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THE CHURN PHENOMENON –PAST, PRESENT AND FUTURE

Review
Article

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Abstract

The interest in investigating the phenomenon of customer migration to the competition has grown in recent years. The efficient management of the customer base has become a powerful tool which plays a significant role in maintaining stable revenues in businesses around the world. This paper presents the evolution of research that has extensively studied the churn phenomenon and focuses on several topics: research fields according to the number of publications, research organizations, written language, authors, industries, research areas, types of works and so on. The paper also defines the terminology, the taxonomy and the causal factors of the phenomenon.

INTRODUCTION

Bibliometry is a quantitative analysis technique, a statistical method that centralizes and studies articles in journals, conference volumes, reviews, and quotes. The bibliometric analysis of the churn phenomenon can actually be a quantitative analysis of all the research which centres on this topic as main subject. This is undertaken by recording, measuring, computing and examining research findings across the academic world.

Churn consumer behavior is a challenge that companies in almost all industries have to deal with and consider its implications such as: revenue, profitability decreases and brand's power depreciation.

CONCEPTUAL DELIMITATIONS

In a general context, the online Cambridge dictionary defines churn as the process of kneading milk until it becomes butter, hence the meaning of agitation or movement. In the business context, however, it is characterized by the migration phenomenon of customers from one service provider to another within the same categories of services. A synonym is the verb to migrate, to convert or to alternate. The phenomenon can be quantified and measured by a rate, that is, the churn rate, which according to the same sources expresses the number of customers who decide not to use the services offered by a particular company anymore and migrate to another company usually because it offers a better service or price. The term is often used in areas such as marketing and trading to describe the situation when customers cease to buy the products or services of an enterprise and turn to a competitor.

According to Geppert (2003) churn is defined as the movement of customers from one service provider to another in search of better and cheaper products and services.

Richeldi and Perrucci(2002) claim that subscribers become churners when they suspend their subscription, consuming less and showing more and more inactivity.

Customer churn is a phenomenon spread across a variety of industries. A recent report has estimated an annual 20% churn rate for US credit cards and a 20% to 38% annual churn rate for mobile operators in Europe (Bobbier, 2013). As customer acquisition costs continue to grow, the management of customer migration has become extremely important for company profitability, the cost of retaining an existing customer is at least five times cheaper than the cost of acquiring a new customer. The problem that focuses exclusively on customer

acquisition is the filling of a drain bucket (Adebiyi et al., 2015).

Churn behavior is often described as synonymous to turnover (Gupta et al., 2004). 'Churn' is a term which defines a customer's tendency to cease doing business with a company over a certain period of time (Neslin et al., 2006).

Modisette (1999) found that customers' churn action can be divided into three types:

- involuntary: this happens when customers no longer buy products, subscriptions or services.
- inevitable: this means complete omission of the client on the market.
- voluntary: this happens when customers prefer to switch to another operator due to a more convenient offer or service.

One of the most common taxonomies of the churn phenomenon is the one that classifies the action according to the reason why customers change or cancel their subscription (Yang and Greg, 2003):

- voluntary churn: the client initiated the service termination due to their dissatisfaction with the quality of the service.
- involuntary churn: the company suspends the customer's service usually because of non-payment or service abuse.
- expected churn: the customer decides to cancel his contract for reasons other than dissatisfaction, such as customer relocation.

The factors that could make someone migrate have been studied a lot. A better price is the main factor, but it is not the predominant reason. In fact, as has been noticed over time, offering a lower price does not necessarily bring greater customer loyalty. Subscribers join competitors that best fit their needs in terms of features, technology and service quality (Hamelin et al., 2010).

THE BIBLIOMETRIC ANALYSIS OF THE CHURN PHENOMENON

The methodology used in this study is based on the results from the Web of Science database (WoS); it gives an overview of the research that has as main subject the action of migrating consumers from a supplier to another. This data resource includes more than 200,000 studies from 300 domains, and visualizes, studies, and integrates quotes research and metrics over the past twenty years. It is a source of reference and trustworthy information for the university community, including innovative studies with a high degree of originality.

The interest in publishing research that has as main topic the churn phenomenon has become increasingly stronger over the last few years as customer base plays a significant role in maintaining stable revenues. The research

published in the economic field on this issue has increased by more than 250% since the nineties (Larivière & Van den Poel, 2004).

The bibliometric techniques have the main advantage of identifying the relevant publications in the studied field. The evolution of information technology has greatly facilitated the development of bibliometric analysis, which tracks citations, publications and sources of information in a particular field or subject of research (Kamalraj and Malathi, 2013).

To initiate the search for publications of interest for the topic studied, the terms churn and churn prediction were used as keywords. Searching for these terms generated a total of 3,624 results, of which 808 publications and 5,546 citations in ISI quoted articles deal with the predictive modeling of the migration phenomenon.

The phenomenon studied in the current research is a subject addressed by prestigious organizations and *research-intensive* universities around the world: Purdue University of Indiana, United States of America, University of Amsterdam, Chinese Academy of Sciences, Xi'an Jiaotong University, Beijing Telecommunications, and the prestigious MIT, Massachusetts Institute of Technology. According to WoS, there are 1,995 institutions that have approached and researched global migratory behavior, with Purdue being the most publicized (Figure 1).

Initiator of the research in this field, the author with the most publications on the churn phenomenon is R. Krishna, Department of Chemical Engineering, University of Amsterdam with 47 papers, closely followed by M. Ishii, Nuclear Engineering School, Purdue University. A total of 6,143 authors studied and published about this issue, five of whom are of Romanian nationality (Figure 2).

Worldwide, the papers published and recorded in the database were written in nine official languages; however, 98% of them are in English, followed by Chinese, Japanese, Turkish, German and so on (Figure 3). Most papers in this field were written after 2007, over 82% of all publications so far. Figure 4 shows that the number of studies published between 2007 and 2018 has a high upward trend reaching the peak in 2016.

The 2,816 generated results were classified in about one hundred and seventy research fields by WoS research. Of all these areas of interest, only the industries relevant for the present study, that is the migratory behavior of customers from a Romanian telecoms company, were selected. Thus, the 2,816 results were filtered again and twenty relevant articles were selected; the current bibliometric analysis focused on industries such as: electrical engineering and electronics, theoretical data science theorems, computer systems, telecommunication, artificial intelligence,

engineering chemical engineering, mechanical engineering, fuels, economy and so on.

As for the geographic distribution of the authors, most of the papers were from the United States of America (26.45%), China (15.51%), England (8.46%), Germany (6.35%), India (5.71%), Canada (4.86%), the Netherlands (4%), France (3.90%), the Netherlands (3.90%) and Japan (3.76%) (Figure 5 and Figure 6).

The classification of the recorded papers that investigated the churn phenomenon shows that 55% of these are articles published in ISI rated journals, followed by articles published in conference volumes 42.61%. Reviews represent about 1% of total articles, and editorial materials under 1% (Figure 7).

ANALYTICAL METHODS. CAUSAL FACTORS

In today's industries, the volume of data is huge; in the current analysis, the information extracted from the database can be used to construct predictive models, identify links between selected variables, classify them, group them in clusters depending on the specific characteristics they have, or only analyze the database. Data science techniques allow extraction, classification of information and forecasting.

Data science techniques have been successfully applied in many different areas. A customer database flagged as prone to churn allows the company to target those customers and begin applying various retention strategies that reduce customer migration.

For the development of a churn prediction model, various techniques and methods of data science have been proposed. Most studies focusing on predictive modeling of customers who are likely to churn are focused on the following data mining techniques (Huang et al., 2012):

- Logistic Regression
- Decision Trees
- Random Forest
- Neural Networks
- Support Vector Machines

Decision trees and neural networks have proven to be the most useful and optimal prediction techniques for managing and modeling customers who are prone to migratory behavior. The customers who are subjects of this analysis are the subscribers of a telecommunications company in China (Wei and Chiu, 2002).

Generally, the data used to build models for churn prediction is related to demographic information, contractual data, customer history (age, gender, network age), service quality, complaints and payments.

For the churn prediction in telecommunication services, the specialists in the field used a set of features such as: service usage duration, type of payment, billed amount and additional costs (Zhang et al., 2012).

Burez and Van den Poel (2009) found that to reduce customers' churn rate, it is necessary to analyze the following factors intensively:

- timely identification of the reasons behind the churn process
- the company's quotation on the market
- loyalty to customers
- meeting and adapting to customer expectations
- quality products and services
- the correct segmentation of the database

Among the reasons a customer may abandon his service provider for another supplier of the same category of products and services may include the following: lack of financial resources, dissatisfaction with the service or better offers from the competition.

According to Prazeres Lino da Silva (2011), there are two types of approaches to churn management: reactive and proactive. When a company adopts a reactive approach, it waits until customers ask the company to cancel their service relationship. In this situation, the company will give the client an incentive to stay. On the other hand, when a company adopts a proactive approach, it tries to identify customers who are susceptible to churn before doing so. The company then offers special services or incentives for these customers to persuade customers not to migrate. Proactive programs have potential benefits of lower incentive costs. However, these systems can be useless if the churn forecasts are inaccurate because companies waste incentives or money for customers who will not change their minds.

Therefore, due to intense competition and the saturated market, a lot of companies have realized that the database with existing customers is their most valuable asset. That is why the prediction model of this action and the identification of causal factors can, not only be viewed as an insurance policy, but also provide invaluable database management suggestions; the potential churn customer can benefit from personalized offers and services depending on their profile, which will reduce customer churn.

CONCLUSIONS: THE CHURN PHENOMENON IN THE FUTURE

Analyzing the bibliometry of the migration phenomenon according to all the above parameters: the countries of origin of the published articles, the period of research on the subject, the type of recorded works, the research areas, the large

number of authors and publications, we can conclude that the subject analyzed in this research has developed considerably in the last ten - twenty years. Companies in many industries are increasingly interested in methodologies, techniques and solutions to reduce the phenomenon and prevent customer churn, which can happen at any time due to the wide variety of similar services on the market.

Therefore, the numerous papers published in this field give even greater importance to the research of the churn phenomenon. The studies published on this topic belong to fields such as: computer science, engineering, telecommunication, banking, management, mechanics, energy, food, commerce etc. A classification of the research according to the most researched field would certainly place engineering industry, telecommunication and computer science at the top. Also, research and development of the theoretical domains, from theories and concepts to algorithms specific to data science in combating the churn phenomenon, is, an extensively studied field according to WoS.

To understand the present and future very well we need to look into the past, so bibliometric analysis is the first step in any study. So, to combat the churn phenomenon, we need to know where to look for information about the most effective analysis and modeling techniques.

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APPENDICES

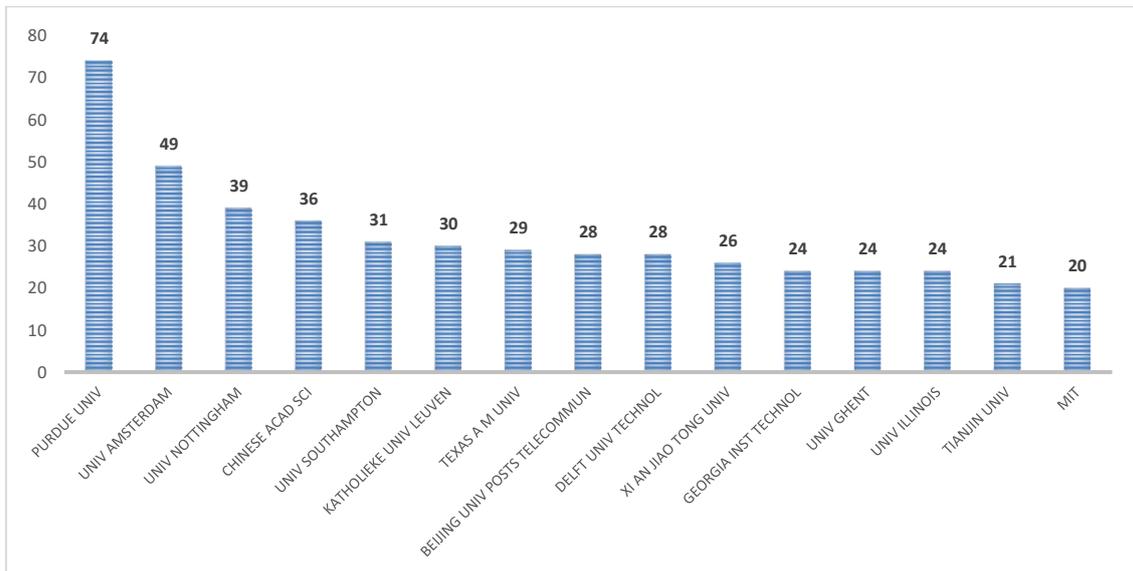


Figure 1. Research organizations of the churn phenomenon
 Source: <http://thomsonreuters.com/thomson-reuters-web-of-science/>

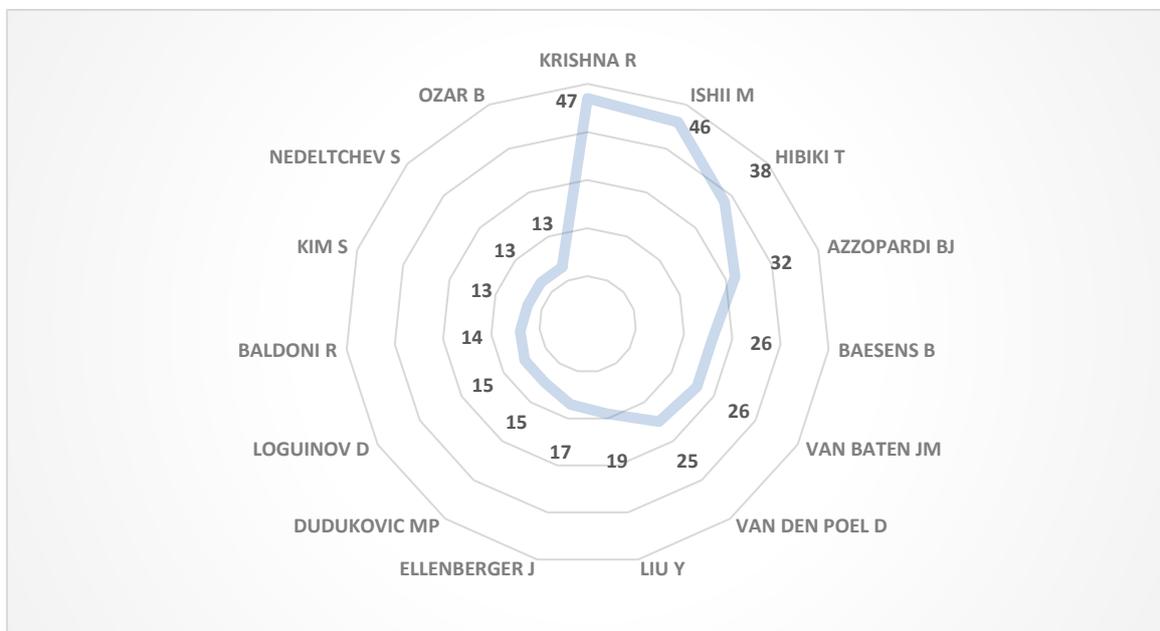


Figure 2. Authors by number of publications
 Source: <http://thomsonreuters.com/thomson-reuters-web-of-science/>

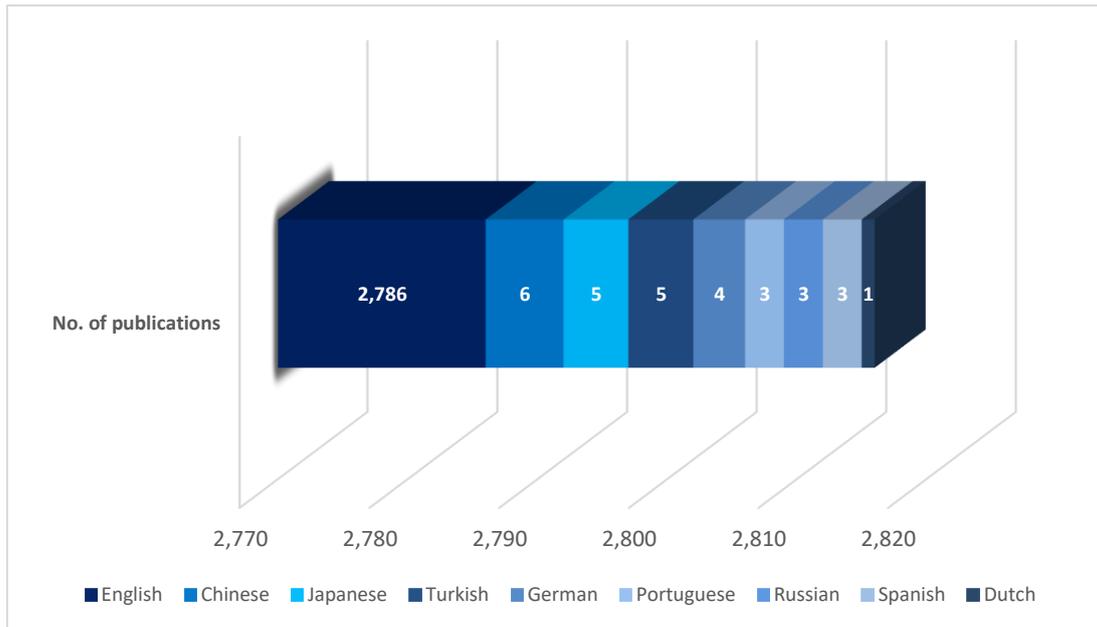


Figure 3. Editing language according to the number of publications
Source: <http://thomsonreuters.com/thomson-reuters-web-of-science/>

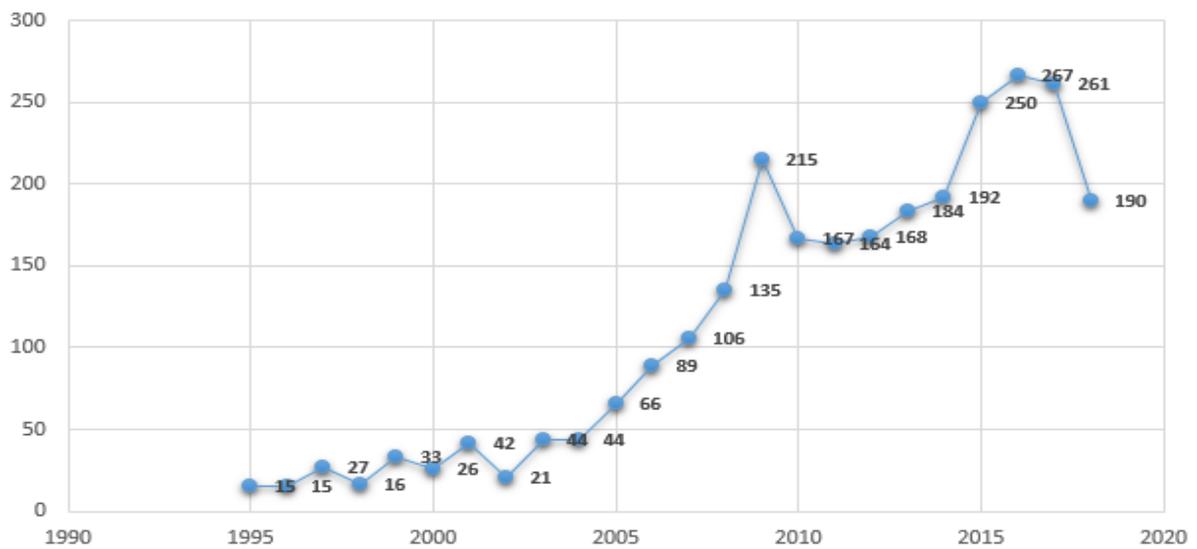


Figure 4. Evolution of the number of published articles
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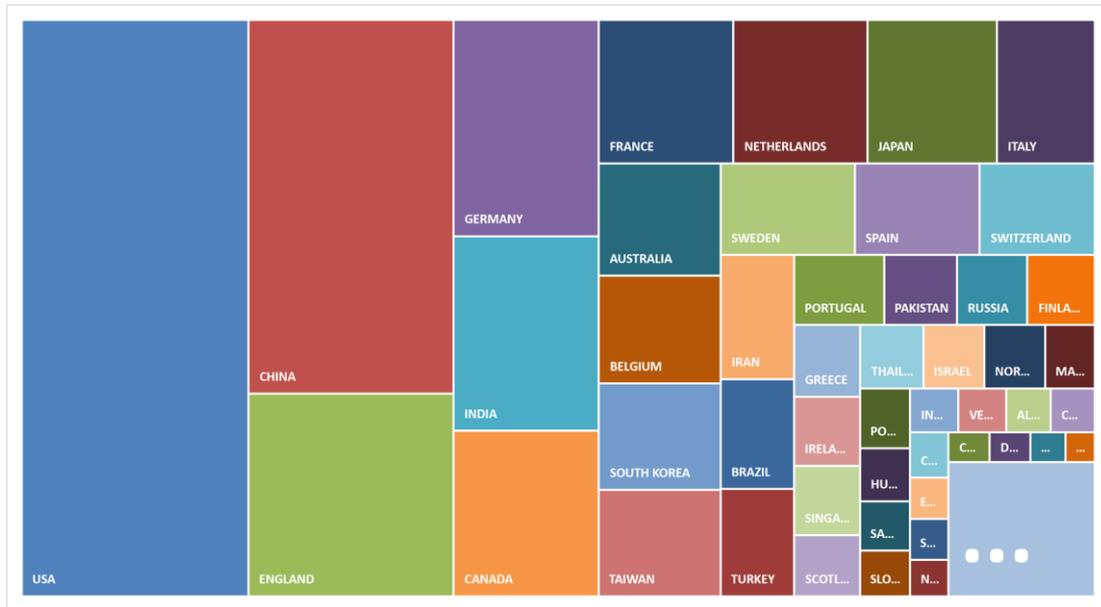


Figure 5. Country distribution of recorded works
Source: <http://thomsonreuters.com/thomson-reuters-web-of-science/>



Figure 6. Country distribution of recorded works – global vision
Source: <http://thomsonreuters.com/thomson-reuters-web-of-science/>

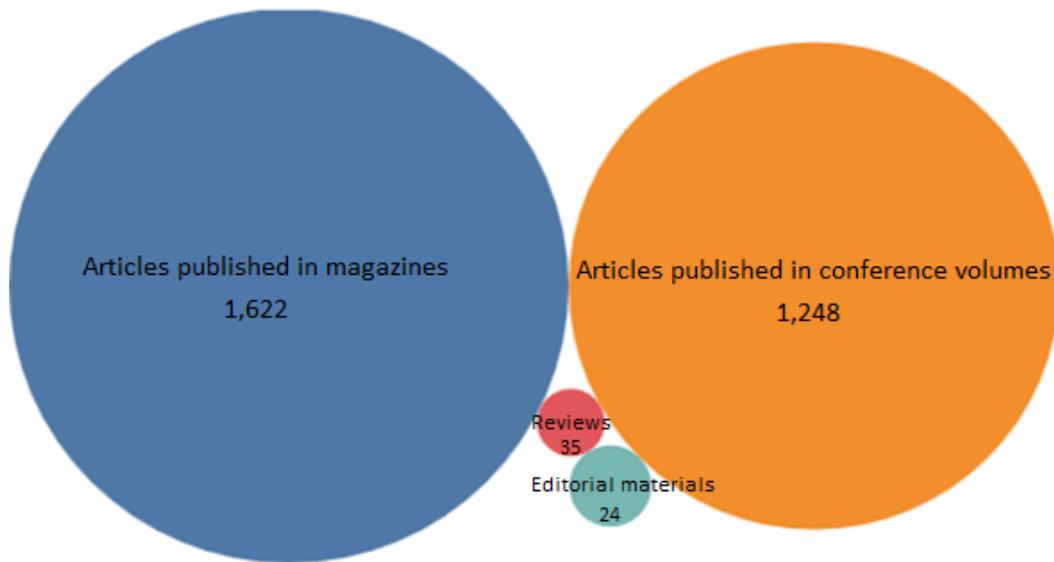


Figure 7. Types of published papers
Source: <http://thomsonreuters.com/thomson-reuters-web-of-science/>