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Customer Relationship Management: A Review and Classification

Mosa Alokla[±]
Mais Alkhateeb^δ
Muneer Abbad^λ
Faten Jaber[¥]

Abstract

This research identifies the effective components that influence the evolution of the concepts of customer relationship management (CRM) research strategies and to present the academic literature review and classifications of CRM. It provides an overview of CRM research and identifies the gaps in the previous CRM literature review. To achieve this, our research is based on the period from 2006 to 2010. Data is collected from 618 research papers on CRM for the 2006-2010 period as sourced from top online databases. The data are then analysed by capturing the keywords of articles to determine the different perspectives to the study of CRM. The components of CRM are then classified. The emerging schema is then used to review the literature. The results show the current state of the art in that period (2006-2010) for CRM research, the comprehension of CRM components, their categories and techniques.

Keywords: Review; CRM; CRM components; CRM lifecycles.

Introduction

The world has witnessed digital revolutions that reshaped people and businesses practices. In early 2000, the Internet, computing and mobile technologies developed to boost database management systems such as enterprise resource planning (ERP), supply chain management (SCM), and customer relationship management (CRM). By 2007, the world has witnessed a tremendous change in technology, the introduction of social media through Facebook and the introduction of smartphones through Apple's iPhone, which made technology more immersive in people's lives. These technologies have paved the way to a massive increase in data, and a new term was coined big data.

Some scholars have focused on analysing the trends in CRM discipline between the period of 2000-2006 (e.g. Paulissen et al., 2007; Kevork et al., 2008; Wahlberg et al. 2009) and 2006 to the present time (e.g.

[±] Mosa Alokla, Community College of Qatar, Qatar. E-mail: Mosa.Okla@ccq.edu.qa.

^δ Mais Alkhateeb, Community College of Qatar, Qatar. E-mail: Mais.Alkhateeb@ccq.edu.qa.

^λ Muneer Abbad, Community College of Qatar, Qatar. E-mail: Muneer.Abbad@ccq.edu.qa.

[¥] Faten Jaber, Regent's University London, Faculty of Business and Management, United Kingdom. E-mail: jaberf@regents.ac.uk.



Soltani and Navimipour, 2016). However, limited attention was paid to examining the main theories and practices contributing to CRM between the period of 2006-2010. This period has witnessed the development of what we consider today as the leading digital platforms (e.g. Apple smart devices, Facebook, Twitter, etc.). Hence, it is the period where traditional marketing and digital tools combined. This study will help to shed lights on the major concepts of CRM that emerged as a result of the development of social media and mobile technologies. It will draw conclusions from these past approaches and interpret them in the current time.

The goal of this study is to review the literature of CRM systems. It does not seek to create or implement a new prototype CRM system, but to present the state of the research topic of CRM for the period from 2006-2010 by considering five separate components of CRM: analytical, operational, collaborative, communicative and electronic CRM as state of the art components (Hilbert et al., 2010; Hettich et al., 2001; Hippner et al., 2007). To provide a complete view of the topic, two main perspectives of CRM are presented which depend on two directions: research in information system and computer science (IS & CS), and research in economics and business science (EBS). To achieve the research goals, top journals and academic works are analysed. Moreover, sub-perspectives areas are studied according to the important role of their developments.

It is necessary to spend more time in reviewing the relevant literature. Moreover, there is a risk of neglecting valuable resources due to duplication or irrelevant evidence. To avoid and compensate the negative consequences of the increasing amount of literature, new instruments are needed such as "Literature Review, State of the Art ..." (Peter et al., 2005, p. 25). The growing volume of literature means new questions for research methods in CRM have arisen. For example, researchers might like to know if all research methods of a similar topic have similar results or whether there are significant differences or even contradictions. Also, can the recent findings of research be generalised or not? (Harris et al., 1994; Harris et al., 1988; Fink, 2005; Mulrow, 1994; Woodward, 1977). Ultimately, it is also interesting to search unsolved problems and identify research gaps that offer new areas of research.

The principal problem in CRM research is that different viewpoints exist making it difficult to determine common perceptions. There is an enormous volume of scientific papers (more than 2000), PhD theses, master theses, articles and books and this number continues to increase (Ngai, 2005). It would, therefore, be incredibly instructive, to review the research to identify trends and topics for further research.



Moreover, it is insightful to bring together previously disparate streams of work to help shed light on a phenomenon and to suggest significant implications for practice.

CRM Background and Evolution

CRM is often referred to as one-to-one marketing (Peppers et al., 1999). The CRM system has been developed, especially after innovation in network infrastructure, client/server computing, and business intelligence applications. This development leads companies to depend on CRM systems for providing more technological services with high performance for their customers. CRM is not a new concept, but it is based on the latest development in enterprise software technology. Also, companies use this concept to win the trust and the loyalty of their customers. This helps facilitate profitability in business. To achieve this, the CRM system needs to link front and back office applications (Gefen and Riding, 2002) to maintain relationships and build customer loyalty. Also, CRM utilises ERP systems to achieve its goals (Solmans and Berger, 2005).

Developments in ICT and the world wide web system (WWW) means that CRM systems could take full advantage of these technologies with their ability to collect and analyse the data on customer patterns and interpret customer behaviour. Furthermore, companies can create a 360-degree view of customers to learn from past interactions to optimise future ones (Eckerson and Watson, 2000). This technology has brought a new meaning to build customer relationships and offers the new concept of "e-customers". The impact of ICT has been so great in recent times that it has large effects on the global marketing. Therefore, all organisations have restructured the marketplace. It is well-known that retaining customers is more profitable than building new relationships (Reichheld, 1996; Reichheld, 1996). Also, the developments in CRM concepts play an important role in improving all software which is used in many companies such as in financial, tourism, and mobile and logistic companies, among others. Moreover, CRM techniques focus on the customers and organised requirements of the organisation around the customer rather than the product. According to the above discussion, "Managing a successful CRM implementation requires an integrated and balanced approach to technology, process, and people" (Chen and Popovich, 2003, p 680).

CRM and Literature Review

A review should examine relevant papers and present findings of a research area from different perspectives of a specific problem. The historical roots of the review research go far back (Cooper et al., 1994). Reviews based on a set of primary research involve one or more

similar research question(s). The review itself does not present new results for the primary research question but aims to describe the results of selected primary research in order to summarise, evaluate, and clarify them as well as to inform the reader of the state of current research (Light et al., 1984). Also, a review of relevant literature in any academic research project is a fundamental traditional method, because it provides an effective basic principle for establishing and advancing knowledge, supports the theory, describes the development and discovers trends of research areas, as well as helps to refer to the areas that need more attention and research. A review article should not only summarise the old articles; it has to provide a new overview, highlight the gaps in research, develop new theories and create new directions in research:

"A review should identify critical knowledge gaps and thus motivate researchers to close this breach. That is, writing a review not only requires an examination of past research, but means making a chart for future research. For example, the MISQ review articles by some researcher pinpoint questions for future inquiry" (Webster et al., 2002).

According to Apa (2001) who provided the developments in the scope of the review of the research workers, literature review articles are critical evaluations of material that has already been published. The contents of a review article can be summarised as the following:

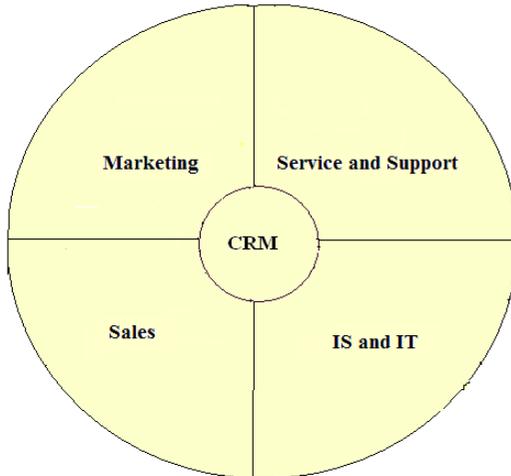
- It determines and describes the problem and reviews all previous similar research and publications to inform the researcher about the current state of research.
- It determines and classifies relationships, contradictions, gaps and inconsistencies in the relevant literature.
- It concludes and summarises the results to use for solving current problems as well as to facilitate futures works.

The enormous number of publications in CRM provides a fertile field for researchers to describe the image of CRM research by identifying trends and disciplines. Attempts have been made to characterise a clear image of CRM research fields. An earlier review of CRM research was proposed by Romano and Fjermestad (2003). They studied the status and maturity of electronic commerce in customer relationship management (ECCRM) for the articles published from 1984-2002. Also, the first academic literature review of CRM research was introduced by Ngai (2005) and covers the relevant publications (papers, academic researchers) of CRM from 1992-2002. Approximately 205



published articles have been identified and classified depending on the lifecycle of CRM (Figure 1).

Figure 1: CRM Lifecycle of Ngai



Ngai's sample study classifies CRM research into four main categories: information systems and information technology, marketing, sales, service and support. Most of the previous publications were centralised on information systems (IS) and information technology (IT). Therefore, it is clear that IS and IT play a great role in developing CRM. However, some public-

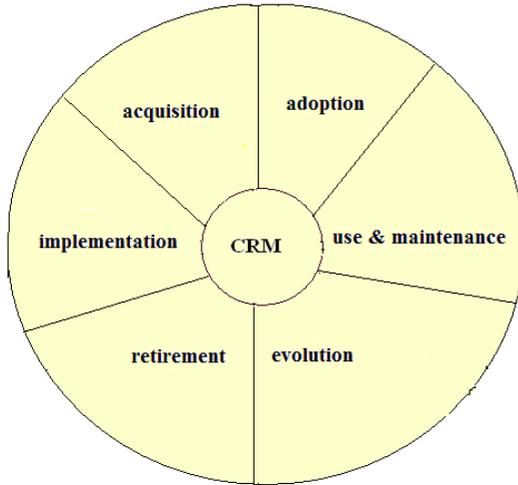
ations take different directions, such as management and customer privacy.

The volume of published research on CRM until 2005 makes it necessary to review all publications for this period. Paulissen et al. (2007) selected CRM papers concerned with IS and marketing in top journals and international conferences. Approximately 510 articles have been identified and classified depending on a new lifecycle of CRM (Figure 2).

Paulissen's sample study focuses on CRM research from 2000 to 2005 and classifies a new scheme of CRM into the following main categories: adoption, acquisition, implementation, usage and maintenance, evolution and retirement. It is worthy to mention that these phases were already used to describe the image of enterprise resource planning (ERP) system (Esteves et al., 1999 and 2001). The drawback of Paulissen's research is that it focuses only on the journals and conferences for IS and marketing. Other disciplines such as management, technology, organisational behaviour and customer behaviour have been excluded.

Wahlberg et al. (2009) cover in their academic literature review all relevant publications of CRM for the 1998-2006 period. They identified 468 articles and classified them depending on the lifecycle of CRM as was the case in Gefen and Ridings (2002), which are strategic, analytical, operational and collaborative CRM.

Figure 2: The Lifecycle of CRM According to Paulissen



Their research was applied to the following top journals and academic online databases: Emerald, Science Direct and IEEE. Wahlberg et al. (2009) found that the publications of CRM have been growing, but this decreased from 2004 to 2006. Moreover, the topics of CRM research which have centred on strategic and analytical CRM.

According to their study, there is a need for more research on operational and collaborative CRM.

Kevork et al. (2008) review the literature of CRM by analysing the keywords of CRM publications for the 2000-2006 period. The result was approximately 396 articles in 135 journals, which impacted nine CRM related research areas mutually exclusive of 226 sub-categories. The keywords related to the different research areas are CRM overall, e-commerce, marketing, IS, knowledge management, CRM software, management, CRM attribute and CRM culture environment ethics. The study concludes that the issues of culture, environment, ethics as sub-subjects of CRM appear explicitly as important factors affecting the dimensions of CRM implementation during the last few years. Other sub-subject areas of CRM research attracting interest are CRM attributes and variables, particularly those related to customer attitudes and consumer behaviour (Kevork et al., 2009).

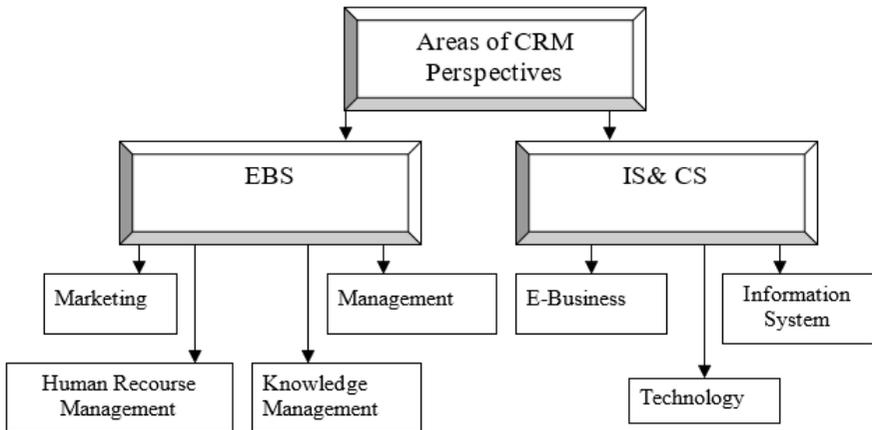
The Gap in the Literature and The New Perspectives

To maintain continuity in the literature review of CRM, this study covers the gap in the period between 2006 and 2010. It then proceeds to compare the key themes of this period with the current literature between 2010 and 2018. To offer strong evidence for classifying CRM research, the advantages and limitations of the literature should be considered. For example, the limitation of the research of Paulissen is that it focused only on the journals of IS and marketing and their conferences. The limitation of Wahlberg's research is that it only considered the IS and social science databases. It is important to

extend this discipline to other disciplines in including economic business science.

As the topics of CRM research are difficult to determine, the relevant topics through journals and international conferences in IC and computer sciences or economic business sciences have to be specified (Romano and Fjermestad, 2003). Perspectives of CRM are determined in the following sub-paragraph according to these two important fields of CRM research (Figure 3).

Figure 3: Perspectives of CRM



Information Systems (IS) and Computer Science (CS)

Through the observation of CRM publications, IS and its applications appear to be an important tool and major perspective of CRM. In IS, CRM is the underlying infrastructure for understanding and interacting with customers efficiently (Goodhue et al., 2002; Pan and Lee, 2003; Rigby et al., 2002). The CRM perspectives in IS and CS research are:

Information System (IS): IS plays a key role in the development of CRM (Kincaid, 2003; Ling and Yen, 2001). The emphasis on IS discipline highlights on the importance of technological aspects of CRM, a combination of software, hardware, processes and all applications aligned with customer strategy are explained.

Technology: The main categories that describe this perspective are the modules of CRM such as sales force automation, marketing automation, customer service and support. Moreover, CRM as software is provided by many vendors the business market.

E-Business: According to this perspective, CRM is an application of e-business and digital activities as well as customer collection data.

The Business and Economic Science (EBS)

CRM is an “enterprise approach to understanding and influencing customer behaviour through meaningful communications in order to improve customer acquisition, customer retention, customer loyalty, and customer profitability” (Ling and Yen, 2001; Swift, 2001; Ngai, 2005). From this viewpoint, it is important to describe CRM by using the economic and business perspectives with their categories as follows:

Management: It is the function most often associated with CRM (Kincaid, 2003). CRM is founded on marketing (Russell-Jones, 2002) and relationship marketing (Ryals and Knox, 2001). Here, CRM systems are described as a business strategy more than a technology. The aims of this perspective can be summarised in managing the customer lifecycle, increasing the loyalty of the customer, profitability and retention which are the objectives of the CRM system.

Marketing: Most objectives which can be achieved through this perspective can be demonstrated in the following points:

- Emphasis on long-term relationships and one-to-one interactions through communication channels.
- Strong connection between CRM and service.
- Data collected which is important for promotional strategies.
- All forms of services marketing.
- Some form of customer services.
- Definition of CRM as an application of the CRM concept utilising ICT in both traditional and electronic environments.

Knowledge Management (KM): In knowledge management, CRM means learning the customers better to achieve their objectives.

Human Resource Management (HRM): This perspective proposes the adoption of a customer-oriented culture by both top management and employees within an organisation.

Table 1 shows the development of CRM perspectives based on the previous analysis of literature, limitations and new disciplines that appears in the CRM field. It compares its development with the different perspectives for different periods. This study adopts an approach entirely different from all previous studies in the field. The distribution of our perspectives according to components of the updated lifecycle are studied, while all previous studies have determined only the subject-research areas (see Table 1).



Table 1: CRM Perspectives of Previous Studies

Romano and Fjermestad 1984 - 2002	Ngai 1992 - 2002	Kevork et al. 2000 – 2006	Perspective 2006 -2010
Business Models	CRM general	Overall CRM	IS
Markets	Marketing	Relationship Marketing	Technology
Knowledge Management	Sales	Knowledge Management Supply Chain Management	Knowledge Management
Technology	Services & Support	IS & CRM Software	e-business
Human Factors	IT and IS	e-commerce CRM attribute/Customer	Management Marketing
		CRM Culture- environment-ethics	Human Resource Management
			Others

Research Methodology “Review”

Kothari (1985) points out that “When we talk about research methodology, we not only talk about research methods, but also consider the logic behind the methods we use in the content of this research and explain why we are using a particular method or techniques, so that research results are capable of being evaluated either by the researcher himself or by other”. From this viewpoint, and in order to provide a complete image about the CRM, a literature review has to be conducted.

The review of research has several methodological proposals in reviewing articles. Although these proposals differ in detail, they can typically be identified commonalities. The present study is based on well-established review methods (Webster and Watson, 2002). It searches for literature in the CRM fields, but with respect to certain conditions which decrease the amount of data results, avoids duplication and leads the search towards a specific type of literature according to the rules of the research. The criteria of the literature selection comprises three main steps (Webster and Watson, 2002):

- Selecting the literature sources and bibliography.
- Limiting the timeframe of the literature.
- Limiting the selection of literature that will be reviewed.

Bibliography of Publications

The first step of the literature selection processes provides a list of possible and familiar online literature sources with an enormous number of articles and reduces the cost and time of the search. Therefore, the most-used bibliographies are determined using online

databases. However, there are many bibliographies and databases. Some major bibliographies have to be identified and selected according to their direction and the nature of research. As the topics of CRM research are difficult to determine, the disciplines of this topic in the fields of IS and CS, as well as economic and business science, have to be specified (Hippner and Wilde, 2002; Romano and Fjermestad, 2003). This research focuses on well-known databases. Moreover, according to the databases ranking of CRM publications offered by Ngai (2005) and Wahlberg et al. (2009), the following online journal databases are chosen to present a bibliography of the academic literature on CRM in IS and CS (Wahlberg et al., 2009): IEEE and the Guide to Computing Literature Portal SCM.

In the field of economic and business science, the following online journal databases were chosen to present a bibliography of the academic literature on CRM: Business Source Complete (EBSCO), Emerald Full Text, Ingenta Journals, Regional Business News and Science Direct.

These online databases are chosen because they have been classified by the Library of the Technical University Bergakademie Freiberg as one of the best and top online databases with regard to IS & CS and BES. In addition, these online databases have been adopted by many similar previous case studies in CRM (Wahlberg et al., 2009). Also, the top electronic journals are included in these online databases.

Limiting the Timeframe of the Literature

The next step of the literature selection process is to define an appropriate timeframe to decrease the amount of data and to provide a new non-studied timeframe. The first academic literature review by Ngai (2005) was for the 1992 - 2002 period. Also, all relevant publications of CRM system for the 1998 - 2006 period by Wahlberg et al. (2009) are classified and reviewed. To update the literature review, literature published in the 2000 - 2005 period by Paulissen et al. (2007) was surveyed. Focusing on the literature search for the 2006 - 2010 period is an appropriate timeframe for the literature.

Limiting the Selection of Literature

Topic-related papers have to be chosen from the selected literature sources that appeared in the defined timeframe. This selection considers the following points:

- Scientific articles in journals and international conferences are considered. The online journal databases and international conferences websites ranking are included in the review. Thus, an



initial list of well-studied and well-recommended articles will be generated.

- Books were deliberately omitted from the selection process on the assumption that their authors had already published their results in journals. Furthermore, the quality of the contributions is not always apparent, since not all of them were subjected to a formalised review process.
- Master theses, doctoral dissertations, textbooks and unpublished work are excluded because most doctoral dissertations are supposed to be published through one or more articles related to their topics. Considering them as literature could cause a duplication of the articles. In addition, in order to be reliable, types of articles which are based on a set of rules and international standards are considered in this search to lend credibility to this research.
- We take into account that there is no duplication of older papers that first appeared in conference proceedings and were later published in journals. Moreover, there is no duplication of papers belonging to two different databases.

Data Collection

In the beginning, the publications and scientific research in the field of CRM have to be chosen. However, through this mechanism, it is important to consider the criteria. The main keyword is Customer Relationship Management (CRM) to identify publications, scientific papers and articles. The literature search depends on the search terms "Customer Relationship Management" and "CRM", which have to be mentioned in the title, as a keyword, or in the abstract. Several well-known databases are chosen to support the validity of the search. The results of this search produced approximately 618 articles from 266 journals and international conferences.

Literature Evaluation

To complete the selection process for the literature review, it is important to narrow the review to a specific area of interest. The resulting list of papers is manually reviewed, and only the relevant papers are selected. A systematic search should ensure that a relatively complete number of relevant articles are accumulated:

"Studies of the IS literature have consistently been limited by drawing from a small sample of journals. Even though the [ones] investigated here may have reputations as the top journals that does not excuse an author from investigating all published articles in a field. I just can't see the justification for searching by journal instead of searching by topic across all relevant journals" (Webster and Watson, 2002).

Hence, the literature evaluation determines the relevant publications. Determining the relevant article depends on the analysis of the data and identifying the keywords reported in the articles together with their frequency. Through this, the papers concerning IS and CS as well as BES can be determined. All publications outside of these areas are considered irrelevant. This mechanism of choosing the relevant articles is known as the literature approach.

Data Analysis

Data analysis is used to classify the literature and begin the process of evaluation (Webster and Watson, 2002). It is also used to review the framework. With this step, the publications are classified according to the keywords reported in the articles together with their frequency to narrow the scope of the search.

Table 2: Number of CRM Publications According to the Perspectives of CRM

CRM Perspectives	2006	2007	2008	2009	2010	SUM	Percent %
IS	21	35	43	45	3	147	29.16
Technology	4	18	27	21	1	71	14.08
E-Business	4	10	7	8	1	30	5.95
IS and CS	29	63	77	74	5	248	49.21
Marketing	8	11	24	19	2	64	12.70
Management	12	42	56	55	6	171	33.93
Knowledge Management	2	4	6	5	1	18	3.57
HRM	0	0	1	2	0	3	0.60
BES	22	57	87	81	9	256	50.79
Sum	51	120	164	155	14	504	
Percent %	10.12	23.81	32.54	30.75	2.77		
Others	14	28	48	20	4	114	
Total	65	148	212	175	18	618	

Through the evaluation process of the search results, the keywords in articles are classified into seven perspectives based on their ranking by CRM researchers. By checking the frequently-used keywords of the publications, we identify their directions such as marketing, management, knowledge management and human resource management. Table 2 summarises the number of CRM publications according to these perspectives of CRM. Those that do not belong to these perspectives are called "Others".

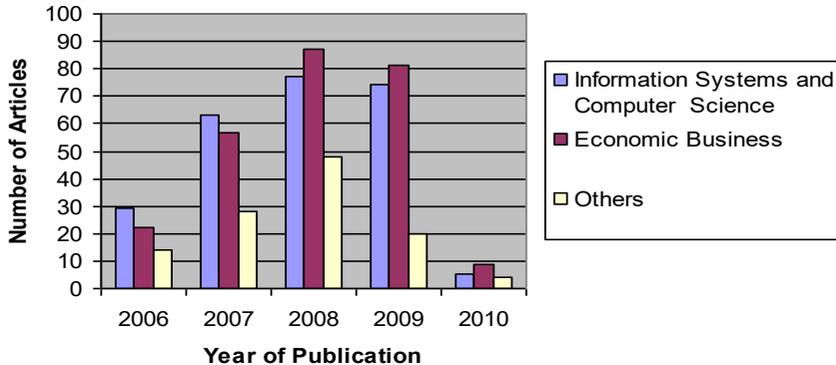
After reviewing the selected publications, their relevance is analysed. Of the 618 articles identified in the first step of the selection process, 114 are considered irrelevant. Consequently, 504 articles remain, thus



totalling 504 relevant publications for in-depth analysis. Figure 4 illustrates the complete selection process.

For the in-depth analysis, 248 publications as IS and CS, as well as 256 articles as BES, are classified.

Figure 4: CRM Publications by Year According to their Perspectives



Classification and Sub-Classification Framework

After the relevant publications of CRM are collected, these publications have to be analysed and categorised using the classification system. This classification must be summarised by words or phrases (Bogdan and Bilken, 1982). To provide a complete image of CRM research, all publications will be analysed and categorised according to CRM components. According to Gefen and Riding (2002), Hilbert (2010), Schubert (2009) and Hippner (2006), the CRM research could be distributed in four different components: Front-office (two components: communicative and operational), Back-office (analytical), and conjointly (collaborative) (See Figure 5).

A combination of CRM and e-commerce produces e-CRM, which may be referred to as e-services (Rust et al., 2001; Rust and Kannan, 2002). The 504 publications are reviewed according to the five components of CRM: analytical CRM (a-CRM), operational CRM (o-CRM), communicative CRM (c-CRM), collaborative CRM (co-CRM) and e-CRM. The sub-classification scheme will be formed according to the categories of these components.

By comparing previous literature reviews related to this work, the following points are considered:

- The current study considers the state-of-the-art components of CRM, depending on recent published academic articles in that period (Hippner et al., 2007; Hilbert, 2010).
- This classification is left to auto-determined metrics, uniquely, directly and at any desired level of detail.

- By contrast, not only are the components of CRM considered, but also the distribution of their functions and tools are well-studied.

Figure 5: The Components of CRM (Hilbert, 2010; Schubert, 2009; Hippner, 2006)

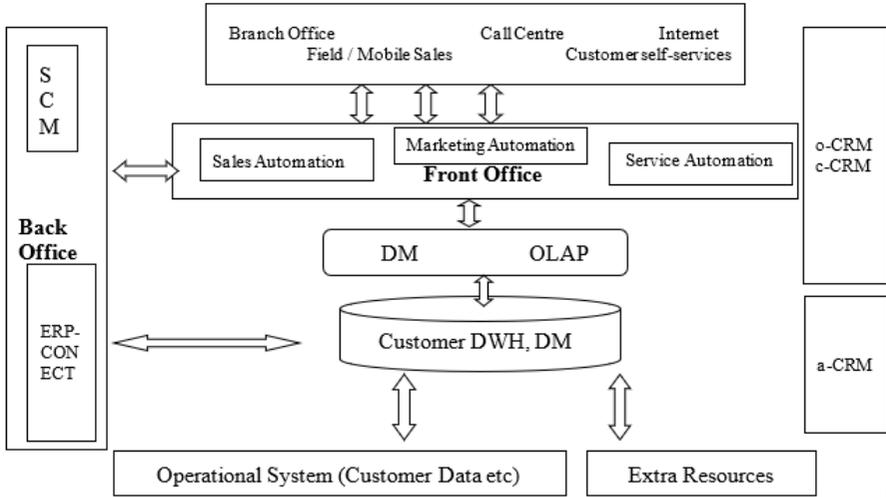


Figure 6. The life cycle of CRM of Wahlberg et al. (2009)

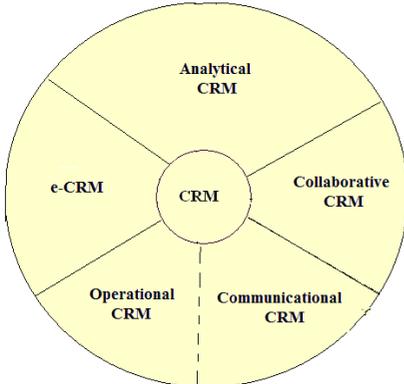


Figure 7. The new life cycle of CRM

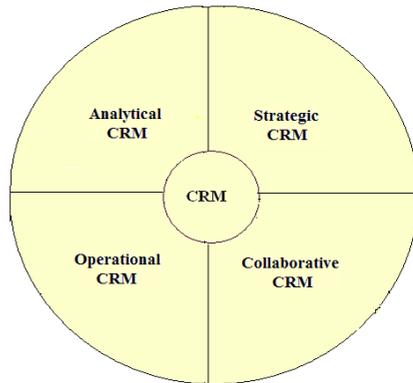


Figure 6 and Figure 7 compare the classifications of the lifecycle of CRM by Wahlberg et al. with the lifecycle of CRM according to this study (Gefen and Riding, 2002; Hilbert, 2010; Schubert, 2009; Hippner, 2006). The results show that this study completely differs from similar case studies.



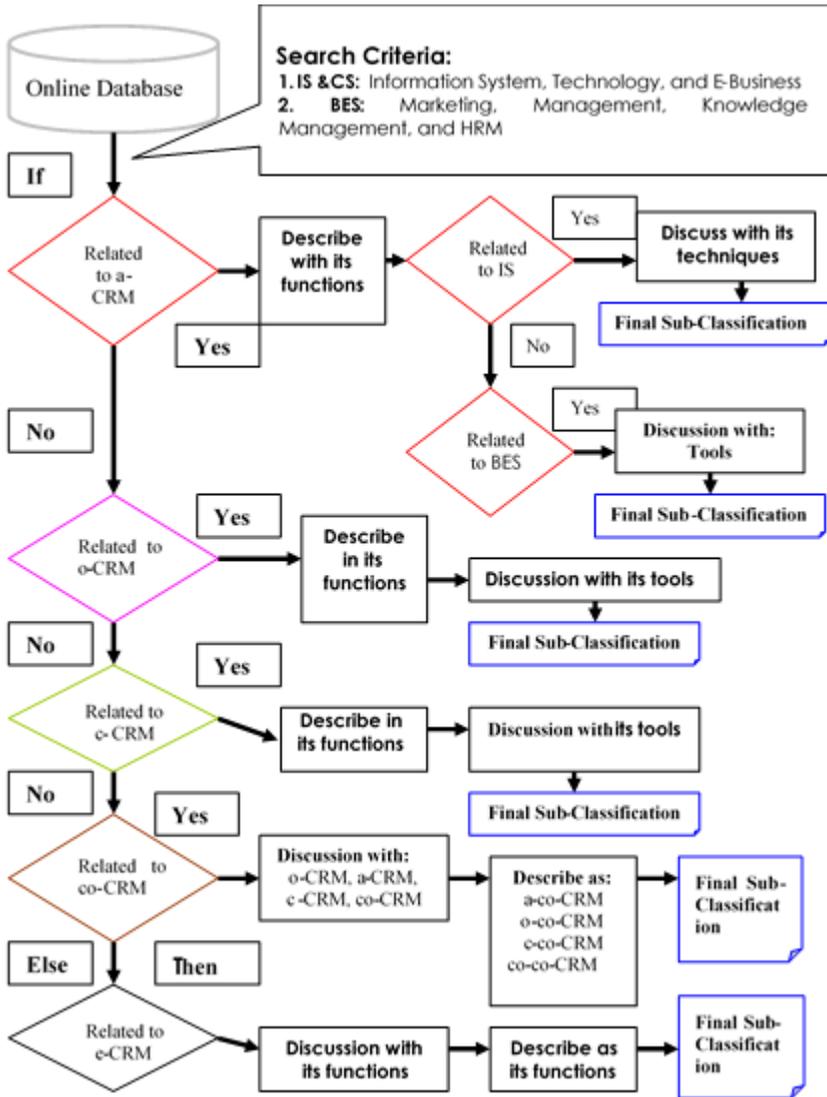
Classification Process

The classification process is determined depending on the functions of each component of CRM. The classification in this step is left to auto-determined metrics. After that, every article is classified into any component of CRM. Now it is possible to discuss the research of each CRM components based on the direction of the articles, focus and keywords. Hence, the final results are proposed as final sub-classification. This selection criterion and evaluation framework are explained in Figure 8, and all functions and tools of CRM components are summarised in Table 3.

Table 3: Classification Framework

Components	Functions	Tools
a-CRM	Dimensions in BI 1. Customer identification 2. Customer attraction 3. Customer retentions 4. Customer development	IS Tools DM, DWH, OLAP, other technical <hr/> BES Tools Empirical Study, Reviewing Study, Primary Research
o-CRM	1. Sales Automation 2. Market Automation 3. Service Automation 4. Other o-CRM function	CTP, CIC, SCM, Multi-Channel Management, Implementation or as other Process
c-CRM	1. Multi-Channel Management 2. CTP 3. Call Centre 4. Other Functions	1. Sales Automation 2. Market Automation 3. Service Automation 4. Others technical
co-CRM	Co-a-CRM, co-o-CRM, co-c-CRM, Co-co-CRM	
e-CRM	e-business, e-commerce, e-CRM, e-government, e-marketing	

Figure 8: The Phases of Classification Processes



Classification and Sub-Classification of the Publications

Here the distribution of the articles according to the components of CRM is explained. Tables 4 and 5 show the result of this classification model.

Table 4 is described according to the cross-matching of the perspectives of CRM in IS & CS (IS, e-Business, Technology) with the

components of CRM. There is a total of 275 articles of the 504 relevant articles (54.56%) that have discussed the cross-matching of CRM components with the perspectives of IS & CS. From 275, 163 articles are for IS (59.27%), 42 articles e-business (15.27%), and 70 articles in technology (25.45%). In addition, in the distribution of CRM components, 148 articles (53.19%) discussed a-CRM during the period, 54 o-CRM (19.63%), 32 c-CRM (11.63%), 35 are e-CRM (12.72%), and the remaining articles (12) are classified as co-CRM with 2.18%. A-CRM (53.19%) is the most common component to support IS & CS. When ordered by their number of articles and percentage, o-CRM is the most dominant one followed by e-CRM, c-CRM and co-CRM.

Table 4: Number of Articles of Components of CRM and its perspectives of IS & CS

Components	a-CRM	o-CRM	co-CRM	c-CRM	e-CRM	Total	Percent %
Perspectives							
IS	115	23	3	7	15	163	59.27
e-Business	13	9	1	3	16	42	15.27
Technology	20	22	2	22	4	70	25.45
Total of IS & CS	148	54	6	32	35	275	
Percent %	53.19	19.63	2.18	11.63	12.72		

Table 5: Number of Articles of Components of CRM and its perspectives of BES

Components	a-CRM	o-CRM	Co-CRM	c-CRM	e-CRM	Total	Percent %
Perspectives							
Marketing	37	9	0	2	4	52	22.71
Management	106	33	4	6	8	157	68.56
Knowledge Management	13	1	2	1	1	18	7.86
HRM	1	0	0	0	1	2	0.87
Total of BES	157	43	6	9	14	229	
Percent %	68.55	18.78	2.62	3.93	6.11		

The remainder of the articles (229 out of 504 - 45.44 %) is described based on the intersection between the components of CRM economic business science (Management, Marketing, Knowledge Management, Human Resource Management) (Table 5). Of the CRM components, a-CRM (157 out of 229 articles with 68.55%) is the most common component to support economic business science. There are 43 articles on o-CRM with 18.78%, 14 articles on e-CRM with 6.11%, 9 articles on c-CRM with 3.93% and 6 with 2.62% as co-CRM. A-CRM is ranked as the first (68.55%) and second is o-CRM (18.78%) in terms of

the components of CRM concerning economic business science. On the other hand, 68.56% (157 articles) are related to the management perspective. However, some articles covered other perspectives with 22.27% (52 articles) in marketing, 7.86% (18 articles) for knowledge management, and 0.87% (1 article) on human resource management.

Distribution of Articles by Journal Titles

The titles of journals and conferences are classified based on publishing five or more articles on CRM. It is arranged in alphabetical order in Table 6. This class of journals accounted for 37.86% of the overall percentage of publications in the sample studied. This means that these journals played a great role in the publication of CRM for the 2006 - 2010 period. Major contributions are likely to be in leading journals (Ngai, 2005). Furthermore, publications related to the journals and conferences which published five or more articles in the area of CRM increased significantly from 2006 to 2009.

Table 6: Number of CRM Publications According to some Journals

The name of Journal	2006	2007	2008	2009	2010	Sum	Per cent %
Expert Systems with Applications	1	2	13	11	2	29	12.39
Industrial Marketing Management	3	7	9	3	1	23	9.83
International J. of Electronic CRM	2	-	-	17	-	19	8.12
Decision Support Systems	4	6	3	1	2	16	6.84
The Jo. Data Mark & Cus Str. Management	9	-	-	4	-	13	5.56
Fusion for Profit	-	-	-	12	-	12	5.13
Journal of Financial Services Marketing	5	4	1	2	-	12	5.13
Marketing Intelligence & Planning	2	-	2	7	-	11	4.70
European Journal of Marketing	2	-	5	3	-	10	4.27
Expert Sys. with Applications Int. Journal	-	2	3	4	1	10	4.27



Table 6: *Continued.*

Journal of Business Research	1	1	4	2	-	8	3.42
European Journal of Operational Research	1	4	-	1	-	6	2.56
Information and Organisation	2	2	2	-	-	6	2.56
Int. J. Production Economics	2	1	3	-	-	6	2.56
International Jo. of Electronic Finance	1	-	1	2	2	6	2.56
International J. Information Management	-	3	1	1	1	6	2.56
Technovation	-	-	4	2	-	6	2.56
Business Journal (Central New York)	-	2	3	-	-	5	2.14
Computers & Industrial Engineering	-	-	2	3	-	5	2.14
Electronic Commerce Research Applications	-	4	1	-	-	5	2.14
Intern. J. of Research in Marketing	-	1	1	3	-	5	2.14
International J. of Technology Marketing	2	-	-	3	-	5	2.14
J. of Retailing and Consumer Services	1	1	2	1	-	5	2.14
Strategic Direction	3	-	-	2	-	5	2.14
Total	41	40	60	84	9	234	
Per cent %	17.52	17.09	25.64	35.90	3.85	37.86	

Distribution of Articles by Year of Publication

Table 7 shows the distribution of articles by year of publication according to the components of CRM. Publications related to components of CRM have increased significantly from 2006 to 2008.

As shown in Table 7, the analytical CRM (a-CRM) is the most popular CRM component (305 out of 504 articles, 60.51%). It plays a good role in CRM research. O-CRM (97 out of 504 articles, 19.25%) and e-CRM (49 out of 504 articles, 9.72%) are the second and third, respectively. The remaining articles (53 articles) are distributed in both c-CRM (41 out of 504 articles, 8.14%) and co-CRM (12 out of 504 articles, 2.38%).

Table 7: Number of Articles of the Components of CRM

CRM Components	2006	2007	2008	2009	2010	Total	Per cent by Subject
Analytical CRM	22	76	105	93	9	305	60.51
Operational CRM	13	26	28	27	3	97	19.25
Collaborative CRM	1	2	6	3	0	12	2.38
Communicative CRM	7	11	11	12	0	41	8.14
e-CRM	9	11	15	14	0	49	9.72
Total	52	126	165	149	12	504	
Per cent %	10.32	25.0	32.73	29.65	2.38		

Conclusion

This study offers an in-depth understanding of the literature review of CRM. This was firstly carried out by summarising the literature related to CRM, as well as presenting a clear picture of the factors that play an important role in improving CRM research topics. This article also shows that CRM is a complex concept to be comprehensively researched and efficiently classified by simple procedures and criteria because there is no numerical information (metrics) about all the CRM related research categories and sub-categories.

This study concludes that the four main components of CRM: analytical, operational, collaborative and communicative CRM are key issues raised and discussed by researchers in the period between 2006-2010. These components remain important although analytical CRM is receiving most of the attention in 2019 (e.g. Khodakarami and Chan, 2014; Zaby and Wilde, 2018). This focus is mainly driven by the growing amount of data and the challenges of analysing unstructured data collected from a wide range of varieties. This study has shown that research on CRM excessively focuses on the analytical side at the expense of focusing on developing a strategic focus for CRM. Strategy was a key pillar of CRM research, but it did not receive the same amount of attention due to digital disruptions.

The study confirms that information system, technology, e-business, management, knowledge management, human resources management and marketing were the key disciplines of CRM and among the most important characteristics of its publications. In addition, useful numerical results have been obtained, confirming the interest of the research community in CRM publications and the importance ascribed by researchers to this rich subject matter, which encompasses CRM research in both its theoretical and practical aspects.



Today, businesses are overwhelmed by the number of tools they need to integrate and embed in their CRM systems (Bang, Jaber, Simkin, 2019). The fundamental findings of this paper stress that businesses need to harmonise their efforts by going back to the basic goal of CRM, which is managing customer relationships. Analytical models for managing customer relationships from a marketing perspective is an under-researched area that deserves further attention from researchers.

This research has established the theoretical and practical opportunities (call for new research) that several functions and tools of CRM components offer as interesting research topics. The research methodology is determined based on the literature for information systems and management sciences. It could be potentially used for the similar state of the art research. Furthermore, since this study is constrained by factors of sample size and period examined, the generalisation of the findings should be approached with caution and emerging trends could lead to different results if the study is replicated for different periods.

This study has limitations. Firstly, it surveys articles based on a keyword search of "customer relationship management" and "disciplines of CRM regarding IS & CS and BES". Articles which mentioned the application of CRM disciplines without a keyword index could not be extracted. Secondly, this study limits the search for articles to seven online databases. There might be other academic journals that may be able to provide a more comprehensive picture of the articles related to the application of CRM. Finally, non-English publications were excluded. We believe research regarding the disciplines of CRM regarding IS & CS and BES as well as the components of CRM have also been discussed and published in other languages.

Potential future works can be summarised in the following important points:

- Many businesses have needlessly abandoned some marketing strategies that are still valuable. Technology should be used to serve marketing strategy, and further research should pay attention to this, especially in the big data age we are witnessing. Further attention should also be paid to identifying other classification frameworks of CRM literature according to CRM application, areas of implementation such as small enterprises, large enterprises, according to benefits of CRM, or mistakes in the application of the CRM System.
- Further research should consider including other databases and periods.

- Other areas in CRM should be researched such as CRM dimensions or CRM techniques.

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