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We chose six experts to take part in the survey; data collection was carried out through interviews; these experts judged the relevance of each of the 27 items generated.

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The Adoption of E-CRM System in Service Firms: Creation of a Measurement Scale

Sameh Tebourbi [α] & Romdhane Khemakhem [σ]

Abstract- This paper aimed to develop scales to measure the adoption of the e-CRM systems in service firms. A qualitative study consists of 10 semi-structured interviews to explore the intention of marketers to adopt the e-CRM system; we opted for an inductive approach for the generation of items, since the scales in the literature are not adapted to the context of this study.

We chose six experts to take part in the survey; data collection was carried out through interviews; these experts judged the relevance of each of the 27 items generated.

During the 6 interviews, we noted several relevant impressions and remarks from the experts.

Once the content validity for the development of the measuring instrument has been designed, a test-pilot will be carried out. The objective of the test pilot is to verify the reliability of the items.

Three hundred forty managers from different service firms have been selected to participate in this test. Factorial analyzes are considered necessary to identify the main factors explaining the results obtained. The results of the exploratory factor analysis generated three factors.

We choose the smart PLS approach to conduct a confirmatory factor analysis to verify the reliability and validity of the scales.

A reliable and valid scale was developed to measure the two dimensions of adoption of the e- CRM system: the testability and the observability of the e-CRM system. Since this study was conducted in Tunisia, the generalizability of the CRM scale has to be tested in other countries. In addition, cross-sectional data were used in this study. Future studies should have applied to identify the relationship between CRM and business performance. The findings validate the observability and, the testability encourage the adoption of e - CRM system.

Keywords: measurement scale, testability of e-CRM system, observability of e-CRM system and service firms.

I. Introduction

Adopting information technology by individuals and organizations is part of the information systems (IS) implementation process, an area of research that has received considerable attention in recent years (Zabadi, 2016). However, understanding the successful implementation of information technology remains one of the major challenges facing the IS field (Princewill Lekara, 2019), and research efforts have been mixed and inconclusive.

It should be noted that the poor development of the theory and the inadequate measurement of constructs have turned research on IS into a wide variety of subjects (George M, Florida I Richard D, Paul Clay Fort Lewis Coll, 2017) (It is also clear that well-defined constructs are based on theory, and the operationalization of these constructs by measurements with high degrees of validity and reliability is a necessary condition. Recently, many researchers have started using theories of diffusion of innovation (Rogers, 2003) to study implementation problems. One of the most cited theories on perceived characteristics in literature which, in a survey of several innovation studies, identified five characteristics of an innovation that affect the rate of diffusion of an innovation. They are the relative advantage, compatibility, complexity, observability and, testability.

We proposed to test two characteristics namely: testability and, observability of e-CRM system by managers in service companies. Despite the importance of the perceived characteristics in dissemination research, documentary research indicated that most of the existing instruments designed to exploit these characteristics lacked reliability and validity.

The main objective of this research was to develop scales to measure the observability and testability of the e-CRM system in service firms. However, we notice that all of the scales developed are generally applicable to various innovations, in particular to other types of information technology. Therefore, items apply only to the use of the e-CRM system have been excluded. It should also be noted that, although some researchers study innovations at the organizational level and responses at the individual level.

II. Theoretical Research Framework

The theory used to deal with this problem is diffusion of innovations (Rogers, 2003).

Although, this theory will be applied to Innovation Technology IT products like Java language (used in network or hypertext environments) or technologies, like software engineering tools. The Theory of Diffusion of Innovation of Rogers (2003) is proposed to help the integration of technologies in companies.

The integration goals are at the same time the adoption of the technology with the users, the implementation and, the institutionalization of the use.

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The diffusion theory of innovations has modeled the rate of adoption of innovation according to the perceptions by individuals of five attributes of innovation that influence the individual adoption process, namely the relative advantage, compatibility, complexity, divisibility and visibility of the innovation (Rogers, 2003). The adoption rate of an innovation is positively linked to the relative advantage perceived, compatibility, test possibility and observability, and negatively related to the perceived complexity of the innovation.

We proposed to test two characteristics, namely: testability and observability of e-CRM system by managers in service companies.

CRM is a business management tool focused initially on the automation of the sales force (Buttle, 2004) and which has evolved towards a global concept of customer relationship management whose ultimate goal is customer loyalty and thus the improvement of the company's results (Gil-Gomez et al., 2020).

Testability " is the degree to which an innovation can be tested on a limited field before it is used" (Rogers2003). "A new idea that you can try before you adopt it is generally quicker to adopt than others. This possibility would allow the individual or any other adoption unit to better understand how innovation works. Thus, an innovation that can be tested beforehand poses less risk for the individual or the organization that intends to adopt it" (Rogers, 2003).

The first research relating to the diffusion of innovation considers innovation to be unchangeable over time. However, testing an innovation can allow an individual to "customize" or personalize it to give birth to an innovation more suited to his situation. This is what Rogers (2003) calls "reinvention." Here, we admit that an innovation can be modified or changed following its adoption and implementation process.

Observability "is the degree to which the results of innovation are visible. (Rogers, 2003), The more visible the results, the more rapid its adoption. At this level, the example given by Rogers (2003) concerns PC technology with its two components, namely hardware and software.

The hardware part includes the electronic elements (visible); on the other hand, the software part includes the program for the PC system. The software part of technological innovation is not observable.

III. Qualitative Research

To clarify and complete the identification of the adoption characteristics of innovations in information technology, specifically the testability and observability of the e-CRM system, we conducted 10 semi-structured interviews with managers of service firms.

The interview guide, which includes a total of ten questions, was designed in two main parts. The first part is regrouping general questions. The second part of the questions related to the perceived characteristics of adoption of the "e- CRM system" innovation, namely testability and observability concerning the diffusion theory of innovation of (Rogers, 2003) Appendix1.

We stopped the interviews when we found that the last interview did not provide any additional information (Gavard-Perret et al., 2012). The interview lasted on average 20 minutes, is administered, face to face.

Table 1: The Officials Interviewed

Three Business Consultants	Attijari Bank
one Customer Officer	Housing Bank
One branch manager	Housing Bank
Un Second agent	STB bank
TPE Back Office Bank Manager	All baraka bank
One Customer Manager	STB bank
wo Ooreedoo Sales Consultants	Ooreedoo

IV. Content Analysis

We chose NVivo software, a tool used to analyze all kinds of qualitative data.

The content analysis process is inherent in respecting a certain approach described by Giannelloni and Vernette (2001).

10 semi-structured interviews were recorded and transcribed, thus constituting the verbatims. The data were processed according to the thematic content analysis method. It is a question of dividing the speech of the interviewees into units of meaning to bring out the underlying themes (Evrard et al 2009).

Thus, two themes appeared through the various interviews:

The testability of the e-CRM system theme and the observability of the e-CRM system theme. Then, we proceeded to the codification of the transcriptions of the different categories of the themes. Following the coding of the interviews, we established the summary grid (appendix2) which integrates the details of the speech of the participants in the qualitative survey. Concerning the thematic analysis, first, we carried out the vertical analysis and, secondly, we carried out the horizontal analysis. This analysis is qualified by these authors as

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invaluable since it is the means of the constitution of the summary report of the exploratory qualitative study whose object is for our research the generation of items for the construct "adoption of system e- CRM".

The penultimate step is to determine the relative weight for each dimension.

Regarding the dimension relating to "testability" we note through the qualitative analysis that out of the ten interviews carried out, all the directors affirm that they had tested the e-CRM system before adopting it.

Ultimately and given the comments collected, we consider that the variable "testability" is one factor to be taken into account in the adoption of the e-CRM system by service companies.

Concerning the dimension relating to "observability" through qualitative analysis, out of the ten interviews carried out, 9 Marketers affirm that observability must be considered a factor of the e-CRM adoption.

To the question: "In your opinion, are the e-CRM system and its results visible and observable? Explain". The STB Customer Manager replied: "The system is not very visible in my organization".

And do you think this influenced your company's decision to adopt this innovation? "*Yes, of course* ".

The sales consultant, Ooreedoo "*saw the results of the adoption of the e-CRM system in information traffic speed".* Observability has a very strong weight as a factor of adoption of the e-CRM system in service firms.

a) The synthesis reports

This step allowed us to generate the items of the measurement scale for the adoption of the e- CRM system. It will be the subject of the following paragraph. The first, step in the process of developing a new measuring instrument is "specification of the domain construct" (in the words of Churchill 1979) Mckenzie and, al (2011).

b) Generation of items, content analysis and purification of the "e-CRM system adoption" scale

i. *Generation of items*

The generation of items is done using literature review and qualitative interviews and intuition (Churchill, 1979).

c) Content validity

Our choice is based on the method of Law she (1975), who proposed a content validity ratio (CVR), use to measure the degree of agreement between the experts on the relevance of the items.

d) The expert population

In our research, we have chosen 6 teachers and computer scientists to have theoretical knowledge and skills in CRM.

e) Collection procedure

For our survey of experts, data collection was carried out through interviews and was administered by "electronic mail" (appendix3).

The expert was first invited to assess the relevance of each item (not necessary, important but not essential, essential). The objective of this evaluation is to verify the relevance of each item by calculating the CVR (Lawshe 1975).

Each expert also had the option of adding items that did not appear in the proposed battery of items. He also had the opportunity to suggest a reformulation of the items he found ambiguous. The CVR of each item is obtained using the following formula from Lawshe (1975, p. 567): CVR = (ne-N / 2) / N / 2;

Given when we called on 6 experts (N / 2 = 3) the CVR formula will be as follows: CVR = (ne- 3) / 3

With ne: number of experts who declared the item to be "essential" and N the total number of experts. The CVR is between -1 and + 1.

Furthermore, Lawshe (1975) established minimum CVR values according to the size of the panel. The Table below provides the minimum CVR values required to retain an item.

Table 2: Minimum Values of the Cvr Depending on the Size of the Panel of Experts (Lawshe, 1975)

Panel size	5	10	15	20	25	30	35	40
Minimum CVR value	0.99	0.62	0.49	0.42	0.37	0.33	0.31	0.29

Table 3: Results of the Cvr Method

Concepts	Items	CVR	Items restraint
	1. I have a lot of opportunities to test various e-CRM system applications before adopting them to see their usefulness and to test the crucial components of the system.	1	1
	2. I have the opportunity to use the e-CRM system as an experiment to better understand the operating mode to keep the reliability of the system.	1	2
	3. I tried the e-CRM system before adopting it within the company.	1	3

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Testability e CRM svstem	4. Testing the e-CRM system allows me to use it correctly.	1	4
	5. I tested the e –CRM system before implementing it to be able to master its tools and functionality.	1	5
	6. I am considering a trial period to adapt the system to our company and our working methods.	1	6
	7. testing the e-CRM system avoids the risk of dysfunction during adoption.	0.66	
	8. Testing the system before setting it up encourages me to adopt it.	0.33	
	9. I don't make much effort to try the e-CRM system.	0.66	
	10. I used the system during its implementation within the company without the test before.	1	7
	11. There are many people in my organization who can help i try out the various applications of the system.	0.66	
Observability of e -CRM system	1. I have often seen other users of the e-CRM system.	1	1
	2. In my organization, several members have the e-CRM system.	1	2
	3. I saw the e-CRM system used outside my company.	1	3
	4. The system is not very visible in my organization.	0.33	
	5. I saw the e-CRM system used in my business.	-0.66	
	6. I have not seen other people using the e-CRM system in my department.	0.66	
	7. I have observed other people in my department using the e-CRM system.	1	4
	8. I have seen sales advisers on most computers.	0	
	9. The e-CRM system tries to create a unique vision of each customer to discover the sales opportunities, improves the competitive position.	1	5
	10. The e-CRM system enables customer loyalty.	1	6
	11. The e-CRM system offers better customer service.	1	7
	12. The e-CRM system allows sellers to be reactive.	0.33	
	13. The e-CRM system allows sellers to be more aware.	1	8
	14. The e-CRM system meets the real needs for customers	1	9
	15. The e-CRM system, allows the speed of information flow.	1	10
	16. When adopting the e-CRM system there are always updates to customer data.	1	11

Our panel comprises 6 experts, so all items with a CVR greater than or equal to 0.99 will be kept, so they have good content validity and, the others will be rejected.

Table 4: Summary of Validity of Content

Constructs	Total number of items	Number of items retained (significant CVR> 0.6)
Testability	11	7
Observability	16	11
TOTAL	27	18

The CVR analysis results led to changes in the items (which went from 27 to 18). During the 6 interviews, we noted several relevant impressions and remarks from the experts. Some reformulations have been proposed by the experts to simplify, specify or present in a more concrete and relevant way the content targeted by each indicator.

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Table 5: Reformulation of Items by Expert

	Items	Reformulation
Testability of du e- CRM system	Testability of the e-CRM system I have many opportunities to test various applications of the e-CRM system before adopting it to see its usefulness and tc test the crucial components of the system.	Testing the e-CRM system shows its usefulness.
	I have the opportunity to use the e-CRM system as an experiment to better understand the	Using the e-CRM system allows me to understand its operating mode.
	Operating mode in order to keep the reliability of the system.	
	I tested the e –CRM system before implementing it to be able to master its tools and functionalities.	Testing the e-CRM system allows you to master its tools and functionalities.
	I am considering a trial period in order to adapt the system to our company and to our working methods.	A trial period is essential.
	I used the system during its implementation within the company without testing it before.	I do not have the possibility to try different applications on the e-CRM system.
Observability of e-CRM system	Observability of the e-CRM system I have not seen other people who use the e-CRM system in my department.	The e-CRM system is not yet adopted in my department.
	The e-CRM system tries to create a unique vision for each customer to discover the sales opportunities, improves the competitive position.	The e-CRM system tries to create a unique vision for each client.
	Regarding item 15, the term information is replaced by the term data.	

Regarding the addition of items by the experts, item 10, where there is the question of loyalty, has been divided into six items (10a to 10f) so as not to be limited to loyalty, which is only one phase among others in the CRM process (there is also acquisition, re-acquisition, identification, evaluation, etc.).

Table 6: Added Items

10. The e-CRM system enables customer loyalty.
10b. The e-CRM system makes it possible to assess the customer's profitability and to determine its value.
10c. The e-CRM system identifies customers and describes their profiles.
10d. The e-CRM system allows better conversion of prospects into customers.
10e. The. e-CRM system helps to win back lost customers.
10f. The e-CRM system makes it possible to assess the level of customer satisfaction.

We noted that only one expert among the 6 forming the panel suggested adding these items 10b to 10 f. However, these items are not added since they are not recommended by the majority of experts. Item 16 relating to the observability of the e-CRM system is divided into two items. The majority of experts suggested adding items 16a and 16b to distinguish data collection and processing.

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Table 7: Added Items

16. When adopting the e-CRM system there are always updates to customer data.
16 a. The e-CRM system allows better collection of customer data.
16 b. The e-CRM system allows better use of customer data.

f) Purification of the "intention to adopt e-CRM system" scale

Once the content validity for the development of the measuring instrument has been designed, a test-pilot will be carried out. The objective of the pilot test is to verify the reliability of the items (Dwivedi et al., 2010).

For this, factorial analyzes are considered necessary in order to identify the main factors explaining the results obtained, to eliminate redundant items and thus, to reduce the number of items (DeVellis, 2003).

The participant According to Churchill (1979), we used two independent samples to conduct the "exploratory factorial analysis" AFE and the "confirmatory factorial analysis" AFC within the framework of the development of the new measuring instrument of "adoption of the system e -CRM ".

The two samples come from the same survey, will be a question of dividing the initial sample into two sub-samples randomly then designating a first sub-sample for the AFE and a second sub-sample for the AFC. Since our questionnaire as a whole was not perceived as long, we conducted a single survey with a global sample of 340 companies and we extracted two independent subsamples: a subsample of 240 observations for the 'AFE and a subsample of 100 observations for the AFC.

The procedure Regarding our study, we have chosen to administer our questionnaire face to face and by e-mail to managers, directors, customer managers, sales managers or marketing managers in companies mainly in the service sector.

The questionnaire, on the instrument of intention to adopt electronic customer relationship management "e-CRM" (containing 19 items) and socio-demographic questions.

g) Description of the sample

The questionnaire (appendix 4) was collected from a sample of 240 managers from various service companies. The characteristics of this sample are presented in the table below:

Table 8: Description of the first Collection Sample

Sectors	Frequency	Percentage
Financial services sector	112	46,7
Telecommunication sector	78	32,5
NICT sector	48	20,0
Total	240	100,0
Post occupated		
Member of the management Team	12	5,0
Marketing manager	110	45,8
Customer manager	95	39,6
Sales manager	22	9,2
Other 1	1	,4
Total	240	100,0
Using e-CRM system CRM		
No	85	35,4
For a period of fewer than 1 years	49	20,4
For a period between 1 and 5 Years	31	12,9
For a period between 5 and 10 Years	75	31,3
Total	240	100,0

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V. Exploratory Factor Analysis

AFE of the measurement scale in development phase: "adoption of e-CRM system".

As recommended by Churchill (1979), the development of a new measuring instrument requires the completing of an AFE and an AFC. In the context of our work, it is rather a question of identifying the latent structure or the factors of "intention to adopt an e-CRM system". We will then use the AFP method.

During the introduction of the 19 items for the AFE, the KMO index displays a high value (0.73), the Chi 2 of the Bartlett test (of value equal to 2260.9) displays zero significance and the determinant of the matrix correlation is different from 0 thus justifying the usefulness of using factor analysis.

For the purification of the measurement scale, we started by eliminating the item with the lowest commonality of less than 0.4, namely the item T3 (0.068).

The analysis was restarted without the item and the new values of the communities re-examined. Each time, the item with the lowest community below 0.4 was eliminated until all the remaining indicators had acceptable communities.

Table 9: Purification Stages of the "E-Crm" System Adoption Construct

Steps n°	Number of items	Determinant	KMO	Sig Bartlett	Attempted extraction	Item with the lowest commonality	Com	Item
1	19	0.001	0.738	2260.97	Possible (6 F)	T3	0.068	deleted
2	18	0.001	0.738	2170.383	Possible (6F)	O12	0.144	deleted
3	17	0.002	0.743	2110.177	Possible (5F)	T5	0.204	deleted
4	16	0.002	0.743	2053.114	Possible (4F)	O4	0.23	deleted
5	15	0.003	0.744	1965.476	Possible(4F)	T6	0.267	deleted
6		0.004	0.748	1874.238	Possible(4F)	T4	0.136	deleted
7	13	0.004	0.748	1811.878	Possible(4F)	O8	0.185	deleted
8	12	0.005	0.749	1742.835	Possible(4F)	O3	0.282	deleted
9	11	0.007	0.745	1647.377	Possible(4F)	O11	0.305	deleted
10	10	0.01	0.733	1544.17	Possible(3F)	O2	0.255	deleted
11	9	0.13	0.735	1446.983	Possible(3F)	O1	0.182	deleted
12	8	0.15	0.726	1398.936	Possible(3F)	O9	0.465	keep

h) Identification of factors

At the 12th step in the scale cleaning phase, the 8 remaining items displayed satisfactory commonalities (greater than 0.4). The factorial contributions after oblimin rotation of 8 items were therefore analyzed. These items represent three factors with eigenvalues greater than 1.

Table 10: Factorial Contributions of the 13 After Rotation Items

Factors	Items	Communality	Factorial contribution	% of the variance explained	Alpha
Factor 1	T1	0.986	0.99	36.224%	0.93
	T2	0.708	0.840		
	T7	0.772	0.877		
Factor 2	O5	0.514	0.665	56.866%	0.797
	O6	0,705	0.842		
	O7	0,536	,747		
Factor 3	O9	,0.465	,704	66.15%	0.638
	O10	0,606	,651		

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Confirmatory factor analysis of the measurement scale "Adoption of the e-CRM system" We choose the smart PLS approach, the criteria, which led us to opt for this approach relate to the research objective which is exploratory in nature and the reduced sample size which is 100 units. The stages of the analysis through the PLS approach

According to Hulland (1999), evaluating PLS model involves the careful examination of three main methodological elements, namely, determining the nature of the relationships between measures and constructs, evaluating reliability and the validity of the measurements and the evaluation of the final model. In our work, the relationships between constructs and their measures are reflexive.

i) Estimation of the measurement model

The measurement model specifies the relationships between the latent variables and their observed indicators. This model is evaluated based on the reliability of the internal coherence, the convergent validity and the discriminant validity of the measures of the constructs.

The results of the confirmatory factor analysis. The reliability of the constructions PLS software provides us with values for composite reliability. Hair et al. (2014) suggest that each of these values must be greater than 0.7. The composite reliability values for the constructs from our research are all greater than 0.7.

Table 11: Composite Reliability

	Composite Reliability
Observability 1	0.927
Observability2	0.845
Testability	0.928

j) Reliability of indicators

For Hair et al. (2014), this reliability is verified when the factorial contributions of the constructs (outer loading) are each greater than 0.5 and are significant. The results, relating to the indicators of our model are satisfactory about this condition.

k) The validity of constructs

To check the validity, we are basing ourselves on the one hand on the convergent validity test, which is based on the examination of the correlations (loading) of the measurements with their respective constructs and, on the other hand, on the discriminant validity test, which represents I extent to which the measures of one construct differ from the measures of another construct in the model (Fernandez, 2012).

To test convergent validity, we refer to the approach of Forner and Larcker (1981) and that of Hair et al. (2014). According to Forner and Larcker (1981), the convergent validity is verified when the value of the "extracted average variance or VME" of the construct is greater than 0.5. Concerning our work, the values of the VMEs provided by the PLS software are illustrated in the following table:

Table 12: Validity of Constructs

	VME
Observability1	0.813
Observability2	0.734
Testability	0.813

The convergent validity is verified. Furthermore, and concerning the discriminant validity test, we refer to the approach of Forner and Larcker (1980), that of Chin (1998) and that used by Garson (2016). The verification of this validity is illustrated in table 15.

Table 13: Discriminant Validity Test

	Observability1	Observability2	Testability
Observability1	0.902		
Observability2	0.579	0.856	
Testability	0.228	0.121	0.901

The average variance extracted from the construct is greater than the square of the correlations of this construct with the other constructs.

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VI. Conclusion

The objective of this research is to develop a valid and reliable scale to measure the observability and testability of the e-CRM system, in service companies. A qualitative study by 10 semi-structured interviews to explore the intention of managers to adopt in the face of the testability and observability of the e-CRM system. The measurement scale was created following the paradigm of Churchill (1979) McKenzie et al. 2011, for this, factor analyzes are considered necessary in order to identify the main factors explaining the results obtained.

Our research brings many contributions, creating an instrument to measure various perceptions of the use of the e-CRM system by marketers in service firms. The scale development method offers a high degree of confidence in their content and their construct validity. The result is a sparse instrument of 8 items, comprising 3 dimensions, all with acceptable levels of reliability. This instrument can now be used to study how perceptions affect the actual use of information technology by individuals. The development process also made it possible to clarify and refine certain definitions of the different concepts. The development stages showed that observability as originally defined by Rogers seemed to exploit two distinct constructions. Result Demonstration and visibility.

Another contribution is the use of TDI models as the basis for this study. Indeed, the literature shows that the TDI model of Rogers (2003) is more complete than the other models that have tried to explain the adoption of technologies. However, no study has been examined on the TDI about the e-CRM. Rogers pointed out the need to test this model in other contexts to improve and generalize the validity of this model in various contexts and for different technologies. Therefore, the results of this study lead to enriching the conclusions of studies based on this model. Our work allowed us to test two perceived characteristics of innovation inspired by the TDI innovation diffusion theory (Rogers, 2003), namely the testability and observability of the e -CRM system in a new context to confirm its validity. As a future research path, we plan to test the set of perceived characteristics of a technological innovation.

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Appendix

Appendix1: Qualitative study

To try to understand the adoption of electronic customer relationship management "e-CRM" in service companies, a qualitative approach is therefore perfectly justified.

A qualitative study was planned to enrich our understanding of the meaning of the concept of adoption of the e-CRM system and to have a clear definition of this concept. Indeed, the adoption of e-CRM system is a complex concept and qualitative methods are appropriate tools to reveal how leaders perceive them from the testability and observability of the e-CRM system. Our qualitative study constitutes a semi-structured interview in order to explore the intention of adoption of marketers.

Interview Guide

Introductory phase:

To get started, can you tell us:

- For how many years has your business existed?
- What position do you currently hold in the company?

Centering phase

Competition is the main factor propelling the principle of loyalty and the development of lasting relationships with customers. Indeed, it becomes imperative for a company to know how to anticipate customer needs as well as to develop personalized offers.

This through increasingly sophisticated data collection and processing programs, including customer relationship management.

I would like you to talk about your relationship with your customers and the various problems encountered?

- What can we expect from a relationship with the client?
- Today we are talking more and more about electronic customer relationship management systems. Does the exploitation of electronic CRM applications create expectations by the manager?
- Can you tell us about the advantages of this system?

Deepening phase

a) The testability of the electronic customer relationship management system

1. Do you have the opportunity to test the e-CRM system before adopting it?
2. If yes? How? 'Or' What?
3. Do you think this influenced your company's decision to adopt this innovation?

b) Observability of the e-CRM system

1. In your opinion, is the e-CRM system and its results visible and observable in the organization?
2. Explain.
3. Are the adoption results of this system observable in the company?

Conclusion

Before ending this interview, do you have anything to add?

Appendix2: Summary Grid

Category	Interview1	Interview2	Interview3	Interview4
Topics: The t the e-CRM system				
Testing the eCRM system	I have the opportunity to use the e-CRM system as an experiment to better understand the mode of operation in order to keep the reliability of the system.	I tried the e-CRM system before adopting it in the company.	Testing the e-CRM system allows me to use it correctly.	I tested the e – CRM system before implementing it so that I could master its tools and functionalities.
	Interview5	Interview6	Interview7	Interview8
Testing the eCRM	I am considering a trial period to adapt the system to our business	Testing the eCRM system avoids the risk	Testing the system before setting it up	I don't put much effort into trying the e-CRM

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system	and our working methods.	during adoption.	encourages me to adopt it.	system.
	Interview9	Interview10		
Testing the e-CRM system	I have used the system during its implementation within the company	There are a lot of people in my organization who can help me try out the various applications on the system.		
	without testing it before.			
	Interview1	Interview2	Interview3	Interview4
The observability of the e-CRM system	I have often seen other users of the e- CRM system.	I have observed other people in my department who use the e-CRM system.	The e-CRM system tries to create a unique view of each customer to discover sales opportunities, improves the competitive position.	The e- CRM system helps to build customer loyalty.
	Interview5	Interview6	Interview7	Interview8
	The e-CRM system offers better customer service.	The e-CRM system allows sellers to be responsive.	The e-CRM system helps meet the real needs of customers.	The e-CRM system allows salespeople to be more aware.
	Interview9	Interview10		
	When adopting the e-CRM system there are always updates of customer data.	The e-CRM system enables the rapid flow of information.		

Appendix 3: Directory Guide

The adoption of the e-CRM system is defined as the process of acceptance of the e –CRM system by a decision-making unit (an individual or a firm) evolving in a particular social system.

Adoption is the use of new technology on an ongoing basis. The theory of diffusion of innovations has modeled the rate of adoption of an innovation according to the perceptions by individuals of five attributes of the innovation which influence the process of individual adoption namely the relative advantage, compatibility, complexity, divisibility and visibility of innovation (Rogers, 2003).

We will test two dimensions namely the testability and the observability of the e-CRM system. Items related to each of the two dimensions were generated which must be examined in depth by experts in the field.

This is where your opinion is essential.

- Please assess the relevance of each item and specify whether it is "irrelevant", "importantbut not essential" or "essential"
- Suggest a rewording for the item if you think it is imprecise.
- Suggest other items that you think are capable of emphasizing the measurement tool. Your responses remain highly confidential and anonymous.

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Concepts	Items	Relevant of the 'item		
		Irrelevant	Important but not essential	Essential
Testability of e-CRM system	1. The test of the e-CRM system shows its usefulness.			
	2. The use of the e-CRM system as an experiment makes it possible to understand how it works.			
	3. I tried the e-CRM system to adequately test the execution of the various applications.			
	4. I have the opportunity to test the applications of the e-CRM system before implementing it within the company.			
	5. I tested the e –CRM system before implementing it in order to be able to master its tools and functionalities.			
	6. A trial period is essential.			
	7. Testing the e-CRM system avoids the risk of dysfunction during adoption.			
	8. Testing the system before putting it in place encourages me to adopt it.			
	9. I don't make much effort to try the e-CRM system.			
	10. I am not able to try different applications on the e-CRM system.			
	11. There are many people in my organization who can help me try out the various applications of the system.			
Observability du système eCRM	1. I have often seen other users of the e-CRM system.			
	2. In my organization, several members have the e- CRM system			
	3. I saw the e-CRM system used outside my company.			
	4. The system is not very visible in my Organization			
	5. I saw the e-CRM system used in my business.			
	6. The e-CRM system is not yet adopted in my department.			
	7. I have observed other people in my department using the e - CRM system.			
	8. I have seen sales advisers on most computers.			
	9. The e-CRM system attempts to create a unique vision for each client.			
	10. The e-CRM system enables customer loyalty.			
	11. The e-CRM system offers better customer service.			
	12. The e-CRM system allows sellers to be more reactive.			
	13. The e-CRM system allows sellers to be more aware.			
	14. The e-CRM system meets the real needs of customers.			

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	15. The e-CRM system allows the speed of information flow.			
	16. When adopting the e-CRM system there are always updates to customer data.			

Thank you so much.

Appendix 4: Questionnaire Relating to the Qualitative Phase

Company Name:
Contact person:
Last name:
First name:
Do you operate a CRM application? (CRM: Customer Relationship Management)

1. Yes
2. No

If yes, which application is it? (Specify name)
.....
You are:

1. Member of the management team
2. Marketing Manager
3. Customer manager
4. Sales manager
5. Other, please specify
.....

Member of the management team

For the following proposals, please indicate your level of agreement with what is put forward. The use of e-CRM system.
Do you try e-CRM system applications?

	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
T1: Testing the e-CRM system shows its usefulness.					
T2: Using the e-CRM system allows you to understand how it works.					
T3: I tried the e-CRM system before adopting within the company.					
Q4: Testing the e-CRM system allows me to use it properly.					
T5: Testing the e -CRM system allows you to master your tools and functionalities.					
T6: A trial period is essential.					
T7: I don't have the opportunity to try different applications on the e- CRM system.					

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Can you judge the observability of the E –CRM system.

	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
O1: I have often seen other users of e-CRM system.					
O2: In my organization, several members have the e-CRM system.					
O3: I saw the e-CRM system used outside my company.					
O4: I have observed other people in my department using the e-CRM system.					
O5: The e-CRM system attempts to create a unique vision for each customer.					
O6: The e-CRM system enables customer loyalty.					
O7: The e-CRM system offers better customer service.					
O8: The e-CRM system allows sellers to be more aware.					
O9: The e-CRM system meets the real needs of customers.					
O10: The e-CRM system allows the speed of data circulation.					
O11: The e-CRM system allows better collection of customer data.					
O12: The e-CRM system allows better use of customer data.					

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