The impact of CRM on QoE : An exploratory study from mobile phone industry in Morocco

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ABSTRACT: Today's mobile phone sector is marked by intensified competition and strong market penetration. In this environment, the carriers offer their customers a wide variety of services that are quite similar from one operator to another. These customers are always searching for a quality of experience (QoE). On one hand, operators interact with their customers through CRM practices inspired by their marketing strategies and rolled out through their procedures and technological support. On the other hand, the customers expect an extremely high quality of service (QoS) and subjectively perceive the utility and usability (Qp) of these mobile services. This paradox led us to study the impact of CRM on the customer experience (QoE) in the mobile phone industry, in this study with data from Morocco. Empirical data confirms existing theory, CRM determinants for QoE include quality of service, quality of interaction with customer, claims management and customer knowledge. However, we also found that practitioners are aware that organizations should look beyond the relationship to manage the customer experience. To this end we developed a model based on the first four CRM determinants and the findings in this study.

KEYWORDS: CRM, QoE, QoS, Qp, Mobile services, Business Intelligence, ERP

1. Introduction

The field of Customer Relation Management (CRM) is linked to that of Business Intelligence (BI) in that CRM systems rely on ever greater sets of data and datamining capabilities.

Interest in CRM has begun to grow in the 1990's (Xu and al., 2002). Within the sector of information technology management research, CRM has become its own niche thanks to its relative newness and growth explosion (Lambert, 2010). According to Nguyen (2013), Dyché (2001), Greenberg (2004), Osarenkhoe and Bennani (2007), CRM allows companies to build a lasting relationship with their customers whilst constantly keeping in touch with them. According to Ejaz and al. (2013), CRM is considered as one of the best approaches to satisfy and retain customers. The results of their studies have shown that CRM has a positive impact on customer satisfaction and on customer experience which in turn directly impact customer loyalty. Our research goes in the same direction as that of Ejaz and al. (2013), but with a different vision.

Our objective is to explore the determinants of CRM and those of the quality of the customer experience in order to study their causal relationship. The customer relationship is a subject of great interest, especially in the domain of service activities/interactions due to the importance of the "supplier-customer" interface to achieve a high quality of the realization of service (QoS) (Damperat, 2005). In addition, services have now become a priority; they are by nature "moments of truth", which makes them more sensitive to good perceived quality (QP) in the exchange relationship (Giordano, 2006). Furthermore, the quality of experience (QoE) is a subjective measure of the adequacy of a service which the customer was expecting. In the literature, we found that there is little empirical research on the study and the measurement of the impact of CRM on QoE (research gap). It is important to understand the cause and effect relationship between CRM practices and (QoE) in order to establish a conceptual framework.

We begin by drawing from the literature of those two concepts, theirs definitions, theoretical foundations, models and functions. Secondly, we present the research methodology and the results of the exploratory qualitative study of thirteen CRM practitioners. In conclusion, we propose a preliminary conceptual model that links CRM to QoE.

2. Literature review

The customer and the service provider are found in the service relationship in two separate logics (Averous, 2004). Everyone perceives their service delivery according to their perspective and its repository. The customer repository is one of the affects, the subjectivity and the holistic cognition while as the display domain of the service provider can be defined as the technicality, occupation, objectivity and accountability (Averous, 2004). The interaction between the two perspectives is not obvious and requires efforts in terms of listening, proximity and anticipation. From this come the sensitivity and complexity of the CRM field of study and QoE for both service providers and customers respectively.

As CRM advances, so does its multidimensional character. We therefore think that to go through the CRM practices and determinants, is worthwhile by studying the link to QoE. The mobile phone industry is a major area for CRM practices. The question is how does CRM impact QoE?

2.1. CRM

CRM is a strategic concept which draws its basis from economic and social exchange theories and relationship marketing (Damperat, 2005). The supporters of transactional exchange paradigm as Coase (1937) and Williamson (1979) study the customer-supplier relationship in its absolute transactional sense. The paradigm of social exchange supported primarily by Hakansson (1982), raises the importance of the social relationship that promotes greater transactional exchange. Other authors such as Marion (2001), Parvatiyar and Sheth (2001), Arndt (1979) bring the notion of relational exchange that takes into account both transactional and social exchange with a concept of relationship sustainability over à long period of time. Since 2000, supporters of the new technology approach as Plakoyiannaki and Tzokas (2002), Grabner and Moedritsher (2002), Chang and Young (2007) and Coovi (2010) defend the role of technology in CRM.

CRM can be defined as a business strategy oriented towards the customer (Park and Kim, 2003). This strategy is supported by information and communication technology and aims to facilitate and improve relationships with customers (Lamparello, 2000; Mckim, 2002). Several definitions have been developed by several authors (Table n°1); it appears that the CRM is seen as both a business strategy and a technological process (Dionne, 2001), thus the increasing importance of Business Intelligence (BI) and Datamining.

Table n° 1: CRM approaches

CRM as a business strategy	Parvitiyar and Sheth (2001), Buttle (2001), Thieriez (2002), Zablah and al (2005), Singh and al (2003), Peppers and Rogers (2004), Peelen and al (2009), Allard and Guggémos (2005), Rogers and Dorf (1999), Urbanskienė and al (2008), Hobby (1999), Dalziel and al (2011), Osarenkhoe and Bennani (2007), Lambert (2010).
CRM as a strategy supported by technology	Lamparello (2000), Mckim (2002), Crosby and Johnson (2002), Dionne (2001), Ramaseshan and al (2006), Allard and Guggémos (2005).
CRM as a technological process	Bose (2002), Xu (2002), Missi and al (2002), Payne and Frow (2006), Khanna (2001), Stone and Woodcock (2001), Frock (2000), Ryals and Knox (2001), Chen and al (2009).

The depth and specificity of different CRM definitions can be seen in the form of CRM layers. For instance, Trepper (2000) propose three categories: operational, analytical and collaborative CRM. Collaborative CRM includes exchange channels with the customer (Chen and al., 2006), while the analytical CRM enables the analysis of information gathered (Zikmund, 2003) and finally the operational CRM, which aims to industrialize the company's daily contacts with its customers through a pre-established process (Cast, 2003; Pepper and Rogers, 2004).

According to Lambart (2010), CRM is the business process that provides the structure and the way for how customer relationships are developed and maintained. Specifically, the CRM process is divided into several stages combined with practices. These are defined by Chen and Russell (2007) as a set of actions taken by the company to retain current customers and attract potential ones. These practices include customer segmentation, database marketing, personalization and one-to-one marketing, proactive selling, cross-selling and loyalty program (Peelen and al., 2009).

While Shaw (1999) defines CRM as an interactive process for achieving the optimum balance between corporate investment and the satisfaction of customer needs to generate the maximum profit. Objectives and CRM functions are multiple; it is a way to get superior financial performance (Lambert, 2010; Boulding and al., 2005; Bohling and al., 2006), a differentiator with a competitive advantage (Almquist and al., 2002; Missi and al., 2002) and a long-lasting contact support for customer loyalty through long-term relationships (Nguyen, 2007; Greenberg, 2004; Osarenkhoe and Bennani, 2007).

CRM also allows the company to customize and improve the quality of customer service (Nguyen, 2007) and to share customers knowledge within and between offices (Nguyen, 2007) and consequently to achieve profitable growth (Greenberg, 2004) and better performance. CRM is considered a strategic approach, oriented toward processes (Lambert, 2010; Payne and Frow, 2006; Zablah and al., 2005), it's cross-functional (Lambert, 2010; Payne and Frow, 2006), a mutual value creator for the buyer and the seller (Lambert, 2010; Boulding and al., 2005; Payne and Frow, 2006).

The analysis of the most important and various CRM models that we found in the literature review allowed us to highlight some determinants (Table n°2), where it is recognized that strategy, people, technology, and processes are all important factors in CRM (Chang, 2007).

All models which are found in the literature review are predictive, conceptual and integrators of factors which explain CRM. Our theoretical contribution will be to study the determinants of CRM and their relationship with QoE.

2.2. QoE

The customer experience is an interdisciplinary concept that has been the subject of research in various fields including economics, psychology and management (Qing et al., 2013). The customer experience is considered a new concept that refers to all the emotions and feelings experienced by a customer before, during and after the purchase of a product or service (Gentile et al., 2007). It is a source of satisfaction and loyalty influence (Lefranc, 2013). Pine and Gilmore (1999) were the first who studied the concept of the customer experience and they showed that the customer experience can provide be a new area of competition.

To provide an optimal and a positive customer experience is important, seeing as it impacts customer satisfaction and creates an emotional connection with the brand. It therefore enhances customer loyalty (Gentile et al., 2007). The quality paradigm is the theoretical basis of the QoE, through disconformity theory based on the measurement of the gap between customer expectations and performance of the product or service (Oliver, 1980; Churchill and Suprenant, 1982). The American school, known as SERVQUAL (Parasuraman et al., 1985) suggests a conceptualization of perceived quality seen in ten dimensions and refined in five dimensions: reliability, helpfulness, insurance, tangibility and empathy. In comparison the Nordic School defended by Grönroos (1990) is based on the work of Swan and Combs (1976) and identify two dimensions of service quality, the technical quality (what the customer receives) and the functional quality (what the customer perceives).

Theories of psychology have also treated the customer experience including the ergonomic psychology theory in the context of human-technology interaction that revolves around usefulness, usability and acceptability (Dillon and Morris, 1996; Tricot and al., 2003). Other psychosocial theories analyze the subjective component of the customer experience, mainly the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), the Theory of Planned Behaviour (TPB) (Ajzen, 1991) and the Interpersonal Behavior Theory (IBT) (Triandis, 1980). For Soldani et al., (2006), the term (QoE) refers to the perception of the user on the quality of a particular service. It is expressed in human feelings as "good", "excellent", "poor", etc. Soldani et al., (2006) highlight in their researcs, focused on UMTS networks, the difference between QoS and QoE, stating that the quality of service (QoS) is inherently a technical concept. It is measured, expressed, and understood in terms of technical features, mechanisms and procedures between the user equipment and the network, which usually makes little sense for the end user. Many methods have been proposed to evaluate QoE subjectively and objectively (Xin Yu et al., 2012). QoE, is a subjective measure of the adequacy of a service compared to customer expectations. It measures the "rendering" of the use of a service and how a user perceives the conviviality of a service, the satisfaction level that comes with a service in terms of conviviality, accessibility, continuity and integrity of the service (Soldani et al., 2006).

The literature review allowed us to highlight two different approaches of QoE (Table n°3):

-The QoE as objective and subjective measure of the customer experience.
-The QoE as an evaluation of customer perception, the gap between expectations and performance.

Table n° 2: Summary of the determinants according to different CRM models

Determinant	Model	Summary Model	Author
Strategy	The Customer Connections Ernest & Young Model	Sign in and get closer to customers to make them real partners	Allard and Derringer, (2000)
Strategy	The model of the IDIC methodology	Identify, Differentiate, Interact, Customize	Peppers and Rogers, (2004)
Strategy, Process, HR, Organization, Customer Centric.	Balanced Scorecard	Calculation of the performance: financial perspective, perspectives related to the customer, internal processes to the business, organizational learning	Kaplan and Norton, (1996)
Customer centric	Model based on the several stages of customer life cycle	- Initialization or Acquisition - Maturation and rupture	Dwyer and al., (1987)
Customer centric, Organization and culture, HR, Process, Technology	The CRM Value Chain	Primary level are centered on customer and support conditions are focused on profitability	Buttle, (2001)
Strategy Process Technology	The model of the strategic framework CRM	- The development strategy - The Information Management - The value creation process - The process of performance evaluation - Multi-Channel Integration	Payne and Frow, (2006)
Organization et HR	Service and profit chain model	There is a link between satisfaction and employee motivation and customer satisfaction	Heskett and al , (1994)
Strategy	An integration framework of CRM implementation strategy	- Analysis - Formulation and strategy selection - Implementation of the strategy	Osarenkhoe and Bennani, (2007)
Process	Measures framework of CRM Impact on economic added value	Impact on sales, cost of goods sold, total expenditures, inventory investment, other current assets, and investment in fixed assets	Lambert, (2010)
Strategy Culture Contexte	Conceptual framework for overall CRM	Macro Factors: internal and external to the company Micro factors: marketing activities, customer focus, buying behavior. Conceptual framework for overall customer relationship management	Ramaseshan and al., (2006)
Technology Strategy HR	Challenges for overall customer relationship management	-Technology -Economy and market -Regulatory Framework -Culture and Social	Ramaseshan and al, (2006)
Process HR Technology	CRM Implementation	The successful implementation of a CRM requires an integrated and balanced approach of technology, processes and human resources	Injazz and Popovich, (2003)

Table n° 3: QoE Approaches

QoE	
Objective and subjective measure	(Kilkki, 2008), (Rehman and al., 2011), (Xin and al., 2012), (Mitra and al., 2011), (Hassenzahl, 2008), (Chen and El Zarki, 2011).
- Assessment of customer perception - Gap between expectations and performance	(Rehman and al., 2011), (Fiedler and al., 2010), (Chumpitaz and Swaen, 2004), (Gentile and al., 2007), (Lefranc, 2013), (Johnston and Kong, 2011), (Johnson and Mathews, 1997).

3. Epistemology and research methodology

This research aims to explain the relationship between CRM practices and the quality of the customer experience (QoE). To sort out this relationship, we position ourselves within a positivist perspective based on the hypothetico-deductive approach. This epistemological position aims to draw a state of the art to build an adequate theoretical framework for this relationship and derive hypotheses that will bring forward a more representative reality (Miles and Huberman, 1991) through a qualitative study in order to explore the main determinants of CRM practices and the most significant factors in the quality of the customer experience.

In this paper, we present an exploratory qualitative study in terms of CRM practices in the mobile phone industry. The sample consists of about 60% of practitioners among telephony mobile operators, 16% of vital service provider and 24% of SS2I. Interviews were carried out according to an interview guide constructed at the base of the determinants of CRM identified from the literature review summarized it in Table n°2.

For data analysis, we collected, recorded and transcribed data by Transcriber Application. To this end, we mobilized the content analysis method (Bardin, 1977). Moreover, with the Sphinx Lexica, we treated and coded all the answers and we analyzed the verbatim by following the method of parsing (syntactic unit) and semantic (Andreani and Conchon, 2005). Following this analysis, we got answer segments that we have grouped around recurring key ideas that revolve around the five factors: Strategy, Process, Organization, Personnel and Technology.

For greater objectivity, we opted for a statistical analysis of key ideas through coding categories (Andreani and Conchon, 2005), marking out the words forming these categories. With the method of multiple correspondence analyses (MCA)[1], we have five sets of contingencies tables that intersect in multiple matrices, as variables for each practitioner. At the end we treated statistically the contingency tables by XLSTAT for the study:

- The rate of inertia[2] which measures the practitioner's opinions dispersion around the variables (key ideas) from the center of gravity (CRM determinant) as two factorial axes.
- The factorial axes are the most active components of CRM determinant and around which the variables and observations disperse. These are the main terms or combinations formed by matching variables to observations and the observations of each variable (absence, presence, recurrence).
- The variance of the distribution of the practitioner's notices by qualitative variable associated with the variance of the distribution of variables per practitioner around factorial axes to represent the eigenvalue.[3]
- The total inertia rate is the sum of the eigenvalues. When the inertia ratio is high, it means that there is a strong dependence between variables and observations, if the total inertia ratio is low, the variables are independent of observations.
- The cumulative percentage of inertia indicates the level of inertia or dispersion and can explain the categories of profiles alike. In our research we have practitioners who share the same point of view about the correspondence of the CRM determinants.

4. Results and interpretations

The analysis of the CRM determinants components by the MCA method allowed us to identify for each determinant, the Total Inertia ratio, the Eigenvalues, Inertia percentage and percentage of Accumulated Inertia**.**

4.1 The CRM strategy Determinant

CRM practitioners mostly confirm the existence of a customer-centric CRM strategy and perceive CRM as a software tool. They argue that the CRM goals are: quality of customer service (QoS), satisfaction, customer loyalty and profitability of the company. Other objectives were mentioned but with less

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[1] The Multiple Correspondence Analysis (MCA) is a statistical method to study at least the association between two variables, observations (CRM practitioners) and terms of observational variables (absence, presence, recurrences).
[2] Inertia ratio is the sum of the projected variances.
[3] This is the projected variance of inter-qualitative variables for a variance inter-practitioners.

Table n°4: Semantic recurrences related to the practitioners CRM strategy variable.

variable Strategy	customer centric	Strategy Existence	tool	Satisfaction	QoS	profitability	Loyalty	Segmentation	performance	management of claims	customer knowledge	Activity	Reporting	Proximity	anticipating	Customer wallet	process	launch new product	data	customer focus	Business	competitive advantage	Productivity	Costumer conquest
Recurrences	14	11	10	10	9	8	8	5	5	5	5	4	4	4	3	2	2	2	2	2	4	2	1	1

frequency, for example performance, segmentation, complaints management, customer knowledge.

The inertia of the key components of CRM strategy is 3,923. This is the highest value of the calculated rate. It indicates that there is a high practitioner's opinions concentration around the CRM strategy variable and its perception as an information technology tool. It's focus is on a customer-oriented approach, segmentation and claims management means, satisfaction etc. This concentration is measured around the gravity center of all CRM strategy components with the first three eigenvalues μ = 0.492, μ = 0.376, μ = 0.318. These values are close together and involve a high association between correspondences of practitioners opinion concerning the CRM strategy formulated by the variables listed in Table n°4.

4.1.1 Eigenvalues, inertia percentage and percentage of accumulated inertia:

For table n°5 we have:

-The first line represents the rank of the factorial axis considered, p = 23 factorial axes,
- The second line shows the eigenvalues of the matrix associated with each axis,

- The third line gives the inertia ratio explained by the axes,
- The last line gives the cumulative inertia ratio (that is to say, explained the subspace formed by the axis and the previous).

The first tree values together account for over 30% of the total inertia opinions of practitioners according to the CRM strategy determinant (point cloud), so we can therefore consider other significant factorial axes that represent a combination of correspondences (variables strategy and practitioners). We can extend the factorial space to F13 which shows over 77% of the total inertia of the point clouds.

4.2 The CRM process Determinant

The practitioner's descriptions of the CRM process allowed us to deduce a perceptual schema CRM process. This scheme focuses on the phase and the quality of interaction with customer, customer data collection stage, qualification of customer data and integration of multi-channel communication with CRM.

	F1	F2	F3	F4	F5	F6	F7	F8
Own value	0,492	0,376	0,318	0,280	0,253	0,227	0,198	0,188
Inertia (%)	12,542	9,579	8,106	7,142	6,446	5,775	5,055	4,801
%accumulated	12,542	22,121	30,227	37,369	43,815	49,590	54,645	59,446

	F9	F10	F11	F12	F13	F14	F15	F16
Own value	0,166	0,147	0,144	0,131	0,124	0,113	0,098	0,094
Inertia (%)	4,232	3,743	3,674	3,335	3,153	2,874	2,501	2,396
%accumulated	63,679	67,422	71,095	74,431	77,584	80,458	82,959	85,356

	F17	F18	F19	F20	F21	F22	F23
Own value	0,090	0,088	0,084	0,081	0,078	0,077	0,077
Inertia (%)	2,283	2,252	2,138	2,071	1,979	1,961	1,961
% accumulated	87,638	89,890	92,029	94,100	96,078	98,039	100,000

Table n°5: The 23 factorial axes
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The determinant CRM process is in the second position with inertia ratio of 2.6. The analysis of CRM process asymmetric graphic components and observations shows that there are three different categories of profiles but closely spaced. The majority of practitioners category which recognizes the existence of the CRM process confirms its efficiency and describes it as a series of phases: customer interaction stage, customer data collection stage, qualification and treatment of data customers stage, quality interaction with the customer, billing, claims management, through procedures and certifications that enact the script and interaction with the costumer in order to satisfy and offer them the best QoS.

Also there is a class of practitioners who focuses on respect of charters, CRM procedures and scripts, the quality of customer interaction and multi-channel integration with communication channels and finally another group who perceive CRM process through the interaction with the customer stage, customer data collection stage and the multi-channel integration with the communication channels in the CRM.

Thanks to ISO certification standards, charters, scripts and quality procedures, the CRM process is considered efficient and cover among other aspects of the company's business, billing and claims management. The efficiency of the different CRM processes respectively depends on: targeted training around the CRM function and delivery by the team which in most cases

is conducted to work in networks, the sensitization and assessment system of CRM human resources and their professional skills.

The first three eigenvalues are: $\mu = 0.413$, $\mu = 0.348$, $\mu = 0.316$, they are close together which explains that there is a significant association between concepts, listed in Table n°6 to explain the CRM process.

Table n°6: Semantic recurrences related to CRM process according to practitioners.

Concepts	Number of occurrences
Interaction with the customer phase	18
Integration multi channels with CRM	16
Qualification and customer data processing	15
Efficiency procedure	11
Collecting customer data phase	10
Claims Management	9
Quality of interaction with the customer	8
Billing	8
Charter, user guide, scripts Respect	7
Quality of Service	5
ISO certification, internal procedures	5
Satisfaction	3
Existence of CRM procedures	6
absence of CRM procedures	1

	F1	F2	F3	F4	F5	F6
Own value	0,413	0,348	0,316	0,297	0,249	0,196
Inertia (%)	15,902	13,387	12,149	11,422	9,571	7,548
% accumulated	15,902	29,289	41,439	52,860	62,432	69,980
	F7	F8	F9	F10	F11	F12
Own value	0,187	0,155	0,138	0,114	0,099	0,086
Inertia (%)	7,211	5,978	5,312	4,370	3,823	3,327
% accumulated	77,191	83,169	88,480	92,850	96,673	100,000

Table n°7: The 12 factorial axes

4.2.1 Eigenvalues, inertia percentage and percentage of accumulated inertia:

For table n°7 we have:
- The factorial axis rank is p = 12,
- The first 3 values together account for over 41% of the total inertia practitioners opinions in relation with CRM process determinant. We can think about other factor axes that are significant and represent the

combination of correspondences (process variable and practitioners). We can extend the factorial space to F5 with more than 62% of the total inertia of the point clouds.

4.3 The CRM organization determinant

The CRM function is considered by a minority of practitioners as a call center job. CRM is a project

that is often supported by top management but without a specific function in the organization. In addition, it is located halfway between the marketing function, the business function, the customer service function and sometimes the Information System Direction (ISD).

The determinant of the CRM organization gives us an idea about the CRM position inside the service provider's organization. Its inertia ratio is 2.286 and it comes third after the CRM process determinant.

We found that there are three positions categories with average dispersion. There is a category of practitioners where the CRM is positioned at the top management level and largely deviates from the two other categories. The second category positions CRM into the sales function level with an average concentration of observations around this variable. The third category consists of practitioners who share their opinions around a CRM organizational position that integrates the marketing function, IS Direction, management services and customers, n-1 levels of top management and the sales office.

The first three eigenvalues are $\mu = 0.413$,

$\mu = 0.315$, $\mu = 0.281$, they are less close together which explains that there is a less significant association between the variables representing CRM Organization listed in Table n° 8.

Table n° 8: Semantic recurrences according to the CRM organization

Concept	Number of occurrences
Top management	9
Business function	8
Existence of responsible unit	7
Management services and clients	6
Marketing function	5
Customer Relationship Centre	4
Level N-1	3
IS Direction	3
Marketing Officer	3
Networks Team	3
Claims Management Centre	2
Sales Management	2

4.3.1 Eigenvalues, inertia percentage and percentage of accumulated inertia:

	F1	F2	F3	F4	F5	F6
Own value	0,413	0,315	0,281	0,225	0,204	0,179
Inertia (%)	18,077	13,776	12,289	9,857	8,914	7,848
%accumulated	18,077	31,853	44,143	54,000	62,914	70,762

	F7	F8	F9	F10	F11	F12
Own value	0,149	0,133	0,124	0,094	0,087	0,081
Inertia (%)	6,526	5,817	5,404	4,132	3,801	3,560
% accumulated	77,288	83,105	88,508	92,640	96,440	100,000

Table n°9: The 12 factorial axes

- We considered twelve factorial axis p = 12,
- The first tree values together account for over 44% of the total inertia practitioners opinions related to the CRM Organization determinant. Also we can take into account other factorial axes. We can extend the factorial space to F5 with more than 62% of the total inertia of the point cloud.

4.4 The CRM technology Determinant

The technological component of CRM comes in the fourth position with 1,81 as total inertia ratio. There are several categories of profiles relatively dispersed according to their CRM expectations but concentrated into two categories. The first category of practitioners use the software CRM (Integrated CRM software in the ERP, CRM-SQL, VOCALCOM, NOBELSYSTEM, Software GRC, EFBI Platform, Microsoft Dynamic CRM, SAP CRM, Saleforces, Zoho, SugarCRM) and other software managements such as ELAG and business management software. They are interested in reports generated by the CRM and indicators that these reports occur.

While the second category consists of a minority of practitioners who are aware of the importance of the CRM software and dashboards they generate, they don't use it in their own activities because they are involved as SS2I; in other words as, assistant project manager in CRM solutions integration.

These results reflect the overall vision of a recent study published by the Gartner Institute for the year 2014 "Magic Quadrant for Business Intelligence and Analytics," especially for the point of operational and decision-making ability of CRM that are raised

in this report. The report also highlights that "historical leaders of the CRM market: Oracle, Microsoft, IBM and SAP are this year the big losers" with a speed loss on the clear quadrant.

The first three eigenvalues of CRM technology determinant are $\mu = 0.360$, $\mu = 0.234$, $\mu = 0.193$. They are less close which explains that there is less and less of an important combination between concepts that represent the CRM technology that we list in table n°10.

Table n° 10: Semantic recurrences on CRM technology according to practitioners

Concept	Number of occurrences
Specific software	9
Other software	6
Dashboard	2
Performance report	5
Accessibility and Flexibility	8
Excellent experience, satisfaction and customer knowledge	7
Managements indicators	6
Performance indicators	6
Sales report	4
Marketing campaign report	4
Periodic reports	4
Independence	4
Profitability	4
Performance	4
Predictors	3
Reliability	3
Management report	2
Sale force automating	3
Zoning report	2

According to the data analysis, the most cited CRM tools are the specific solutions (SAP CRM, Saleforces, Zoho, SugarCRM, Microsoft Dynamic CRM, CRM-SQL software Vocalcom, Nobelsystem) or other management solutions. They are either integrated into ERP, operated in open source configuration, internally developed or developed with the help of a professional integrator. nnn

We noted the positive feedback toward practitioners dashboards generated by their CRM. The periodic sales tables, marketing campaigns and performance are the most cited and produce management indicators, predictive and performance indicators. They are deployed in the decision making on several levels. However, it must be said that CRM practitioners still expect more accessibility,

flexibility, reliability and independence of their information technology solutions to impact the customer experience and to know them better in order to satisfy them.

4.4.1 Own values, inertia percentage and percentage of accumulated inertia:

	F1	F2	F3	F4	F5	F6
Own value	0,360	0,234	0,193	0,161	0,158	0,156
Inertia (%)	19,875	12,943	10,666	8,898	8,754	8,638
%accumulated	19,875	32,818	43,484	52,383	61,137	69,775

	F7	F8	F9	F10	F11	F12
Own value	0,124	0,114	0,096	0,078	0,076	0,059
Inertia (%)	6,840	6,313	5,312	4,321	4,201	3,239
%accumulated	76,615	82,927	88,239	92,560	96,761	100,000

Table n°11: The 12 factorial axes

- We consider 12 factorial axes,
- The first tree values together account for more than 43% of the total inertia of the point cloud. Beyond third factor, the difference between values becomes insignificant, so we limit ourselves to F3.

4.5 CRM Human Resources Determinant

The determinant of human resources is the latest one with a total inertia ratio of 1,286. It means that practitioners disagree with a wide dispersion about the key components of Human Resources namely staff skills, training on CRM and sensitization and assessment systems developed around CRM. The analysis of asymmetric graph of variables and observations showed a big gap between the profiles of practitioners and high data dispersion.

The first three eigenvalues of the HR CRM are $\mu = 0.707$, $\mu = 0.327$, $\mu = 0.252$. They are not at all close, which explains that there is a weak association between concepts that represent the Human Resources as a determinant of CRM.

Table n° 12: Semantic recurrences related to Human Resources CRM according to practitioners

Concepts	Number of occurrences
Staff Skills	12
CRM training	30
Sensitization System around CRM	10
Assessment and control System	16

4.5.1 Own values, inertia percentage and percentage of accumulated inertia:

	F1	F2	F3
Own value	0,707	0,327	0,252
Inertia (%) %	54,957	25,442	19,601
accumulated	54,957	80,399	100,000

- The first line represents the rank of the considered factorial axis, p = 3 factorial axes,
- The first tree values together account for 100% of the total inertia practitioners opinions according to HR CRM determinant. We can limit our analysis to the first factor with 54% of inertia and for more significations connections we can also consider the second axis with more than 80% of the total inertia of the point clouds

Conclusion

To conclude, CRM is a strategic choice for enterprises and mainly for mobile phone service providers. They have to guide the overall strategy toward the costumer. In other words, it is essential to rethink the organization and business structure around customer service, train and develop management and IT skills related to CRM, implement an effective process and support it with technology. The objective is to offer consequently a quality customer experience in the use of services across CRM practices. Furthermore, we understand with evidence that interactive links between the determinants of CRM and the determinants of the quality of the customer experience (QoE) exist. On one hand, the semantic analysis of CRM determinants brings up the determinants that we found in the literature review of the quality of customer experience, like quality of service, quality of interaction with customer, claims management and customer knowledge. And on the other hand, it turns out that practitioners are aware that we should look beyond the relationship to manage the customer experience to satisfy and retain thereafter. To this end, we will propose a preliminary model built around the first four CRM determinants taking into account the results obtained (Figure n°1) of the exploratory study and our conclusion.

Figure 1: CRM determinants
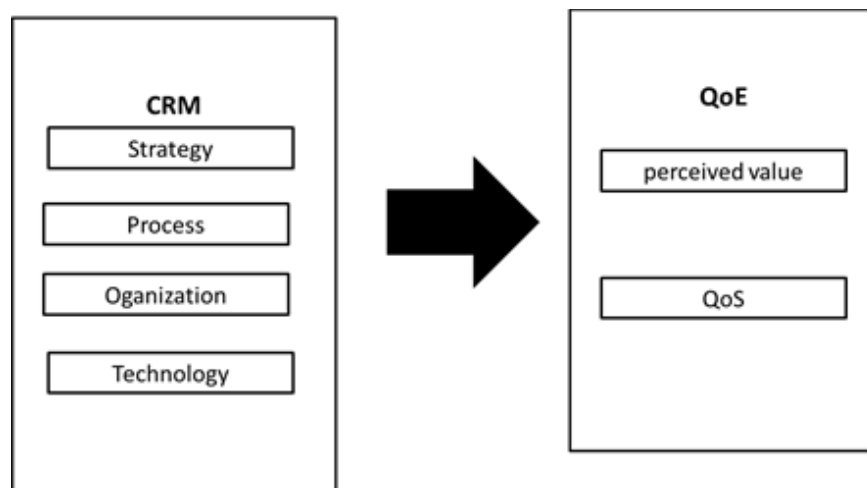
Our research has been limited by the problem to interview professionals and the double burden of transcription and coding the dialectal language to foreign language. The next stage of our research is to study the determinants of QoE in order to develop a conceptual model of the relationship between CRM and QOE.

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