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# New technologies to improve quality of service and client experience of challengers offshore companies

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**Abstract:** Customer requirements and expectations are constantly evolving due to the various opportunities and possibilities offered using new communication technologies. Multi-channel communication, Artificial intelligence and big data allow companies to adapt their proposed costumer's experience to constantly changing customer behaviors like choosing the channels of communication, the time, the place and the purpose of interactions. The contact center sector is greatly affected by these technological and behavioral developments. The industry players and adapting revolutionary approaches in their costumer's relationship management to improve their service quality and to propose a positive customer experience.

This research emphasizes the relationship between the use of new communication technologies and the improvement in perceived service quality and client satisfaction. This study is focused on medium size contact centers in morocco. A segment that we categorize as "challengers" within the industry. This category is very important for the economy in terms of job creation and as a source of foreign currency. However, it suffers from a bad reputation in terms of service quality and a poor proposed customers experience

Thus, the problematic is: Could the adoption of new technologies of communication help this category of contact centers improve service quality and customers experience?

Through a field survey, the main results show that the use of new technologies have a notable impact on certain aspects of the quality of service such as reliability and responsiveness but has a limited effect on other aspects such as insurance and empathy which are rather linked to professional and interpersonal skills and performance of employees.

**Keywords:** Customer experience, Quality of service, Contact centers, QoS dimensions, ServQual, Digital Media Communication, Client Satisfaction.

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## 1. Introduction

Costumers have never been faced with as many possibilities and choices as they are nowadays. Time and location are no longer à criteria of choosing a service company instead of another one. New communication technologies allow consumers to purchase the service from a company thousands of miles away without ever interacting physically with the service provider. The purchase can be made any time of the day even after opening hours. This flexibility drives the competition to a very high level. The quality of the product itself does not guarantee the customer satisfaction anymore. How the service is marketed, sold, and delivered is as important as the quality of the product itself. Companies are now faced with the challenge of constantly enhance the quality of their product and the customer experience which requires a great deal of creativity and innovation in order to achieve costumer's satisfaction.

## 2. Quality of service

Quality of service can be measured through a comparison of perceived quality of service and what an excellent service is supposed to be from the customer's perspective. Improving perceived service quality can be an important competitive advantage for companies. According to Bitner M.J1 (1990), Quality of service is the overall impression of the superiority or inferiority of the company and the service provided.

Traditionally, customers would express their opinion of the quality of service based on the quality of the interaction with the front-end employees where the perception of quality of service in that case depends directly on their professional performance and communication skills. This definition suggests that quality of service is linked to human interactions during service delivery2.
Now a days, interactions between companies and customers evolved and took different forms. It went from direct and personal interactions with company employees to digital and impersonal interactions trough different media such as interactive voice servers (IVS), websites, social networks, chat bots, or contact center agents who may not be employees of the service company, but are usually employees of an external contact center service providers. Customers themselves in that case become a simple record in a database. They may go through the whole purchasing process without ever interacting with any campany employee. These digital impersonal interactions have been widely adopted by customers and have become a decisive factor for quality of service and customer satisfaction.

### 2.1 QoS Dimensions

According to Parasuraman[3] (1985), customer perception of service quality is determined by evaluation of the 5 following dimensions.

- Tangibles: The means put in place in terms of infrastructure, installations, communication tools, Technical and hardware equipment.
- Reliability: The ability to deliver a service. To be trustworthy and respecting confidentiality.
- Responsiveness: ability to help customers find the right product or service and being able to deliver it on the promised time.
- confidence: The ability to inspire confidence through a good understanding of customer's needs and mastering the company's products and services and also by having good communications skills and courtesy in the exchange.
- Empathy: Provide a personalized service by giving care and individualized attention to the client.

Before interacting with a given company, client has already his own expectations of what excellence should be regarding each of these dimensions. The gap between excellence from the customer's point of

[1](Mary Jo Bitner, 1990)

[2](Norizan Mohd Kassima, 2002)

[3] (Parasuraman A, 1985)

view and his judgment of the service provided in terms of the 5 dimensions constitutes: The Customer perception of service quality.

### 2.2 QoS perception

Customer perception of the quality of interactions or services provided by the company is the difference between the perceived and expected quality. A customer experience is considered positive when the perceived service quality exceeds the expected service quality. This is an emotional and subjective judgment derived from a client's system of reference. The Client system reference is linked to two fields: A Mental field and a space-time field (Bernard AVEROUS, 2004).

The mental field is related to a structured customer beliefs and information accumulated from previous experiences (Bernard AVEROUS, 2004).

The customer's space-time field is the space and time in which the relationship or service is taking place. This field lasts as long as the psychological and/or financial effect of the service persists. (Bernard AVEROUS, 2004).

Quality of service that take place in the space-time field is strongly influenced by the mental field that is made up of previous experiences.

The service provider also evolves withing a "provider system of reference " that is also made up of a mental and a space-time field (Bernard AVEROUS, 2004) .

The mental field of the service provider is made up of business experience, know-how, techniques and skills. Also, values and the culture of the structure or the company can be added. All these elements combined are deployed in the back office and front office to produce the desired service. (Bernard AVEROUS, 2004).

The Provider's space-time field is the environment where the service is designed and implemented (Bernard AVEROUS, 2004).

### 2.3 QoS cycle

It is a virtuous cycle that allows continuous service quality improvement. This cycle is made up of four stages. Each stage is impacted by the one that precedes it and impacts the following one. Each relationship between the different stages is an opportunity to improve the quality of service. the service provider may act on and influence the different stages

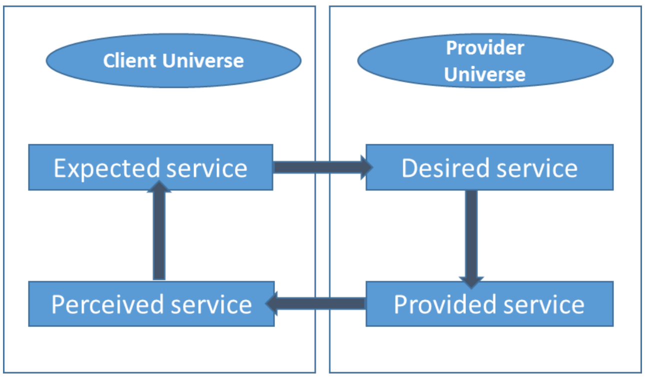


**Figure 1 : Quality of service Cycle: Two Universes**

***From the expected service to the desired service***

This is a preliminary analysis that precedes the design of the desired service. A field of action where the client is placed at the center of the provider's approach. (Bernard AVEROUS, 2004) This is the crucial step in designing the desired service. This stage consists of 3 phases:
Understand customer expectations for the desired service in terms of attributes such as reliability, speed, punctuality, confidentiality, etc., and in terms of costs (Fabien, 2015). These expectations are enriched by previous experiences, misconceptions, habits, social environment.
The second phase consists on defining the expected attributes that will be taken into account when designing the service, taking in consideration various economical and technical production aspects such as production capacities, profitability, etc.
The 3rd phase is a marketing campaign which consists on promoting and highlighting the expected attributes that have beed taken in consideration while designing the service.
This step allow to bring expectations as close as possible to the service provider's desired service and vice versa.
In fact, customer analysis is necessary especially in the current context where the requirements and consumer behavior are constantly changing.

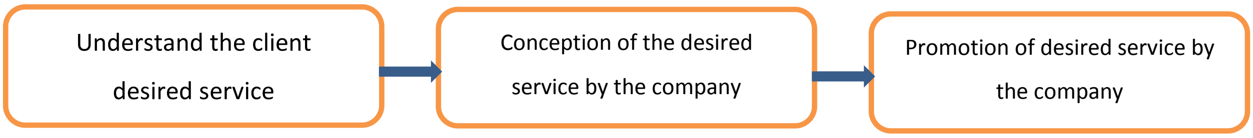


**Figure 2 : Stages to elaborate the desired service[4]**

***From the desired service to the provided service***

The provided service is the desired service after being confronted to the production process restraints. Going from the desired service to the provided service is the field where we assess the conformity of production which gives us the opportunity to improve the production processes of the service. The purpose of this conformity assessment and process improvement is to reduce the gap between the desired and provided services. (Bernard AVEROUS, 2004).

***From the provided service to the perceived service***

The perceived service is a subjective client judgment of the provided service. The link between the provided service and the perceived service falls within the scope of communication and marketing. This communication consists on explaining the service provided to the client from his specific language and frame of reference to make it more relevant. (Bernard AVEROUS, 2004).

***From the perceived service to desired service***

The perceived service and the desired service constitute the universe of reference, experience and evaluation of the client. This is the field where customer satisfaction is assessed. The success of the previous steps leads to successful customer satisfaction and therefore a successful customer experience. (Bernard AVEROUS, 2004).

At the end of this stage, the customer becomes either a brand ambassador if the customer experience is positive or a detractor if it is negative.

### 2.4 Customer satisfaction, a lever for economic performance

Making satisfied customers brings higher revenue for businesses. This happens through three levers:
**Brand loyalty:** A loyal customer continues to consume products of the same brand that generates steady sales and income (Saloman, 2014).

[4](Bernard AVEROUS, 2004)

**Lower attribution rate:** Customer retention is always less expensive than acquiring new customers. a lower attribution rate and loss of of customers generates significant savings for the company. (Saloman, 2014).
**Word of mouth:** Satisfied customers become brand ambassadors. By communicating positively around them of their positif customer experience, they contribute to the acquisition of new customers which generates additional sales. (Saloman, 2014);
Even if the link between customer satisfaction and economic performance is obvious, we still need a more precise survey tools to measure of customer satisfaction.

## 3. Client experience

The customer experience is the cumulated feelings and impressions perceived throughout his consumer journey which is built during all interactions with the company. (Fabien, 2015).
It includes all contact points with the company or the brand, whether before, during or after the transaction (Saloman, 2014)
A positive customer experience is acquired when the customer's perception of the quality of all interactions with the brand exceeds expectations. This triggers satisfaction and appreciation that results in what we call the ”WOW effect”.

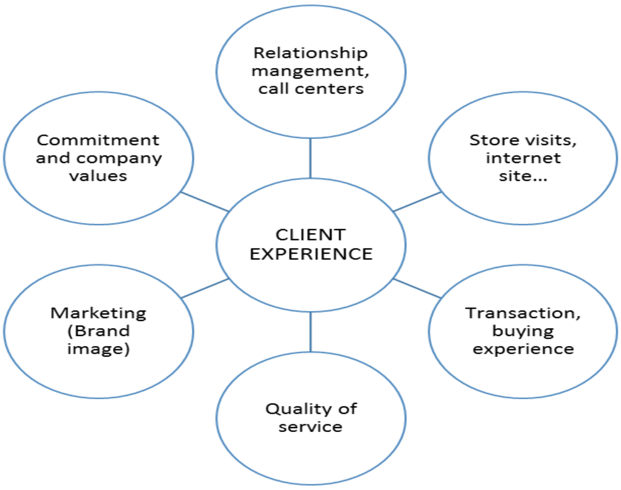


**Figure 3: Client experience is in the core interactions with the brand[5]**

### 3.1. Customer satisfaction, a lever for economic performance

Interactions with customers have evolved significantly and have taken different forms. The use of digital media has become more than a tool for competitive differentiation but rather a customer requirement. A good quality service is not enough eny more, costumers now ask to live an exceptional buying experience. For 84% of consumers, customer experience is as important as the purchased product or service. The difficulty for companies lies on the fact that the customer experience cannot be standardized. Creativity in terms of customer journey improvements must be continuously improved. According to a Salesforce study, 73% of consumers confirm that an amazing customer experience increases their expectations of other companies.

### 3.2. Technological innovation for better client experience

Technological innovation in the service sector has historically been linked to the process of creating the delivered products. With the evolution of customer requirements and the growing importance of providing a positive customer experience, technological innovation is increasingly used in the ways and

[5](Saloman, 2014)

methods of interaction with customers. Competitive differentiation is now done at the level of customer interaction, which must be multi-channel, available anytime, anywhere, taking in consideration the context and circumstances of each customer need.

### 3.2.1 Multi-channel interactions

Today, customers want to choose their interaction channels with companies. For one transaction, a customer may use one or more communication media. According to a Salesforce study, 64% of consumers use different media during the purchasing process of the same transaction. (Salesforce, 2019). For instance, an online ticket purchase can first go through an online consultation of price comparison sites, then through the airline's website to obtain flight schedules and then through the contact center to carry out the reservation.
We can also have additional interactions by email, SMS or Chat (WhatsApp) to notify the customer of a change in flight schedule for example.

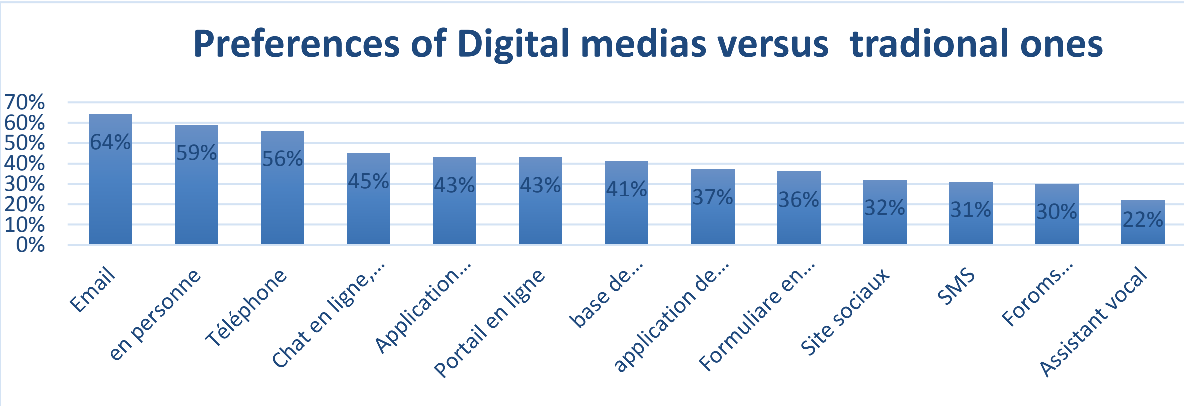


**Figure 4 : Usage comparison of communication médias**[6]

### 3.2.2 Artificial Intelligence: Chatbot

Chatbots represent one of the major communication tools based on Artificial Intelligence. The word Chatbot is derived from the word "CHAT" and "ROBOT" referring to a "robot agent" who uses "Natural Language" to provide data or services in a text or a voice form (Petter Bae Brandtzaeg, 2018). In other words, the conversational nature of Chatbots allows new and potentially more personal ways to accede to the content or to a service.
It allows users to ask questions or place orders in their native language. If this technology gains the expected popularity, the Chatbot will dramatically change the methods of communication between the customer and online services (Petter Bae Brandtzaeg, 2018).
Chatbot is used in various fields, particularly in the customer service sector (Nordheim BC, 2019). Contact centers are important users of this technology, particularly on the "Predictive Webchat" and "IVR" tools. The Predictive Webchat allows you to predict responses to users' messages through a database of keywords without the intervention of the contact center agents. Chatbot is also used in "Natural language" IVR.
The results are quite impressive. Some transactions can be made entirely through IVR without any human interaction, particularly in the banking or services sectors that are fully accessible by IVR equipped with Natural Language, Text to Speech and Speech to Text functionalities.

[6](Salesforce, 2019)

## 4. Problematic

The Contact center sector in Morocco is one of the 5 major industries that the country is trying to promote and preserve. It is an important resource of foreign currency and job creation. we can divide this sector to 3 categories:

- The National champions; are the top 20 fully equipped in terms of latest technologies and infrastructure. this category represents 80% of the national market in terms of income and job creation
- The challengers: Are the midsize contact centers. they are also important for the national economy since they are also located in smaller cities with an important impact in terms of job creation. this category has some important weaknesses such as a poor reputation in terms of service quality. with a limited financial resource this category has a hard time to progress and to improve their perceived service quality
- Small contact center: in most cases with less than 50 employees and only one client.

we chose the category of "challengers" for our study. This category is struggling to reinvent itself and face threats that could affect its sustainability. Without large financial resources that would allow significant investments with to improve working conditions, employee training , and integration if new technologies to improve their production tools, it will be difficult or even impossible for them to maintain themselves in the race for customer satisfaction.
Considering the financial constraints of this category, only improvements that do not require a heavy investment would be possible.

**How can this category of contact centers improve perceived of quality of service and possibly offer a positive customer experience?**

To measure the influence of adopting new communications technologies on the service quality perception and customer experience, we will make a survey to test the following assumptions:

- **H1: The use of new communication technologies influences positively customer perception of service quality.**
- **H2: The use of new communication technologies provides a positive customer experience**

## 5. Empirical methodology

Contact centers are major actors of customer relationship management. These structures, traditionally called call centers, were first created by large structures to manage interactions by phone and email. These interactions were either external toward customers and suppliers or internal to provide internal services such as technical assistance centers or information centers dedicated to employees and internal users.

Facing The evolving needs of brands and companies in general, new activities, particularly those related to Marketing, sales and after-sales service, were introduced within these centers, especially operations in: telemarketing, tele sales, data collection, Customer support, Technical assistance…
As these centers grow and accumulate experience and know-how, they become more and more essential for the management of brand customer interactions.

### 5.1. Contact Center sector in Morocco

For better competitiveness, towards the end of the 90s, some Outsourcers of customer relations, essentially on the French market, began to test relocating there production to French-speaking countries, with available French speaking skilled human resources at attractive costs. Among these destinations

we have Eastern European countries, such as Romania and Bulgaria, African countries like Senegal, Madagascar and Mauritius, and finally North African countries, especially Tunisia and Morocco.
In Morocco since early 2000s, several companies specialised contact center services have been created. those companies were mostly addressing foreign markets especially European and North American. To follow this emergence, Moroccan government understood the economic importance in terms of foreign investment and job creation of this new industry and took several measures:

- Investment aid: By granting an investment bonus and contributing in employees training costs.
- Fiscal initiatives: the government granted this sector many tax exemptions of income tax and corporate tax.
- Real Estate: Creation of real estate offers corresponding to international standards through a number of «offshore zones» fully equipped with technical infrastructures.
- Improvement of the business climate with the simplification of administrative procedures and the establishment of appropriate telecommunications infrastructure.

### 5.1.1 Economic and social impact

According to the Minister of Industry, "There is significant potential for the offshoring sector in Morocco, especially in a context marked by worldwide market growth , the existence of favourable structural trends in Morocco, and the diversity sectors covered by the activity". After twenty years of development and growth, the offshoring sector has kept all its promises, whether in terms of revenue and / or in terms of job creation.
The offshoring sector participates in the country's economy in terms of income with more than 1 billion euros in 2018 which brings us very close to the objective of the Industrial Acceleration Plan (PAI) 2014-2020 announced by the Minister of Industry, a contribution of the sector to the national GDP in the amount of 16 billion dirhams.

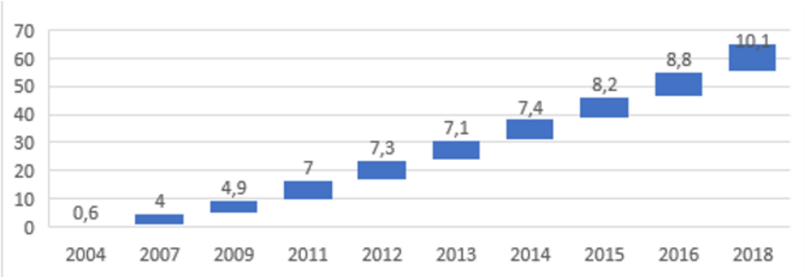


**Figure 5 : Turnover evolution in Moroccan offshoring exportation[7]**

With 1,000 national players, the offshoring sector is positioned as the 2nd employer in Morocco, exceeding 100,000 jobs, including 69,932 direct jobs created between 2014 and 2018. It represents 17% of all jobs created during this same period.
These figures are distributed very disproportionately among the 1000 national players. There were a lot of mergers between the various players at the national and international level. This help the creation of national big industry players that we call the national champions. They are about twenty groups that monopolize more than 80% of the industry income and the job creation.

### 5.1.2 Typology of players on the sector

Structures of call center scan be classified according to three groups:
**The sector champions:** The TOP 20, they monopolize 80% of the industry income and jobs creation. We can divide this group into two subgroups:

[7] http://amrc.ma/wp-content/uploads/2019/10/Guide-investisseur_ecosystemes_offshoring-2.pdf

- National companies created by Moroccan investors, they were developed in Morocco before going international through acquisitions and mergers and by creating new establishments abroad, particularly in Europe and in Sub-Saharan African countries. Examples include: INTELCIA, MAJOREL and Outsourcia.
- Major international groups: They created subsidiaries in Morocco during the 2000s. Over the years these subsidiaries have evolved by acquiring other Moroccan or foreign players. For instance "COMDATA" international actor who bought in 2018 "CCA international" an international actor which bought in 2016 "Data Base Factory" another international actor who had bought in 2009 its Moroccan provider (STRATEGY CALL) which was at the time a midsize contact center.

**The Challengers:** Medium-size contact centers with a workforce that varies between 100 and 1,000 employees. Established in different regions in Morocco, especially in cities less coveted by the top 20. This is the group that we want to address and analyze in this study.
**The Small call centers:** They employ less than 50 agents. They can be divided into two sub-groups:

- Centers of Excellence: Often created by the brand to test products and customer service approaches before outsourcing the activity. These centers of excellence are the benchmark in terms of qualitative and quantitative objectives.
- Single-client sites: often created by small investors who manage to have a client. These are small, custom-build platforms for their customers. These are small structures with less than 50 employees often dedicated to a single client.

We choose the “challenger” group as targeted category for our study. It is an important category for Moroccan economy. These are sites located in several cities even outside the “Casablanca-Rabat axis”. They can be found in the northern cities where the availability of Spanish-speaking human resources especially Tangier and Tetouan, in the center region in Fez and Meknes and in the eastern region in particular in the city of Oujda.

## 6. Results analysis

### 6.1. Methodology

Our survey targeted users of a customer technical support service in a medium size contact center. This technical support service handles requests for technical support for a telecom’s operators. Those requests involve users-end telecom requirements.
The survey was distributed by the call center telephony system at the end of communications through an IVR. The customer was brought to answer the questions by DTMF[8] digital input.
Over the 100 IVR requests distributed, we identified 64 usable responses.

### 6.2. Data analysis

To analyze the relevance of these hypotheses, we opted for a quantitative customer survey in three steps:
- A “serv-qual” type survey to calculate the customer's perception of the quality of service, our SurvQual has been modified in order to fit the purpose of our study. Bellow the questions that have been asked for each service quality dimension.
- A survey to measure customer preferences in terms of integration of digital communication channels, "Data Mining" and Artificial Intelligence,
- An "NPS" survey to quantify the level of satisfaction with the customer experience.

For our study, we targeted a sample of 100 technical customer service users to assist to the installation of home internet connection equipment.

[8] DTMF : saisie de touches sur le clavier du téléphone

#### 6.2.1 SERVQUAL

It is a model developed by Parasuraman in 1985. It has become the standard used to measure the quality of service (Norizan Mohd Kassima, 2002). This model uses 22 questions scored according to "Likert scale". It permits to explore the differences between the customer's perception of the quality of the service and that of the service provider. (Norizan Mohd Kassima, 2002). This model includes the 5 dimensions of quality of service, namely: Tangibles, reliability, responsiveness, confidence, and empathy (Norizan Mohd Kassima, 2002).
to adapt the "Servqual" model to the business sector, we have made some modifications. We have removed the section of tangibles since in the case of the call center, the client does not have access to production site or infrastructure. Even if we can consider that the communication tools made available to the customer are part of the tangible, we integrated them in the second questionnaire that deals with the integration of new communication technologies. The answers on this questionnaire will be scored on a Likert scale mode as follows:

1. Strongly disagree/ 2. Disagree/ 3. Neutral/ 4. Agree/ 5. Strongly disagree

Bellow our ServQual diffused survey:

***Reliability:***

| Code | Question | Answers |
|---|---|---|
| QSQ1 | Does the service provided meet your expectations | 1 to 5 |
| QSQ2 | Did your contact person have the necessary knowledge to process your request? | 1 to 5 |
| QSQ3 | has your request been handled on the first call? | 1 to 5 |
| QSQ4 | Was your request processed within the promised timeframe? | 1 to 5 |
| QSQ5 | Was the agent able to identify easily you account and have access to you data? | 1 to 5 |

***Responsiveness***

| Code | Question | Answers |
|---|---|---|
| QSQ6 | Have you been regularly informed of the progress of your request? | 1 to 5 |
| QSQ7 | Overall, have we been responsive? | 1 to 5 |
| QSQ8 | Overall, have we been helpful? | 1 to 5 |
| QSQ9 | Did the agent show willingness to find the right solutions for your need? | 1 to 5 |

***Confidence***

| Code | Question | Answers |
|---|---|---|
| QSQ7 | Was your interlocutor reassuring? | 1 to 5 |
| QSQ8 | Was your interlocutor welcoming? | 1 to 5 |
| QSQ9 | Was your interlocutor courteous when handling your request? | 1 to 5 |
| QSQ10 | Was the agent experienced enogh to handel your request? | 1 to 5 |

***Empathy***

| Code | Question | Answers |
|---|---|---|
| QSQ11 | Did your interlocutor pay you the special attention expected | 1 to 5 |
| QSQ12 | Did your interlocutor take solving your request to heart? | 1 to 5 |
| QSQ13 | Was your interlocutor able to understand your needs? | 1 to 5 |
| QSQ14 | Are our opening hours suitable for you? | 1 to 5 |

#### 6.2.2 Digital communication Preference

To define how comfortable are our customer support clients using digital media over classic voice communication we have established our survey as follows :

| Code | Digital Communication | **Answers** |
|---|---|---|
| CDQ | Do you use digital media available 24/7 rather than calling the customer support during office hours? | Yes - No |
| DMQ | Do you appreciate that our agent have access to account information, and all previous requests and transactions history | yes - No |
| AIQ | Do you sometimes use our IVR to completely handle your request | Yes - No |

This survey will help us define the supporters and the antagonist of the use of digital communication channels and understand how they perceive the service quality (Servqual) and where they stand in terms of client satisfaction (NPS)

### 6.2.3 NPS : Net Promotors Score

The Net Promoters Score NPS is commonly used by businesses to measure the customer experience. Its calculation is done on a scale of 0 to 10 to answer a single question which is: "What are the chances that you will recommend our company to someone you know?" (Rebecca Koladycz, October 2018). The NPS is calculated by segmenting customers according to their responses:

- 9 to 10: This is the group of ambassadors, those who have had an exceptional customer experience that deserves to be shared positively with those around them. This customer segment will help promote the business.
- 7 to 8: This is the group of neutrals or those without special notice. They are customers, certainly satisfied with the quality of service but did not necessarily live from their perspective an exceptional customer experience that deserves to be recommended.
- 0 to 6: This is the group of detractors. Dissatisfied customers who have had a bad experience and who risk sharing it negatively with those around them.

| **Détractors** | | | | | | **Neutral** | | **Ambassadors** | |
|---|---|---|---|---|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |

**% Ambassadors** − **% Détractors** = **% NPS**

**Figure 6 : Calcul du NPS**[9]

The NPS is obtained by subtracting the percentage of ambassadors from the percentage of detractors. A score of 50 or above, obtained by a company is considered a positive score. (Poulard, 2019).

## 7. Results analysis

Over 64 selected clients, 29 responded between 8 and 10, 14 between 6 and 7 and 21 between 1 and 6. This gives us 45% of ambassadors, 22% of those without opinion and 33% of detractors which gives us an NPS result of 12%.

[9] https://www.hopcrm.com/arrêtez-les-enquêtes-de-satisfaction-passez-au-nps/

**Table 1 : NPS Survey Results**

| Client Experience | | | | |
|---|---|---|---|---|
| **Client Segment** | **Ambassador** | **Neutral** | **Détractor** | **NPS** |
| Occurrence | 29 | 14 | 21 | |
| Pourcentage | 45% | 22% | 33% | 12% |

**NPS= % Ambassadors - % Détractors**

In order to verify the causality between the customer experience, and the use of new communication technologies, a breakdown of the rates of the supporters of the use of new technologies and its antagonists on the three segments of the NPS is done.

**Table 2 : Rate of supporters and antagonists according to NPS Segments**

| | Ambassadors | | Neutral | | Détractors | |
|---|---|---|---|---|---|---|
| | Supporters | Antagonists | Supporters | Antagonists | Supporters | Antagonists |
| Use of digital channels | 68,97% | 31,03% | 64,29% | 35,71% | 42,86% | 57,14% |
| Use of Data Mining | 62,07% | 37,93% | 64,29% | 35,71% | 47,62% | 52,38% |
| Use of SVI (AI) | 62,07% | 37,93% | 57,14% | 42,86% | 47,62% | 52,38% |
| **TOTAL** | **64,37%** | **35,63%** | **61,90%** | **38,10%** | **46,03%** | **53,97%** |

We note that 64% of ambassadors use digital media against 46% of the detractor.
In order to verify the causality between the customer experience and the perception of the quality of service, we integrate the results of the quality of service by customer segment of the NPS:

**Table 3 : Servqual grade by NPS segments**

| **Quality of Service** | **Average grade** | **Ambassadors** | **Neutral** | **Détractors** |
|---|---|---|---|---|
| Reliability | **4,23** | 4,63 | 4,26 | 3,78 |
| Eagerness | **4,16** | 4,48 | 4,14 | 3,86 |
| Insurance | **4,21** | 4,30 | 4,2 | 4,13 |
| Empathy | **4,29** | 4,38 | 4,26 | 4,25 |
| TOTAL | **4,22** | **4,45** | **4,22** | **4,01** |

We note that ambassadors have a service quality rating of 4.45 while detractors have a lower than average rating of 4.01.

Below are the details of the quality of service scores per question:

**Table 4 : Details of Servqual results**

| Domaine Q S | Question Code | AVerage grade | Ambassadors | Neutral | Détractors |
|---|---|---|---|---|---|
| Reliability | QSQ1 | 4,42 | 4,79 | 4,63 | 3,85 |
| | QSQ2 | 4,08 | 4,5 | 3,96 | 3,79 |
| | QSQ3 | 4,29 | 4,79 | 4,21 | 3,88 |
| | QSQ4 | 4,23 | 4,86 | 4,33 | 3,5 |
| | QSQ5 | 4,1 | 4,21 | 4,19 | 3,9 |
| Total | | 4,23 | 4,63 | 4,26 | 3,78 |
| Eagerness | QSQ6 | 3,94 | 4,36 | 3,96 | 3,5 |
| | QSQ7 | 4,3 | 4,86 | 4,38 | 3,65 |
| | QSQ8 | 4,24 | 4,36 | 4,25 | 4,1 |
| | QSQ9 | 4,17 | 4,36 | 3,96 | 4,2 |
| Total | | 4,16 | 4,48 | 4,14 | 3,86 |
| Insurance | QSQ7 | 4,23 | 4,36 | 4,22 | 4,12 |
| | QSQ8 | 4,12 | 4,29 | 3,96 | 4,1 |
| | QSQ9 | 4,28 | 4,21 | 4,38 | 4,25 |
| | QSQ10 | 4,22 | 4,36 | 4,25 | 4,05 |
| Total | | 4,21 | 4,3 | 4,2 | 4,13 |
| Empathy | QSQ11 | 4,34 | 4,29 | 4,22 | 4,5 |
| | QSQ12 | 4,22 | 4,36 | 4,15 | 4,15 |
| | QSQ13 | 4,44 | 4,5 | 4,6 | 4,21 |
| | QSQ14 | 4,18 | 4,36 | 4,05 | 4,12 |
| Total | | 4,29 | 4,38 | 4,26 | 4,25 |

In order to verify the impact of the use of new technologies on the perception of the quality of service, we calculated the scores of the customer's perception of the quality of service per response relating to the use of new communication technologies.
We note that the average rating given to the quality of service by people who are adept in the use of new communication technologies is 4.44% against 4.01 for people who are not.

**Table 5 : Servqual grade split: supporters vs antagonists**

| | **CDQ** | | **DMQ** | | **IAQ** | | **Total QS** | |
|---|---|---|---|---|---|---|---|---|
| **Domaine Q S** | Supporters | Antagonists | Supp | Antag | Supp | Antag | Supp | Antag |
| Reliability | **4,87** | 3,9 | **4,54** | 3,65 | **4,57** | 3,85 | **4,66** | 3,8 |
| Eagerness | **4,6** | 3,78 | **4,42** | 3,88 | **4,35** | 3,92 | **4,46** | 3,86 |
| Insurance | **4,5** | 4,15 | **4,25** | 4,12 | **4,14** | 4,11 | **4,3** | 4,13 |
| Empathy | **4,4** | 4,22 | **4,28** | 4,27 | **4,32** | 4,25 | **4,33** | 4,25 |
| Total by question | **4,59** | 4,01 | **4,37** | 3,98 | **4,35** | 4,03 | **4,44** | 4,01 |

### 7.1. 5.1. Quality of service and use of new technologies

Our analysis is based on a comparison of the scores attributed to the quality of service by customers who use new communication technologies and those who do not.
Customers who answered "yes" to the use of new communication technologies assigned a score of 4.44 to the quality of service compared to 4.01 for customers who are not adept at these technologies. This difference varies according to the segments of service quality used during our survey.

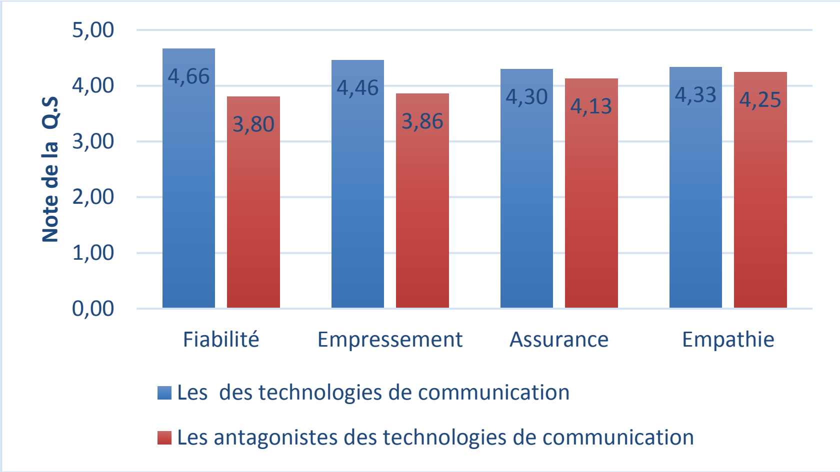


**Figure 7 : QoS Perception Results**

We notice the gap is greater in reliability and responsiveness but less important in the areas of confidence and empathy. This can be explained by the fact that the impact of the use of digital tools allows better responsiveness and availability while reducing the margin of human error which increases reliability and readiness while inpiring confidence and empathy depends more on the quality of service of agents where the impact of technology is lower.
We can deduce that our first hypothesis is partially confirmed by our investigation. And that the use of new communication technologies has a positive effect on certain areas of quality of service, notably reliability in the first place and speed in the second place, given that other areas of quality of service are more linked to human factor.

### 7.2. 5.2. Customer experience and use of New technologies

Our analysis focuses on a comparison of the results of ambassadors with the results of detractors.In terms of adoption of the new communication technologies offered by the contact center, ambassadors support it more than detractors with an average of 64.37% for ambassadors against an average of 46.03% for detractors. This result is in agreement with our second hypothesis. The customer experience is positively impacted by the integration of new communication technologies

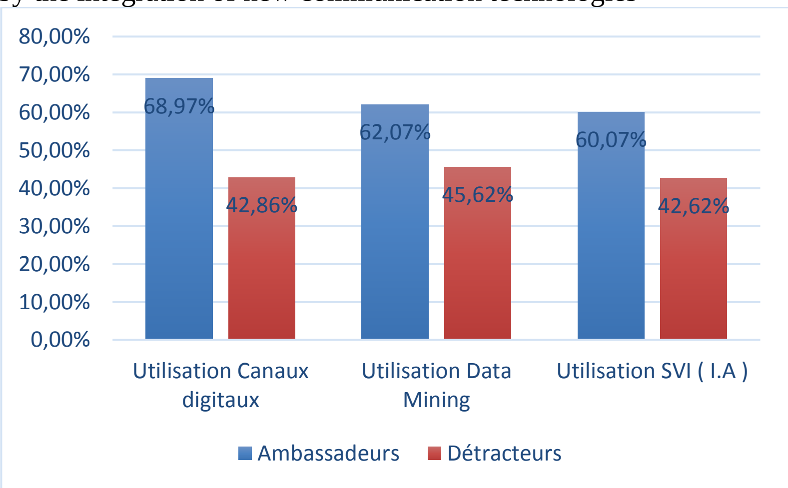


**Figure 8 : Digital media adoption rate by NPS segment**

We note that the use of digital channels for processing customer support is more appreciated by ambassadors than the use of Data Mining and IVR. The lack of customer enthusiasm for Data Mining may be due to customer concerns about data privacy and security aspects.

## 8. Conclusion

Our study shows that improving the quality of service and the customer experience cannot be based exclusively on technological innovation as it has a limited impact on certain aspects or the impact of the latter is quite low on certain areas of the business. Quality of service is mostly linked to the professional performance of employees. This professional performance of employees is also impacted by other types of innovations, in particular innovation at the level of production processes, innovation at the level of management methods and innovation at the social level.

The analysis of the results of our survey confirms the positive impact of technological innovation in communication methods on the perception of service quality and on customer satisfaction. The good news for the call center category targeted by our study is that these innovations have become more accessible than ever. Thanks to the evolution of voice over IP, the performance of telecom networks, particularly the Internet, and the attractiveness of "Data Center" offers, several manufacturers and solution editors have adapted their business model to offer their solution in cloud.

The perspective of the research is to study the different demographic niches and to prove that they certainly do not have the same sensitivity to the adoption of new communication technologies. In order to have a better understanding of development trends, more targeted studies must be carried out taking into account demographic characteristics such as: age, gender, level of academic training, occupation, income level and / or social status.

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