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## **The effects of customer relationship management (CRM) on e-commerce evolution: A systematic review**

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**Abstract.** The developments triggered by marketing technologies in the information system of companies that took place in the mid-1990s through the tools of knowledge management, data mining, data quality, and social CRM, became effective in the construction of new business environments. The system called Customer Relationship Management (CRM), which has been widely disseminated in the business environment, has been one of the factors that makes relationship marketing in company management manage all relationships with customers. CRM is more than marketing, as it allows its management, sales and new business, and consequently impacts the evolution of e-commerce. Thus, the objective of this research is to identify and explore the effects of customer relationship management on the evolution of e-commerce and what its potential would be. We used a methodology with a qualitative approach, descriptive and exploratory, by systematic mapping method and deductive hypothetical, whose data collection technique was the systematic literature review research, seeking international articles in the databases indexed in the Capes platform (scopus), in the period 2015/2018, related to the theme. Inclusion and exclusion criteria through selection of articles performed by software: VosViewer and Excel. Electronic commerce is becoming more and more prevalent because it is characterized by easy access to information, being an ubiquitous trade with low transaction costs, which in an abstract place contributes to the realization of an economic market.

**Keywords.** Technologies. E-commerce. CRM. Social media and CRM. Knowledge management

### **Introduction**

The study of electronic commerce (e-commerce) and/or any markets starts from the analysis of the forces of supply and demand. In the offer we find producers and suppliers of products or services (or services and products) that aim to meet the needs of their consumers. Buyers represent those who look for products on a daily basis for different situations, that is, they represent demand. In this way, the customer is placed first, as he is the one who guides business actions. Companies need instruments that can manage this relationship, tools known as *Customer Relationship Management (CRM)*.

From the consumer, all the necessary planning for the implementation and growth of any business is drawn up. In electronic retail this is no different, on the contrary, the focus on the consumer is an essential requirement for the maintenance and growth of companies.

Consequently, the internet and new technologies are daily confronted with a vast world of information and knowledge that permeates organizations and produce changes and effects in the market.

In formulating the problem of this research, is relationship marketing an antecedent of CRM? Yes, the term Customer Relationship Management (CRM), was influenced by Relationship Marketing, and has represented a great balance in ongoing relationships, demonstrating a large impact on profitability from small increases in customer retention rates. In this way, the marketing community has become more aware of the need to manage long-term customer relationships, even before the first sale is made (Wilson, HN, Daniel, EM and McDonald, MHB, 2001).

There are currently many tools to manage the relationship with the customer, but more important is to understand the factors that determine the need for relationship marketing in companies. In other words, the functionality of a CRM system is not necessarily enough to make e-commerce viable, since by creating a relationship of trust with customers, relationship marketing is being established, which in the competitive market has proven to be as a differential in the management of companies.

This study aims mainly to: Identify and explore the effects of customer relationship management on the evolution of *e-commerce*, and what are the potentials of CRM to retain and attract customers.

The specific objectives are:

- I - Raise the origins and definitions of customer relationship management and e-commerce;
- II – Identify and demonstrate the benefits of *Customer Relationship Management (CRM)*;
- III - Search and present the modules and characteristics of *Customer Relationship Management (CRM)*;
- IV -- Investigate the main features of a CRM system and how it contributes to the evolution of e-commerce;

The implementation of CRM systems may be triggered by new technologies, necessary to assume, in addition to functionalities, the potential of a relationship management system.

CRM involves capturing customer data by all means of access, consolidating them in a centralized database, analyzing them, distributing their results to strategic managers to generate marketing actions with customers. (GARTNERGROUP, 2001). Even so, Gartner Group (2001) qualifies CRM as a business strategy aimed at understanding and anticipating the needs of a company's current and potential customers.

The article is structured as follows: Initially, a brief introduction to the e-commerce process and its relations with Customer Relationship Management (CRM), and end consumer interface, in addition to the presentation of the study objectives, which demands in response to the evolution of businesses linked to e-commerce.

.Section 2 presents the theoretical framework modeling a review of technology, pointing out the means of dissemination of e-commerce on the internet, the origins and definitions of e-commerce, e-marketing and contextualizing the history of customer relationship management ,

with the similarities of this and relationship marketing. The also M features are essential to understand the role of knowledge management in relationship management environment with the customer, and adding evolution to e-commerce and value to the organization and the customer.

Section 3 deals with the research method and procedures - hypothetical-deductive mapping was used and bibliographic research with systematic review, and qualitative approach, descriptive and exploratory, looking for articles indexed on the Capes platform, in the Base of "Scopus" Data, with inclusion and exclusion criteria for key expressions used in this research. In section 4, the results are discussed and a research synthesis is presented.

Finally, section 5 provides final considerations for investigating the benefits of *Customer Relationship Management (CRM)*, leveraging knowledge of the customer and their needs, as well as interfaces that are strategically internal tools where companies can effectively interact with their customers, producing effects on the evolution of e-commerce.

## **2 Theoretical framework**

### **2.1 Technology and electronic commerce**

At the beginning of this section, it is necessary to establish the concept and emergence of the internet, in the 1960s as a project in the United States known as *ArpaNet*, (*Advanced Research Projects Agency Network*), which it reads: Network of agencies for advanced research projects, due to the need to maintain communication between US military bases, after this period, with the lack of use of *ArpaNet* for the military, they made the information available to scientists in the Universities from other countries allowing worldwide communication (FILHO, 2007). The same author adds:

Throughout the 1970s and mid-1980s many universities connected to this network, which moved the militarist determination to use the network to a more cultural and academic foundation. In the mid- 1980s, the NSF –*National Science Foundation* of the USA (something like the CNPq of Brazil) constituted a high-speed fiber optic network connecting supercomputing centers located in key points in the USA (FILHO, 2007, p.14) .

This NSF (*National Science Foundation*) network, where the played a key role in the development of the Internet by substantially reducing the cost of data communication to existing computer networks, which were widely encouraged to connect to the Internet. *Backbone* (transport network) of the NSF. The control of the *backbone* maintained by the NSF ended in April 1995, being largely transferred to private control (SILVA, 2012).

The Internet boom in the 1990s caused profound changes in commercial relations. Electronic Commerce caused a great impact with regard to acquisitions, purchases, commercial partnerships, among others (ALVES, 2012). Internet sales have grown annually, representing a significant picture for companies. Torres (2010, p. 06) also emphasizes that:

The Internet is not something new. We all use email, access websites, shop online, and many of us use social media such as Facebook or Twitter. But as something we incorporate into our lives so quickly, we sometimes forget that the Internet is used by our customers and consumers alike. More than just using the Internet, consumers have taken charge of it.

Surfing the Internet is the act of walking around the *web*, moving from one *web site* to another, following *links* - a link. (SILVA, 2012). The social, economic and cultural environment that surrounds citizens has undergone changes with the implementation of new technologies, the use of computers imposes the need to acquire knowledge, there are several ways of

dissemination on the site, providing Internet users with the ease of searching for information, products or services.

Table 1 presents the most common means of dissemination via the Internet.

**Table 1 – Means of Dissemination on the Internet**

<b>MODALITY</b>	<b>DESCRIPTION</b>
Organic search	Known as SEO ( <i>Search Engine Optimization</i> ) is the search engine that provides an excellent cost-benefit ratio for companies.
Sponsored links	These are ads published on search engines, where the advertiser who launches the highest value per ad for a certain keyword will occupy the top positions.
Price Comparators price	Through the comparison websites, it is possible to analyze the products and prices in relation to the store and the competitors. Example: Buscapé.
graphic <i>Online</i>	media These are media with the visual ability to impact the user through information and promotions. Example: Earth.
Social Media	Describes online technologies and practices. It is used by people to share opinions, ideas, experiences and perspectives.

Source: Adapted from: Maccariet *al.* (2009).

An important transformation brought about by the World Wide Web, the Internet, is what has been called electronic commerce (e-commerce). It is the purchase and sale of products and services over the Internet (GUROVITZ *et. al.*, 1999).

Zhao and Feng (2017) define electronic commerce (*e-commerce*) as the use of the internet to engage in commercial activities. Thus, it can be said that *e-commerce* makes use of a variety of electronic tools for the management and operation of the commercial activities of companies, for the management of sales to customers, whether individuals or organizations, as the authors identified the existence of different e-commerce models.

The most notable feature during internet browsing is the presence of global brands, that is, globalization affects all areas of society, especially communication, international trade and freedom of movement, with different intensity depending on the level of development and integration of nations around the planet, and in a way the internet brings attractions to make people's lives easier through digital marketing.

## **2.2 Origins and definitions of *E-commerce***

The e-commerce (English term) of *electronic commerce* is designated in Portuguese as “electronic commerce”, which began to take off in 1990 in the United States, with the emergence of the *internet*, facilitating the entire purchase process and sale of products through the internet, through electronic devices and platforms. In Brazil, this process began five years later with the creation of “Amazon.com”, with the sale of small products and values via *e-commerce*(books, cds, DVDs), in the pioneer Librarian Cultural (MACCARI *et al.*, 2009 ).

However, to integrate the digital world, companies must face the digital transformation process, as today even the most expensive products in the world are traded through electronic commerce, such as: mansions, works of art, yachts, planes, among other luxury products.

For Schneider and Perry (2000), state that a good definition of electronic commerce is "the use of electronic data transmission to implement or improve any business process".

According to Watson, Berthon, Pitt, and Zinkhan (2000, p.7):

E-commerce involves the use of information technology to improve communications and transactions with a company's stakeholders, and includes activities such as establishing a web page to facilitate these communications. These stakeholders include customers, suppliers, government regulators, financial institutions, managers, employees and the general public.

In this way electronic commerce is described in some cases as an internet-enabled electronic data interchange mechanism.

The concept of CRM is approached as a business strategy aimed at understanding and anticipating the needs of current and potential customers of a company, based on market research that supports CRM, in order to develop strategies capable of increasing both customer loyalty, as well as sustainable sales. (BRETZKE, 2000).

CRM is also the integration of sales automation functionalities, customer service (*call center*), marketing automation and tools for managing management information, which can be integrated with systems *BackOffice*, even linked to customer service in credit, billing and delivery.

The *e-commerce* space has captured the market and became a retail supplement. It comprises market research, development, marketing, advertising, negotiation, sales and support. After the appearance, companies looked for ways to stimulate sales, promoting the products and brand, and through this need emerged *e-marketing* (MACCARI *et al.*, 2009).

Retail, in general, is well allocated within this e-commerce modality, and companies must, in a long- term view, integrate the digital world into their business models.

Vernon (1999) reports that e-commerce is extending its scope and affecting all information systems in companies, including ERP (Enterprise Resource Planning) systems. Today there is a consensus on the importance of navigation interfaces in Intranets, Extranets and the Internet.

The key is integration, because from a technological point of view, e-commerce means the integration of database systems through browser programs. On a commercial level, e-commerce integrates the supplier, the company, and the customer through the use of Internet browsers.

However, this is due to the functionality of business management systems - ERP, especially in terms of online processing of data coming from all sectors of a company.

### **2.2.1 Relationship**

*Marketing marketing* is the result of a plurality of constructs (NETO, 2003). Morgan and Hunt (1994) highlight that trust, commitment; satisfaction and quality are mediators of the relationship and that working with these mediators' results in an expectation of continuity of the relationship, consumer loyalty and positive word of mouth. The customer perceives value in the relationship when he receives some benefit from this relationship, increasing the willingness to develop relationships; for this, loyalty must be increased; but loyalty can be defined and operationalized in different ways (MORGAN and HUNT, 1994).

Relationship Marketing is marketing based on interactions within a network of relationships, whether it is the network between groups of customers with a company (B2C), companies with companies (B2B) or even individual customers with a company (O2O) (GUMMESSON , 2005; LEWIS, 1997).

### **2.2.2 E-Marketing**

Digital Marketing, known as “E-Marketing”, is a new concept that is being adapted by companies as a source of marketing innovation, and comprises creative strategies, communications and interactions, and which, at the same time, add value to the customer and to the company's results.

The new e-marketing model, being adapted to digital media, should be strategically based on the use of information technology, more effectively than traditional marketing, but in a more operational and economical way, enhancing communication with customers in order to benefit the company and its target audience.

With this, the tool encompasses, through electronic distribution channels, the practice of promoting faster, and reaching new customers more effectively, in a personalized way in order to attract more customers.

### **2.3 Contextualization Customer Relationship Management (CRM)**

The acronym CRM, or Customer Relationship Management, refers to a set of customer-focused practices, business strategies and technologies that are used by any organization, since Entrepreneurs up to medium and large organizations, including startups, can use CRM to manage and analyze interactions with their customers, anticipate their wishes and needs, optimize profitability and increase sales and assertiveness in their campaigns to attract new customers.

According to Strauss and Frost (2001), CRM involves, as a first step, research to gain insight in order to identify potential and current customers. The second step is to use this customer-focused information in order to differentiate the base according to specific criteria. Finally, the third stage involves personalized offers for customers, considered a stage of customization."

CRM should be seen by organizations as a possibility to turn business opportunities through integrated communication, with their customers and the entire value chain, communicating properly, in real time, generating an increase in sales, building customer loyalty and avoiding the loss of business partners (BROWN, 2001, BRETZKE, 2000;).

Feinberg, Kadam, Hokama, and Kim (2002) underscore the crucial role of CRM in Internet retailing, reporting, however, that it is still in its infancy. However, its activities and points of contact with the company include visits to websites, phone calls, emails, among other interactions, as the CRM stores information on current and potential customers - name, address, telephone number, etc.

CRM is the easy and integrated relationship management module that, through a detailed history, allows monitoring of business proposals, projections, and controls daily, weekly, monthly schedules, in a way that helps your company in customer service, and improving business processes and increasing the success of your sales team.

However, the platform is not just an elaborate contact list: it gathers and integrates valuable data to prepare and update your teams with personal customer information, history and purchase preference.

The main features of the CRM module are summarized as: detailed contact history; monthly and weekly schedule; direct mail; pending alerts; control of commercial proposals; opinion surveys and control of commercial expenses and reimbursement.

The goal of CRM is maximum consumer satisfaction and, instead of winning new customers, it aims to keep existing customers through the creation of relationship capital, which involves commitment, trust, interdependence and cooperation (STRAUSS, EL-ANSARY and FROST, 2003).

### **2.3.1 Main characteristics of CRM**

CRM is a synthesis of many existing relationship marketing principles (JANCIC&ZABKAR, 2002; MORGAN & HUNT, 1994; SHETH, SISODIA, & SHARMA DE 2000).

The CRM should relate broad features focused on management, as the system provides the infrastructure that facilitates building long-term relationships with customers. Some examples of the functionality of CRM systems are sales force automation, data warehousing, data mining, decision support and reporting tools (HENDRICKS, SINGHAL, & STRATMAN, 2007; KATZ, 2002).

In this sense, in addition to CRM involving the integration of the marketing, customer service, sales, and the entire supply chain of the organization, it is discussed as knowledge management, as it covers the process of acquisition and retention of selected customers. Seeks efficiency in delivering value to the customer, creating value for the company.

Thus, the general objectives of CRM are to create customer satisfaction, trust, loyalty and retention of former customers, and with that the tool in practice contributes to reducing the organization's marketing costs.

### **2.3.2. Knowledge management in the CRM environment**

The knowledge management process is a fundamental resource for companies today, it is the recognition for the creation of value for the customer, as it confirms the need for processes that facilitate the creation, transference and leverage, individual and collective knowledge (BECERRA-FERNANDEZ AND SABHERWAL, 2001; IPÊ, 2003; NONAKA AND TAKEUCHI, 1995). This ability is important because knowledge is seen as a key strategic resource (VAN DENHOFF AND HUYSMAN, 2009); that is, if companies want to take advantage of the knowledge they have, they must know how it is created, shared and used in the company (IPE, 2003).

In the context of the CRM environment, there are several systems that support this entire knowledge management and customer relationship process. Thus, this CRM strategy is divided into three distinct types, which are based on collaboration, operation and analysis, aiming at the integration of all customer information, for better decision-making within the context of relationship marketing (REINARES, 2007; PEPPERS and ROGERS, 2001;).

For the company to apply knowledge management effectively, it is necessary to have an organizational culture, and consequently to have people prepared to manage everything that adds value to the business in an orderly, systematized and intelligent manner.

According to Zenone (2007), companies seek all information about their customers, aiming to ensure and maintain a long-lasting relationship in order to produce a deep knowledge of the customer, which can thus constitute an effective weapon at the service of the organization's strategic competitiveness.

#### **2.4 Effects of CRM on the evolution of electronic commerce**

The study allowed us to analyze the effects of CRM in the contribution to electronic commerce, when:

a) Relationship management (CRM) helps to understand the trajectory of the customer in the store before leaving the cart of orders, and in the opportunity to analyze which products the customer chose, at what moment there was the withdrawal, and what the values of the products were. So, by recovering order carts those customers tend to abandon before paying for the purchase and giving up on the product, they will be able to establish contact with the customer, apply improvements in e-commerce, and prepare future offers.

b) The CRM, through the information necessary for the customer's login, to read each customer's profile enables an offer of products via e-mail to the customer.

c) CRM, by storing all customer data from its first access, provides a differentiated service, in a personalized way when contacting them in the interest of purchasing, offering quick solutions to the demands of e-commerce.

d) The function, with a CRM better understanding of the customer-public, allows checking the most researched brands, searching for items of greatest interest, and with personalized products, acting more strategically regarding the product mix for e-commerce.

e) Relationship management demonstrates the offer of a complementary product to the mix, increasing customer satisfaction and evolving to surprise customers with complementary offers, meeting their needs.

f) The CRM must monitor the results of e-commerce strategic planning, analyze the numbers to assess daily performance, either by customer, by product, average ticket, and total sales and keep the company at the top of e-commerce among competitors.

### **3. Methodology**

A systematic literature review (RSL) is a critical assessment of all research that addresses a particular issue, using an organized method of locating, assembling and evaluating a body of literature on a particular subject. Generally, a systematic review includes a description of findings from a collection of investigated studies that form reliable results for conclusions. (SOLTANI and NAVIMIPOUR, 2016).

Thus, systematic review is a way to collect data in publications, scientific articles and books, to study a particular subject. It is a method of searching for previously written works on the same subject to explore an area of study or to initiate scientific research.

According to Soltani and Navimipour, (2016), the systematic review of the study addresses basic concepts such as:

Customer relationship management (CRM); Customer orientation; Customer Knowledge Management (CKM); Data exploration (DM); Data quality (DQ); geographic information system (GIS); information quality; information technology (IT); information system (SI); electronic customer relationship management (E-CRM); Knowledge Management (KM); Customer knowledge; Knowledge about customers; Customer knowledge; Likert scale; LISREL methodology; structural equation modeling (SEM); soft issues; and web 2.0 (SOLTANI, NAVIMIPOUR, 2016).

The preparation and maintenance of a systematic literature review (RSL) involves seven steps: (i) formulate the problem, (ii) locate and select studies, (iii) assess the quality of the studies, (iv) collect data, (v) analyze and present the results, (vi) interpret the results and (vii) improve and update the revisions. (COCHRANE, 2006)

However, according to research in the field of management (Denyeret Tranfield, 2009; De Medeiros et al., 2014; Garza-Reyes, 2015), the RSL consists of five consecutive phases: (1) question formulation, (2) study location, (3) study evaluation and selection, (4) analysis and synthesis, and (5) report and use the results.

The methodology procedures covered in the research are exploratory, descriptive, and bibliographic techniques of systematic review, and with qualitative purposes, by systematic mapping method and hypothetical-deductive. However, it does not have the commitment to explain the phenomena it describes, but to expose its characteristics, execute and define correlations between possible factors.

In this sense, Dresch (2015, p.21), lists the hypothetical-deductive method as being what "can be found in management research when the problem to be investigated is related to the measurement of the quality of products or services."

The tools to support the process of conducting RSL, meeting the support criteria proposed in the issue of this article, were used, among the operating system Microsoft Windows – Excel, in conducting the software's Vos viewer.

The main steps of this research were divided into four: data search, data structuring, data analysis, and finally data synthesis. The strategy to search for potential scientific articles for this research had the following inclusion criteria:

In the data search phase, the main steps of the research are described below:

I - Selection of sources for research: searching for international articles on the Capes platform indexed in the "Scopus" database and publications in national journals and websites related to the theme of this work, that is, the evolution of e-commerce under the effects of customer relationship management.

II - Selection of search terms: to search for articles in journals, the research objective was taken into consideration, and the search terms were defined as: "Technologies". "E-commerce". "CRM". "Social media and CRM". "Knowledge management".

III - Database search: the articles that contained the terms defined in their title, words or key expressions, or in the abstract of the source indicated in item 1 of this list were searched.

IV - Data structuring: Initially the titles of the articles were read to separate those that would be used in the research, excluding those that did not fit with what was being researched.

V - Analysis and Synthesis of the data: tables and graphs representing a general characterization of the research on the articles

Systematic reviews depend specifically on the rigor of their method, their inclusion and exclusion criteria, the quality of the included studies, the databases, and the way they are conducted. (NASSERI - MOGHADDAM; MALEKZADEH, 2006).

Thus, the inclusion and exclusion criteria for the extraction of information from the chosen articles served to elaborate the research questions with studies linked to e-commerce. In the sources, the selected search terms were used, where all in scope and articles from the last years 2015/ 2018 were chosen.

#### **4 Data syntheses**

A data search was conducted in the "Scopus" database, for the keywords: "Technologies". And "E-commerce" or "CRM" or "Social Media and CRM" or "Knowledge Management", contained in the inclusion criteria, in the period 2015/2018, and were found

55,465 documents restricted to open access, which after delimitation of areas: "Business", "Management and accounting" and "Engineering" were filtered by type of document through 62 articles, according to table 1, and in the time between 2015/2018, the number of articles published per year, according to table 2.

Table 1 Filter articles by "keywords"

Nºs	ANO	FILTRO DE ARTIGOS- "TÍTULOS"
1	2018	Organization of knowledge ecosystems: Pre figurative and partial forms
2	2018	Modelling vital success factors in adopting personalized medicine system...
3	2018	The penalty for privacy violations: How privacy violations impact trust online
4	2018	Determinants of Graduates' Start-Ups Creation across a Multi-Campus [...]
5	2017	Nano-enhanced Phase Change Material for thermal management of BICPV
6	2017	Integrating building and urban semantics to empower smart water solutions
7	2017	A cloud computing model for optimization of transport logistics process
8	2017	A computer-based approach for analyzing consumer demands in electronic..
9	2017	Organizational communication management during the Volkswagen diesel...
10	2017	How network-based incubation helps start-up performance: a systematic ...
11	2017	To invent and let others innovate: a framework of academic patent transfer...
12	2017	A framework for attribute selection in marketing using rough computing and ..
13	2017	Fundamental Theories and Key Technologies for Smart and Optimal [...]
14	2017	From the evaluation of existing solutions to an all-inclusive package for biobank
15	2017	Firms' knowledge profiles: Mapping patent data with unsupervised learning
16	2017	Biomimetic bio-inspired bimorph sustainable? An attempt to classify and...
17	2017	Big Bench Workload Executed by using Apache Flink
18	2017	Economic Evaluation of Process Chains for Hybrid Products – Concept for [...]
19	2017	CBR and PLM applied to diagnosis and technical support during problem [...]
20	2017	Modeling Supply Chain Performance
21	2017	A technology-organization-environment perspective on eco-effectiveness:
22	2017	Transition towards an Industry 4.0 State of the Lean Lab at Graz University of
23	2017	Continuous improvement through “Lean Tools”: An application in a [...]
24	2017	Smart Life Cycle Monitoring for Sustainable Maintenance and Production-...
25	2017	Evaluation of Socio-Economic Factors that Determine Adoption of Climate...
26	2017	Critical analysis of Big Data challenges and analytical methods
27	2016	Semantic catalogs for life cycle assessment data
28	2016	Knowledge Transferal CERN
29	2016	Biometrics in cyber security
30	2016	Firms navigating through innovation spaces: a conceptualization of how ...
31	2016	Privacy concerns and online purchasing behavior: Towards an integrated...
32	2016	Smart product design and production control for effective mass customization
33	2016	Construction risk knowledge management in BIM using ontology and semantic
34	2016	Necessitated absorptive capacity and met routines in international technology
35	2016	The firms benefits of mobile CRM from the relationship marketing approach...
36	2016	Technology readiness level assessment of composites recycling technologies

37	2016	Personalized Information Management by Online Stores in 4C Model. Case ...
38	2016	A Strategic Knowledge Map for the Research and Development Department...
39	2016	A Model of a Tacit Knowledge Transformation for the Service Department [...]
40	2016	Business intelligence: Strategy for competitiveness development in techno...
41	2016	Composite Indexes Economic and Social Performance: Do they provide ...
42	2016	Strategic Research Programs in the Area of Technical Innovations - Case Study
43	2016	The Concept of Social Responsibility in the Business Model of a Company
44	2015	Antecedents and consequences of innate willingness to pay for innovations:..
45	2015	The social innovation potential of ICT-enabled citizen observatories to ...
46	2015	Social innovation through a dementia project using innovation architecture
47	2015	An intelligent web digital imagemet a data service platform for social curation
48	2015	Human Resources Management in the System of Organizational Knowledge...
49	2015	Identifying Key Factors for Introducing GPS-Based Fleet Management Systems
50	2015	A Cognitive Adopted Framework for Io T Big-Data Management and Knowledge
51	2015	Knowledge Creation and Learning within the Building Project Orientation of...
52	2015	Contributions of Workflow for Knowledge Generation Process
53	2015	Modeling and querying business data with artifact lifecycle
54	2015	Internationally Management of Socio-technical Projects – A Case Study in a...
55	2015	Use of Qualitative Research in Architectural Design and Evaluation of the ...
56	2015	Woven Strategy Approach and Shared Value Creation
57	2015	Crisis Management Simulations: Lessons Learned from a Cross-cultural ...
58	2015	Young Workers' Occupational Safety Knowledge Creation and Habits
59	2015	An Analysis of Open Innovation Practices in the Medical Technology Sector ...
60	2015	Human Factors Considerations for the Application of Augmented Reality in ...
61	2015	Modern Manufacturing Practices and Agile Enterprise. Anticipated Scope of ...
62	2015	Development of Training for New Air Traffic Control Technology Implementation

Table 2 - Published articles/years

<b>Publication years</b>	<b>Articles</b>
2018	4
2017	22
2016	17
2015	19

Also, the key words that sometimes stood out the most according to occurrence - table 3.

Table 3 - Key-word Occurrences

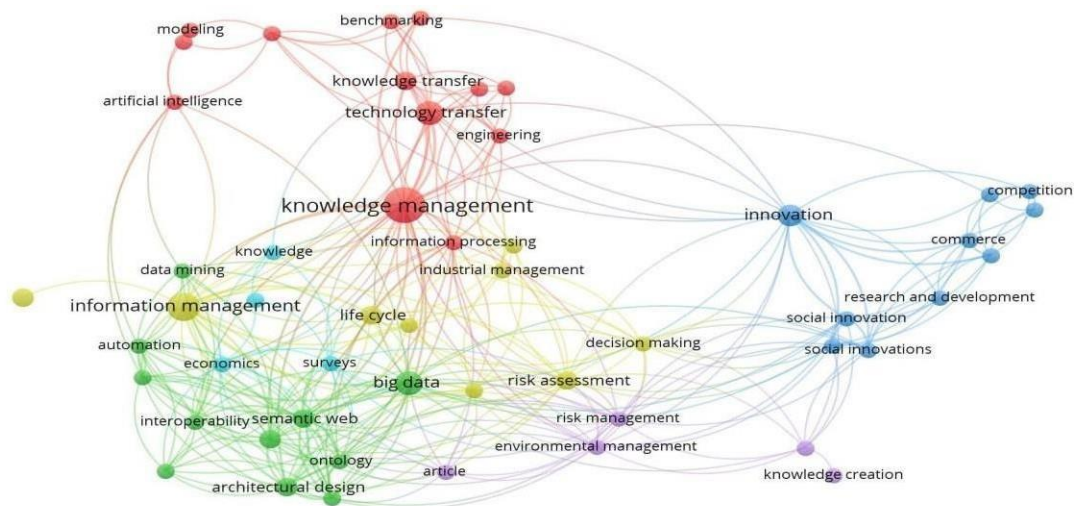
<b>Key-word</b>	<b>Occurrences</b>
Knowledge Management	5
Information Management	5
Technology transfer	4

E-commerce	3
Strategic Management	2
Industry 4.0	2
Interoperability	2
Knowledge Creation	2
Technology Management	2
Manufacturing Enterprise	2
Quality Management	2
Social Innovation	2
Semantic Web	2
Ontology	2
Human Factors	2
Big data	2
Bim	2

Prepared by: the author

It is shown in chart 1, co-relation with table 3, (source and elaboration: Vosvieur), where it highlights in the cluster (red), "knowledge management", and "technology transfer"; in the cluster (yellow), "information management", "interoperability", in the cluster (green), "big data", "interoperability", and in the cluster (blue), "innovation".

Chart 1 - Keyword representation



However, the most cited authors in the peer-reviewed academic papers, which are presented in table 4, with citation numbers.

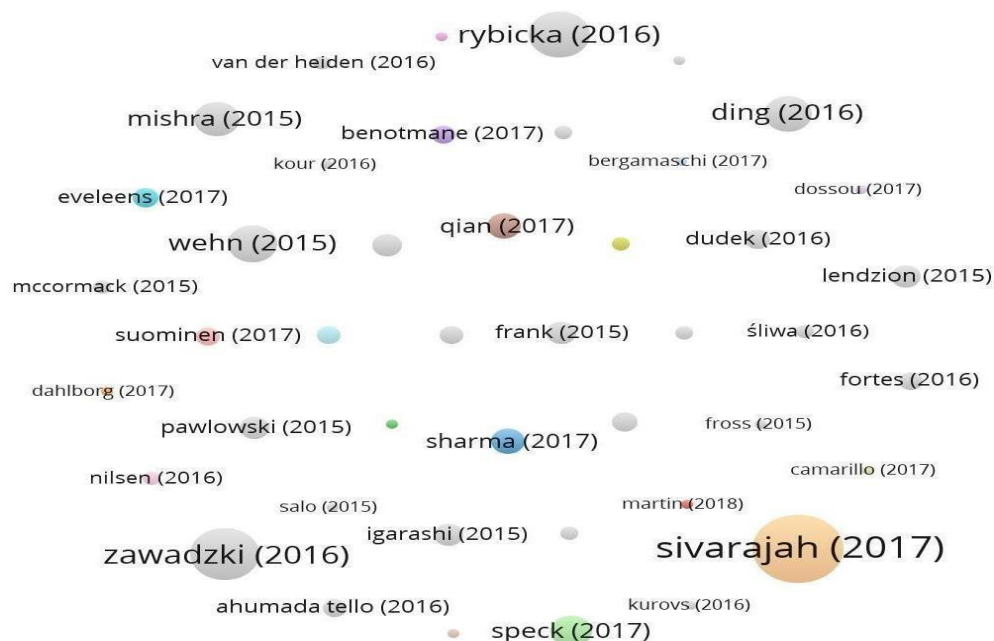
Table 4 - Most cited authors

Authors	Citations
sivarajah u.	45
kamalm.m.	45
zawadzki p.	26
zywicki k.	26
rybicka j.	20
leekeg.a.	20
evers j.	13
wehn u.	13
dingl.y.	12
zhong bt	12
mishra n.	11
chang h.-t.	11
gantner j.	10
horn r.	10

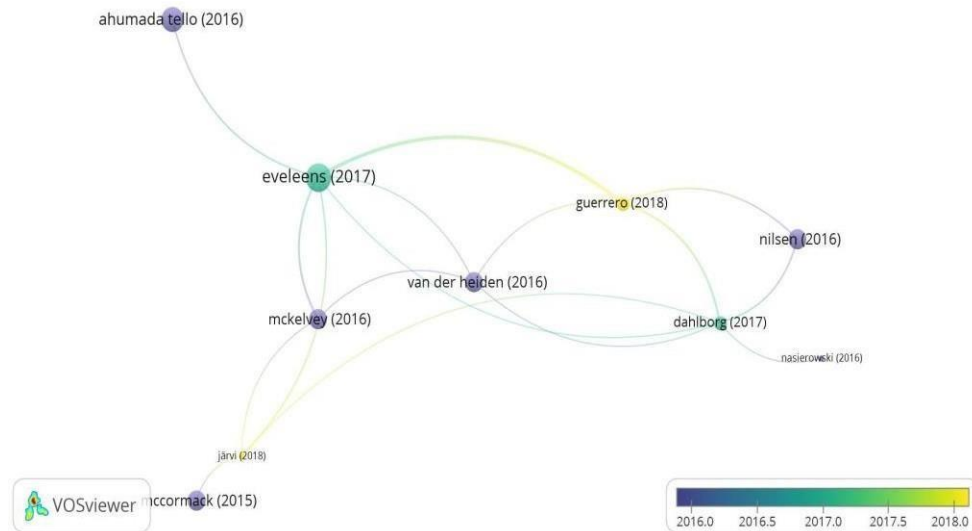
Prepared by: the author

Shows Graph 2 the correlation with table 4, where "sivarajah", "zawadzki", "rybicka", "dingl.y", "mishra n." and other authors stand out.

Graph 2 - Clusters of most cited authors

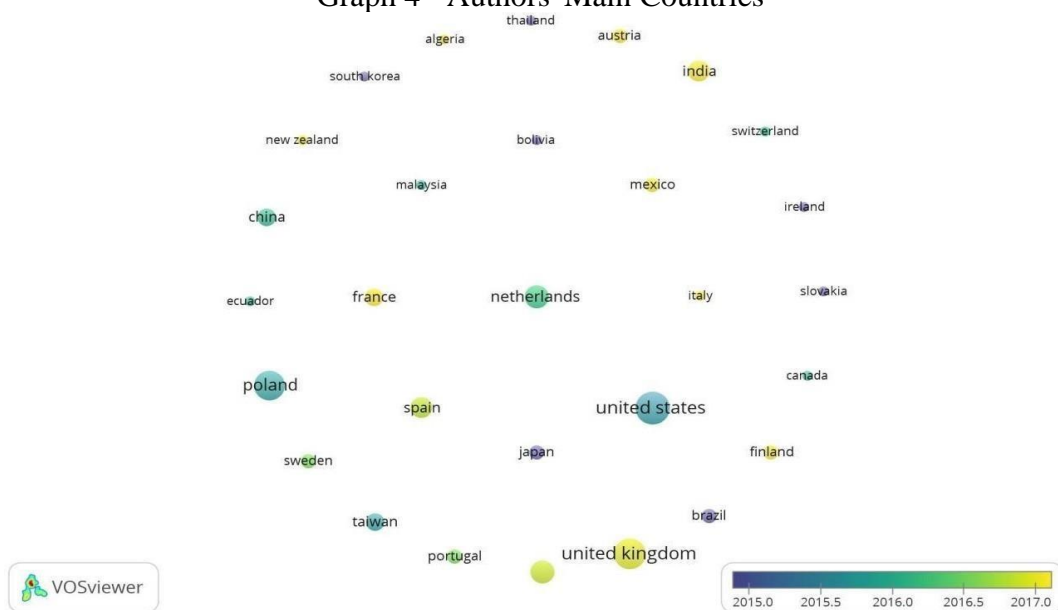


Graph 3 - Authors cited among themselves



However, Graph 3, demonstrates the most cited authors to each other, for example, "eveleens-2017" cites "ahumatatello-2016," and "mckelvey-2016," while "guerrero-2018" cites "eveleens-2017" and other authors.

Graph 4 - Authors' Main Countries



The main countries of authors who have written academic articles, published in "Scopus", as shown in chart 4, relate most frequently to the United Kingdom, the United States, Poland, the Netherlands, China, Taiwan, India, and others.

#### 4.1 Narrative overview of the selected studies

The empirical universe was made from 62 articles, which after selected 7 articles and 1 research paper, according to chart 2, with greater predominance to the theoretical development of the selected studies.

Chart 2 -Summary of the systematic review articles

Themes	Authors and Year publ.	Keywords/Public Year	Findings & Contributions
ARTICLE: Workflow contributions to the knowledge generation process	Schmitz, Macedo, and Hatakeyama	Knowledge management; workflow; Business process - (2015)	Reports that organizations are increasingly awakening to the need to manage organizational knowledge, and the workflow tool is one that provides computer support to manage business processes. It presents the workflow tool, to contribute to the knowledge generation process, where companies can make use of information and communication technology (ITC). The authors point out that the creation of knowledge in organizations is the company's greatest capacity to create new knowledge, and disseminate it throughout the organization with the sharing of knowledge on a single basis, thereby evolving the business.
ARTICLE: Identifying key factors for the introduction of GPS-Based Fleet Management Systems for the logistics industry	Yi-Chung Hu, Yu-Jing Chiu, Chung-Sheng Hsu, and Yu-Ying Chang –	(2015)	They discuss in their article on logistics, that the rise of e-commerce and globalization has changed consumption patterns, as different industries have different logistics needs. However, it does not address relationship management, but the competitive advantage for the logistics industry.
ARTICLE: Companies benefit from mobile CRM from the	Martin, Jiménez and Catalã	Benefits CRM; mobile; technology; employee	Companies that fail to establish successful, reciprocal relationships with their customers can earn higher returns on their relationship marketing investments. The study applies the TOE model , to address factors of

relationship marketing approach and the TOE model		competence (2016)	technological context (technological competition), organizational propensity for innovation and support employees) and business environment (customer information management) to determine the perceived benefits of managing customer relationships through mobile phone (m-CRM), so to propose the hypothesis to be contrasted on the factors that contribute positively to the perception of CRM benefits.
ARTICLE: Customized information management in line stores in the 4c model- Case study	Anna Kubicka	personalization, information management, e-commerce, 4C model. - (2016)	Studies the growing complexity of the business surroundings, growth requirements of knowledge, development of information technologies and competitiveness means the need for implementation of information management systems. The study focuses on possibilities of using personalized communication in information management by online stores in 4C model..
ARTICLE: Privacy concerns and online shopping behavior: Toward an integrated model	Nunno Fortes; Paulo Rita	Privacy issues; E-commerce; online shopping behavior. -(2016)	It was concerned with analyzing privacy over the Internet, as well as the impact it has on consumer intention to shop online. However, the authors, to develop and validate a model of online consumer behavior pursue the following objectives: (1) The identification of variables that mediate the relationship between privacy concerns and online purchase intention; (2) The recognition of dependency relationships that are established between privacy concerns and the mediating variables; (3) The recognition of dependency relationships that are established between the mediating variables; (4) The dependency relationships recognize that are established between the mediating variables and online purchase intention.

<p>ARTICLE: A framework for attribute selection in marketing using rough computing and formal concept analysis</p>	<p>Acharjya and Das</p>	<p>Information system; formal concept; formal context -(2017)</p>	<p>Conceptualizes marketing management into a business discipline that focuses on marketing techniques, management of a firm's marketing resources and activities. They clarify that, the fast globalization has forced firms to market their products beyond their home country. Therefore, it is highly challenging for managers to influence the level, timing, and composition of customer demand; the size of the business; business culture; and industry context. The authors' contribution of relevance is with the introduction of information and communication technology, where the buyer today is exposed to a veritable flood of information. These sources provide information about new products and services, improved versions of existing products, new uses of existing products, and the like. Therefore, attribute selection in marketing is today a challenging issue, and to this end, introduction of computers and information technology has brought a drastic change in the recent past.</p>
<p>ARTICLE: An Intelligent Web Image Digital Metadata Service Platform for Social Curation Trade Surroundings</p>	<p>Yong Hong and Joon Lee</p>	<p>(2015)</p>	<p>Where the authors portray that recently, the use of web digital image information is increasing with the rapid development of multimedia technology. Multimedia data is commonly used on the wired and wireless internet in various industrial areas, including the area of information technology. Thus, a number of research groups are exploring different approaches to provide and transform information on various customer devices, such as web browsers, I Pad and smartphones, which are tools that can be used in the evolution to e-commerce.</p>

RESEARCH: computer-based approach to analyze consumer demands in word-of-mouth marketing electronics	YI LIN	Electronic Word-of-Mouth; Knowledge management (eWOM) of consumers. Sentiment analysis - (2017)	Recorded in research documents consumer opinions are one of the most valuable assets that companies have, and thus questionnaires are often used to investigate consumer opinions. However, this approach requires a great deal of human labor and time, and, more importantly, cannot automatically discover consumers. However, many consumers will now share their evaluations of products or
			services via electronic Word-of-Mouth (eWOM). In summary, this study proposes a computer-based approach for analyzing consumer demands.

Prepared by: the author

However, the files analyzed in systematic review, presents gaps regarding the effects of the relationship management of the retail e-commerce, presenting parallel content in the area of computer science, knowledge management, business management, marketing techniques, where it presents propensity for tools of organizational nature. Only the article by Yong Hong and Joon Lee (2015), presents tools that can be used in the evolution to e-commerce. And research paper by Yi Lin (2015), which presents consumer opinions in the electronic word of mouth.

## 5 Final considerations

E-commerce is clear proof of the robustness of the technology needed in management, representing a necessary effect facilitated by Customer Relationship management (CRM), which is the basis for implementing relationship marketing, and identifying precise information in the evolution of the economic business.

Relationship marketing gets fundamental importance in CRM management for allowing managers to know better who their customer is and what they can do to make the customer satisfied, understanding what the customer really wants and transmitting commitment and loyalty.

The study allowed to analyze the CRM effects in the contribution to e-commerce: understanding the customer's trajectory in the store, recovering the order carts for future projection, offering products via e-mail to the customer, differentiated customer service, customized products, offering complementary products, following up the e-commerce strategic planning results, in order to analyze the numbers for performance evaluation and keep the company with the evolution to e-commerce.

CRM is more than a technological solution, for some authors it is considered a revolution in the marketing and sales model, because the customer started to be perceived by all departments of a company in the same way and marketing should no longer be focused only on the product, but on the needs, expectations, and desires of each consumer.

Finally, the CRM manager in a company should take advantage of the presence of the customer on the e-commerce platform, and know that when he seeks the organization to make a purchase, he comes with a perspective of building a relationship and, knowing the customer's needs, it is time to build a lasting and high value relationship, both for the customer and for the company. In a certain way, the manager will be investing in relationship marketing, generating skills and contributing to the evolution of his business, thus pointing a differential among competitors who offer similar products and services, focusing on the growth of e-commerce.

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