

# **Analysis of a Customer Relationship Management Tool in a Shipping Company**

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## **Abstract**

Today's society is technologically advanced, the world is just a click away and our companies' customers have easy access to all the information. Therefore, they are increasingly demanding, wanting more and better at a lower cost. Using as a case study a shipping company, a system of Customer Relationship Management (CRM) was analysed to verify what reasons led to its abandonment and to realise what to do to reverse such situation. In this industry product differentiation is practically null, so the customer's choice comes down to price. However, customers are paying more attention to customer service, therefore companies are developing stronger relationships with them. The construction of such relationships implies data collection on the client, from which one can offer services of greater value. This may lead to partnerships and competitive advantages. Thus, the use of CRM tools is being promoted for CRM tools present themselves as a valuable asset. In the end, suggestions are presented, ranging from improvements to the existing system, to more complex suggestions, costlier or breaking with the existing mode of relationship and dialogue between company and customers, but that, in the future, will certainly translate into advantages over competing companies.

## **Keywords**

CRM, shipping, customer service, case study.

## **1. Introduction**

The shipping industry has recently grown and evolved a lot. It is true that there was greater investment in reconstructing and improving land transport infrastructures (road and rail), but maritime transport presents itself as an alternative for it allows a reduction of the number of vehicles that daily congest the international road network (Douet and Cappuccilli, 2011). In fact, according to the European Commission, maritime transport, namely Short Sea Shipping (SSS), is the only "mode" that has proved to be able *to keep up with the growth in road transport* (Douet and Cappuccilli, 2011).

*Freight transport is a vital component in any economy. It is an economic indicator on the contribution to the economic*

*growth of each country or region. Transport networks facilitate good and people movement, being considered essential to the competitiveness and growth of the economies* (Pereira, et al. 2015). Therefore, it has become essential for the globalization of supply chains, with *the majority of world trade being carried out by sea (75% by volume and 60% by value)* (Lee and Song, 2016).

Maritime transport is also more environmentally friendly and it contributes to the integration, cohesion and economic development of peripheral areas (it allows door-to-door delivery of certain types of goods) with the advantage of offering a relatively low cost service due to the large capacity of ships (Paixão and Marlow, 2002).

When just over 50 years ago, the American Mac Lean boarded the first containers few people believed in the future of this new way of transporting goods, that was hard to load and to move. Containers were too big and not easily transported by the time's trucks and wagons. (Silva, 2011). In fact, the adoption of the container in the 1960s led to a kind of transport revolution - the use of containers meant standardization, enabling goods to be easily handled throughout the whole supply chain and their transportation in a multimodal way, using any of the different possible means of transport, road, rail and sea, or a combination of these with no need to reorganize the cargo (Lee and Song, 2016). In terms of maritime freight transport, this revolution was particularly notable with an increase of the number of companies in the industry over the years. These companies have also increased their fleet capacity, as transporting more goods at once leads to a cost reduction. However, since not all ports can receive these larger ships, companies have sought to fill this fact with feeder services, carried out by smaller capacity vessels that distribute the merchandise by the smaller ports, thus allowing a door to door service (Sousa, 2008).

The larger the number of companies, the greater the need to choose the company the customers will work with. Considering that in this field *service differentiation is low* and that *competition is mainly on a cost basis* (Lee and Song, 2016) companies are betting on customer service, a service that adds value due to the fact that both *[p]ort and maritime companies are challenged to redefine their functional role in the value chain for the sake of creating customer value and of ensuring the survival and growth of the company* (Notteboom, 2004).

It is precisely in the customer service aspect, that Customer Relationship Management (CRM) tools gain special importance because (...) *organizations are increasingly focusing on attracting, developing, and retaining businesses (...) managers are placing a greater emphasis on managing their marketing relationships, networks, and interactions, both internally with employees and externally with suppliers* (...) (Lindgreen, 2004), for that is exactly what CRM tools allow: the system's database is fed with relevant information about the customer, which makes it easier to get to know him and, consequently, to serve him better. However, the implementation of this type of solution does not have immediate effects: *[t]ypical CRM projects involve a long-term development process that extends over two to three years and includes all areas of consultancy, situational report, design of strategy, implementation of strategy, education and training of employees, and evaluation of the CRM Project* (Lindgreen, 2004).

This paper is organised as follows: after this introduction, literature on CRM is reviewed in order to compare the case study's reality to the theory regarding customer service, CRM, CRM in the shipping industry and software engineering. Then the company and its systems are presented followed by a thorough analysis of the CRM tool. Then results are presented and suggestions to get the most out of this tool are made.

## **2. Literature Review**

### **2.1. Customer Service**

Nowadays, organizations look for the most advanced techniques and technologies of in order to get competitive advantages. These can be obtained in a wide number of ways, but they require decision making, which can dictate the success or failure not only of a company but of the entire supply chain in which it is integrated: success depends on the ability to integrate and coordinate the complex business network established with the members of their supply chain with the main goal of improving their efficiency, profitability and competitiveness (Carvalho et al., 2012). It is, therefore, necessary to look for tools that can help in these decision making processes.

Regardless of the business and its size or location, the goal is to satisfy customers and *to provide unique value* (Christopher et al., 1991). Companies must, then, seek to differentiate themselves and to stand out from the rest by betting on customer service: *it is customer service that can provide the distinctive difference between one company's*

*offer and that of its competitors* (Christopher, 1998). Although this concept varies from company to company, it implies a relationship with both the final customer and the suppliers (Christopher et al., 1991). Because *customers create sales and the most successful companies are those that win the most customers and keep them* (Christopher, 1998), customer service becomes a kind of competitive weapon with a growing importance not only due to increasing customer demands, but also due to the ease with which the customer replaces a product and/or service by that of a competitor. The final decision is no longer based solely on the product's characteristics, but on the quality of the service provided, on what distinguishes it from others. Such issues are even more important when it comes to providing services (Christopher, 1998). In fact, quality and customer service go hand in hand: (...) *service quality (...) leads to, overall customer satisfaction. (...) Overall satisfaction with an experience leads to customer loyalty* (Caruana, 2002).

Another aspect of great value is availability, for *making the product or service 'available' is what, in essence, the distribution function of the business is all about* (Christopher, 1998), that can be defined as the set of factors that make customer service, such as delivery frequency, trust, stock levels and order cycle time among others (Martin Christopher, 1998). Regarding the shipping industry these factors are vessel frequency, transit time and equipment and space availability. These companies should also adopt an organisational culture that focuses on the client, because it is the knowledge of their needs and desires that allows companies to (...) *outperform competitors (...) and responding with goods and services to which superior value and greater satisfaction are consistently attributed* (Brady and Cronin Jr, 2001).

## **2.2. Customer Relationship Management**

The world we live in is constantly changing and we find ourselves, as well as our companies, unable to live without technology. In addition, the growing competitiveness and competition between companies makes them want to be one step ahead of others and constantly looking for new technologies and/or. Among these is a technology that has been increasingly used in companies since the 1990s – Customer Relationship Management (CRM). According to Dowling (2002), CRM had two points of origin: the United States (due to technological advances that provided more effectiveness and efficiency to call centres, websites and loyalty and customer service programs), where it is perceived as the driving force of the development of relationships between customers (Durvasula et al., 2004), and in Northern Europe and Scandinavia (due to the need of understanding the nature and impact of long relationships between companies), where it is considered a supportive tool.

Despite the obvious definition of CRM as the management of a company's relationships with its clients, in reality it this is a concept that means different things for different authors. The literature on CRM is wide, so we selected some definitions as follows:

- (...) *Customer Relationship Management is (...) a way to improve visibility, add to revenues and gain market share. (...) [A] tool to track relationships in a dynamic economy. (...) [CRM] refer[s] to comprehensive software solutions that (...) make the customer the epicenter of the business. (...) enables companies to collect, maintain and manipulate customer-related data to leverage customer relationships to increase revenue and profitability. (...) CRM gives a business continuity by providing the technology and techniques to take ownership of data and make the data visible and accessible to the entire enterprise* (Katz, 2002).
- *CRM is about acquiring customers, knowing them well, providing services and anticipating their needs* (Teo et al., 2006).
- *CRM is making the organisation customer centric, using new techniques and Technologies, and making the customer an integral part of the organisation. (...) CRM is about getting to know your clients better through the use of technology (...)* (Boon et al., 2002).
- *Customer relationship management, or CRM, are solutions that have emerged(...)In response to the competitive pressures that globalization (...) were bringing about (...). (...) [B]usinesses have changed from being product-driven to customer-driven. CRM is a strategic approach for systematically targeting, tracking, communicating, and transforming relevant customer data into actionable information on which strategic decision-making is based (...)* (Missi et al., 2005).
- *CRM is a synthesis of many existing principles from relationship marketing and the broader issue of customer-focused management* (Hendricks et al., 2007).

- *CRM is a process/application that permits organisations to gather and analyse customer data rapidly while seeking to improve customer retention and profitability via targeted products and services (Wright et al. (2002) and Rigby et al. (2002) apud Payton and Zahay, 2003).*

This diversity of definitions is related to the companies and businesses in which the technology was observed, since each company's vision on CRM is different: for some it is just one more technological tool for others is an integral and essential part of the business (Teo et al., 2006). However, there is one consensual aspect: the importance of the client, which should be the main focus of the attention of the companies. Because the customer is the focus of any business, all the information that the employees get through their interaction with the customer is fundamental for companies. A CRM tool is, then, helpful considering that one of its functions is the creation of a database with client information, that *replaces systems maintained by individual sales people, institutionalizes customer relationships, and prevents the loss of organizational customer knowledge when sales people leave the firm* (Hendricks et al., 2007). It is this knowledge that allows companies to get competitive advantage. However, CRM is not a simple technological solution, it is a model, a strategy and a business practice (Kordalipoor et al., 2015), as well as a complex process driven by the needs of both the company and the customers, who *demand and expect fast, efficient, and effective service instantaneously. Customers anticipate and expect that all of their personal information, likes and dislikes, and special preferences are recognized and efficiently turned into action (...) [They] demand personalized service, and they demand to speak to the person in charge so they may get the best deal* (Kordalipoor et al., 2015).

Although technology is important, it should be seen as a tool and not as a solution, for *simply throwing software or technology at an organisation for CRM implementation will cause more problems than solutions* (Boon et al., 2002). Nonetheless, in order to ensure that CRM implementation is successful, the company needs to know the Critical Success Factors (CSF), *those characteristics, conditions or variables that, when properly sustained, maintained, or managed, can have a significant impact on the success of a firm competing in a particular industry* (Leidecker (1984) apud Kordalipoor et al., 2015), that are another aspect of CRM widely covered by the literature. Among the CSF of CRM we find: client satisfaction (Arab et al., 2010 and Ferreira, et al., 2016), client retention (Arab et al., 2010 and Ferreira, et al., 2016), reassessment of the organisation's culture and structure (Damacena and Pedron, 2004, Arab et al., 2010, Padilla-Meléndez and Garrido-Moreno, 2014 and Ferreira, et al., 2016), workers' training and motivation (Katz, 2002, Damacena and Pedron, 2004, Arab et al., 2010, Padilla-Meléndez and Garrido-Moreno, 2014 and Ferreira, et al., 2016), top management support and commitment (Kordalipoor et al., 2015, Damacena and Pedron, 2004, Arab et al., 2010, Padilla-Meléndez and Garrido-Moreno, 2014 and Ferreira, et al., 2016), CRM strategy (Katz, 2002, Damacena and Pedron, 2004, Arab et al., 2010, and Ferreira, et al., 2016), knowledge management (Kordalipoor et al., 2015, Padilla-Meléndez and Garrido-Moreno, 2014 and Ferreira, et al., 2016), focus on the client (Padilla-Meléndez and Garrido-Moreno, 2014), processes redesign (Katz, 2002, Damacena and Pedron, 2004, and Ferreira, et al., 2016), system's implementation monitoring (Katz, 2002, Damacena and Pedron, 2004, and Ferreira, et al., 2016) and technological integration (Damacena and Pedron, 2004, Padilla-Meléndez and Garrido-Moreno, 2014 and Ferreira, et al., 2016). No less important than all of the aforementioned FCS is Peter Chase's advice, who invites managers to take on the role of clients and have their experience, noting that *[u]nderstanding your company from the customer's point of view is the first step to successful CRM* (Chase, 2000).

Besides all this, we were also able to identify three different types of CRM, according to the work of Hayley (2016), Teo et al. (2006) and Greenberg (2001): operational CRM (customer oriented), analytical CRM (analyses the collected data to find patterns and other relevant details) and collaborative CRM (shares information throughout the whole organization and integrates all points of contact between company and customer). Payne and Frow (2005) also present the same perspectives as a continuum, for a system has to grow up, develop and adapt itself, so we can consider the mentioned stages as the three life moments of the system: childhood, youth and adulthood.

We conclude, then, that CRM is actually a continuum developing process which aims to give the customer the best possible experience and, therefore, it should include all the company's departments. In fact, *CRM is not a stand-alone system in the organization but it needs to be maintained well and integrated with other functions to construct a satisfying customer experience. A CRM strategy involves the entire enterprise and is employed on an ongoing basis* (Sen and Sinha (2011) apud Hayley, 2016) and its success is all about integration. *Get your CRM system to work in concert with the rest of the enterprise, including ERP systems, the Web, and other enterprise applications, and you will finally unleash its potential* (Chase, 2000).

### **2.3. Customer Relationship Management and the Shipping Industry**

Despite the wide literature on CRM, the literature regarding the application of CRM tools in the shipping industry is still very scarce.

Knowing that any organization's aim is to deliver the right product, to the right customer, on the precise quantity, in the right conditions, to the correct place at the right price (Carvalho, *et al.*, 2012), an organization that delivers goods (whether by land, air or sea) aims to offer the best service possible, at the best price and when the client needs it. For that reason, such companies need to ensure that the client's needs are met quickly for that is considered a determinant aspect in such a competitive market (Durvasula, *et al.*, 2004). *A customer's relationship with a shipping company involves prices, services, scope of service, schedule, customer relations, company history, convenience, brand name and value-added services* (Yang and Nguyen, 2011), however *the main distinguishing factors for customers comprise company history, brand name, customer relations and value added services* (Wong (2007) *apud* Yang and Nguyen, 2011).

Despite the promise that technology will transform the shipping industry, the adoption of a new technological tool will definitely not be the factor that will influence a customer's choice, because in this business area prior relationships, based on direct contact, are very important and should not be forgotten (Durvasula *et al.*, 2004). In spite of this, *[a] properly integrated IT system can significantly improve customer service by providing accurate shipment data for both the company and the customer, and an integrated IT-based CRM program ensures a more efficient and effective quoting and communications system for sale departments and beyond* (Gander, 2008). So, (...) *the shipping industry can use technology as an integral part of its CRM industry. In particular, information technology in the form of the internet and business intelligence can enable shipping firms to focus on their customers more in depth and provide products and sales service at levels that are necessary to retain customers* (Durvasula *et al.*, 2004). Yang and Nguyen (2011) argue that such a tool may improve the coordination and communication between vessel management, terminal operations, transportation organization and infrastructure management, as well as maximize profits by reducing operational costs.

Although CRM is a tool to get competitive advantage, it should be used as a means, that is, it should not replace the interaction between sales department and customer, because only the human contact allows the development of trustworthy relationships and, consequently, the offer of a personalised service. It should, therefore, serve the company and facilitate its employee's work. It should be *an assistant in creating satisfaction for the shipper but not the sole source of satisfaction* (Durvasula *et al.*, 2004). In spite of all the widely recognised advantages of CRM tools *most carriers and logistic providers have yet to launch a formal CRM program* (Fakhredaei, 2007). According to the author, the reason for this is the existence of very few CRM software adapted to the reality of the transportation business.

### **2.4. Software engineering**

*Software engineering practice encompasses principles, concepts, methods, and tools that software engineers apply throughout the Software process. Every software engineering project is different. Yet, a set of generic principles apply to the process as a whole and to the practice of each framework activity regardless of the project or the product* (Pressman, 2010). Among these principles we can find communication (and collaboration with the customer), planning (the definition of the work to be done), modelling (the creation of a model that allows the understanding of how the system will look like and how it will work), construction (code development and testing) and deployment (the delivery of the system and the feedback provided by the customer) (Pressman, 2010). Understanding of requirements defined by the customer is also to be taken into account, because the team's aim is to guarantee that the software meets the customer's needs: *[i]f only one user defines all requirements, acceptance risk is high* (Pressman, 2010). This is also important when one thinks about the system's *usability - a qualitative measure of the ease and efficiency with which a human can employ the functions and features offered by the high-technology product* (Pressman, 2010). After all, a system is developed to be used and to help someone else's work. However, *if the interface is poorly conceived, the user moves in fits and starts, and the end result is frustration and poor work efficiency* (Pressman, 2010).

## **3. Case Study**

### **3.1. The company**

In order to do this work, an internship took place at an international company of the shipping industry. Its business area is the maritime transportation of goods (containerized cargo, bulk cargo, energy, vehicles, ...) and it has over 700 workers worldwide and over 500 vessels that transport, daily, over 40 million tons of goods. It deals with a series of external entities on a daily basis and communicates with them via Electronic Data Interchanges (EDIs) that are both sent and received through a vessel management system. It is also through this system that containers are booked and that customer data, which will later be included in the Bill of Lading (B/L), one of the most important documents in the area of shipping, are entered. This tool allows the issuance of invoices as well as their rectification too. However, unlike the interaction with the external entities, the interaction with the customers (regarding bookings, B/L instructions and invoices) is manually inserted on the system. Also manually inserted are the agreed service prices and contract numbers (that need to be confirmed in a different system).

The sales department, in which the internship took place, receives the clients' request by email or telephone and the proposal is then sent to back. If the proposal is not accepted by the client, then a process of negotiation begins in order to check the possibility of offering price which is more attractive to the client. Once the proposal is accepted the booking process begins and a booking is created. The same department is also responsible for verifying if the value agreed is updated on the company's system and to assign it to the respective booking. Once this process is finished, an EDI file is created and sent to the company's system in order to distribute the values by all the supply chain elements (company's offices, ports, transportation companies, ...).

### **3.2. The company's CRM**

In 2015 a *Customer Relationship Management* (CRM) tool was implemented in the company's office in Portugal. This tool resulted of the adaptation to the shipping industry reality of a system that already existed for the road sector. Its installation occurred due to the need of the company of register and work client data (regarding requests, offer and communication of acceptance or non-acceptance of quotations) that were lost because communication was mainly held by email. It was desired that the sales department used this new tool to send the proposals to the clients (at the same time its use would generate statistical data on strategic information that was so far difficult to obtain). The tool was developed by the information technology department of a logistics and transportation company. As they were already using such a system it was decided to adapt it to the specifications of the shipping industry, for only minor adjustments were needed. However, soon after the tool's implementation the workers realised that sending proposals with it was much more time-consuming than if it continued to be carried out by email and, on the other hand, that the usage of the new software meant entering the same information for a third time (in the vessel management system, in the company's system and in the CRM tool). These observations led to a progressive abandonment of the CRM.

#### **3.2.1 SWOT analysis**

During the internship a SWOT analysis of the system was performed. The following aspects are some (the most important) of the strengths, weaknesses, opportunities and threats that were identified:

- Strengths: available website with relevant information, communication between some (internal or external) systems, focus on the client, definition of goals and expectations, top management support, access to the client database, exporting data for a spreadsheet, availability of information related to the turnover generated over a given period of time;
- Weaknesses: no collaboration of the workers in the requirements' definition, choice of the system without a thorough analysis of other systems available on the market, non-existence of a testing version, no training of the users and no support document (instructions' or user's manual), no evaluation of the changes generated by the introduction of the new tool (namely concerning the way of working), lack of monitoring of the system's implementation, system improvement limited due to the non-definition of key performance indicators, database and helpdesk located in a different company in a different location and no system integration;
- Opportunities: the system can easily be integrated in the vessel management system, statistical data can easily be obtained, desire of the sales department to work with the tool and possibility of gathering of useful information;
- Threats: identification of only a gap and one goal, lack of process redesign, no sharing of the client

information through the whole company and no possibility of sending multiple proposals at the same time (in the same file) when their origin and/or destination is not the same.

7.

### **3.2.1 Time Measurement**

After some time inserting information on the database and after understanding how it worked, we decided to realise how long, on average, does it take to send a proposal using the CRM tool. In order to do that, we timed the work using the repetitive method with zeroing. When performing such a study, the highest and lowest times are usually left out (meaning that they represent bad measurements). However, many times different clients request the same service or similar services, so it was faster to copy the proposals and assign them to the different customers making the necessary adjustments when needed. That resulted, naturally, in lower time measurements. On the other hand, sometimes there were requests that required the introduction of new information on the system (new client, new contact information, new origin, destination and/or port), which resulted in longer time measurements. Because all this is part of the sales department work, all the time measurements were included, because they result from the specificities of the business.

According to the results the average time to send a proposal through the CRM system is about three minutes. However, this time does not include the time spent in calculating the service price. It is true that, in some cases, the price is fixed, in other cases there is a series of taxes that need to be calculated case by case (like, for example, the fuel adjustment factor or exchange rates). In other occasions, information concerning delivery prices is needed or there is a need to negotiate freight values with other offices. That can occur within minutes or take days to obtain. This time is, therefore, impossible to measure, especially because the sales people are constantly multitasking: answering the phone, reading emails, replying to emails, but it has to be added to the average three minutes measured.

### **3.3. Analysis**

CRM tools allow the storage and analysis of relevant information and consequently a better management of the relationship with the customers. We realised that this tool was key for this company to get crucial information, that would enable closer relationships with the clients ensuring their loyalty. That information, would also be key for segmenting the customers and defining the best strategies to approach them. Because the majority of the company's customers are forwarders, strong relationships may mean the establishment of partnerships and the conquer of competitive advantages.

Of the 15 people working in this office, the CRM is only accessible to the six people of the sales department. When the tool was installed, they started using it and that resulted in the creation of a good client database. However, the fact that it was too time-consuming and that it did not reach their needs led them to go back to the old ways. It is, therefore urgent, that measures are taken so that this system can evolve from a purely operational system, to an analytical system and, ideally, to a collaborative system (Hayley, 2016, Teo *et al.*, 2006, Greenberg, 2002 and Payne and Frow, 2005).

Regarding the critical success factors mentioned before, it was observed that the system's implementation failed mainly in the relationship with the workers. It was also evident that it is a system that does not require the participation of the customer, that there was no customization, processes redesign or monitoring and that it is not easily adjustable and that the integration with the other systems is scarce.

From the SWOT analysis, we realised that some aspects of software engineering were not taken into account by the project development team. In fact, communication failed because the users' requests were not listened to, planning failed because there was no room for improvement or changing the system, modelling failed because there was no opportunity to test an earlier version of the software and deployment failed because there was no support document and the support given by the team was very limited. Regarding the system's usability defined by Donahue *et al.* (1999) as the way to measure if a system is helpful, efficient and pleases its user (Donahue *et al.* (1999) *apud* Pressman, 2010), there are some aspects that need to be revised: despite being considered consistent and well structured, the software is not prepared for the complexity of the shipping industry's service.

## **4. Possible solutions**

#### **4.1. Current system improvement**

The cheapest and probably easiest solution found is an adjustment of the current system. In order to do that a meeting with the IT department took place and the users' requirements were exposed and explained. It was decided that some changes would take place in a shorter period of time. The system's update in order to fulfil such requirements would definitely lead to a greater use of the system, although the users agree that it will never be enough.

#### **4.2. Other solutions**

If the existing system's improvement is not enough, one needs to think of other solutions. Among those we suggest:

- Global CRM – this is a multinational company, so it would be natural that the CRM tool was the same for all the offices worldwide, which would definitely lead to a greater share of customer information.
- Integration with the vessel management system – this suggestion has already been made, but was refused due to its high costs. However, we think it would be a solution that would help both the sales and the customer service departments. If the same codes were used by both tools it would only be necessary for the customer to give the offer's number and the system would automatically associate the agreed price to the booking (when necessary, the system should also display error messages – for example, if the client requested an equipment type for which he did not ask for a price)
- Electronic CRM (e-CRM) – most of the CRM tools available on the market nowadays, offer more than just a CRM tool, they offer an e-CRM solution which is the ability of the customers being able to take care of themselves online (Greenberg, 2002). That could be done by creating, in the company's website, a portal or link that would give access to a client's page in which the clients themselves would fill in the information requested. By sending such a request through such a system, the sales department would need to fill in the remaining information only (transhipment port(s), transit time and price). Relevant information (like restrictions, special taxes or dangerous cargo) would also be available. In their "customer page" clients could also have access to their *history*, that is have access to their prior requests so that they could only ask for an update or for a new booking (when the agreed value is still valid).

### **5. Conclusion**

*Any CRM implementation needs to be evolutionary and not revolutionary* (Katz, 2002). Any changes in a company do not aim to cut with the past, but to improve, to evolve and to get advantages over the competitors. The introduction of a CRM tool aims for a better relationship with the customers, ensuring that they get the best service at the best price as possible. During this internship we analysed a CRM tool implemented two years ago by mapping the necessary processes to send quotations through it and by performing a SWOT analysis. We realised that in spite of fulfilling the initially defined requests, the system did not fit the company's reality and its business specificities.

As mentioned above, this system is only two years old, so it is still an embryonic system that can be adapted, that can improve and grow. Given that, and knowing that the most economical solution is the improvement of the currently existing tool, it is logical that the system, as it is, may be considered as a testing version and that all the changes made are considered part of a new improved version. This solution, nonetheless, lacks the so wanted systems' integration that would be possible with the implementation of an e-CRM solution.

Each organisation has a different view of how a CRM tool works, so, as long as it focuses on the client, the system can be adjusted to better fit the company's needs and their customers' wishes. (Júnior *et al.*, 2005). Having met our goals in analysing this system, we suggest that the company's managers meet with its employees and with the IT department in order to present them the CRM strategy (what they want to achieve and how to do it) as well as all the possible solutions there are, in order to choose, together as a whole, the one that is more beneficial for everybody and to ensure that the tool meets all the requirements. Whatever the choice is, the important is that, *[i]n the end, what matters more is not the display of technology, but how technology is put to practical use for delivering superior quality service* (Durvasula *et al.*, 2004).



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## References

- Alves, R. and Dores, V. (Dezembro 2016). A atividade de *Shipping* em Portugal. In *Temas Económicos*, number 46. Gabinete de Estratégia e Estudos - Ministério da Economia.
- Arab, F., Selamat, H., Ibrahim, S., and Zamani, M. (2010). A survey of success factors for CRM. In *Proceedings of the World Congress on Engineering and Computer Science*, volume 2, pages 20–22.
- Boon, O., Corbitt, B., and Parker, C. (2002). Conceptualising the requirements of CRM from an organisational perspective: a review of the literature. In *AWRE 2002: Proceedings of the 7th Australian Workshop on Requirements Engineering*, pages 83–95. Deakin University.
- Brady, M. K. and Cronin Jr, J. J. (2001). Customer orientation: Effects on customer service perceptions and outcome behaviors. *Journal of service Research*, 3(3):241– 251.
- Caruana, A. (2002). Service loyalty: The effects of service quality and the mediating role of customer satisfaction. *European Journal of Marketing*, 36(7/8):811–828.
- Carvalho, J. C. *et al.* (2012). *Logística e Gestão da Cadeia de Abastecimento*. Edições Sílabo.
- Chang, J., Yen, D. C., Young, D., and Ku, C.-Y. (2002). Critical issues in CRM adoption and implementation. *International Journal of Services Technology and Management*, 3(3):311–324.
- Chase, P. R. (2000). Why CRM implementations fail and what to do about it. *Scribe Software Corporation*.
- Christopher, M. (1998). *Logistics and Supply Chain Management*. Financial Times - Prentice Hall, 2 edition.
- Christopher, M., Payne, A., and Ballantyne, D. (1991). Relationship marketing: Bringing quality customer service and marketing together.
- Damacena, C. and Pedron, C. D. (2004). 322 – Estratégia de CRM: O desafio da implantação. In *Anais do Congresso Anual de Tecnologia da Informação–CATI*.
- Douet, M. and Cappuccilli, J. (2011). A review of short sea shipping policy in the European Union. *Journal of Transport Geography*, (19):968–976.
- Durvasula, S., Lysonski, S., and Mehta, S. C. (2004). Technology and its CRM implications in the shipping industry. *International Journal of Technology Management*, 28(1):88–102.
- Eurostat (2015). Maritime economy statistics - coastal regions and sectoral perspective. Available: <http://ec.europa.eu/eurostat/statistics-explained/index.php/Category:Maritime>, August 12, 2017.
- Eurostat (2017). Maritime ports freight and passenger statistics. Available: <http://ec.europa.eu/eurostat/statisticsexplained/index.php/Category:Maritime>, August 12, 2017.
- [Fakhredaei, 2007] Fakhredaei, N. (2007). The factors affecting adoption of CRM at the organizational level in Iran’s shipping industry.
- Ferreira, B. O. S., Varajão, J., and Cunha, A. (2016). Fatores de sucesso da gestão de projetos de CRM: uma revisão de literatura. In *CAPSI 2016–Conferência da Associação Portuguesa de Sistemas de Informação*. APSI.
- Gander, G. (2008). 10 ways an integrated CRM tool can improve the forwarding process.
- Greenberg, P. (2002). CRM at the speed of light. *Osborne/McGrawHill, Berkeley*.
- Hayley, M. (2016). A literature review on CRM – definitions, benefits, components, and implementation. *Australian Journal of Management and Financial Research*, 1(1):26–34.
- Hendricks, K. B., Singhal, V. R., and Stratman, J. K. (2007). The impact of enterprise systems on corporate performance: A study of ERP, SCM, and CRM system implementations. *Journal of operations management*, 25(1):65–82.
- Júnior, A. G., Santade, H. O., Pizzinatto, N. K., and Farah, O. E. (2005). CRM: conceitos e métodos de aplicação no marketing de relacionamento. *Revista Gestão Industrial*, 1(3).
- Katz, H. (2002). How to embrace CRM and make it succeed in an organization. *SYSPRO White Paper*. SYSPRO, Costa Mesa, CA.
- Kordalipoor, M., Shahhosseini, R., and Hamidi, K. (2015). A literature review on customer relationship management and critical success factors. *Applied Mathematics in engineering, Management and Technology*, 3(3):401–411.
- Lee, C.-Y. and Song, D.-P. (2016). Ocean container transport in global supply chains: Overview and research

- opportunities. *Transportation Research Part B*, pages 1–33.
- Light, B. (2003). CRM packaged software: a study of organisational experiences. *Business Process Management Journal*, 9(5):603–616.
- Lindgreen, A. (2004). The design, implementation and monitoring of a CRM programme: a case study. *Marketing Intelligence & Planning*, 22(2):160–186.
- Missi, F., Alshawi, S., and Fitzgerald, G. (2005). Why CRM efforts fail? A study of the impact of data quality and data integration. In *System Sciences, 2005. HICSS'05. Proceedings of the 38th Annual Hawaii International Conference on*, pages 216c–216c. IEEE.
- Notteboom, T. (2004). Container shipping and ports: An overview. *Review of network economics*.
- Padilla-Meléndez, A. and Garrido-Moreno, A. (2014). Customer relationship management in hotels: Examining critical success factors. *Current Issues in Tourism*, 17(5):387–396.
- Paixão, A. and Marlow, P. (2002). Strengths and weaknesses of short sea shipping. *Marine Policy*, (26):167–178.
- Payne, A. and Frow, P. (2004). The role of multichannel integration in customer relationship management. *Industrial marketing management*, 33(6):527–538.
- Payne, A. and Frow, P. (2005). A strategic framework for customer relationship management. *Journal of marketing*, 69(4):167–176.
- Payton, F. C. and Zahay, D. (2003). Understanding why marketing does not use the corporate data warehouse for CRM applications. *Journal of Database Marketing & Customer Strategy Management*, 10(4):315–326.
- Pereira, T., Rocha, J., Telhada, J. and Carvalho, M. S. (2015). Characterization of the Portuguese SSS into the Europe: A Contribution. *International Conference on Computational Logistics* (pp. 252-266).
- Pressman, R. S. (2010). *Software Engineering - A Practitioner's Approach*. McGraw-Hill, 7 edition.
- Rocha, J. (2015). Transporte marítimo de curta distância na União Europeia e em Portugal. Master's thesis, IPP - ESEIG.
- Silva, J. (2011). O transporte marítimo - mais... e mais contentores. *Revista de Marinha*. Available: [http://www.revistademarinha.com/index.php?option=com\\_content&view=article&id=1437:transporte-maritimo&catid=102:portos-e-canais&Itemid=291](http://www.revistademarinha.com/index.php?option=com_content&view=article&id=1437:transporte-maritimo&catid=102:portos-e-canais&Itemid=291), July 20, 2017.
- Sousa, M. (2008). O transporte marítimo na cadeia logística. Seminário de Logística -AEP.
- Teo, T. S., Devadoss, P., and Pan, S. L. (2006). Towards a holistic perspective of customer relationship management (CRM) implementation: A case study of the housing and development board, Singapore. *Decision support systems*, 42(3):1613–1627.
- Winer, R. S. (2001). A framework for customer relationship management. *California management review*, 43(4):89–105.
- Yang, Y.-C. and Nguyen, H. H. (2011). Comparison of customer relationship management systems perceptions among container shipping companies in Vietnam and Taiwan. *African Journal of Business Management*, 5(15):6515.

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