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THE "ONLINE MANAGER"
A VALUE ANALYSIS

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Preface

I would like to thank everyone who helped make this dissertation possible.

To Company Virtual Managers, they made my study case possible. To the marketing department, for all the data they made available.

To my Director and tutor, for their support and advices, they have provided the bases for this paper.

From the UCP, I would like to say thanks to my dissertation advisor for the help he gave. Because of him I could find my way. His effort and skillfulness were most welcome.

To my Mother and Father, I need to thank them for everything they were able to provide in my live, both personally and academically. Lastly to Joana… If it wasn't for her my dissertation would not be finished.

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Abstract

This study assesses if the Online Manager, a new technology implemented by the company Virtual Managers with the aid of CRM Systems, did create value for the firm. We propose a service deliver model based upon five service components: Virtual front office and back office, physical front office and back office and an integrator component. Furthermore, we discuss how the components should be designed in order to deliver value to the customer and profit to the company, then, a comparison is done between two periods (2007 and 2008) of time to determine the differences occurred at the level of service delivery in Virtual Manager. A linkage between our service delivery schematic and service quality is made in a value creation point of view, through the use value and exchange value dimensions. We conclude that in Virtual Managers, knowledge creation still has a long way to go.

1 - Introduction

The internet is almost an inevitability in our everyday lives [M. Castells et al 2003], and the time-to-market of new technologies decreases in front of our own eyes [Smith and Reinertsen et al 1992], companies and entrepreneurs are focused in new ways of increasing their sales and profits [Heskett at al 2008].

Consequently, Company Virtual Managers (we will address the company this way due to confidentiality reasons) with the support of CRM systems came up with the idea of creating an "on-line manager" in their internet banking channel, in order to explore the relational factor with their costumers online. The on-line manager went "active" in March 2008, after 6 months of testing a small group of customers.

The purpose of this work is the following:
- *Determine and analyze whether or not this new technology improved the Virtual Managers online channel value*.

This work is relevant because if companies could finally understand how to do a proper analysis to their CRM technology, there wouldn't be so many problems concerning their implementation. Problems may occur from every part of the service components [Gebert et al 2003];[Sousa and Voss et al 2006], "CRM promises revenues and profits, and customer service companies face potential failure, because of all the complex technical and organizational issues involved" [Goodhue et al 2002].

Indeed, new technologies are always hand in hand with uncertainty of success, making doubt always present before and after their implementation [McGrath and MacMillan et al 2000]. Therefore the project was analyzed by the company before it was implemented and now, almost 2 years after the go-ahead, the urge for a new

analysis emerges in order to evaluate if the online manager did or did not create value, and in either case to identify possible processes improvements.

This kind of analysis to a project is referred in [Kotler et al 2008] and in [Pan and Lee et al 2003], and for that reason, a comparison is done between two periods of time to determine the differences occurred at the level of service delivery. The two periods are 1st semester of 2007 (the online manager was only made available in the second semester at July27), and 2º Semester of 2008, a year after its rollout.

To evaluate if this new technology had in fact an impact on value creation, and what kind of an impact it was, a conceptual framework supported by previous studies is constructed, being fundamental for its construction the paper of [Sousa and Voss et al 2006]. Because the online manager is a new service offered by the company, this framework will be conceived with the purpose of accessing what components of the service delivery did (or not) the online manager create value.

As said before problems can occur from every part of the service components, therefore we first start our approach by discovering what service is and the components it possesses at section 1. Then, in section 3, our attentions turn to the CRM systems and study how they are supposed to be implemented in order to improve the online channel value and bring profit to the company. We also approach the customer view, in section 4, since it is the customer who evaluates service delivery and bring profit to the firm by purchasing what the company is offering in a process called payment equity: "Customer's perceived fairness of the price paid for the firm's products or services"[Verhoef et al 2003]. Therefore we also perform a literature review on service quality literature, because this topic is vital to understand how customers perceive the value of the service delivered to them [Cronin et al 2000].

Lastly we address to value creation in section 5, in order to understand value creation sources, what dimensions value has and finally how to measure it.

In our case study chapter, we learn how the online manager operates and discover the CRM systems and applications it uses to allow its functioning. Afterwards, we place this systems and applications in our service components, then, it is performed an analysis to study their impact on our service quality dimensions.

To conduct this study, we will use four samples of Virtual Managers customers, requested to their marketing department. Two of these samples concern to the first period of analysis (1st semester of 2007), we then perform a cross-check with other two samples of the second period of analysis (2nd semester of 2008). The measurements, results and discussion are displayed in chapter 4.

2 - Literature Review

In this chapter we first study service characteristics, used as foundations to service definition and to the remaining chapters of our work. Then we advance to the service concept, where we address its dimensions and the three types of service processes that Marketing is responsible to design in a profitable way. We use these dimensions to discover our five service components.

In section 2, and because marketing is responsible to design service processes with market knowledge [Hoffman et al 1996], knowledge creation literature is reviewed to assess how can it be obtained. [Porter et al 2001] stressed that to gain market knowledge a company needs to "join forces" with an information system to integrate its information flows.

For this reason CRM systems are studied in section 3, since they are information integrators by definition [Feinberg and Kadam et al 2002]. These systems are therefore discussed concerning their operational capabilities and placed in the matching service component.

In section 4 a service quality model is constructed, since it is the customer who evaluates service delivery and brings profit to the firm by purchasing what the company delivers. This model is constructed to appraise the problems that might occur in service components.

Value creation is the section 5 topic. Vital to determinate if the Online Manager technology improved the Virtual Managers online channel value. We study its sources, dimensions and finally how to measure it.

2.1 - Service Definition

Because the Online Manager is a service delivered by means of CRM technology, problems may arise from its every component. Therefore, we need to perform a service literary review so that these components become discovered and a proper service designing convention is assembled to avoid these problems.

It is performed a reading on service unique characteristics, for the reason that they need to be addressed differently than products [Parasuraman et al 1985]. Furthermore, service concept is approached to discover and seize service dimensions. They are the starting point for our five service components.

2.1.1 - Service Characteristics

In order to understand what a service is, first we need to address to their unique characteristics. They were pointed out by Parasuraman in order to differentiate services from goods [Parasuraman et al 1985]. They are:

1. **Intangibility:** Cannot be touched.
2. **Heterogeneity:** Variability on delivery.
3. **Inseparability** of production and consumption: Produced and consumed simultaneously.
4. **Perishability:** Cannot be stored.

The question with services is heterogeneity and intangibility [Zeithaml et al 1981; Parasuraman et al 1985]. While heterogeneity would bring service standardization and quality control difficult to achieve, intangibility would set difficulties to the firm, in the comprehension on how consumers perceive and evaluate service quality intangibility [Zeithaml et al 1981; Parasuraman et al 1985].

This set of characteristics exists due to the lack of a physical product (goods), leading to a fifth characteristic: _services are built on processes_ [Gonroos et al 2000], a "combination of activities needed and sufficient for the firm functioning" [Victor Martins et al 2006].

However, these definitions and characteristics were made thinking on services delivered on physical and offline environment. Therefore, with the internet appearance, today's products and services are radically shifted to digital form and delivered through this channel [Sukasame et al 2005].

Scholars [Hofaker et al 2007] [Rust and Kannan et al 2003] found it necessary to make changes to meet today's _e-service_ reality. Some defend that e-service can be created and stored as an electronic code comprised of binary numbers, and define it as "an act or a performance that creates value and provides benefits for customers through a process that is stored as an algorithm and typically implemented by network software" [Hofaker et al 2007] while others have a simpler definition: "provision of service over electronic networks" [Rust and Kannan et al 2003].

The previous problems concerning Heterogeneity disappear with e-services because "does not incur as much risk of human error" [Hofaker et al 2007]. However, intangibility remains a problem and will be addressed upfront in the service quality chapter.

2.1.2 - Service Concept

To define service or e-service, it is also necessary to conceptualize service in order to grasp and visualize its dimensions. [Heskett et al 1986; Goldstein et al 2002] said that service concept was "the way in which the organization would like to have its services perceived by its customers, employees, shareholders and lenders". However, [Collier et al 1994; Goldstein et al 2002] called it the "customer benefit package".
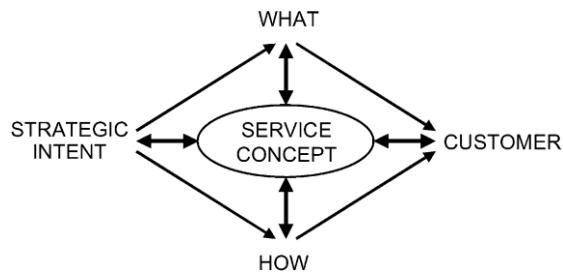
Source: Goldstein, Johnston, Duffy and Raod et al 2002

A service has two dimensions [Goldstein et al 2002] divided into a functional ("What" is delivered in terms of service outcome) and a technical dimension ("How" is it delivered) [Grönroos et al 2000; Bauer et al 2006], on the other hand, service concept not only defines the "How" and the "What", but also ensures their integration [Goldstein et al 2002].

The sentences mentioned above refer to the existence of a third integration dimension, but do not acknowledge it as a separate dimension. Due to its importance and role in the provision of the service itself, the need to a third service dimension is in order [Sousa and Voss et al 2006].

These three dimensions are guided by a strategic intent, which has its source on Marketing [Goldstein et al 2002], defined by "the attempt to uncover and satisfy customer's needs at a profit, by the organization wide generation of market intelligence" [Hoffman et al 1996]. Therefore, with market knowledge this company division has the responsibility to create processes that:

- Define what is delivered to the customer.
- Define how to deliver the "What".
- Integrate the "What" and the "How"

The purpose of these processes designing is to <u>uncover and satisfy customer needs</u> in order to achieve profit. To realize this goal and get high level of performance, <u>service processes need to be customer oriented</u>. [Möller et al 2006].

Nevertheless, we must differentiate Virtual components and Physical components in service delivery, since services are radically shifted to digital form and delivered through the internet. Sousa and Voss also felt that necessity due to the appearance of virtual channels and defined two service components [Sousa and Voss et al 2006]:

- **Virtual service:** Pure information component of a customer's service experience provided in an automated fashion (without human intervention).

- **Physical service**: Portion of a customer's service experience provided in a non-automatic fashion, requiring some degree of human intervention.

The functional part of the service, the "What", is tightly linked to the back office, since what is delivered to the customer is deliberated in the back office [Gurgul et al 2002], giving form to the "benefit pack". Meanwhile, the technical dimension, the "How", is linked to the front office by means of the channel chosen for distribution (way the service is delivered to the customer [Neslin et al 2006]).

This proves that there are issues, both in the front office and back office that influence service delivery. Nonetheless, where does one ends and the other starts? Teboul defends that there is a "line of visibility", activities or services that are invisible to the customer are behind the line [Teboul et al 2006; Lovelock et al 2004; Glusko et al 2008], making them Back office. By deduction, any activities or services (made by the firm) with a client that are visible to him (even if by means of an interface) is made in front of the line of visibility, defining this way, Front Office.

Having conceptualized service in a more operational way, it is now possible to define service and/or e-service as an act or a performance guided by a strategic intent that uncovers needs and creates value for customers, defined by a back office and delivered by a front office. We also propose a company service schematics (Figure 2).

Figure 2 – Service schematics
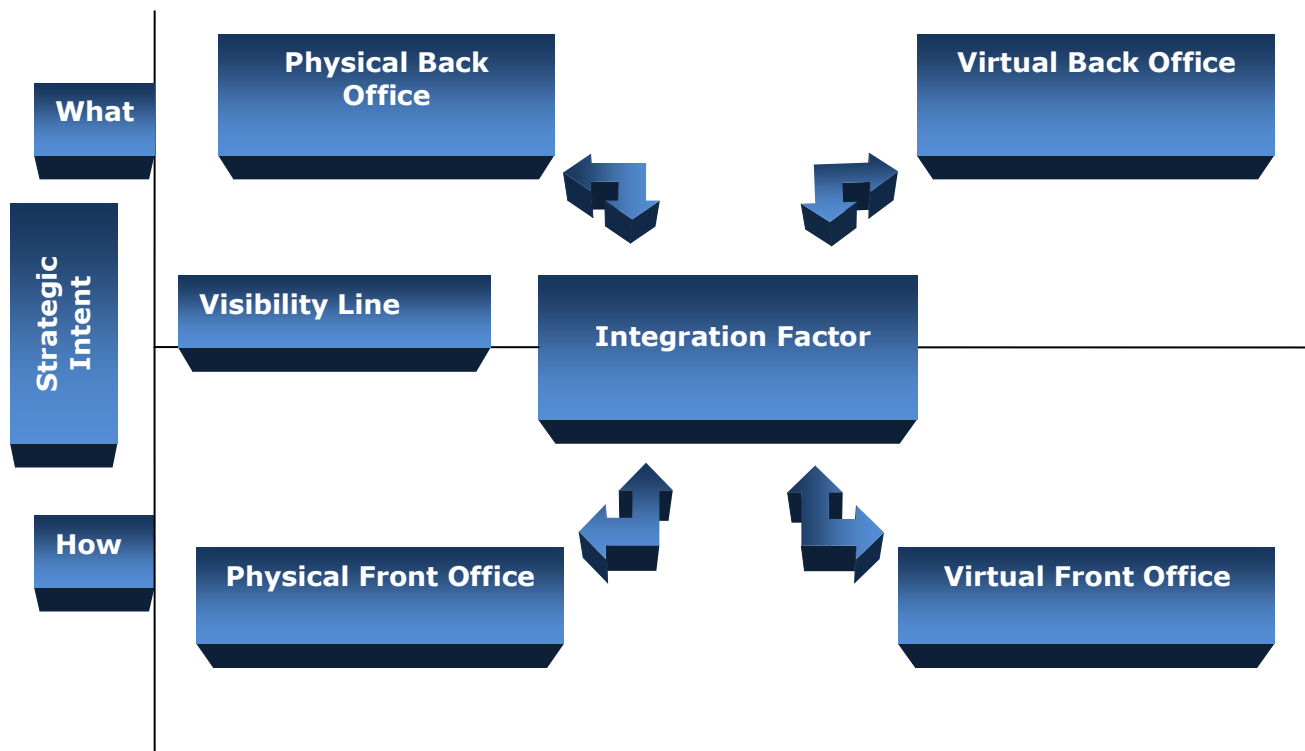
2.2 - Knowledge creation

Consistent with the marketing concept, Market Knowledge is the key to design service processes and ultimately deliver value to the customer.

The Knowledge importance has been claimed throughout time. The well known statements by Socrates "The only good is Knowledge and the only evil is ignorance" [source: goodreads.com] or by Francis Bacon "knowledge is power" back in 1597

[Kotler et al 2008] are some good examples. However, the main question is how to create Market Knowledge?

By learning with and understanding the client, because the client is armed with market knowledge by drawing it from the market itself, due to today's increasingly transparent business environments which allow customers to evaluate each company offering services [Pralahad et al 2004]. Although, a company cannot collect all information from all customers[Davenport et al 2001; Gerbert et al 2004] due to the high costs associated to the data "chaos" it would cause in the Data Warehouse (D.W.) [Nelson et al 2001]. Instead, an enterprise should focus on data harvesting from profitable customers and customize an appropriate service for each one. [Chalmeta et al 2005]

According to Riempp, Knowledge is generally implicit, highly volatile and context sensitive. In order to manage it, it is fundamental to understand that knowledge is not information. When knowledge arrives at the company, it is selected and massively reduced to knowledge representations (information) [Riempp et al 2003; Gerbert et al 2003]. Afterwards, given sufficient context, that information can be reconstructed back into knowledge without needing access to the originator [Gerbert et al 2003].

Porter states that in the Internet environment, every activity involves the creation, processing and communication of information. In order to consent this knowledge flow and to gain sustainable competitive advantage, it is critical for a company to join efforts with information technology to integrate its service processes, the ultimate goal of this partnership is knowledge creation [Porter et al 2001]. CRM technology is the answer to this integration/Knowledge riddle because it is "a comprehensive business and Marketing strategy that integrates technology, processes and all business activities around the customer" [Feinberg and Kadam et al 2002] with knowledge creation skills [Buerer et al 2005].

Next, we will overview CRM systems, their active role in the service schematics in order to sustain knowledge flow and how they support marketing operations on the creation of the three types of processes requirements, so that customers needs become uncovered and value delivered to them.

2.3 - CRM: Purpose and Objective

This support technology is a powerful mean for a company to achieve the strategic intent, since CRM is a strategic approach concerned with creating relationships with key customers and customer segments [Payne et al 2005].

Indeed, the CRM refers to marketing processes with the aim of creating customers relationships [Lee-Kelley et al 2003], "nurturing" them in order to encourage customer loyalty and increase customer retention [Pan and Lee et al 2003]. Studies often report that, on average, it costs a company more to attract new customers as it does to implement a retention strategy. In fact, by increasing 5% the customer retention rate, profits rise from 25% to 95% [Reichheld et al 2000]. However, how is the relationship nurtured?

CRM provides enhanced opportunities to "use data and information of customer segments to both understand and co-create value with them" [Payne et al 2005]. In order to accomplish its goal, the CRM has three levels of systems implemented in the company [Torggler et al 2008]; [Brenner et al 2003; 2004]; [Ross et al 2005].

Front-Office

1. **Collaborative CRM**
2. **Operational CRM**
   2.1. Sales automation
   2.2. Services automation

Visibility Line

Back-office

   2.3. Marketing Automation
3. **Analytical CRM**
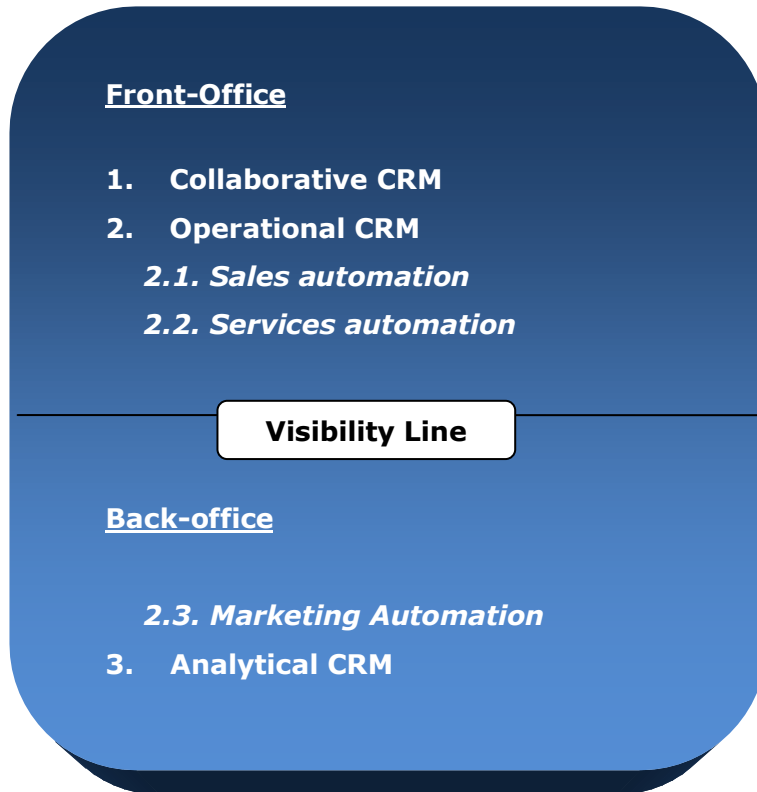
In order to be successful, the CRM systems need to be aligned with the enterprise Back Office and Front Office, given that the key reason for CRM implementation failure is the inability to create an enterprise wide CRM strategy [O.Chan et al 2005].

2.3.1 - Front Office: The internet

As discussed previously in the service concept chapter, the Front Office is where customers have contact with processes that are visible to them. One of the CRM systems implemented in the Front-Office is the *Collaborative CRM*. From its definition we learn that it integrates all channel operations in terms of channel information flow: "The collaborative CRM covers the control and integration of all communication channels between the company and its customers. Via "Customer touch points" in different communication channels" [Torggler et al 2008].

In a company's Website, customers can interact with application functionalities. Each one of them performs with a different goal, from assuring a user-friendly navigation to online purchasing capability. It is the CRM Collaborative system who is responsible to manage the integration of 42 Web functionalities [Feinberg and Kadam et al 2002]. Thanks to this application synchronization, <u>functionalities and service components "symbioses" emerge</u>. In both cases, they represent the way in which functionalities and components can help each other mutually to perform a better service. The list of functionalities is presented at table 1 (the explanation of each one can be found at the appendix – Collaborative Web functionalities).

a) Functionalities "symbioses". When delivering service by means of a physical channel, customers often purchase their products without providing any kind of information about themselves [Neslin et al 2006]. As consequence of this, a Forrester survey found that 48% of 50 retailers learn nothing about their shoppers [Yates et al 2001; Neslin et al 2006].

In a virtual channel such as the internet, a company can induce customers to input personal information by centralizing the registration process [Hoffman et al 1996] and use <u>the membership functionality</u> (see table 1/ nº17). This feature not only allows the company access to customer's personal information, but also tracks down his "footsteps" inside the member's area [Feinberg and Kadam et al 2002].

Since these online applications are directly integrated to the D.W. [Torggler et al 2008], imagine the range of data input combinations that exist from 41 web functionalities if they are positioned inside the member's area.

Table 1: Collaborative CRM functionalities		
1. Complaining ability	15. Check out	29. Site customizing
2. Privacy policy	16. Info first time users	30. Postal address
3. Product Information online	17. Membership	31. Order within 3 clicks
4. Product highlights	18. Mailing list	32. Domain fault repair
5. Preview product	19. Prod. customization	33. Find stores
6. Site map	20. Your account info	34. Gift certificate
7. E-mail	21. FAQ	35. Fax
8. Purchase conditions	22. 1-800	36. Request catalog
9. Customer service area	23. Track order status	37. AFFINITY program
10. About company	24. External links	38. Chat
11. Local search	25. Member benefits	39. Bulletin board
12. Problem solving	26. Spare parts ordering	40. Site tour
13. Cross sell/up sell/add-on sale	27. On sale area	41. VoIP
14. Online purchasing	28. Quick order ability	42. Call back button

Source: [Feinberg and Kadam et al 2002]

b) Service components "symbioses". Multichannel integration has a major importance on marketing channel strategy because of its lasting effects on channel power, customer value and on market opportunities [Andreini et al 2008]. In fact, multichannel customers are more loyal and are two to four times more profitable when compared to single channel [Double Click Inc et al 2004; OC&C et al 2002; Müller-Lankanau et al 2005].

The internet channel is the most discussed marketing channel for complementing offline purchase experience [Andreini et al 2008], since it offers a high customers reach [Hoffman et al 1996] allied to considerable cost reductions [Rust and Kannan et al 2003]. Nonetheless, Reicheld argues enterprises seem to overlook the lack of Physical service presence in their websites on the cost of eventual consumer confidence in the service provider. This fact places the seller-customer relationship at risk [Stenger et al 2008], since trust is vital to induce customer loyalty [Reicheld et al 2000]. It is in fact the absence of a customer-seller dialog that undermines consumer trust. With it, not only a relationship can emerge but also superior customer insight can be unveiled [Grönroos et al 2000].

By integrating Physical and Virtual channels, we are making way to integrate Physical and Virtual service components [Sousa and Voss et al 2006]. This multichannel setting in an internet environment is vital not only from merging the best of both worlds when it comes to create customer knowledge and build customer relationships (Figure 3), but also to provide the customer with the power of choice, increasing his satisfaction considerably [Bitner et al 2000; 2002; Sousa and Voss et al 2006].

In light of these facts, the ability of the Collaborative CRM to induce complementary channels in an enterprise Website becomes a precious asset: E-mail, fax, toll-free numbers, postal address, chat, call back button, voice over IP and bulletin board, provide companies and customers a vast number of alternative ways to reach company personnel [Feinberg and Kadam et al 2002].

Figure 3 – Virtual & Physical integration advantages

Visibility Line

Integrator

Collaborative CRM

**Physical Front Office
(Human Presence)**
Sales and Service Automation

- **Dialog capability**
- **Enhanced customers Trust**
- **Superior customer's insight**

**Virtual Front Office
(Internet)**

- **High customers reach**
- **Low Cost**
- **High quantity of customers Data**

Customer
"The answers are often locked within the consumer's head"
[Kotler et al 2008]

This Data information retrieval is fundamental for the company to create market knowledge and uncover customers' needs. <u>Nonetheless, this information is also vital for future customer interactions since a customer is always eager for it</u>, either from company services/products or past interactions [Gurgul et al 2002]. If an exchange of information fails to exist, the creation of a relationship with the customer becomes an impossible challenge [Reinecke et al 2002; Torggler et al 2008].

Processes are services and if services heterogeneity characteristic is no more in an e-environment, since it "does not incur as much risk of human error", by introducing Physical service in the internet environment, variability on delivery is once again a problem.

For that reason, *Operational CRM* deals with the design, planning and implementing activities by automating all processes associated with customer relations [Gebert et al 2003]. According to [Ross et al 2005], [Gebert et al 2003], and [Torggler et al 2008], Marketing, Sales and Service are the three departments that use CRM systems and are responsible to cooperate with the client and/or retrieve information data. However, these instruments are also very useful for the mentioned company units; the description of each Operational CRM application is showed in table 2.

The authors stated above mention that Marketing is present in the Front-Office and is responsible for the campaign preparation, launching and monitoring. Still, an actual interaction with the customer over the internet, one that is visible to him, is only made by the Sales and Services department. For that same reason, <u>we consider and place the Marketing department and Marketing automation in the Back-Office</u>. Therefore, the Marketing division table can be found in the next section.

Sales department & Service department: They have the responsibility to deliver the Physical Service as it is demonstrated in figure 3. The Sales department receives marketing information regarding what clients to target in each campaign and perform

the approach according to the designed processes. However, the service department has a post-service management role. It is important to mention that companies' salesman need proper instruction, concerning customer handling and data retrieval skills requirements. Therefore, companies should hire competent employees [Gurgul et al 2002.

Table 2 – Front Office Operational CRM systems

System	Applications	Description
Sales Automation [Ross et al 2005]	Contact Management	This function allows the organization and management of prospect and customer data (name, address, phone numbers, titles, etc).
	Account Management	This application is design to present information of a customer account on a demand basis.
	Sales Process/ Activity Management	This are processes that function as guidelines for to sales activity management, this applications can come with product demos, proposal deadlines, trigger alarms to remind sales rep of closing dates
	Opportunity Management	Details the status of the business opportunity.
	Quotation Management	Assists the development of quotations for complex orders subject for configuration; transmitted via e-mail for authorization, inventory check.
	Knowledge Management	Ensures access to "Knowledge management systems" providing information that resides in each company (policy handbooks, presentation materials, forms, templates, historical sales and marketing reporting).
Services Automation	Helpdesk	It is often the first point of contact for customers with problems. Clients request are automatically assign to the appropriate staff.

[Torggler et al 2008]	Complain Management	Generates customer feedbacks. Typifies the complaints and performs an automatic management of customers requests.

2.3.2 - Back Office: The Feed Back Loop

The *Analytical CRM component* lies in the back office and is connected to the Data Warehouse, where the customer data originated from the front office is [Gurgul et al 2002]. However, the major critical factor that may lead to problems towards knowledge, are companies that already exist upon the system implementation. They face difficulties with existing non-optimal conditions in terms of data storage and data access [Arndt et al 2002]. For example, "valuable information got buried in silos and not leveraged in analytical processes around the company." [O.Chan et al 2005]. Nonetheless, if the Analytical CRM accesses this data, it will be able to analyze customer data, discover customer processes/behaviors and create Market Knowledge through them [Arndt et al 2002].

With Market Knowledge, *Marketing* can now create the three types of customer oriented processes in a more effective way, bearing in mind some pointers that will assist them in service delivering via the internet channel:

Processes type	Key aspects
Integrate "What" and the "How"	Promote the Feedback Loop (figure 4)
How to deliver the "What"	Use the functionality symbioses and service components symbioses
Define "What" to deliver	Deliver a Customized Service to customer segments.

It can launch a more effective campaign, targeting the most profitable customers with a customized service. With the help of the campaign management *Marketing* can also control, analyze and see the campaign results, making afterwards, any adjustments necessary for the next campaign [Pan and Lee et al 2003].

Marketing Automation [Gebert et al 2004]	Campaign Management	Responsible for "planning, realization, control, and monitoring of marketing activities aimed at known recipients" (channels and clients). The selection of "clients to target" is cooperation between marketing and analytical CRM.

We mentioned in the Knowledge creation section, that Knowledge is reduced to data information when it arrives at the company, being reconstructed afterwards without accessing its originator. This process is done through a feedback loop between all service components, represented in Figure 4.

Figure 4 – The Feedback Loop
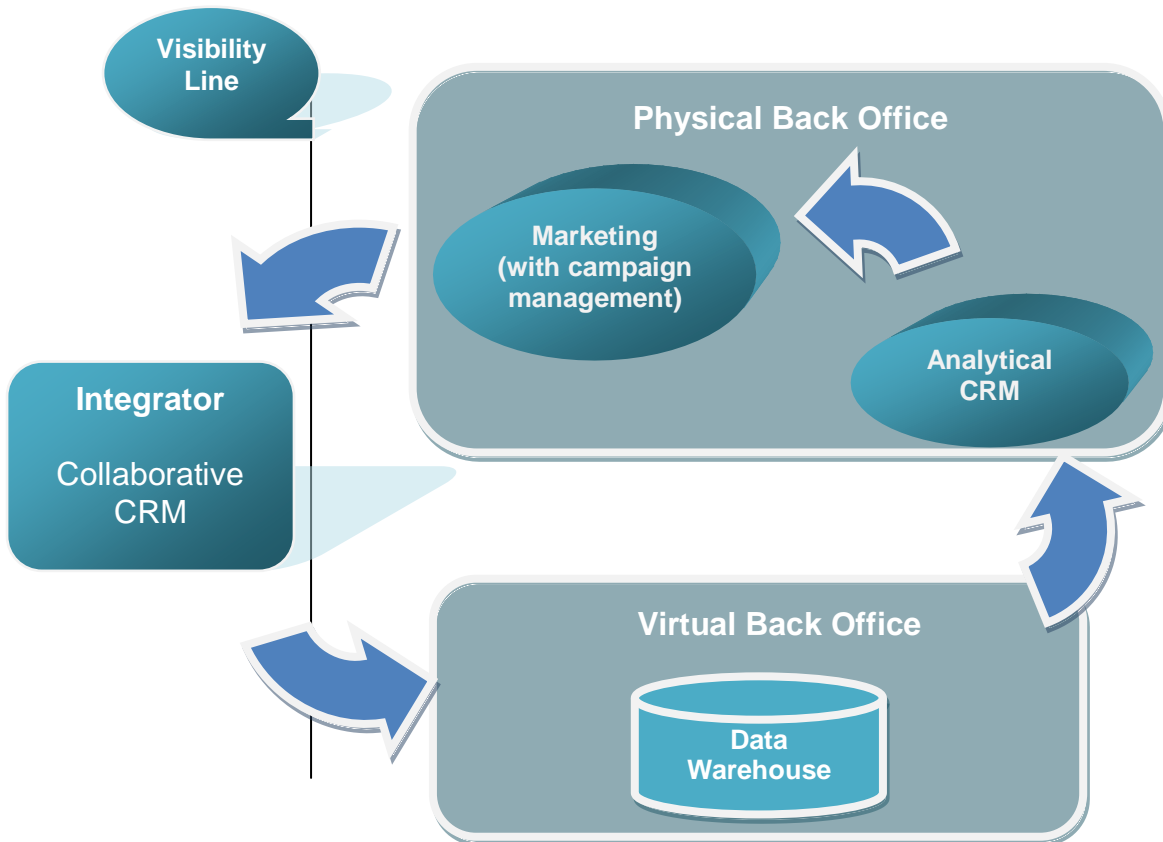
As we can see in Figure 4, the Front Office and Back Office nourish each other in a Feedback Loop. The Analytic CRM component creates customer Knowledge for the Marketing department, and this one improves company processes which enhances future customer operations that take place in the Front Office. Therefore, customer needs are then satisfied and value is delivered to them by means of a customized service. Whereas the Front Office (Physical and Virtual) capture the critical data required for CRM analytic processes.

Consequently, this Feedback Loop is fundamental to create sustainable competitive advantage, because with it the company will reach Operational effectiveness. In other words, it will "do the same things, but do it better" in a way that company competitors are unable to reproduce. [Porter et al 2001].

We have been studying service delivery from the company point of view and the key guidelines for enterprises design service processes, in order to deliver value with a CRM to the customers and satisfy their needs. Now we turn our attention to service quality, fundamental to explain how customers perceive the value of the service delivered to them [Cronin et al 2000]. It is essential to put ourselves in the eyes of the customer in order to do a proper value creation analysis, since <u>"Value is truly in the eyes of the beholder"</u> [Kothandarman and Wilson et al 2001].

2.4 - Service quality

In the Japanese philosophy, quality is defined as "*zero defects*, doing it right the first time" [Parasuraman et al 1988]. On the other hand, e-service quality is defined as "the customer's overall judgment of an e-entity's excellence" [Santos 2003; Park et al 2007]. By doing a cross check with our service/e-service definition (an act or a performance that is delivered…), we define service quality or e-service quality as the customer overall judgment of an act or performance delivered to him.

Therefore, it is important to do a literary review on service quality dimensions in order to know how customers evaluate the service delivered and determine how they (service quality dimensions) can be conceptualized and measured [Parasuraman et al 2002]. According to [Parasuraman et al 1985] "consumers evaluate SQ (service quality) through a number of criteria".

In SQ studies, the recurrent methodology used to retrieve this criteria can be either by machine, experts or the customers themselves [Loiacono et al 2002]. These criteria are then transformed into SQ dimensions normally recurring to the use of statistic programs, like it happens for example in [Loiacono et al 2002][Parasuraman et al 2005]. While other authors choose to retrieve their dimensions from previously

conducted researches and use them for their current paper [Wolfinbarger and Gilly et al 2003][Collier and Bienstock et al 2006], this is going to be our approach since discovering SQ dimensions is not the main purpose of this paper.

2.4.1 - The service quality dimensions

An extensive reading on SQ papers was made (regarding the website channel), and their findings (SQ dimensions) are presented at the appendix – Table 1. We have decided to use as a guideline the SQ dimensions of [Sousa and Voss et al 2006], since they were the only authors that stressed the need of a first line of SQ dimensions division, which are:

- Physical quality
- Virtual quality
- Integration quality

These first order dimensions go along with our line of study, since we have a virtual quality to a Virtual service component, a Physical quality to a Physical service component and an integration quality for an Integration service component. Next we present their definitions:

1. **Virtual quality**: "The virtual part of quality that should focus only on aspects of the service that are automatically provided without human intervention (Virtual component)" [Sousa and Voss et al 2006].

2. **Physical quality**: Physical part of quality that focuses on "Physical service components that occur as a complement to virtual service components" [Sousa and Voss et al 2006].

3. **Integration Quality:** Their definition of integration quality is "the ability to provide customers with the seamless service experience across multichannel service instances" [Sousa and Voss et al 2006].

We found [Sousa and Voss et al 2006] *integration quality definition* to be limited, because is not addressed to service components. Regarding the integration factor presented and defined in [Goldstein et al 2002] service concept: "the integration of the "What" and the "How"", we define integration quality as <u>the integration part of quality that focuses on the service components that integrates its concept notions of "What" and "How".</u>

The model sub-dimensions also suffered some modifications (see original model in the appendix – Table 2 and the one used for our present study in Table 3). We present and explain the reasons for that matter:

Physical dimension adjustment

All SERVQUAL dimensions from Interpersonal were kept, minus <u>tangibles</u> because concerns with the brick-and-mortar facilities (not the internet), therefore, it was removed.
<u>Logistics fulfillment</u> relates to attributes concerning tangible products and because we are addressing a bank with intangible products, it is also removed from this study.
Service recovery, an adapted dimension from [Parasuraman et al 2005] E-RecSQual is substituted with Customer Service from [Wolfinbarger and Gilly et al 2003] for three reasons:

- The authors did not mention the ServQual dimensions, failing to realize the presence of two dimensions with the same name in their study: Responsiveness.
- The Compensation dimension is, as the other previously mentioned, a dimension that concerns tangible products.
- Contact has a very similar definition when compared with ServQual Responsiveness dimension. Both refer to time spent by the salesman to respond a service request.

Virtual dimension adjustment

The only modification occurs with the fulfillment dimension, since it concerns the possible failure in the delivery of the purchased tangible products. In this case, stock out is impossible to occur, since an e-service is created and stored as an electronic code and the bank we will address only sells financial products online.

Integration dimension adjustment

We select integration dimensions bearing in mind the importance of sustaining the information flow ("Feedback Loop") across multiple service components, a condition vital towards knowledge creation.

Therefore, *emotional appeal* is introduced (experience), which lacked from Sousa and Voss study. We retrieve it from [Loiacono et al 2002] with the purpose of knowing the overall service (from all service components) impact on the customer, since "how customers experience activities is crucial to their perception of value" [Bitner et al 1992; Sandström et al 2008].

We maintained both *Channel-service configuration* and *integrated interactions* from the original model, adding potential perceptual attributes for each one of them:

- For *integrated interactions* we propose Data consistency, fundamental to promote an exchange of knowledge/information between the customer and the firm, and to allow the analytical process as well. We define it has the ability to retrieve and access information from the customer. For *Channel-service configuration* we use a proposed indicator from [Sousa and Voss et al 2006] *breath of channel choice*, defined has "Degree to which customers can accomplish preferred tasks in individual channels" (in our case the internet). We also propose a Service *Customization,* defined as the company's ability to provide a customize service to the customer.

Figure 5 – Service Quality Model

Physical quality Dimensions	Definition
Interpersonal Service	
Reliability	"Ability to perform the promised service dependably and accurately" [Parasuraman et al 1988]
Empathy	"The clients empathy towards the sales person; " [Parasuraman et al 1988]
Assurance	"Knowledge and courtesy of employees and their ability to convey trust and confidence" [Parasuraman et al 1988]
Responsiveness	"willingness or readiness of employees to provide service" [Parasuraman et al 1988]

Customer Service	"Combining interest in solving problems" [Wolfinbarger et al 2003]
Virtual Quality Dimensions	
Efficiency	"The easy and speed of accessing and using the site" [Parasuraman et al 2005]
System availability	"The correct technical functioning of the site" [Parasuraman et al 2005]
Security/Privacy	"The degree to which the site is safe and protects customer information" [Parasuraman et al 2005]
Integration Quality Dimensions	
Integrated interactions	"Consistency across interactions with service providers" [Jonhston et al 2001 ; Sousa et al 2006]
Data consistency (communication)	"Capacity to retrieve and access data information from the customer"
Channel-Service Configuration	"Quality of the available combination of services or their components" [Sousa et al 2006]
Breadth of channel choice	"Degree to which the consumer can chose alternative Channels and both service components in an internet environment " [Sousa et al 2006]
Service customization	"Capacity of the firm to offer tailored made service and satisfy customer needs"
Emotional Appeal	"Experience felted when using the website" [Loiacono et al 2002]

Next we approach Value Creation, our final chapter of the literary review, fundamental to understand if value was indeed created with the CRM systems.

2.5 – Firm's Creation of Value

What is the source of value creation? [Porter et al 1985] stated that new value is created when firms develop/invent new ways of doing things using new methods, new technologies and or new forms of raw materials. In accordance is also [Priem et al 2007; Lepak et al 2007], although, he simplifies the matter by saying that "value creation involves innovation that establishes or increases the consumer valuation on the benefits of consumption [Lepak et al 2007].

The Resource Based View model of [Barney et al 1991] stands that created value can be originated and sustained by the firm resources (organizational processes, information, knowledge, capabilities, etc.). For that, firm resources need to be:

- **Valuable:** Enables a firm to conceive or implement strategies that improve its efficiency and effectiveness.
- **Rare:** Not possessed by a large number of other firms
- **Imperfectly Imitable:** Firms that do not possess cannot obtain them.
- **Non Substitutable:** There cannot be a substitute resource available in the market.

Therefore, a company that innovates and increases the consumer valuation of consumption, by using resources with these four characteristics, will generate value in a sustainable way.

However, how is a service valuated? [Bowman et al 2000; Lepak et al 2007] stated in their research that value is divided in two fractions, making the analyses on:

- **Use value:** "Specific quality of a new job, task, product or service as perceived by users in relation to their needs". This means that the use value is the quality of what is perceived by the customer.

- **Exchange value:** "The amount paid by the user to the seller for the use value of the focal task, job, product, or service".

Still, [Porter et al 1985] stresses that value is "the amount buyers are willing to pay for what the firm provides them [Amit et al 2001] in a process that is defined in this paper introduction as payment equity. In other words, we have a **company point of view**, where the company offers a service and wants an amount to be paid in exchange. On the other hand, we have the **customer point of view** which values the perceived quality of what the firm provides to him, and makes a judgment on whether use value meet's the exchange value.

Notice that value is measured by total revenue [Porter et al 1985; Amit et al 2001], "the amount of money realized from selling goods or services in the normal operations of a firm in a specific period of time". [Source: Businessdictionary.com]. Consequently, the number of products bought during a time frame needs to be taken in consideration. According to previous studies [Oliveira et al 2007] [Hallowell et al 1996;Cronin et al 2000], if a customer is satisfied with the perceived value, the repurchase probability increases significantly leading, ultimately, to customer retention and customer loyalty. Therefore, we can conclude that the amount of products bought by a customer is a direct result of customer satisfaction and is an indicator of customer's retention and loyalty to the firm.

Consequently, we may affirm that if *Use Value >= Exchange Value* (Price), the customer acquires the product/service. If so, and because Marketing is also responsible for setting a price for their products and/or services [Kotler et al 2008], in

order to maximize a company revenues, the optimal price is achieved when Price = Use Value.

If Use value < Price the "exchange" does not occur, on the other hand, if Use Value > Price the customer buys the product, being the difference between both (Use Value – Exchange Value) the customer surplus, "a measure of the value of a particular deal to the customer, surplus is the difference between the fair price and the price actually paid" [Source: cval.com]. Therefore, when marketing delivers a customized service to customer segments (Process type: Define "What" to deliver), it should deliver a service that enhances the customer *Use Value* perception, in order to create value and maximize company profits by setting a equivalent "custom made" price.

The ultimate goal of a company is to create value, by the means of the *exchange value*. In order to accomplish that, a company has at its disposal resources as service processes, information, knowledge or managers capabilities, to develop new ways to deliver the "benefit package" to the customer.

In delivering a service, a firm encounters problems that may appear in every service component. Consequently, five service components were found: Physical front office and virtual front office, linked, to the service concept dimension "How to deliver"; Virtual back office and physical back office connected to the service concept dimension "What to deliver" and a fifth component that integrates both, previously mentioned service concept dimensions. We also concluded that Marketing has the responsibility to design each service component process, with the help of market Knowledge, in order to discover customers needs and deliver value to them. Three types of processes are refereed: Processes that a) Define "What" to deliver, b) Define "How" to deliver the "What" and c) Integrate the "How" and the "What".

Since Marketing needs Market Knowledge to design service processes, it is reviewed that a firm needs to joint efforts with CRM systems to enable a knowledge/information flow, which is fundamental not only to know customers needs and deliver value to

them, but also to improve operational efficiency and avoid competitors to "copycat" their methods, becoming imperfectly imitable.

Therefore, we place the CRM systems in our five service components and trace key guidelines that support the marketing department, in designing the three types of service processes with the aid of those systems: a) Define "What" to deliver - Deliver a customized service to customer segments, b) Define "how" to deliver the "What" - Use components and functionalities symbioses and c) Integrate the "How" and the "What" - Promote the Feedback Loop.

If a company follows these three guidelines, when delivering their service on the internet, it will create sustained value. This value is ultimately measured by the firm revenue.

Nonetheless, how does a firm recognize if all the guidelines are being carried out? By placing itself in the "eyes" of the consumer.

For that reason, we approach the customer view and "construct" a SQ model with Virtual Quality, Physical Quality and Integration Quality. The Virtual quality is focused on the virtual service component quality, whereas the Physical Quality concerns to the physical service component and the Integration quality on the Feedback Loop (integration between the "How" and the "What"). We assign a second order of dimensions for each one of them, which will ultimately lead to their measurement. This SQ model is a tool to measure the various dimensions of *use value* and assess not only which dimensions the customer values the most, but also if the company is being able to deliver them.

We also conclude that value has its source on company resources, when these are used in an innovative way. Use value (perceived quality of the delivered service) and exchange value ("The amount paid by the user to the seller for the use value".) are its dimensions. It is also determined, that value is measured by a company revenue,

being the optimal price, for marketing to set, achieved when Price = Use Value. Therefore, marketing should customize both service delivery and the "adjusted" price to customer segments, in order to maximize the company revenues. Lastly, it is determined, that customer repurchase is a loyalty indicator.

Next we will present our case study, the On-line Manager from the company Virtual Managers. The purpose of this study is to verify if it is actually creating sustainable value or not. Therefore we will verify if Virtual managers follows the three rules to create sustainable value.

3 - Case Study: The Online Manager

In this chapter we explain first what the Online Manager project is, by reviewing its purpose (why was it implemented) and main features. Then we adopt our Literary Review methodology and explore Virtual Managers CRM systems and their functionalities both in the firm front office and back office.

In our front office analysis we look at the collaborative and operational CRM systems, while in the back office we view the analytical CRM and the Marketing automation. This front and back office study is made with the purpose to assess how the CRM technology works in the Virtual Managers service schematics.

3.1 - Purpose and main features

According to Virtual Managers, the Online Manager is an innovation at the market level that makes the managers of this bank the firsts with the ability to have a real time interaction with its clients through the online website. This new technology is only possible due to CRM systems installed in the bank service component. This is shown in this section as we view the way it operates in the front and at the back office as well.

At the present time, this "new way of doing things" is only available at the company website, to a premium segment of clients and has the strategic intent of retaining these customers by presenting them with a customized service.

This service has its back bone in the presence of the Online Manager at the client's computer, every time that he logs on to the bank's website. In this moment, its main features are:

- Look at the manager's name, contacts and photograph

- Gain access to handpicked financial products recommendations
- Interact with the manager online through messages

3.2 - The Front Office

At the company, there are three channels connected to the collaborative CRM: the call center, the website and the branch. Our study is focused on the website. However, we will present the characteristics of each channel afterwards.

Two channels are connected in the Bank's website thanks to the online application *Chat* functionality for the branch, and the *Call back* button functionality for the *Call center*. Both of them are functionalities that induce *components symbioses* at the front office (Figure 5)

<ins>Figure 5 – Virtual Managers front office service components</ins>
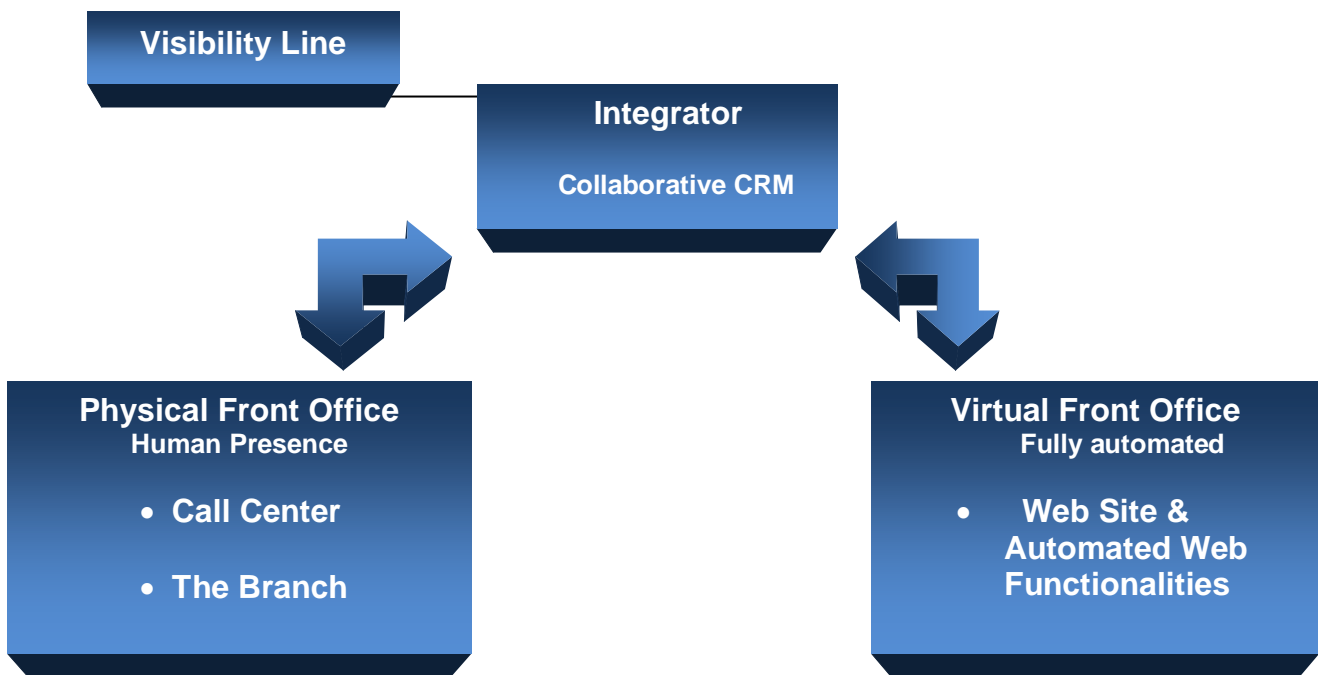
3.2.1 - The Branch

The branch is only relevant to this study because it is the physical channel where the portfolio manager lays. Each and every premium customer has its personal portfolio manager, interacting online through the Siebel (CRM) interface.

3.2.2 - Call Center Channel

This channel was made available in March 1996. With this channel, customers can contact the bank via telephone and get in touch with a human operator.
The operator uses an application suit called Altitude, which enables him to reach all the information needed, in order to provide the services available in this channel. This application is connected to the Siebel collaborative system.

3.2.3 - Online Channel

The online website is separated in two sections, one where all the clients can enter, and the other where the online manager is, being this section restricted for premium members thanks to the Membership functionality. Because the online manager only functions at the premium section, this is the section that we are going to study, mentioning every time web functionalities are encountered.

At the *members section*, once the customer enters the first page of the Online Manager, he is able to see the manager's name and his photograph, along

with a welcome message. It says the last logon made and shows a link to the products recommendations.

It also shows information concerning security, alerting the customers about frauds, incenting them to read and follow security measures.

When the customer selects the link "know the opportunities that I selected for you", at the first page, he will then be redirected to the page where all the recommendations made by his personal manager are.

Posição global
Produtos »
Serviços »
Bolsa »
Fundos »
Mercado cambial »
Operações »
Personalização »
Caixa de correio »
O meu gestor »

O meu gestor » **Oportunidades**

Manager's Photo | Manager's Name

Conheça as oportunidades que seleccionei para si.

Product's Name — Até 15 de Maio
Desde 500 € a 181 DIAS — Depósito a prazo a 6 meses com capital garantido. Remuneração igual à Euribor a 6 meses. A partir de 500 euros. Exclusivo para clientes on-line. Só no serviço Caixadirecta
Mais informação...

Product's Name — Até 30 de Maio de 2008
Prazo 1 ano. Capital Garantido. A partir de 1.000 EUR — Depósito estruturado a 1 ano com capital garantido. Remuneração variável indexada à performance do índice DJ Eurostoxx 50 até 20%. A partir de 1.000 euros.
Mais informação...

Product's Name — Até 30 de Maio de 2008
Prazo 3 anos. Subscrição 5 a 30-Maio. A partir de 1.000 EUR — Oportunidade de subscrição de obrigações de caixa a 3 anos, com rendimento indexado à performance de um cabaz de 20 empresas que operam no sector de utilities/energias renováveis, combinadas com um depósito a prazo a 1 ano com uma remuneração de 6% (TANB). A partir de 1.000 euros.
Mais informação...

The next picture shows what the client sees when he selects one of the products.

At the center of the page we can see all the product characteristics (Web functionality: Preview product.), while on the left side we can see the available services that the costumer has in hand. Finally, on the right side, the customer

Posição global
Produtos »
Serviços »
Bolsa »
Fundos »
Mercado cambial »
Operações »
Personalização »
Caixa de correio »
O meu gestor »

O meu gestor » Oportunidades » Product's name

Product's name — Até 15 de Maio

Principais características do Product's name

Manager's name

Manager's Foto

- Montante mínimo: 500 euros;
- Montante Máximo: 10.000 euros;

- Subscrição: de 30 de Abril a 15 de Maio de 2008, excepto se esgotar o montante de emissão
- Constituição: 16 de Maio
- Prazo: 6 meses
- Remuneração: 4,9% (taxa de juro anual nominal bruta) igual à Euribor a 6 meses, Base 365d, verificada dois dias antes do início do período de subscrição e arredondada à décima, por defeito
- Pagamento de capital e rendimento: Em 13/11/2008
- Liquidez: O depósito pode ser mobilizado antecipadamente, pela totalidade, com perda total dos juros;
- Fiscalidade: os rendimentos estão sujeitos a IRS/IRC, com retenção na fonte às taxas em vigor.

A oferta é limitada.

Se pretender, solicite o contacto do seu Gestor Dedicado

- Tenho interesse contacte-me.
- Não tenho interesse nesta campanha.

Subscrever

can see the manager's name and photograph, along with the available choices: "I'm interested", or "I'm not interested". To buy the product the option "subscribe" is presented at the bottom. (Web functionality: Online purchasing.)

Once the customer selects a recommended product he can:

- Show interest in the product, asking to be contacted by his personal manager or by the Call Center.
- Say that he's not interested. In this option two cases can occur:
  1. Permanently "not interested": The customer says that he wants no further contact to be made (Closes the approach).
  2. Temporarily "not interested": The customer wants to be contacted about future campaigns concerning that product.
- Buy the product, if the product is available online (closes the approach).

Interaction with the Online Manager

The "mailbox" is also secured by the Membership CRM functionality. In this case, this feature is a card with a sequence of numbers. The software will ask the consumer to insert only some digits of the sequence in order to access the membership area. This way, premium customer and their manager can exchange real time messages with each other. We now present a list of functionalities the client has with the mailbox:

- Send text messages to the manager
- View messages sent by the manager
- View messages sent by the call center
- View messages sent to the manager
- Delete messages that were received or sent, from/to the manager

If the customer decides to send a message, he selects the option "my manager", and afterwards "contact". Once again, he will see the manager's photograph. However, this time he will have access to his name, telephone number, cell number and email.

There is also the location, phone and address of the managers' agency. Once the customer sends a message, he is also free to choose the option to be notified after the message his received and readied.

Now that we understand how the Collaborative CRM works along with the website and the other two channels, we advance to the next CRM system.

3.2.4 - Operational CRM

As we have shown at our CRM section, operational CRM can be handled by three company departments: Sales (in our case the branch), Service and Marketing department. Since the Marketing department does not have an actual interaction with the customer over the internet, one that is visible to him, we address this department CRM usage in the back office.

We have approached the Marketing department in a sense of collecting information on how these departments made use of this CRM system:

The Branch: At the branch, managers are the ones who have direct contact with the customer by using the Siebel CRM. According to the marketing department, at the present time, each manager handles, on average, with 600 hundred customers. When a campaign is launched, their first approach is to send the following message to targeted clients personal email address: "Hello Mr. (Miss) «Client's name», my name is «Manager's Name» your personal manager and I have selected new opportunities for you". The client is then invited to click on a link available at the sent email, which redirects the customer to the membership area access page at the Company Virtual Managers website. Each manager has at his disposal Sales Automation applications such as:

1. **Opportunity Management:** This allows the manager to see the status of his business opportunities.
2. **Activity Management:** Manager has customer oriented guidelines, written for each status of his business opportunity (See appendix table 3 – Manager Processes).
3. **Contact Management:** This is not a new application, since the manager already had access to it before the Online Manager implementation. Nevertheless, it allows him to see all customer data information (name, data, phone, interests…). This application as a ratio that works as an indicator, called Client Single View. This indicator shows the percentage of customer data information completion (ex: There are 10 fields of customer information. If 2 of them are blank for customer X, the indicator for that same customer is at 80%).

When the customer enters the site and interacts with his manager, the latter has information not only on who asked to be contacted (either by the manager himself or the call center), but also on who consulted the product/campaign, due to the Membership functionality which enables *functionality symbioses* and data retrieval.

If the customer is not contacted in a period of 48h following his request, Alert *Callouts* will appear into the manager's screen at Siebel once the login is made. This pop-up will only disappear once the contact is taken care of.

In case of more than one Alert Callout, they will appear in order of creation.

- **Services:** in the online channel (premium section), this subject is made via the chat functionality. In case of any complain, the manager reports it to its cross-selling manager (superior ranking), and he will decide the course of action. Therefore, no specific process is design for handling complains.

3.3 - The Back Office

In our meeting with the *Marketing department***,** they mentioned that their service's price remained unaltered , acknowledging their task of launching the campaigns and designing their service processes, pointing out however, the usage of a separate system called CSS (campaign support system), which is integrated to Siebel.

Concerning the analytical system, this is called SAS data miner with a mission to enrich the analysis of client data and the objective of transforming them into useful business knowledge, in order to better understand customer's behaviors and to follow their evolution.

The Analysis team receives requests from the marketing department, in order to fabricate a list of the clients to be targeted by each campaign. The requests in order to feed the campaign manager can have two rollouts:

- **The Ad-hoc extractions:**
  The targeted clients by the campaigns are selected through empiric criteria, defined by the marketing department. Afterwards, the analytical department selects which clients match the criteria.

- **Propension modules:**
  The choice of target customers is a result from the merging between business criteria that lead to the identification of possible customers to target, and the result of the data analysis that lead to the propension module. The objective of this kind of study is to predict who will respond affirmatively to the offer of a product or service, in order to estimate the future behavior of a client.

After talking with the responsible in office for the *analytical department*, he stated that approximately 80% of the times, the ad-hoc method was the taken course of action. The explanation given by the responsible was: "we would really like to perform more propension modules, however, time is an obstacle, and the marketing department knows time its critical so they send us the criteria upfront". He also stated that due to the fact that he was running the analysis on a different system, he wasn't able to access what clients bought the financial products. He had to do a series of assumptions to get there.

We have seen how the Online Manager operates, with the support of the CRM systems and applications, in both front and back office in the Virtual Managers website. In the next chapter, we perform the measurement of this project success, by assessing the value created through this new service display.

4 - Measuring the value creation of the on-line manager for customers

In this chapter we discuss our methodology, placing first each Virtual Manager application in the corresponding service component. Then we link our service schematics to our SQ Model. Both these assumptions will allow us to perform an analysis to the *use value* dimension. This dimension is vital to this study, since if it is equal or surpasses the *exchange value* in a process called payment equity, the firm captures the sale; this fact allows the company to set the optimal price on its customize service, setting it on *Price=Use Value*, maximizing their revenues.

In section 2, *Use Value* measurement is performed, explaining how we reach the results in the SQ Model metric scales (important to reduce service intangibility [Paladini et al 2002]), virtual quality dimensions, physical quality dimensions and integration quality dimensions.

The results of the analysis are discussed in section 3. Afterwards, we transpose this analysis to the company view, analyzing each service component's ability to create value, along with the measurement of the value created with the On-line Manager, in section 4.

4.1 - Applied methodology

Our purpose is to answer the following question:

- *Determine and analyze whether or not this new technology improved the online channel value for the company Virtual Managers*.

In order to answer this question we will use four samples of Virtual Managers customers, two from the first period of analysis (1st semester of 2007), and perform a crosscheck with other two samples of the second period of analysis (2º semester of

2008). This samples on which we perform our analysis are service quality studies retrieved from Virtual Manager Marketing department. Every year the Marketing department recurs to an external company, by means of outsourcing, to perform service quality reports on their operations. Therefore, we have asked the Marketing department for two types of studies concerning 2007 and 2008 reports: 1) Virtual quality reports, studies concerning the web site quality and 2) Physical quality reports, which are studies performed concerning their managers performance (placed at the branch). The details on how we handle the data will be explained up front in section 4.2.

It is important to affirm that, due to reasons of information confidentiality, the only information we are permitted to disclose are the variations from one year to the other.

 We now review our "players" (Virtual Managers applications) place in each service component as is presented in figure 6 (nº1):

- **Physical front office:** We can find the manager using the Chat functionality, along with Sales automation applications and the call center using the call back button.

- **Virtual front office:** In this service component is the internet with all the fully automated applications (Membership, online purchasing and the preview product).

- **Physical back office:** The marketing department uses CSS system to coordinate the campaigns while the analytical department uses the SAS system to create customer knowledge.

- **Virtual back office:** The placed entity, not visible to any customer and fully automated, is the Data Warehouse with all customer oriented data.

Our attention in section 4.2 turns to the second part of the research question: <u>the analysis of Virtual Managers created value with the Online Manager.</u> To do this, we must study the impact of service components and the correspondent CRM systems on our service quality dimensions model, since customer quality perception is going to determine the service *use value*. According to [Barnes and Vidgen et al 2002], to assess customer perceptions by means of service quality, enables a company not only to evaluate their front office and back office performance, but also presents insights on how to improve it. For this reason and to turn our research more conclusive, each application installed during our analysis period is assigned to a quality dimension, where we predict it to have a greater impact on customer perception. To accomplish this, we carry out these connections on the following deductions (see table 4 in section 4.2):

1. Being physical quality the part of quality that focuses on Physical service components, applications that rely on human intervention will be placed on physical quality dimensions.

2. Being virtual quality the part of quality that focuses only on aspects of the service that are automatically provided without human intervention, applications that do not rely on human intervention will be placed on virtual quality dimensions.

3. CRM applications are integrators per definition, belonging also to the integration component. Being integration quality the part of quality that focuses on the service components that integrate its concept notions of "What" and "How", CRM applications are placed in the integration quality dimensions.
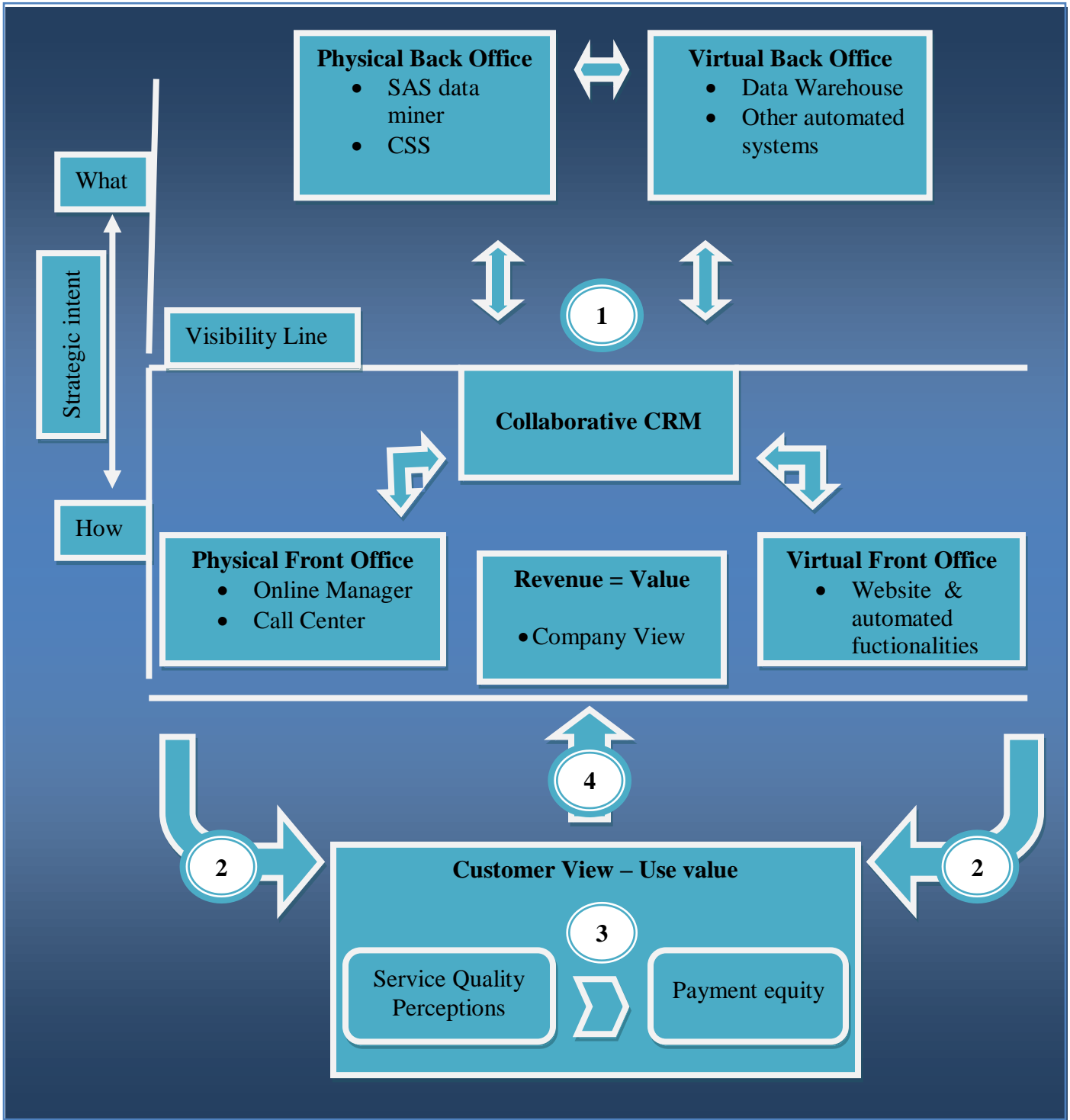
4. Marketing automation is not placed in one specific quality dimension, since the marketing department is, by concept, responsible for designing all service components. Therefore, this application is transversal to all service qualities.

This value perception is the result from an interaction between the company and the consumer, as it is showed in figure 6 (nº2). Afterwards, the latter has to make the decision. If the perceived use value equals or surpasses the exchange value (payment equity) he will acquire the service. Otherwise, he is not interested in this tradeoff (figure 6 /nº3).

Therefore, in section 4.4, we address to the first part of the research question: did the online manager create value on the online channel? To perform this measurement we use our findings from the value creation literary review. We have established that value is measured through revenues (figure 6/nº4).

Once Virtual Managers sells financial products online, we will address this amount as the money collected by the bank once the product was sold to the customer, being the "specific period of time" our time frame.

Figure 6 – Methodology approach

Figure 6 – Methodology approach

Physical Back Office
- SAS data miner
- CSS

Virtual Back Office
- Data Warehouse
- Other automated systems

What

Strategic intent

Visibility Line

How

Collaborative CRM

Physical Front Office
- Online Manager
- Call Center

Revenue = Value
- Company View

Virtual Front Office
- Website & automated fuctionalities

Customer View – Use value

Service Quality Perceptions

Payment equity

4.1.1 - Summary

The Virtual managers systems and applications are placed in the service schematic, as well as their connections to the SQ service qualities made. We have divided the research question into two fragments, each corresponding to one value dimension. The use value, fundamental to our analysis since it reflects what customers values, is going to be addressed up next.

4.2 - Data measurements results

Use Value - Service quality measurement

According to [Paladini et al 2002], metric scales are fundamental to the process of quality and productivity evaluation. Because of that, service quality can be described in terms of objective and perceptual characteristics, whereas objective include such things as service time or call wait time (easily quantified), while perceptual characteristics, on the other hand, depend on clients perceptions [Soteriou et al 1997]. Accordingly, since a service is intangible, customer's quality perception of it becomes difficult, making the measurement of his perceptions more complex. Because of that, whenever possible we are going to measure quality dimensions on attributes, in a quantitative way, relying on a metric scale. Nonetheless, they will also be measured in a perceptive and therefore qualitative manner (expectations-actual service performance) [Parasuraman et al 1985], providing more data to improve the analysis output.

The retrieved data is collected either by questionnaires performed by the Company, or by fit-to-asked data requested to them to calculate the metric scales. There are two sources of questionnaires, one from quality measurements concerning the service delivery of the website (to use on virtual quality dimensions), and the other assessing the quality of service delivered by the manager (to use on physical quality dimensions).We have used these questionnaires questions to fill the Virtual, Physical

and Integration quality dimensions from our service quality model and/or present them with perceptual attributes. Both the "Questionnaires questions" and Metric attributes can be found at the appendix in Table 4 - SQ Model Questionnaires & Metric scales.

Website quality: These are questionnaires done to the universe of clients that have the website activated (it is required to activate the website in order to use it). Two questionnaires are analyzed: one from the first semester of 2007 (April 27) with a sample of 46.363 correspondents and the other from the second semester of 2008 (4 of August) with 32.457 correspondents.

Manager Quality: These are studies performed to premium clients (the ones with personal manager). We also analyze two questionnaires, one from the first semester from 2007 (March 20) with 21.000 correspondents and the second from the second semester of 2008 (August 30) with 17.974 correspondents.

In order to prevent bias, we do a crosscheck of all the questionnaires using the customer ID (unique customer number assigned by the Company), to get a common sample for the two periods and for both Physical and Virtual quality dimensions. As guiding principle for the performed crosscheck we use three customer characteristics:

1) Need to be premium customers
2) The client has access to the Website.
3) Presence in all questionnaires.

 The result is a common sample of 6.394 correspondents for the two time periods concerning Virtual and Physical Quality questionnaires. The responses from the clients are given in a scale from 1 to 5 and the attribute result of 2007 and 2008 is retrieved by the means of a simple arithmetic average from each customer response to that attribute. Then we subtract each attribute result from 2007 from its correspondent one in 2008, to give the presented results in Table 4.

The Metric scales results were also taken, being a sum from the events analyzed (metric description), concerning the first semester of 2007 (6 months period) and second semester of 2008 (6 months period), then subtracted ("2008"-"2007") to give the presented results.

It is important to mention that concerning *Delivery*, because it is a new feature, the result given is the result from the second semester of 2008. The same situation happens to *manager response*. The blanks filled in black (both in table 4 and the appendix table nº 4) occur in two situations: there is no data available or it is a no sense since it is not measurable. Also Delivery and Responsiveness have the same "Questionnaires Questions" addressed, because the question asked in the questionnaires was made concerning both of them.

One limitation of our measurements is the fact that it was impossible to perform a regression analysis, in order to discover which dimensions affect use value the most and the respective correlation between dimensions. That wasn't made because there would always be dimensions that would be left out, making the regression incomplete.

Table 4 – Service Quality measures

Quality Dimensions	Var of questioner responses or results	Metrics var. or results (if there is no ground for comparison)	New Functionalities
Physical			
Reliability			
1.Delivery	-0,26	95%	Guidelines; Opportunity Management
Empathy	-0,37		
Assurace			
1.Knowledge	-0,03		
2. Simpathy, curtesy	-0,11		
3. Trust, confidence	-0,09		

Responsiveness			
1. Manager's response	-0,26	30,69	Reminder
Customer Service	-0,12		
Virtual			
Efficiency			
1.User friendly	0,22		Online Purchase; Preview Product
2.Speed	-0,24	It suffered an increment	
System availability		21%	
Security/Privacy	0,23		Membership
Integration			
Channel-Service Configuration			
1.Breadth of channel choice		2	Call back button; chat
2. Product Selection customization(Campaign)	-0,26	20% (no previous data)	Analytical CRM
Integrated interactions			
1.Data consistency (communication)	0.15	0,24	Component and functionality Symbioses; Sales Automation
Emotional appeal	0,33		

4.2.1 - Summary

This chapter begins by explaining the importance of metric scales, when it comes to measure SQ. These metrics scales were introduced in our model to obtain a better analysis (Parasuraman model is exposed to service intangibility).

Furthermore, we address our SQ dimensions fulfillment. This is done either by questionnaires performed by Virtual Managers, or by fit-to-asked data requested to the company. The two questionnaires are cross-checked using three customer characteristics: 1) need to be premium customers 2) the client has access to the web

site and 3) their presence in all questionnaires, the result is a common sample of 6.394 correspondents. We use both questionnaires responses concerning this sample to fill the SQ Model. On the other hand, the fit-to-ask data is used to fill our metric scales.

4.3 - Service quality analysis and discussion

4.3.1 - Physical quality analysis

Concerning physical quality, by looking at the results we can see that all results are negative. According to our interpretation, this is due to the shift from a human interface into a software interface, which compromises a face-to-face contact.

The greater losses took place in empathy, delivery and manager response. Regarding empathy, this is probably the dimension that suffers more from what is described above. Empathy, the ability for the manager to place himself in the customer shoes is, according to [Parasuraman et al 1988] a dimension that requires a profound understanding and complicity between the salesman and the customer, a situation difficult to obtain online.

 Delivery and responsiveness share the same question, having the same result on customer perception. Nonetheless the metric result has the ability to differentiate them apart and we see a 95% result on the ratio concerning the manager's ability to respond to all the received chat messages, with an average of 30,69 hours (24 hours is the maximum waiting time expected by the customer) to response to a message. Having in mind that each manager deals with 600 customers, these numbers are not so negative has expected. The fact that managers have their processes well defined by their activity/sales management and opportunity applications is certainly one explanation.

About customer service, the absence of clear online processes to manage complaints seems to have some repercussions on the results. Processes need to be well defined

when it comes to physical services components in order to avoid service heterogeneity. Otherwise, variability on delivery is expected to occur.

The assurance dimension is the least affected from the physical dimensions and because it depends on employee skills as knowledge and ability to apply them, we deduct that Virtual Managers employees are educated and skilful.

4.3.2 - Virtual quality analysis

All the new functionalities made the dimensions go up. Online purchasing and Preview product web functionalities have increased the easy to use dimension, showing that they can increase customer use value in a way that eases customer navigation online.

The sense of security was increased by 0,23 points due to the membership functionality, proving that customers do feel more secure when they have a password protected website.
Concerning the web site perceived speed, we were informed that an increment was made to the upload server. Despite this, it wasn't enough since the dimension rating was minus 0,24%. This proves that there are other systems important in the Virtual back office that needs the company's consideration. [Sousa and Voss et al 2006] refers to them.

 System availability went up by 21%, which means that the site was offline more times in 2008 than it was in 2007, before the project implementation. We consider this a normal event, since the period of analysis was right after the roll out phase and the marketing department informed that glitches are normal in this time period.

4.3.3 - Integration Quality Analysis

The breadth of channel choice was increased by the callback button and by the chat ability. Now three channels are complementary from the usage of components symbioses which gives customers a wider choice.

Concerning product selection customization the consumer perception went down by 0,26 and only 20% of the requests from marketing are propension requests. From this data we can assume that the Analytical CRM system is not creating customer knowledge.

The Data consistency dimension is up by 0,15 points, meaning that customers have an improved perception about the managers' ability in keeping their records up-to-date, which to our belief it is due to the functionality and component symbioses. They harvest more customers' data which is immediately processed. On the other hand, the fact that the Company managers' have Automated Sales systems, assists them to acquire the required information, allowing a consistent interaction with the customer. The Client view metric improvement by 0,24% proves both statements.

The emotional dimension went up has expected. We find this dimension to be vital to access the customer perception of all service components. Since the customer now experiences a physical service front office component, his experience as enhanced by 0,33.

4.3.4 - Summary

In this section we performed on the analysis on the three SQ dimensions. The physical quality is negatively reviewed in all service dimensions; this was due to the lack of face-to-face interactions.

The virtual dimension has positive results on user friendly and security dimensions, 0,22 and 0,23 accordingly, due to the collaborative CRM functionalities. The speed dimension had a score of -0,24 due to glitches at the post-roll-out phase.

Concerning the integration analysis, the breath of channel choice increased from the chat and call back functionalities. Service customization scored respectively −0,26 and 20% in both perceptual and metric scales, which means that knowledge is not being created. The perceptual and metric scale (client view) of data consistency rose, demonstrating the importance of functionality symbioses, component symbioses and automated sales systems. The service experience was reviewed with a positive 0,33 value, which means that in overall the Online Manager did created a positive customer experience.

4.4 - Company view: Service components analysis, Value Measurements and discussion

We now perform an analysis on each individual service components, in order to understand the problems placement in each service components, bearing in mind that the "Feedback Loop" is the main topic in the Integration component analysis:

4.4.1 - Front Office

- **Physical Front Office.** The Sales Automation systems allow managers to handle 600 customers with some kind of success. However, because the Physical presence on the internet lacks face-to-face interactions, the use value of service physical component is deteriorated.
  We can also conclude that company personnel are skilful, however the lack of a designed after-service processes are worrying.

- **Virtual Front Office.** The company website has increased its value on the customer's eyes. The main reason for it was the positive impact of

automated website functionalities which have proven their value when placed in the web site.

4.4.2 - Back Office

- **Physical Back Office**. This service component is the most problematic one. The Marketing department, due to time dealing issues, only requests 20% of propension studies.
  As for the analytical division, it performs a large number of Ad-Hoc tests. This fact prevents them from achieving their purpose of creating customer knowledge and study customer habits.

- **Virtual Back Office.** It experiences problems when promoting speed to the website and to uphold its availability. It is appropriate to mention that the Data Warehouse now has more precious and completed customer information data.

4.4.3 - Integration component

Front Office. Virtual Managers uses the collaborative CRM in order to place web functionalities in action. The fundamental part of its strategy lies in the Membership functionality ability to track consumers "steps" inside the member's area, using functionalities symbioses aligned with components symbiosis. Therefore, the marketing department fulfills the requirement of designing a website front office with both types of symbioses.

However, when it comes to the back office, marketing does not request propension studies and, even if it did, the analytical team is not able to correctly access the DW. Ultimately, the feedback loop is not performed because the other two rules are not fulfilled. One is the promotion of the Feedback Loop itself, while the other is to deliver a customized service.

As a consequence the company will not create customer knowledge nor deliver a customized service, failing to improve the company processes afterwards. This fact means that they do not create competitive advantage, being vulnerable to a "copycat" firm, since the latter can easily replicate their processes. The marketing department is the ultimate responsible for this fact, since it was not able to design services processes that integrated the front and back office.

Next we present our service delivery schematics, with the highlights of each service component analysis:

Figure 7: Service components analysis highlights
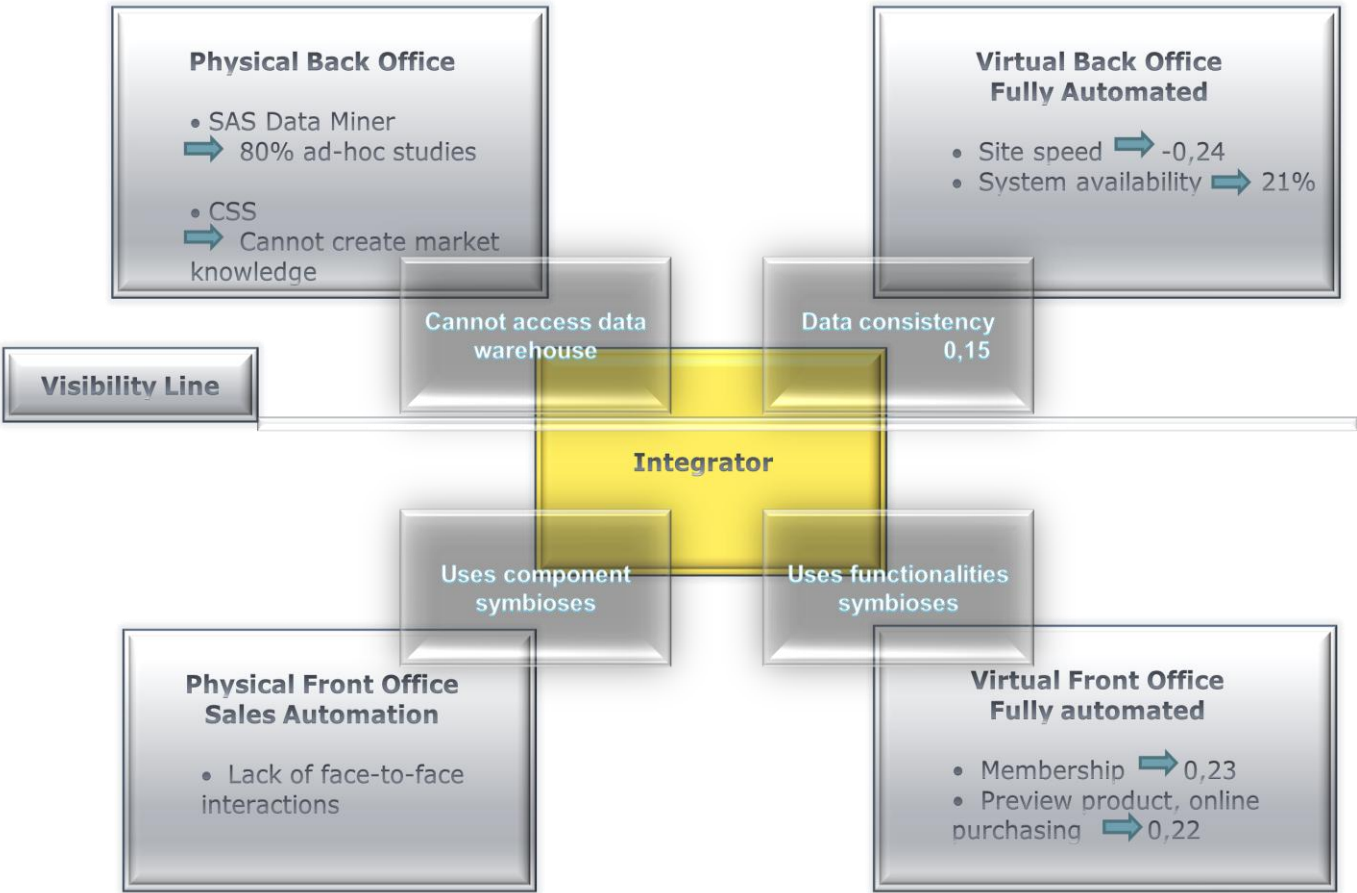
4.4.4 - The "Online Manager" efficiency

Before advancing to the actual value measurement, there is another important analysis to perform. We have asked the Company for information concerning the project efficiency. A study was made concerning the customer possible steps and the sales efficiency of each customer situation. The sample used to perform this study is the same from the service quality measurements, the common sample of 6.394 clients, with data concerning our second period of analysis (Second semester of 2008). These calculations show:

Average percentage of clients exposed.	Average percentage of exposed customers that bought the product.	Average percentage of clients that asked to be contacted.	Average percentage of clients that asked to be contacted and bought the product.
40,77%	7,65%	30,43%	17,21%
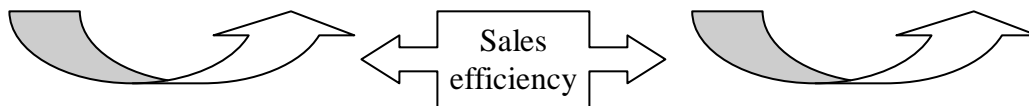
The measurement results are very low as we show above. In **average of clients exposed**, there is a ratio of 40, 77% of all customers. If we consider the percentage of those exposed customers that actually bought the product, the percentage falls to 7, 65%.

Regarding the **average percentage of clients that asked to be contacted,** there is a ratio of 30,43%, although, the column that shows the percentage of these that, in the end, bought the financial product, we see an average of 17,21%. The main conclusion to capture is that the service offered is not customized. Marketing managers take action based on data information, not knowledge, in order to capture the sale.

4.4.5 – Virtual Managers Value Creation

This paper ultimate goal is to measure value creation. In order to achieve that, we have picked the common sample of premium customers with data concerning individual customer revenue from the first period of analysis (1st semester of 2007). This data has a time frame of six months and we perform a crosscheck with the same customers in the second period of analysis (2nd semester of 2008), concerning their revenues made in the online channel. The difference between the second time frame and the first time frame revenues, calculates value creation.

The calculation of Var.Nº of financial products is made with the same method, where Var. Nº of financial products is the variation of the financial products own by the customer between our two time frames, concerning the same common sample of premium customers.

Table 5 – Revenues & Financial products variations

Revenues VAR	Nº Financial products VAR
5.515,45 euros	0,21 financial applications

As we can see in table 5, the Revenues went up by 5.515,45 euros, which ultimately means that value was indeed created. Because we know the price remained unshifted, we can affirm that this value created was not produced by any price adjustment, but by an actual augmentation of the perceived *use value*. Since this dimension rose, we can state that the *exchange value* should rise to an equivalent level, because otherwise Virtual Managers are actually loosing revenues by means of a greater customer surplus.

According with our previous service component analysis, this value was originated mostly by the virtual front office with the functionalities symbioses. Nonetheless,

some value was created in the physical front office from customers' power of choice, the skillfulness from their managers and the operational CRM systems. The number of applications own by customers also rose, which proves that customers are now more loyal due to the CRM systems.

4.4.6 - Summary

These results show that in spite the malfunctioning of the back office, the Company Virtual Managers was able to create value and increase customer retention. On the other hand, this firm without generating customer knowledge can be mimicked by other competitors given that they do not improve their operations [Porter et al 2001]. Furthermore, information systems in general are not imperfectly imitable as they can be bought at the Market level [Barney et al 1991], which leads to the conclusion that this firm is not creating value in a sustained way.

We also conclude that marketing should raise their services price, since *use value* rose and customer surplus is being generated on the company revenues account. In fact, with knowledge creation and innovation achieved by the physical back office, a customized service would be delivered, raising considerably, not only customer use value perception, but also the company revenues if the price becomes adjusted to the value delivered to the consumer.

4.5 - Conclusion

The Virtual managers systems and applications were placed in the service schematic in section 1.1, as well as their connections to the SQ service qualities were made. We have divided the research question into two fragments, each corresponding to one value dimension. The use value allowed us to perform an analysis from the customer point of view, by using our SQ model. On the other hand, exchange value along with payment equity permitted us to measure the created value.

Metrics scales were introduced in our SQ model to obtain a better analysis, since Parasuraman model is exposed to service intangibility. Moreover, we address our SQ dimensions fulfillment. This is done either by questionnaires performed by Virtual Managers, or by fit-to-asked data requested to the company. The two questionnaires are cross-checked using three customer characteristics: 1) need to be premium customers 2) the client has access to the web site and 3) their presence in all questionnaires, the result is a common sample of 6.394 correspondents. We use both questionnaires responses concerning this sample to fill the SQ Model. On the other hand, the fit-to-ask data is used to fill our metric scales.

Then we performed on the analysis on the three SQ dimensions. The physical quality is negatively reviewed in all service dimensions; this was due to the lack of face-to-face interactions.

The virtual dimension had positive results on user friendly and security dimensions, 0,22 and 0,23 accordingly, due to the collaborative CRM functionalities. The speed dimension had a score of -0,24 due to glitches at the post-roll-out phase.

Concerning the integration analysis, the breath of channel choice increased from the chat and call back functionalities. Service customization scored respectively –0,26 and 20% in both perceptual and metric scales, which means that knowledge is not being created. The perceptual and metric scale (client view) of data consistency rose, demonstrating the importance of both functionality symbioses and automated sales systems. The service experience was reviewed with a positive 0,33 value, which means that in overall the Online Manager did created a positive customer experience.

These results show that even with a malfunctioning back office, the Company Virtual Managers was able to create value and increase customer retention. However, this firm by not generating customer knowledge can be mimicked by other competitors, given that information systems in general are not imperfectly imitable as they can be bought at the Market level. This leads to the conclusion that this firm is not creating

value in a sustained way, since Marketing does not improve Virtual Managers operations.

Marketing should thus raise their services price, since *use value* rose and customer surplus is being generated on the company revenues account. Still, with knowledge creation and innovation achieved by the physical back office, a customized service would be delivered, raising considerably, both customer use value perception and the company revenues if the price becomes adjusted to the value delivered to the consumer.

5 - Conclusion

In delivering a service, a firm encounters problems that may appear in every service component. Therefore, we discovered five service components: Physical front office and virtual front office connected to the service concept dimension "How to deliver"; Virtual back office and physical back office connected to the service concept dimension "What to deliver" and a fifth component that integrates both service concept dimensions. We also concluded that Marketing has the responsibility to design each service component process, with the help of market Knowledge, in order to discover customers' needs and deliver value to them. Three types of processes are refereed: Processes that a) Define "What" to deliver, b) Define "How" to deliver the "What", c) Integrate the "How" and the "What".

Since Marketing needs Market Knowledge to design service processes, it is reviewed that a firm needs to joint efforts with CRM systems to enable knowledge/information flow.

Then in the CRM section, we place each CRM system in each service component and explain how it should be implemented. In the front office (the internet) we discuss the existence of the collaborative CRM and Operational CRM, where the Collaborative is the integrator of the service components and allows functionalities symbioses and components symbioses, while the Operational CRM is used to aid and minimize the Physical service heterogeneity, with Sales and Service automation (Operational CRM) placed in the front office, as for Marketing automation, it is placed in the back office since it has no direct contact with the clients. In the back office, the Analytical CRM is located in the physical back office along with the Marketing automation. The first is used for data mining (Knowledge creation), and the second to coordinate and automate services processes with the help of the generated knowledge. At the virtual back office lays the data warehouse where all company data is stored. Still in this chapter, we discover a Feedback Loop that allows information flow leading to Knowledge creation and operational effectiveness, and also trace key guidelines that support the marketing department in designing the three types of service processes:

a) Define "What" to deliver - Deliver a customized service to customer segments, b) Define "how" to deliver the "What" - Use components and functionalities symbioses and c) Integrate the "How" and the "What" - Promote the Feedback Loop.

When approaching the customer view, we review service quality dimensions and "construct" a model with Virtual Quality, Physical Quality and Integration Quality. The Virtual quality focus on the virtual service component quality, whereas the Physical Quality concerns to the physical service component and the Integration quality on the Feedback Loop (integration between the "How" and the "What"). We assign a second order of dimensions for each one of them, which will ultimately lead to their measurement.

The last topic of the literary review is value creation. We conclude that value has its source on company resources when these are used in an innovative way, and has use value (perceived quality of the delivered service) and exchange value ("The amount paid by the user to the seller for the use value".) for dimensions. It is determined as well that value is measured in revenue and customer repurchase as a loyalty indicator.

Then the case study is presented, the company Virtual Managers in order to implement its Online Manager program installs several CRM systems and applications, which we assign to the each service component. These systems are then connected to each service quality dimension: a) applications that rely on human intervention are placed on physical quality dimensions, b) applications that do not rely on human intervention are placed on virtual quality dimensions, c) CRM applications are placed also in the integration quality dimensions and d) Marketing automation is transversal to all service qualities. Afterwards, we "fill" our service quality dimensions with both perceptual characteristics and metric scales and perform an analysis on the results.

The physical quality is negatively reviewed in all service dimensions; this was due to the lack of face-to-face interactions.

The fully automated applications, installed in Virtual Manager, have proven their value. The virtual dimension has positive results, due to online purchasing and preview product ability that had a 0,22 impact on the user friendly dimension. While the security dimension, due to the membership functionality, presented a score of 0,23. This demonstrates the importance of the collaborative CRM, concerning the virtual component. However, the speed dimension, even with a server upload upgrade, had a score of -0,24, showing that this server increment was not enough. Concerning system availability, this dimensions had attain a metric review of 21% due to glitches at the post-roll-out phase.

Concerning the integration analysis, the breath of channel choice increased from the chat and call back functionalities. Service customization scored respectively −0,26 and 20% in both perceptual and metric scales, which means that knowledge is not being created. The perceptual and metric scale (client view) of data consistency rose, demonstrating the importance of functionality symbioses, component symbioses and automated sales systems. The service experience was reviewed with a positive 0,33 value, which means that in overall the Online Manager did created a positive customer experience.

 The impact of each service component on value creation is measured by using our project methodology, which links the service quality dimensions (use value) to our service components in order to allow an analysis on both.

The result of such a model is a link between two worlds of value creation literature, the firm resources (RBV) and the customer perceived benefits of consumptions, in a complementary way. A company has at its disposal resources such as services processes, information, knowledge or managers capabilities. Their application efficiency is viewed through the customer eyes, being the latter responsible to evaluate the value each one is delivering to him, this way, the company has the proper feedback concerning their performance and the opportunity to improve their "benefit pack" delivery, by presenting a customize service that maximizes both use value and exchange value, with the purpose of generating company revenues.

Concerning our study case analysis, we conclude that the company Virtual Manager fails to create market Knowledge and, consequently, two types of service processes. They fail to promote the Feedback Loop (not reaching operational effectiveness) and to deliver a customized service to their customers. The origin of these failures, as it is analyzed, lies in the company virtual back office and physical back office, since the analytical CRM cannot extract data from the D.W. and the Marketing department does not request propension modules. The impact of these causes is shown in the negative results at the integration quality dimension measurements, low efficiency capturing a sale and at the low revenues generated by this project.

Marketing should raise their services price, since *use value* actually rose and customer surplus is being generated on the company revenues account. Still, with knowledge creation and innovation achieved by the physical back office, a customized service would be delivered, raising considerably, both customer use value perception and the company revenues if the price becomes adjusted to the value delivered to the consumer.

We believe that more channels complementarities should be explored and a proper study with made-to–fit data should be done on this model, in order to go deep in the results and analysis. There is the need to promote face-to-face interaction on the internet; this factor will increase significantly the customer use value over the physical service component, since trust, empathy or sympathy are undermine qualities to deliver over a chat or a call back button functionalities.

In summary, we conclude Virtual Managers to be exposed to its competitors, since the firm does not improve their operational effectiveness and create value only upon CRM applications available at the market place, this way their resources are not imperfectly imitable since other companies can ultimately obtain this resource. [Porter et al 2001] stresses that any information system is only a (fundamental) vessel to obtain the ultimate resource to sustained value: Knowledge.

However, in the end, a company most vital resource is its manager's capabilities, since a resource is always a resource if it is not combined with innovation and creativity [Malhotra et al 2000].

"I'm enough of an artist to draw freely on my imagination, which I think is more important than knowledge. Knowledge is limited. Imagination encircles the world" by Albert Einstein [Taylor et al 2002].

6 - Future Research

A study considering all service dimensions from our proposed model should be performed, in order to perform a regression and a factor analysis on it. The objective of such a study would be to validate our analysis model and obtain more conclusive answers, concerning service components analysis, consumer evaluation of the "benefit package" and the opportunity to calculate the optimal price based upon this "package" evaluation.

More studies should be done considering the value that is created through service/product delivery. We need to stress the importance of more empirical service quality studies and dimensions when it comes to measure and analyze the 5 service components.

Also SQ studies should view any company has a whole and not component, channel driven or merely service single minded (need to consider physical product), this way proper measurements and conclusions can be made, regarding customer needs and how to co-create value with him.

Future channels research must be taken into consideration. Pervasive computing is, without a doubt, one technology to take special attention since "They make information access and processing easily available from everyone, from anywhere, at any time" [Hansman et al 2003]. This should be a very interesting theme to explore the Feedback Loop and the three rules of service process designing implications.

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8 - Appendix

Collaborative Web functionalities (retrieved from [Feinberg and Kadam et al 2002])

- **Site customization.** The internet brings enormous amounts of information to the desktop. While this is an advantage, it can also be an enormous disadvantage, since the user may not be able to readily access the information he needs. Therefore, sites offer customization features allowing the user to filter the content they see. Thus, if the user, on the first visit, customizes the site to suite his tastes and preferences, he will see the customized content on subsequent visits.

- **Alternative Channels.** These are the different ways to contact the company. For instance: e-mail, fax, toll-free numbers, postal address, call-back button, voice over IP and bulletin board. Traditionally, only toll-free numbers and postal addresses could be used by customers to reach the company. However, over the past few years, e-mail has emerged as an important tool for company-customer communication.

- **Local search engine.** This feature allows the visitor to search on key words to quickly locate the required content on the Website. This feature is helpful for those site visitors who are looking for a specific piece of information.

- **Membership.** The visitor can request a password. With this password he can continue surfing on password-protected Web pages within the Website. This feature allows the company to collect personal information from users, when the user registers for the membership. It also allows them to track the customer's behavior at the site over time. This knowledge allows the business to assess which customers are worth retaining by looking at current and prospective customer profit and customer defect patterns (Swift et al 2001).

- **Mailing list.** To receive more information, the visitor can add his/her e-mail address to a list to receive automated e-mails. Often, this is called a newsletter. This feature allows the company to build a database of e-mail addresses of potential users of the company's product or service.

- **Site tour.** The visitor can follow a tour through the Website. This allows users to get familiar with the Website contents.

- **Site map.** This is a hierarchical diagram of the pages on the Website, also called a site overview, site index, or site map. This feature is helpful in understanding the general structure of the Website.

- **Introduction for first time users.** Visitors, who enter the site for the first time, can surf to an introduction page containing information about "How to use the site most efficiently". This feature could help attract prospects and facilitate a first time purchase.

- **Chat.** This feature allows a visitor to chat real-time with others. Specifically, this could mean chatting with other visitors on the site or with the customer service personnel. This feature, while not used widely yet, is likely to see a marked increased in use, as internet penetration increases and bandwidth constrains decrease globally.

- **Electronic bulletin board**. Script-driven forums allow visitors to share information with others and can help shape a Website to better serve the customer needs. A visitor can post a message or can respond to a posted message on a special Webpage. This interaction, over time, creates a community of users around the company's service or product.

- **Online purchasing**. Visitors are able to purchase services or products online. This feature is probably the most critical part of the Website.

- **Product information online**. Visitors can customize their service or product online before ordering. For instance, a visitor may want to assemble online a PC of a configuration that is not listed on the Website.

- **Purchase conditions**. The purchase and contractual conditions can be viewed online. Purchase conditions contain shipping policies, return policies, warranty, guarantee and other company commitments.

- **Preview product.** The (customized) product can be viewed before purchasing. The product can be viewed in a motion picture or a demo.

- **External Links.** The visitor can easily and seamlessly link to a complementary products from other companies.

- **FAQs**. Frequent asked questions and their answers are available for reading. This feature acts as a self-helped for customers looking for answers to their queries.

- **Problem solving**. Customers can solve problems with products or services themselves with online self-help routines. This feature is not very prevalent since customers show resistance to using this feature

- **Complaining ability**. Complaints and problems can be detailed online. The Website has specific area for customers to type their complaints and get action.

- **Spare parts.** It is possible to order spare parts and complementary products online. In addition to repeat customer service, this feature ensures repeat traffic to the site.

- **Affinity program**. Affiliations with philanthropic agencies or organizations.

- **Product Highlights**. The benefits of a particular products/services are highlighted. This feature allows the company to highlight products or services that may be relevant in a particular context. The context could be a particular festival or a season, among others. This feature also prompts repeat traffic.

- **Request for catalog**. Allows the user to request a catalog.

- **Quick order ability.** This feature basically allows the user to check out the product within 3 clicks.

- **Easy to check out.** This is a subjective rating of the ability to check out on an "ease" scale of 1=easy to 4=difficult. This parameter is important, since significant numbers of purchases are abandoned at the time of checkout.

- **Ability to track order status**. This feature allows the user to find out which stage of the shipping process his/her order is in. Customers are more likely to feel satisfied if they know of the status of their order than if they not,

- **Gift certificate purchase**. Gives a promotions on a determine purchase

- **Store locator**. This feature is helpful since customers gather product information on the Web and subsequently buy the product from a brick-and-mortar store.

- **On-sale area**. This is a highlighting sale items.

- **Member benefits**. Description of benefits from shopping or of being a site member.

- **Order**. This feature allows the user to place an order within 3 clicks.

- **Speed of download page**. The Website was considered fast if the Webpages download in less than 15 seconds.

- **Account information.** If the user had registered on the site, the feature allowed him to view his personal information that he has given to the site. This could include his credit card information, if he has authorized the Website to retain this information for repeated purchases.

- **Customer service page**. These pages give details on contacting customer service.

- **Company history/profile**. These Web pages give the company background. In the case of retail shopping sites, there will be a link to the corporate Website.

- **Posted privacy police**. Privacy concerns are coming to the fore with increased Internet penetration. Today, most sites have a privacy policy and posted on their Website. This not only assures the costumer that his information is protected but will also protect the company from lawsuits from perceived privacy violation.

Table 1 - Service quality Literary Review

Autor(s)	Dimensions	Relevant information
Loiacono, Watson and Goodhue 2002	1. **Information fit to task**: Appropriateness , quality, and presentation of the information 2. **Interaction:** If user can communicate with people behind the website, search for information and make transactions over the internet 3. **Trust :** information privacy 4. **Responsive time:** time for the site to upload WebPages and to do the requested transactions 5. **Site design:** Aesthetic, information organization and site navigability 6. **Intuitiveness:** Easy of use 7. **Innovativeness:** creativity and uniqueness of the site 8. **Flow -emotional appeal**: Experience felted when by using the website 9. **Integrated communication:** Seamless communication with retailers through multiple channel 10. **Business processes:** Complementarily of the website strategy with the overall business processes 11. **Substitutability:** Effectiveness of the website when compared with other channels	Generated in information for website designers [Parasuraman, Zeithaml, Malhotra et al 2002]
Parasuraman Zeithaml and Malhotra 2005	**E-S-Qual** 1. **Efficiency:** The ease and speed of accessing the site 2. **Fulfillment :** The extent to which the site's promises about order delivery and item availability are fulfilled 3. **System availability:** The correct technical functioning of the site 4. **Privacy:** the degree to which the site is safe and protects customer information	E-RecSQual was built on physical products

	E-RecSQual 1. **Responsiveness:** Effective handling of problems and returns through the site 2. **Compensation:** The degree to which the site compensates customers for problems 3. **Contact:** The availability of assistance through telephone or online representatives.	
Barnes and Vidgen 2002/2003	1. **Usability:** site design and usability refers to easy of use 2. **Information quality :**accuracy, format, relevancy 3. **Service interaction quality :**Trust, Empathy	Lacks purchasing process [Parasuraman, Zeithaml, Malhotra et al 2002]
Yoo and Dontu 2001 **[Parasuraman, Zeithaml, Malhotra et al 2002]**	1. **Easy of use :** easy of use and ability to search information 2. **Aesthetic design:** Creativity, multimedia, color 3. **Processing speed :** promptness of online processing, interactive response 4. **Security :** financial information security	Lacks purchasing process [Parasuraman, Zeithaml, Malhotra et al 2002]
Wolfinger and Gilly 2003	1. **Web site design personalization** 2. **Reliability/Fulfillment:** accurate representation of the product, on-time delivery, accurate orders. 3. **Privacy/Security:** Feeling safe and trusting the site 4. **Customer service:** combining interest in solving problems, willingness of personnel to help and prompt answers to inquiries	The tested dimensions where retrieved from a previous studies
Collier, and Bienstock 2006	1. **Process dimension** (Functionality, Information accuracy, Design, Privacy, Ease of use) 2. **Outcome dimension** (Order accuracy, Order condition, Timeliness) 3. **Recovery dimension** (Interactive fairness, Procedural fairness, Outcome fairness)	The tested dimensions where retrieved from a previous studies

Rui Sousa and Christopher A.Voss 2006	**Physical Quality**
	
	1. **Interpersonal Service**:
	   1.1 Routine: based SERVQUAL model
	
	   1.2 Exception: based on E-RecSQual model
	
	2. **Logistic fulfillment**
	
	Virtual Quality
	(same has Parasuraman et al 2005)
	
	3. **Virtual Fulfillment**
	4. **Efficiency**
	5. **System availability**
	6. **Privacy**
	
	Integration Quality
	
	7. **Channel-service configuration**
	8. **Integrated interactions**
		The tested dimensions where retrieved from a previous studies
		
		The ServQual model dimensions were not presented nor explained. The routine dimensions were retrieve by us from [Parasuraman et al 1988] (see table 2)

Fassnacht and Koese 2009	1. **Environment Quality** (Graphic Quality, Clarity of Layout) 2. **Delivery Quality** (Attractiveness of Selection, Information Quality, Ease of Use, Technical Quality) 3. **Outcome Quality** (Reliability, Functional Benefit, Emotional Benefit)	Generated for electronic services in general

Financial Studies	Dimensions	Problems
C. Sohn and S.K. Tadisina 2008	1. **Availability:** The ability to provide many options or alternatives 2. **Speed of delivery:** Speedy transaction and quick response to customer 3. **Customized communication:** Personalized communication 4. **Trust:** Security and confidentiality 5. **Reliability :** Consistency of performance and dependability 6. **Appropriateness of webpage content:** Amount and content of web pages 7. **Easy of use:** the degree to which the site is easy to use 8. **Multifunctional WebPages:** Website need to be useful tools to get information with being fun to use and offer value added services such as news and subscriptions.	The tested dimensions where retrieved from a previous studies
Mathew Joseph, Cindy McClure and Beatriz Joseph 1999	1. **Convenience/Accuracy** 2. **Feedback/Complain management** 3. **Efficiency** 4. **Queue management** (not taken into consideration) 5. **Accessibility** 6. **Customization**	Study was not internet banking focus, it was made in a multichannel point of view. Did not provide a definition on each variable, these were defined by their attributes

Table 2 - [Sousa and Voss et al 2006] Service Quality Dimensions

Physical quality Dimensions	Definition	Comments
Interpersonal Service		The ServQual model dimensions were not presented nor explained. The routine dimensions were retrieve by us from [Parasuraman et al 1988]
1. Tangibles	"Appearance of physical facilities, equipment and personnel"	
2. Reliability	"Ability to perform the promised service dependably and accurately"	
3. Empathy	"The clients empathy towards the sales person"	
4. Assurance	"The ability of the sales person to create assurance to the customer"	
5. Responsiveness	"willingness or readiness of employees to provide service"	
Exception		Retrieved from [Parasuraman et al 2005] by authors
1. Responsiveness	"Ability to provide appropriate information to the customer when a problem occurs"	
2. Compensation	"Receiving money and returning shipping and handling costs"	
3. Contact	"The extent to which customers are able to speak to a live sales person"	
Logistic Fulfillment		Retrieved from [Rabinovich and Bailey 2004] by authors
1. Inventory sourcing	"Activities taking place from order placement to shipping"	
2. Delivery	"Activities taking place from shipping to the arrival at the final destination"	
3. Timeliness	"Time from order to product arrival"	
Virtual Quality Dimensions		Retrieved from [Parasuraman et al 2005] by authors
1. Fulfillment	"The extent to which the site's promises about order delivery and item availability are fulfilled"	
2. Efficiency	"The easy and speed of accessing and using the site"	

3. System availability	"The correct technical functioning of the site"	
4. Security/Privacy	"The degree to which the site is safe and protects customer information"	
Integration Quality Dimensions		Constructed by authors
1. Channel-Service Configuration	"Quality of the available combination of services or their components and the associated service delivery channels"	
2. Integrated interactions	"Consistency across interactions with service providers"	

Table 3 – Manager Processes

CLIENT	OPORTUNITY MANAGEMENT	SALES PROCESS/ACTIVITY MANAGEMENT
Does not respond but reads the campaign information	Appears "Exposed" in the client contact list	Prioritary contact, the customer already knows about the campaign. What is said to these customers must be the same that is said to clients that haven't been exposed to the campaign. The manager must behave like he doesn't know that customer has read the campaign information, because the client hasn't requested any contact to be made.
Client Shows interest and asks to be contacted by the manager	Appears "asked to be contacted by his account manager" in the client contact list. A pop-up appears saying "contact the customer"	High priority contact. Daily check up of "My activities" list, generated on the website. Contact the customer and close the Business Lead in 48 hours. Register the contact outcome.
Client shows interest and ask to be contacted by the Call Center	Appears "asked for a Call Back"	Daily check up of "My activities" list, generated on the website.

The client buys the campaign product online	Appears "Successful approach". The contact is closed with success(if that is the campaign purpose)	If the condition to close the campaign is the customer buying all the products, and he only buys one, then the contact will be recorded as "in progress". The manager must contact the client in order to know his intentions towards the other product(s)
Customer says he's not interested	Appears "unsuccessful approach" The contact is closed	In "interactions", the account manager is able to see the response in detail, on the website.

Table 4 – SQ Model Questionnaires & Metric scales

Quality Dimensions	Questionnares Questions (Qualitative analysis)	Metric scales (Quantitative analysis)
Physical		
Reliability		
1. Delivery	Rate in terms of effectiveness and quickness, the response of your manager to your requests	$$\dfrac{n^{\underline{o}} \text{ of requests feedback}}{n^{\underline{o}} \text{ of requests sent to manager}}$$
Empathy	"Empathy: Manager ability to place himself in your shoes"	
Assurace		
1. Knowledge	Rate your manager knowledge on financial product and services	
2. Simpathy, curtesy	How do you rate your manager in	

	terms of sympathy?	
3. Trust, confidence	Do you trust your manager?	
Responsiveness		
1. Manager's response	Rate in terms of effectiveness and quickness, the response of your manager to your requests	Average time of the manager to response to a message(hours)
Customer Service	Rate your manager ability to handle a complain	
Virtual		
Efficiency		
1.User friendly	Is the site user friendly?	
2.Speed	Rate the site speed	Server Upload speed (two periods)
System availability		Nº of times the site was offline during the two periods of analysis
Security/Privacy	How would you rate the site in terms of security	
Integration		
Channel-Service Configuration		
1.Breadth of channel choice		Nº of channels used to complement the online channel (two periods)
2. Product Selection customization(Campaign)	Rate the products recomended to you, in terms of tailor fitness	$\dfrac{\text{Nº of propension requests}}{\text{Nº of marketing requests}}$
Integrated interactions		
1.Data consistency (communication)	Rate your manager ability to keep your records updated	Client View (%)
Emotional appeal	How would you rate the site in terms of experience	