Ghaziabad. seema.rani01@gmail.com

Abstract

The phrase "e-marketing" refers to the coordinated effort to bring traditional marketing methods into the digital realm, namely the World Wide Web and social media. If you own an online store, your e-marketing efforts should guide customers to a successful transaction. For this, you need to have an in-depth understanding of what the client likes. This is why online store owners need to figure out when, how, what, and to whom they should direct the client, thus, to learn about the "consumer decision journey" and enhance their involvement. The consumer leaves a digital imprint when they purchase online, which may be analysed to learn about their wants, requirements, and demands and to enhance their online presence. It is possible to have a better understanding of the e-marketing and sales processes by using these data for data mining. Here we provide the results of a study we conducted among 86 Spanish online stores. The results provide some suggestions for effective e-marketing strategies based on consumer purchasing behavior study. Different data mining approaches facilitate the purchase and interaction, thereby suggesting new e-marketing trends from a strategic, tactical, and operational level.

Keywords: Data mining, e-marketing, consumer decision journey, World Wide Web

Introduction

The number of people using the Internet has increased by a staggering 33 percent in the last decade. This has resulted in its increased popularity among customers, who use it for a variety of purposes, including finding information and making purchases ("The internet a decade later", 2013).

As a result of customers' embrace of this new technical environment, electronic commerce (EC) has grown, and consumers' behaviour, habits, and patterns have undergone a dramatic shift

In order to get recognition in a worldwide market and enhance their conventional company, small firms are now compelled to have a strong online presence due to the prevalence of this kind of commercial activity. Except that there is a difference between virtual and conventional consumer behaviour (Eouzan, 2013).

Internet visibility, however, enables a number of other benefits, including: a) a permanent openness to the public; b) a reduction in costs (material stock, logistic personnel, physical space); c) a better understanding of the customer; d) the removal of geographic limitations; and e) the creation of brand and engagement.

Online business-to-consumer sales in Spain increased by 13% to €12,383 million in 2017, according to research from the country's National Observatory for Telecommunications and the Information Society (ONTSI). An rise of 15% (15.2M) in online shoppers in 2012 was the primary driver of this expansion, mirroring trends seen in global markets (ONTSI, 2013).

In Spain, the National Statistics Institute (INE) provides more precise data that is both up-to-date (2013) and derived from regional levels. An estimated 11 million Spaniards have shopped online in the past year, with the rise of e-commerce being largely attributable to this data institute. Of the overall population, this makes up 32%. In addition, according to INE (2013), the Basque Country has used this kind of trade the most, accounting for 42% of all instances. The Community of Madrid comes in second, with 40%.

With a focus on Basque Country, the Statistic Institute of Basque Country (EUSTAT) offers data-bank and yearly report information about e-commerce (under the information society theme). An intriguing part of this research is devoted to online business. According to EUSTAT (2014), 39% of internet users who have recently connected have made an online transaction.

Official statistics show that e-commerce is a growing industry, and this is largely attributable to the nature of the business itself. Small enterprises, in particular, stand to gain economically from a country's commitment to its implementation.

Just as in traditional sales, online purchases must meet the needs of the buyer before, during, and after the transaction. Accurately understanding the customer's preferences is essential for this. This is why website owners need to create targeted Internet marketing strategies and determine the who, what, how, and when of referring to virtual visitors.

We may say that all of our efforts are focused on e-marketing when we build and modify our marketing strategy for the web. According to Strauss, Frost, and Ansary (2009), every step of creating a website—from brainstorming to planning to creation to maintenance to analytics measurement and finally, advertising—is a part of e-marketing. To sum up, e-marketing facilitates the use of the Internet to learn about consumer preferences via collaborative websites and agents.

Establishing a solid rapport with customers and providing them with services that entice them to return to the website for repeat visits and purchases is essential to maintaining their interest in a business's online presence. Understanding the "consumer decision journey" requires in-depth data analysis inside the sales process.

A customer's digital footprint, or the data left behind when they visit a website, may help businesses learn more about their customers' wants, requirements, and expectations and enhance their online presence.

Web Usage Mining approaches are used to analyse the digital footprint left by users throughout their navigation. This information is then used to enhance understanding about consumer purchasing behaviour and promote engagement. Afterwards, this information has to be transformed into intelligence and, if feasible, presented in an engaging way to meet the customer's information needs.

Here, we can examine the state of e-marketing for what it really is by conducting four in-depth interviews and an online survey with Spanish shops. After assessing the current situation, enhanced technicalsolutions through the Web Usage Mining process will be proposed and linked to new discovered e-marketing trends. Finally, a few commercial and open source solutions that can help in the creation of concrete solutions for these new e-marketing trends will be displayed.

Methodology

Given the significant impact that online stores have had in recent years, it is essential for these types of businesses to engage in fruitful e-marketing campaigns if they want to keep or grow their company. From a strategic visionary perspective, it is now important to provide a solution by creating suitable online advertising plans. An operational vision is derived from a tactic vision by deciding on specific e-marketing trends and practices, and the solution is then put into action by these trends and practices (See Fig. 1).Still, it's important to understand the starting point of e-marketing for a subset of Spain's e-commerce businesses.

Fig. 1. Business vision and e-marketing

The approach used to determine the starting point relies on two separate ways of acquiring the actual e-marketing status quo made possible by e-commerce. The first group consists of 86 online questionnaires sent to various online store owners. However, only four of these 86 businesses have advanced to the next round of interviews. These interviews were carried out either over the phone or in person at the client's place of business, and the surveys were administered online information was gathered using a Google Form. We extracted data from the completed surveys to make the findings that drove the second step of the procedure thereafter. In this second stage, specialists will a) consider the identified shortcomings and b)

provide workable solutions that help establish strategic emarketing solutions that align with company goals and make use of Data Mining methodologies.

Thinking and discussion based on solutions

The need for developing specific marketing strategies for e-commerce implies that some traditional principles are adapted, or even reinvented. Four activities facilitate the deployment of e-marketing strategies online promotion, online shopping, online service and online collaborationIn addition to this, we think that it would be helpful it is necessary to choose some of the most relevant emarketing trends and current trends & practices based on the considerations of experts who are close to the market demand and the practical trends web literature. This means that, a part of scientific base, it has obtained information from other important web origins where it might have significant information about real cases that are closer to reality. Therefore, the description of the trends: brick and mortar, Offering of increasingly complex online features, mobile everywhere... related to the e-marketing is crucial, for then, these can be crossed with trends & practices. These latest trends technological advances must be geared towards a future where retailers can get the most out of their online sales. In this regard, there are certain factors that should be taken into consideration such as the pick-up speed or omnichannel customer experience.

Future work

In order to determine if SMEs really need to start using web mining tools, this research set out to do just that. Taken together, the data shows that:

a) They don't care about pricing analysis (because it's usually already set by the goods suppliers); and

b) Online transactions are immune to fraud. One might deduce this from the replies that the industry is still immature and that many businesses rely on outside firms to do this;

c) The vast majority of the organizations polled have implemented web analytics on their websites, but they don't conduct thorough data analysis processes.

Keeping these points in mind and considering the digital footprint's significance at the outset of web mining processes, it's important to anticipate that, in the near future, data origins based on this system will increase, and that this step will be pivotal in ensuring the disposal of better raw data. Online sales, like brick-and-mortar stores, need to cater to customers' needs before, during, and after the transaction. Accurately understanding the customer's preferences is essential for this. Because of this, online stores need to figure out when, when, what, and to whom they should address their virtual customers. Data mining methods may be used at the right time to meet the need of data enrichment and value addition based on improved customer information.

Furthermore, while developing Internet-specific marketing strategies, smart e-marketing procedures should keep in mind the essential connections between e-marketing trends and Data Mining methodologies.

As soon as services are made available, marketing campaigns are launched with a focus on customer needs. With an understanding of what online shoppers want, the confidence in the theoretical idea backed by literature is far removed from the real-world application of marketing trends, which might be derived from the relationships between e-commerce players (vendors and customers).

Online stores need to be open and willing to take advantage of new data economy opportunities in order to attract clients and expand their business.

Conclusion

We should include digital footprint monitoring tools and other technologies that enhance e-marketing campaigns into a Web Mining process together with controls that allow for the use of the data mining techniques outlined in this research. Hence, a pilot project involving a small number of online stores will be suggested as a way to help them implement efficient e-marketing practices. This project will provide a solution, which consists of several e-commerce-focused controls or software services. After completing an in-depth examination of visitor typology, these controls or services will be enhanced. Once completed, the

procedure will assess the level of acceptance among online store owners about the new, improved information that is accessible to them.

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