

Work Project Thesis Presented to
The Faculty of Nova School of Business and Economics
In (Partial) Fulfillment
Of the Requirements for the Degrees
In Masters of Science

‡ **Activity Based Costing in Millennium BCP**

Under supervision of Academic Advisor Ana Marques

Daniel Jorge Correia Lopes Coelho Vieira

Masters In Finance – N° 380 // Master in International Management – N° 237

Delivered on the 26th of May 2013

‡This Business Project was developed with Millennium BCP operations department with the objective to raise internal awareness of the ABC model

Table of Contents

Introduction	1
Brief Context.....	1
Client History	1
Market Overview	1
Current Client Situation	2
Business Project Challenge	3
Reflection on the Work Done	4
Original Approach.....	4
Evolution over Time	5
Conclusions	9
Approach Limitations	10
The Correct Approach.....	10
Reflection on Learning.....	15
Previous Knowledge	15
New knowledge.....	17
Personal Experience	18
Benefit of Hindsight.....	19
Conclusion	20
Reference List	21
Appendices	23

Introduction

This work project serves to give a brief introduction of what the business project was about, for whom it was performed and provide context to the following work. It details the content of the project, how and why it was analyzed and goes through its respective conclusion. Then it closes out with an internal reflection of what I applied, learned and what could be improved.

Brief Context

Client History

Millennium BCP^a started out as Banco Comercial Português (BCP), in 1985 during the liberalization of the banking market. With a young and ambitious team, BCP engaged in an aggressive approach, achieving a significant organic growth and establishing itself as a strong player. Inefficiencies driven by market regulation constraints were capitalized, and very fast. This was also the approach of many banks after market liberalization in Portugal that allowed them not only to gain market share but sustain it¹. In less than 10 years MBCP accomplished over 8% market share in total assets, loans and deposits. With many new players in the market, a strong market pressure was created on revenues, removing the value added of a strategy based solely on organic growth. MBCP, understanding the market environment, started a strong acquisition investment, acquiring Banco Atlântico Português (BPA), the biggest commercial bank at the time, following this Mergers & Acquisitions (M&A) approach until 2000. This significant increase in market share, led MBCP to gain a dominant position of the Portuguese market much faster, although with some inefficiencies regarding the integration of different banks' processes. Consequently, the bank decided to unify their brand image in 2003, to capture all synergies and cost reductions expected to achieve. Following the M&A as a preferred method of growth, MBCP decided to expand internationally, not only to achieve higher growth but because it meant diversification of their product portfolio and revenues, reducing geographic risk². This geographic expansion was performed mainly in affinity markets (e.g. Angola and Mozambique) or in market with similar business models (e.g. Poland).

Market Overview

Even though MBCP achieved a strong position in the Portuguese market, it suffered intensely from 2008 onwards. It all started with the subprime crisis that hit globally in 2008, which Portugal resented severely. This left markets looking more closely into economic indicators and debt levels of countries, resulting in Portugal as one of the prime choices by investors to fail debt repayments.

^a Millennium BCP will be referred as MBCP from here onwards

Along with a severe economic recession that installed in Portugal, housing credit started to become a big problem in the banks' balances, in conjunction with SME (Small and Medium Enterprises) credit (Greece was a major driver of negative profits, due to its situation and MBCP exposure to it). Despite the stress and pressure that MBCP is currently under, it is still the leading bank domestically in terms of client base with private banks, being the second player in terms of market share in deposits (18.1%), credit (19.1%) and in physical branches with 832 (Please see Appendix 1 and 2) ¹.

This severe pressure on revenues and impairments, along with the continuous capital requirements imposed by EBA (European Banking Authority) and troika, led to a contingency capital (COCO) injection from the government, which put a strong pressure on margins with close to 8.5% of interest, to be paid back. This had a significant effect on the decision to lend credit and in the urgency to lower funding deposit costs. Looking closely at this distortion of incentives given by the government, the cost of funding in 2011, which was 2.57% on total to the bank increased in 2012 to 3,02%³, leading to a higher restriction on credit given, only accepting higher rates of return, at an acceptable risk. This was a significant increase which is expected to continue, as long as the financing from the state is unpaid for. Therefore, for MBCP to repay this hybrid lending from the state, it needs to recover to superior efficiency levels and strong operational performance to engage in a rapid and healthy recovery.

Current Client Situation

The capital requirements imposed on banks, a significant measure that was deeply analyzed was the transformation ratio (Loans-to-Deposits), which shows a bank's capability to cover withdrawals and capital requirements. In respect to this measure, MBCP was highly leveraged in 2009, due to a significant exposure to credit domestically mostly (Please see Appendix 3 and 4).

Forced to deleverage the transformation ratio by the Financial Assistance Program up to a level of 120%⁴ until 2014, there were only two possible paths, increasing deposits or reducing credit. Deposits are very hard to increase, since banks have very little influence on customers' capability to deposit, and are therefore limited to the capacity of the economy to generate money liquidity. This led to a strong competition for deposits, resulting in high cost of lending, in an attempt to automatically reduce the transformation ratio that due to the strong competition was insufficient for MBCP. This meant that the only credible solution left was to decrease credit, which was not only difficult but also restrictive, considering the amount of non-performing loans. The solution found was then to be more restrictive in credit lending, leading to a further pressure on the economic system, creating a downward spiral. MBCP was still able to reduce their exposure in 22% to 129% from 2009 until 2012, ensuring a higher flexibility for the end goal of 120%. Looking at the Net Income evolution, the situation looks more problematic (Please see Appendix 5).

With the high number of provisions and negative impact of Greece's operations (Please see Appendix 6), the bank is in urgent need for an operational turnaround and a restructuring of the credit portfolio.

With a strongly negative outlook for the bank, three aspects stand out as crucial for the recovering of banks financial health. These include the customer satisfaction, risk management and cost efficient levels. Starting out with customer satisfaction, the bank has reduced credit availability and engaged in a strong effort regarding cost management. With a strong pressure to reduce costs and credits, MBCP has developed a deficient customer relationship management that despite not having had a big impact on the bank so far, it could certainly have in the future, especially in cross-selling activities. The risk management is also a visible problem right now (Please see Appendix 7), and should be steeply improved, considering how impairments on loans account for more than net interest income (loans impairment=1,684,179,000; Net interest income=1,023,585,000)⁵. The best way to look at efficiency levels in banking is to look at the cost-to-income ratio^b, regarding which MBCP is currently an outlier in the market (Please see Appendix 8 and 9). For a project that started out as an innovative, differentiated and competitive bank, it has drifted away from the objective. Therefore we can understand that there are clear problems internally and that the corporate restructuring they are undertaking currently is definitely the right approach to take. However, engaging in a restructuring alone is not enough, and first it is necessary to understand what made MBCP an inefficient company in the first place, and what are the costs required to maintain a good customer relationship (Please see Appendix 10). Currently with a system that is unable to provide management with such data, corporate restructuring will be done with less accuracy. Fortunately this is where Activity Based Costing (ABC) implementation can add value.

Business Project Challenge

Focusing on the challenge MBCP has proposed to the team, were the client felt the need to show internally how ABC method would help with the current restructuring taking place. The Business Project started out as a project assigned for the study of implementation of ABC in the whole Bank, where the initial approach was to gather data for optimal implementation practices in Portuguese retail banking, and develop the best practices for MBCP. It also included a necessity to raise awareness of advantages and issues to be resolved upon implementation. It was intended to be a strong study of best practices in Portugal in terms of ABC implementation regarding methods and issues, as well as identifying all cost drivers for the ABC model.

^b $Cost - to - Income = \frac{Operating\ Cost}{Operating\ Income}$

Even though this was the initial intention, right on the first meeting where only the Academic and Business advisors were present it was decided that ABC model for the whole bank in such a short period of time would be a risk, and a more concise and realistic goal was defined, keeping the same objectives but for the card business only, instead of the entire bank. This goal was better defined in the first meeting with the group, restating that the main objective was to deep dive into ABC implementation in other banks and academic research, gather all information and develop a methodology of best practices that are applicable to MBCP, while gathering all issues and risks outstanding.

The objective was to reduce the scope and ensure a stronger in-depth analysis, developing strong and cohesive recommendations. They set the cards as the chosen business to analyze, because it is a business that uses almost all operations within the bank, allowing for the conclusions to be more generic, and not specific to a product. This had already raised a significant amount of interest in the bank, as the familiarity with the current costing system allowed employees to understand it was far from optimal for decision making, as it created inefficiencies and allocated costs unfairly, without someone being able to trace any causality in costs. Combined with the strong pressure, from the market, Troika and the Portuguese government, it is of great interest to understand where are costs coming from and how to use the resources in the bank to reduce costs effectively without reducing quality of service.

Reflection on the Work Done

Original Approach

The project started out with a more research based approach, in an attempt to gather as much information on implementation, not only on ABC for retail banking (focus in Portugal but not exclusive) but regarding the model itself, to ensure full understanding of the subject, and take an effective approach to the project. This was made, not only to build capabilities for the model development, but also to increase efficiency in the meetings performed with bank employees, gathering as much reliable and accurate information for the project. To make it clearer, the project team has used the recycling approach, which was the best solution given the resources available and consists of using mapped processes to follow resources and activities developing cost centers⁶.

Throughout the project, expectations grew within the business team of MBCP, as we were constantly asked to refine our approach, and include further initiatives that the team tried to accommodate as much as possible. The client felt we had the capacity to go further in our approach, and have therefore asked us to complement our analysis with a product lifecycle approach, a method of comparison between the current profitability system and ABC, all showing concrete numbers to support the ABC implementation hypothesis. The team tried to implement those extra initiatives, with an investigation that would complement the model and recommendations.

Evolution over Time

Our approach was divided into 5 dimensions. Firstly we wanted to ensure we would diagnose the current costing system correctly, understand its flaws and what could be used for ABC, since the costing system was already implemented and would remove complexity at implementation. The Full Costing Pricing Model (FCPM) was developed internally and consists of allocating services generated to other departments that requested or used them⁷. It then iterates the prices of all services allocated to generate a unit price for the invoice, creating an artificial cost between departments, which at the end of the year will be adjusted to match actual costs. This model is based on a support company called Mserviços with the purpose of allocating these invoices, generating a zero profit^c. This model is a financial accounting system, and as such it is not made to help managerial decisions, but used instead to correctly account for costs and ensure employees perception of resources being exploited. Although it builds on employees experience in service allocation, it also leaves room for error, especially regarding causal effects. The main conclusions taken from this model are that costs rapidly become untraceable from one department to another, and allocations can be perceived as unfair, due to wrong perception of other department's consumption (e.g. IT department allocating 50% of internet costs to a specific department that barely use internet.). This model deals mainly with indirect costs that should be allocated causally, but currently are not, and consequently, can do little to help management decide how efficient departments are and which resources are crucial for the services provided, being used instead as a tool to ensure that external costs, match the total costs of Mserviços.

Regarding MBCP second system called Earnings Analysis system (EAS), which was also developed internally in 2004 and without any update, with the purpose of showing the marginal costs a client would incur in each product or transaction used⁸. Although following a causal and partially correct approach, it is still only a marginal costing approach neglecting indirect costs, but including economic costs, gathering important data that should be included in the analysis (e.g. Cost of funding). By having a marginal approach, the system effectively distorts an individual analysis of client, enforcing the wrong decisions, which in comparison is still more relevant in terms of analysis than the FCPM, regarding managerial decisions. Furthermore, it is common knowledge within the bank that even though it can be helpful it should not be used as a decision-making tool, mostly because it contains theoretical costs that are outdated and imprecise. Also, it is missing indirect costs, since it has a marginal cost approach. Even though it is good to show the marginal benefits and costs for a short period of time, the EAS is unable to show precisely the full costs that MBCP incurs for a client in particular.

^c Mserviços receives all cost and revenue allocations from departments, generating zero profit, as the revenues cancel with the costs. Therefore only costs left standing are the external invoices, which are the revenue of external sources.

After assessing both systems that are currently in place, we can immediately understand that there are a lot of merits and correct costing methodologies, but an overall incorrect approach. This is where ABC approach can add value, as it is able to reduce these inefficiencies regarding management accounting, while taking advantage of the already used systems, reducing the implementation risk. With the extensive mapping and created tools, it can all be leveraged to ABC implementation.

The second dimension of our approach was to create a strong argumentation with business and academic support to the ABC adoption, ensuring a full understanding of the fit between the current bank situation and ABC advantages. We started out with the analysis of the implementation of ABC model at two major banks in Portugal^{9;10;11}. With these analyses, we understood the rationale for the implementation, and what were the issues with it, to recognize best practices and problems derived from them. ABC has been defined as a growing trend in retail banking, due to the increasing value added it could have with high indirect costs being incurred¹². Another big conclusion taken from the research was that retail banking has changed significantly, with two crucial variables for the survival. Those are customer relationship management, taking a strong cost-to-serve approach, and a process cost efficiency, being the best to combine both. Still, with the initial approach being changed to a specific business, the end-to-end approach was unutilized, and therefore the total costs of the client will no longer match the costs through an ABC model, given the fact that there are many shared resources, difficult to allocate to a specific business, as well as bank sustaining costs which were not accounted for.

The third dimension was to go through meetings with all departments that were in contact with cards, and would thus waste resources to ensure continuous development of the cards' business. This was meant to gather data and processes that the bank used to process information and maintain the flow of activities. In this activity we used the recycling approach⁶ with the flowchart given in the beginning, and developed our resource tree and cost tree as we went along. Starting with the marketing department where we had our first meeting, where the main objective was to understand the processes occurring there that had to do with cards, gathering not only a better understanding of the process, but also of the product itself (e.g. Amex Conta Viagens is not really a card but an account used to pay trips, ensuring an easier experience for the client.). In this meeting the team was able to take away the main deviations from card to card (e.g. Business to Prestige Segment). It was also concluded that many costs related to brands were quasi-fixed costs and were therefore not easy to predict. Due to many questions we still had left, the lack of knowledge of the processes and the limited time available for the meeting, it was agreed that they would answer a list of questions prepared by the team to ensure a more clear visibility of the department. Considering that branches were one of the main centers of cards processes, it was naturally the chosen place for the second meeting to take place. Step by step the entire processes occurred at the branches was fully explained to detail and was the beginning point for the development of the excel tool

(which will be explained on the third dimension) used to acquire time estimations. Further on we had meetings with the Operations Department and Department of Cost Control and Performance, with the same purpose as Marketing, to understand the department's activity related to the cards business and the current costing system. Continuing with the additional meetings, we went to the Department of Quality (DQAR) to talk about the tools we were going to use and the feasibility of them, which is going to be explained in the next dimension. Finally, we went to the IT department, where a significant and recurrent part of the processes took place. This meeting was insufficient to gather the knowledge required, and therefore an extra meeting was necessary. It was also one of the hardest departments to allocate costs causally, but fortunately enough, the IT team decided, since they knew the processes and costs on a much higher detail than our team that they would be allocating the costs of the resources that are used by the cards.

The fourth dimension was developing tools to gather and extract the data necessary and request it when possible. We had two main important tools and other minor ones, were the main tools encompassed a behavioral and a time based driven questionnaire. The behavioral, more general questionnaire had academic data supporting it, with the purpose of measuring ABC culture implementation. The other main tool was an excel model automatized to measure time used in customer and non customer facing activities in MBCP, to implement Time Driven Activity Based Costing (TDABC) in this dimension of the model. We used a TDABC for the branches, mainly because it is a part of the process that is customer facing and therefore very hard to estimate it correctly. It was severely automatized and simplified in order to ensure efficiency of employees' time, which are currently under pressure to deliver results. Still, DQAR^d deemed these tools unacceptable for distribution within employees. The excel tool was not distributed because they felt employees would distort the results, with no possibility to ensure correct responses. Regarding the behavioral questionnaire, it was not distributed because the channels were completely full with a survey for a new customer relationship management technology coming out. Since the retail network was a crucial part of ABC implementation in cards products, we needed to find another measure of estimation. Fortunately the meeting with DQAR helped immensely, and we were able to schedule thirty visits to branches to guarantee that estimations of activities would be done properly, without outliers. Nevertheless there were some minor questionnaires that were delivered, and their objective was to gather department specific data regarding employees expertise, in the amount of time spent per type of card, business line and customer segment. These questionnaires helped us build an initial allocation grid model with more accurate allocations based on past experience from employees (Please see Exhibit 11).

^d Direção de Qualidade is responsible for all Questionnaires or internal communications.

The fifth and last dimension was composed of building the resource and cost drivers to compute the ABC model, to ensure causality in cost allocation, being it indirect or direct costs. This allowed us to start building the final ABC model for cards, gather all limitations of our model, minimize them and provide recommendations. We started out by developing the resource cost tree, divided first by type of card (e.g. credit or debit.), and then by card services and operation-based costs.

On operation costs, we divided between customer facing and non-customer facing processes that require a structure to manage it (Please see Appendix 12). This was a method implemented from the start, in which it would be filled upon discovery of new processes or a better understanding of them.

The objective was to get a sufficient division of costs, to allocate the drivers as accurately as possible, in order to have an unbiased and reliable cost structure to allocate. Overall, the model was composed of resources that enclosed personnel, utilities, other operational overheads, transactions, advertising, funding, from the specific departments where they would be allocated to cards. These activities were then allocated based on the fact that they were customer driven, product driven or had direct causality (e.g. Transaction fee to SIBS is customer driven, while cost of miles upon purchase of TAP card is product driven.). After finalizing the model, sensitivity analysis was performed on the most sensitive costs (Please see Appendix 13 to 16). Explaining further what is meant by sensitive costs, it was those that were inaccurately or insufficiently well estimated (e.g. IT costs were based on employees perception uniquely, and without a proven trace of causality.). This sensitivity analysis was performed on three costs, being the first the cost of opening an account, due to being a necessity to the product and not just a possibility. The second and third analysis was on IT costs, which were estimated by the IT department and of which we wanted to understand the volatility an inaccurate estimation would represent. The last analysis was on the communication general costs, because they were estimated based on a likely but imprecise estimation (Based on the assumption that employees allocate time and resources to business in the same proportion that they generate revenues). This analysis allowed us to show that communication costs, despite not being precisely estimated, will not distort the analysis of clients or products individually, but opening an account needs to be very well estimated, with an abnormal sensibility to time and cost per minute. Although our estimations within branch processes were estimated using a significant waste of resources, we still believe it can be improved with the right tools, and a higher number of estimations taking advantage of the significant number of branches spread throughout the country. Regarding IT costs, they were not very sensible if we only consider the main applications used by cards. However, a surprising fact is that the applications that are less used by cards can take a significant influence on the basic price of a card, and by being used much less the group felt that the estimated value could have had a relatively relaxed estimation (Please see Appendix 17).

Conclusions

In the final ABC model, actual core costs were estimated for every card. We defined core costs as all costs that are product driven, and independent of the client. These costs already allowed the team to make some significant conclusions, not only in terms of segmentation of cards, but of the revenue they should represent targeting specific sub segments. The main conclusion that we can take from the core costs is that, the lower the fixed revenues from these cards (e.g. Annual commission) are, the worse is the profitability of them (Please see Appendix 18). This can be easily explained from the fact that several indirect costs are used by cards independently of the type, being allocated evenly to all, and therefore should not be a differentiator factor.

The final conclusion from this project should then be that there is a significant upside for it to be implemented, especially taking into consideration the current state not only of MBCP but also of the Portuguese retail banking in general. Having departments been asked to reduce their budgets significantly, the awareness for the lack of understanding of cost priorities raised the problem with the current costing system. It is therefore understandable that the ABC is currently something that would be interesting for the bank to have, especially for the ABM approach. Following this conclusion, we can split it in three sub arguments, which could increase adaptability and strength of the model. First we have implementation phase which is critical in all processes of ABC, independent of the company or sector. For ABC to be successful, the implementation needs to have several internal and external inputs that if aligned will improve banks capacity to decide. First of all, the bank needs to ensure that incentives come from a top-down approach, guaranteeing the commitment from the entire organization. Secondly, it is important to raise awareness that the current costing system does not allow MBCP to have strong data based decisions that allow the company to engage in a stronger competitive approach. Although an easier point to raise, because it has already been pointed out by the majority of employees the team has had contact with, it can severely help that employees perceive the decision to move into ABC as the right move. Finally, it is important to build the model correctly and accurately enough, not only getting the best resource and cost drivers, but also getting them accurately estimated. This will not only take a significant amount of time, but will also require a devoted team extensively pursuing this goal. An example would be the estimation of unit costs by applications, with a track record by cards, so that the causality could be made at 100% on indirect costs, ensuring a correct mapping of cost allocation to product. Reducing the costs or importance in this section would be prohibitive, as this is a one-time cost that would be crucial for the correct ABC implementation, as having an incorrect managerial costing system would be destructive for future bank decisions. Afterwards, it is required a constant evaluation of whether the model is up-to-date, to ensure valued added to management decisions.

Approach Limitations

Having started out with high expectations from the client, the project team decided to start the project by getting to know all the processes and departments where the cards business was inserted in. Therefore in the initial meetings we started by asking for explanation of all processes that they went through and how they took place, basing ourselves in the flowchart of card's processes. This turned out to be the wrong approach to the meetings, as we were not asking questions specific to processes that were crucial for ABC implementation but were instead getting familiar with the bank's operations. It revealed to be limiting in the beginning of the project with the consequence of having more inefficient meetings due to lack of knowledge on what to ask. On a similar note, the clients high expectations to the project, led the project to be exponentially time pressuring, due to the team's unfamiliarity with the ABC costing system, knowledge that took time to develop. Another major limitation to our approach was that we were not aware of possible limitations in gathering data from the client, and left it on the last positions on our priority list, given the belief that would be an easy material to get. In fact it turned out not to be that way, and we faced several constraints with data, not only in the amount given that was clearly insufficient but also with the amount of time needed to get it. This created a big time restriction on our model and was in fact a bottleneck on the late stage of our process. Of course the lack of data given left no other choice than to have inaccurate estimations in our model that should not have happened. Indeed, many costs were not given, either due to internal restrictions or due to unfamiliarity with them.

Given the time constraints with the project, a more realistic approach was made from the first meeting onwards, when the project changed from ABC implementation in the whole bank to just the cards business. This was the biggest limitation in our approach, as resources are allocated to costs globally, and ABC should have an end-to-end approach, ensuring a total allocation of costs. This is impossible if we only allocate to a specific business within an institution, as we will be starting the allocation from the middle removing some causality and accuracy of cost drivers^{13;14}.

The Correct Approach

Contextualization

We will also be unable to create a strong ABM approach, given the fact that a customer should not be penalized based solely on the fact that he is giving negative profit to MBCP on a card, when in fact on the overall products he contributes significantly to MBCP's revenues. Therefore the analysis is limited from the start, both from a model implementation point of view and of an analysis and decision-making point of view. This is the main reason why the ABC model for the whole bank should have been developed. Understanding that the time constraint of our project was a pertinent issue, the value added of analyzing ABC model for the whole bank would have been much greater, given the clients current

needs (explain here the market overview and requests to lower budgets individually). On this section I will develop this idea further and give out the rationale that would encompass a full ABC model.

ABC was created to respond to management's inability to decide based on financial accounting, given that indirect costs weight on total costs was increasing. It is meant to produce a causal relation between resources and costs, ensuring that a product or activity will be priced for the resources it consumed. ABC started to be implemented in the retail banking after many technological improvements and M&A activity did not give the cost reduction or increasing amount of synergies as expected. Senior management thought the reason for this was the duplication of activities within the organization that was consuming double the amount of resources needed, but had no idea which ones. Therefore, given that ABC shows the causal effect between resources and costs for a specific activity, it could provide them with sufficient intuition on how to cut these duplicate activities and capture cost efficiencies⁶. This is only true for a full ABC model, as a partial implementation will be unable to show duplicate activities that are being used for different services.

Arguments

Knowing how important the top-down approach is to ABC implementation, first it is necessary to convince the top management to create the incentives, and implement the "ABC project champions"⁶. Implementing ABC just for a specific line of business although can be helpful to explain and convince stakeholders of the bank², although it is not the most correct approach. It can severely distort client profitability, and in the hands of someone unaware of the limitations of this approach can cause severe mistakes in decision-making⁶.

ABC should be implemented in an end-to-end process, ensuring, not only the correct costing calculations, but also the ability to measure the client profitability correctly and understand its needs. When I refer to the process being end-to-end, it means that the process should start with the client, go through all channels products and different activities, to arrive to the client again. This is because in a service sector like retail banking, the main goal is to achieve profitability derived from customers. If clients are inexistent, then the profitability will also be inexistent. The end-to-end process will help employees to focus more on delivering what the customers want than what they believe they want. Throughout time with a better understanding of the model, employees will also be able to understand how to do this more efficiently and improve the end-to-end cycle time, creating strong operational efficiencies¹⁵. Understanding and comprehending the services and activities that provide value are crucial for the development of the business. By mapping all time consuming activities, the firm is able to differentiate the non-value added time from the valued added time. They can then understand how to use this non value added time to produce a stronger service or product to the client, engaging in one of

the biggest drivers of revenue in retail banking, customer relationship management¹⁶. This is especially important when we talk about the non-value added time at the branch, which is a significant cost incurred to the bank, and close to sixty percent of the resources of the branch are allocated without causality¹⁷.

Since customer profitability is one of the main metrics in the retail banking system¹⁸, being able to analyze and study it on a global and individual level is of utmost importance. For this they need not only the profitability on a specific line of business, but all lines used by the same client because they want to look at client's profitability, not product profitability. Therefore they need a global 360 degrees approach to costing model interactions, which is highly complex in the services sector¹⁴. This can be achieved with a full ABC system, that when applied can develop the correct profitability per client. This can help the bank to develop systems, understand the client and show they are paying attention to the client's needs. Being in a sector that has a strong focus on client relationship has one of the drivers of profit, this ability can really give the bank an edge, provided they have the necessary personal and technical capabilities to do them¹⁴. By doing this the bank will not only build an ABC that will allow them to understand the causality of costs being incurred, but implementing an ABM approach, taking advantage of the system. Adding to the importance of ABM in service sector and how it can derive competitive advantage, the perception needs to be changed on how to look at costs¹⁹. They are not a just a necessary object that the firm has to incur, but one that will drive revenues. Looking at what costs are needed to provide that service and incur in them should be the right mindset, something that is not easy to implement in the beginning²⁰. A similar concept that effectively changed the mindset of employees, especially in the car-manufacturing sector was the Lean Management system, changing completely the sector dynamics. More recently this concept was transferred to the services sector namely retail banking sector²¹. This concept was applied to the MBCP, and therefore should be used to leverage the implementation of ABC. In a business where customer focus is important, more than giving a product that we believe customers want for a specific price, lean management does it the other way around. It asks clients at which price would they be willing to buy a specific price, engaging in a better client relationship and fit, therefore improving the competitive positioning. Especially in a company that uses shared resources to engage in different value propositions to clients, ABC can be built on top of lean management system, with synergies that are visible from similar practices in both models²². By building causal relationships between resources, activities and costs, ABC will be able to show the streamlined process and ensure an effective lean management approach. They are complimentary models, and can add extra value by being applied together, which enforces the premise that ABC can add value, if applied to the entire bank's operations.

Retail Banking has changed a lot throughout the years. Since the market liberalization, to the strong M&A activity to drive revenues and the current crisis that they are facing, banks have never had to look into cost-to-serve efficiency and customer relationship as crucial sustaining factor until now¹². With that in mind, ABC is the main tool to drive those factors, given that it can not only provide causal effects and a better understanding of the necessary costs, but also understand the services required by clients, strengthening the customer satisfaction. A possible complementary analysis that banks could do is to understand clients' needs and sell to old and new clients different products, engaging in a stronger cross-selling offer²³.

Advantages and Disadvantages

Accepting the time limitation and ensuring that the ABC model for cards' business only would be well developed, the client's main goal might still not be achieved. This is because there is a smaller degree of influence on departments that have no relation with cards. These departments will have a small knowledge of the card business, which will damage their understanding of the model. This becomes worse, as it increases the risk of employee understanding, one of the two main factors for the failure of the implementation⁶. Employees that are product oriented will have a smaller tolerance to waste time and resources on understanding a model that is directed at another product of the bank. This will impair the success of moving the plan forward for the bank, given that they will see no benefit for themselves. Even with the employees and product managers that are related to cards, the ABC model for cards will only be able to give the profitability per product and client, but not of the client as a whole. This means that the managers will be unable to see the benefits of cross selling understanding, and customer behavior, removing the intuitiveness of the model. Being the costs of ABC implementation so high, it is an unnecessary risk to take, to try and push for the implementation without the full acceptance of employees and top management across departments. Looking at the more extreme example of the implementation at just one line of business, in this case the cards business, implementation has a high degree of risk, as cost centers of shared resources will have different costing approaches, creating a sense of injustice for the departments that were increased, and for the ones who would have a smaller cost if they used the ABC approach⁶. Making even more obvious how partial ABC can distort costs and disabling an ABM approach, there are multifactors of ABC in retail banking. By multifactors, it is meant that there are many activities that consume other activities, generating costs that are not being taken in consideration if those activities are in different lines of business. Considering so many disadvantages of going for a partial ABC approach, it might prove to be better to have a less precise but full ABC model that would raise awareness of the entire bank, reducing the risk of implementation.

Conclusions

Given all the collected information, some statements can be derived from the analysis of full ABC analysis. Starting with the disadvantages, it would clearly be less precise, less extensive and more theoretical, due to time constraints. Taking in consideration the current situation and interest of the client in implementing this model, it would be expected that it had a strong level of detail to gain the interest of top management. Given the higher risks that this approach would entail, with the possibility of failure even, the upside would be much greater.

Looking at the client example given in the Business Project, we can understand how limiting the approach used can be. Without a full, round end-to-end analysis of the client, we would have never been able to understand that the client's cost to the bank are mostly in customer plus product driven, accounting for 81% of total costs (Please see Appendix 20). This means that inter-related costs with transactions in other lines of business (e.g ATM transaction) will have further costs that were not considered in this approach, but should be allocated to the specific client.

Doing a full ABC analysis would provide a full analysis to costs and profitability, which will be of interest to all employees, independent of their duties, reducing one of the main risks significantly. Additionally, it will also interest top management, giving the client the possibility to engage in a top-down approach, as it is desired. On a more practical approach, not considering the behavioral aspects of the implementation, a partial ABC will distort any analysis that could be made on a client basis, effectively shutting down the Activity Based Management (ABM) approach. Since ABM is one of the most important aspects of management accounting, especially given the current market, it is a significant advantage that should have been leveraged in the project. One of those consequences is that ABC uses an end-to-end approach, that would give managers the ability to differentiate between non-value and value added time, the necessary cycle time giving a stronger efficient more effective approach to services offered. It will, with sufficient time of implementation, give mid-level employees and even customer facing employees a different philosophy to the business, employing a stronger cost-to-serve approach. With the existence of Lean management system, this approach would only compliment and help streamlining processes, sharing the same method to ensure a stronger customer service relationship, the main driver of revenues. Typically, companies that implement ABC as an end-to-end process have competitive advantage over other companies²⁴, and currently MBCP is lagging behind the market.

Reflection on Learning

Previous Knowledge

Masters Content

Having a Business project that drifts from the Masters Program is always a challenge, and this was no different. Without any previous knowledge of management accounting or, more specifically, of the ABC model, I expected to make this a totally new experience. In fact, it was a challenge and I learned a lot from the project, even though some content was still applied, and most of it successfully. I decided to split this into quantifiable, measurable skills learned and soft skills, and will start first with the measurable skills.

In the Masters in finance I had the opportunity to follow a class that was not only an important part of the program but that has helped me immensely since then, called Applied Corporate Finance (ACF). There were some cases taken during that class on which I related and leveraged to this project specifically. Starting with the Asahi Case²⁵, which is the most relevant in this context, as from the start there were going to be problems with the implementation, from the behavioral point of view. In Asahi, a Japanese firm who had just brought in a CEO that desired to improve the multicultural relations, and shareholder benefits. He tried to implement a system of Economic Value Added (EVA) to employees' objectives to ensure the employees and the firm understood where was the value coming from. Still what felt like a simple and concise implementation, lead to several issues. To start, it was not the best country to implement this, since history, social values and hierarchy were strong barriers to implementation. Not only had they trouble understanding why the previous model changed, the lack of understanding of EVA by employees led to a stronger aversion to change. This means that for a new model to be implemented in a large firm, specifically one that deals with financial issues, there will be implementation barriers from the start as people are typically averse to change. This could be overcome if the model were simple enough, which was not the case. This was one of the main reasons that the project team tried to have the end model as simple as possible, ensuring not only a better decision-making but also gathering employees interest in an intuitive, helpful manner. Continuing with the ACF cases, there was another case that helped me realize even prior to the Business project how important this project was. The WorldCom²⁶ case is about a financial accounting scandal and the consequences it had, not only to the firm and firm employees but also to the auditing firm, which has ceased to exist. This case is all about showing how important accounting is and that their management should be careful and precise. This was one of the main reasons why I chose to be in this project and was interested by it, as I knew it was of a major importance to the client, enabling the project team to engage in an interesting project from the point of view of the client. Still on the topic of case application applied

during classes that remained helpful in this project, our group had a strong help from the RBC case, taught at the banking course²⁷. This case explained in detail the value added of a full proof customer relationship system and the value that having the ability to correctly define single client's profitability could give to the bank. It also showed how a one time approach is not optimal, but should be done over the time, as clients might be profitable in different periods of time (e.g. a university student will be profitable in the future, not currently). From another perspective, a client might also enforce the bank to incur in costs indirectly, which should be accounted in the long term. Therefore an accurate measure should be used, not only to account on the overall profitability of the client over periods of time but also the perspectives of that client in particular. Continuing with the Banking class, it was very good to capture a general understanding of the market and relationship that banks have with the market. This meant I could leverage the knowledge gained in cost of funding, market overview in terms of Basel III, European Banking Authority capital requirements and impairment treatment. This helped me in this Business project, and also allowed the whole group to approach this problem in an enhanced, actionable way, creating a greater fit between the project recommendations and the client's needs.

An obvious need from this project was a significant understanding of financial accounting, not only to understand the current system but also to leverage current existing systems to implement ABC.

For this specific situation, I believe Financial Reporting and Financial Statement Analysis have helped me to understand the systems and current deficiencies of them more easily, creating value to the project. Lastly, and because it was needed a macro and micro analysis of the environment that surrounded both the client and the ABC system, we leveraged on a SWOT analysis^e, learned on Corporate Strategy that helped us situate the system and understand possible flaws of implementation of ABC at MBCP.

Going now into the soft skills, that are crucial for the conclusion and success of the project, I believe to have leveraged from the masters content I gained previously. The extensive group projects, constant pressure and high demanding deadlines gave me experience to maintain and deliver their requests at each step of the way during the business project. Regarding the CEMS academic year I have fortunately leveraged many aspects to my business project. Starting chronologically, the block seminar that I took in Stockholm about corporate entrepreneurship, showed me how important is employee's initiative within a company. This was how the ABC idea appeared to the client, as specific departments were requested to engage in budget cuts, resulting in a request from employees to have better system of management accounting, to be able to cut costs effectively. Regarding seminars offered by CEMS, I took PowerPoint and presentation skills from McKinsey, which helped me throughout the business project.

^e SWOT Analysis is a strategy based framework that divides internal and external forces, positively and negatively. Those forces are Strengths, Weaknesses, Opportunities and Threats.

The MBCP skills seminar helped me, not to get any skills but to gather knowledge and content of employees' perception and understanding of their company. Lastly, the most important seminar I took for this Business project was the Negotiation Skills. On one hand it helped me immensely to manage relationships and expectations enabling the team to keep track of the progress and control of it. On the other hand, this was the most difficult part of the project, and it was time intensive, reducing productivity of the project. It is an area where I felt that these skills developed at the seminar helped immensely, and was one of the key success factors for the project management.

Masters Content Adjusted

Even though I have had advantage with some previous knowledge acquired at the Masters program, some tools that I ended up using were not clear to me at first. As a finance master, developing cash flow analysis was always taken into detail, removing importance to book, accounting values. Still the tools were there, and when applied can provide results the same way as applied to real cash flows, as long as the difference is taken into consideration. This was significantly hard, especially when we are taught the importance of cash flows compared to book values, which can have a significant impact on the company. The excel tools, like treating data and analyzing information can still be used with the same procedures but different properties within them.

Therefore, with proper care the method of analysis could be the same. An example was the sensitivity analysis used, which is a common tool to engage during a valuation exercise, but not normal in proceeding with a management accounting from my previous point of view. Nevertheless we used it, engaging in a better understanding of the estimations used, and guaranteeing not only confidence in our approach but also awareness of the risks involved.

New knowledge

Having never studied managing accounting throughout my studies, I have learned immensely from this new project. Starting from the ABC model, which was studied intensively throughout the semester. To top it off, some management accounting was studied to ensure that the type of methodology used by the group was the correct, given the topic (e.g. Lean Manufacturing system). Further on, after the development of knowledge of ABC, especially in the retail-banking sector, the team felt that a different framework should be used to capture the resources and costs used within the cards business. We chose a different approach because this was a specific situation that was unusual in the research, limiting the scope of the model to a single line of business. A consequence of this approach was the need to increase awareness of the bank and business, to ensure we were capable of developing a framework on our own, therefore capturing the processes used (Please see Appendix 12). As a result of this approach I have gathered a strong knowledge of the card's business, not only in the pricing development and back office,

but also in the processing of requests and services throughout different channels and different companies (e.g. A simple POS communication involves a minimum of five agents in the transaction). Finally given the importance of the ABC implementation issues, we gathered information on what were the most important points to ensure an easy implementation, and arrived to a total of two key success factors for the implementation⁶. These were the top-down approach which is critical since employees need to revisit themselves in the top management and get the incentive from the top and have an honest and open communication throughout the entire firm, ensuring a full cooperation and understanding, maintaining a chain of support strong enough to make implementation an easy step.

Personal Experience

Strengths

I believe one of my main strengths, which helped immensely throughout the duration of this project, was teamwork capabilities, and capacity to adapt within the group. Without this capability there would have been many cultural and team misfits, since there were many dominant personalities. This was more problematic during pressuring deadlines, and I felt I was able to modify my behavior with the purpose of achieving the best outcome. The capability of delivering results, especially within a significant amount of time pressure was important, and crucial towards the end. I can have a stronger than average resistance to pressure, and I owe it to the high demanding sports practiced, especially due to the competitiveness of it. With unexpected bottlenecks regarding the availability of information requested, we were only offered partial, raw information to construct the model, a couple of weeks before the deadline. This meant that a massive amount of information had to be processed, analyzed and developed in a short amount of time, in order to construct the model, were I took an active role and helped other team members with the processing. My versatility to shift roles in the team provided helpful also in internal or external meetings without some team members, that due to their strong personality, were essential in the group dynamics, of which I was able to replace temporarily most of the time. Concluding my strengths in this project, I believe the ability to see the big picture stands out, as I was able to evaluate our approach and take a step back, to follow another, better direction together with the group. This happened during the questionnaire approach, where followed by a suggestion, the group was able to change from a simple questionnaire on time driven activities to the branches to a more accurate questionnaire, which we were able to build successfully (Please see Appendix 19).

Weaknesses

I was given feedback that I tend to go a little too in detail on specific analyses, from my project team, which felt this was not a problem, but an issue that could be leveraged to the project's advantage. Another big weakness was the ability to extract the most out of group capabilities proactively, of which

I did not succeed. I still believe this was a group level concern, with a severe problem of misaligned incentives²⁸. Being used to group work developed for classes, I felt a significant impact in terms of expectations and communications, with respect to hierarchy and bureaucracy. Acknowledging the importance of hierarchy, especially in Portugal is important, and something that even though generally increases the time of communications, if disrespected can effectively block or hinder them. This was a different perspective than the one I was used to, but with significant importance in this project. Bureaucracy was something I was aware of the need, but not confident managing it, and unfortunately turned out to require the project team's resources significantly.

Areas of improvement

My main area of improvement is still in managing relations. This group project was never in risk due to the team's inability to produce a strong model analytically and academically strong, but definitely lacked relationship skills. Managing all different incentives in the project was a strong challenge, and one I was not fully ready for. I believe the approach to the project could have been different, especially in the beginning, where if everyone knew each other's motivation, it would have been a smoother process from the start.

Benefit of Hindsight

Having built an extensive methodology approach from scratch with the help of many frameworks and dimensions have lead to sound and robust conclusion, which in the end I believe can add a significant value to this project. Given that this project was severely time limited, managing relations not only with the client but also with the academic advisor helped immensely to improve the work relationship, and even though with some issues along the way the project had an overall positive relationship.

This was a very interesting and demanding project, not only from the point-of-view of the project team, but also from the client. It was an actual need of MBCP and something that could be actionable in the near future. Unfortunately with it also came unrealistic notions of time achievement. This is a project that typically takes over 24 months of time with several consultancy teams and full openness to data gathering. Given that none of this was in place, it was an extensive project for just four months, even considering the shorter scope of the project, which was aggravated with further requests. A more detailed considerate analysis of time required by a project should be considered, to ensure that they are consistent with the outcome. Looking back now, more specifically on the project development, I believe that given the team's lack of knowledge on ABC system, a significant amount of time and resource was used to both gather the information and understand it. This lead to a reduction on the development process and consequent delay in the data requests. Following up on data requests, this was a severe problem in a late stage of the business project, mostly unexpected, as were told that these would be easy

to obtain. My opinion is that those were very hard to obtain due to the lack of empowerment business advisors had. This was evident in the meetings throughout the bank, where it was not only hard to schedule it, but was impossible to gather data, as they felt uncomfortable giving it. Therefore I believe that this should be a point to improve, since a demanding product should have a demanding internal force, to drive project forward.

Bureaucracy levels were too high, especially for such a time pressuring project. As a consequence, we had a strong inefficiency factor to the project management, which led to a small degree of dissatisfaction from the client, which was rapidly resolved. Another management issue of the project was the deadlines, that were correctly assigned at each stage of the process, but were not always met, and I believe stricter deadlines should have been proposed, to ensure the team had a buffer for unexpected situations, like data availability. Furthermore, I believe there should be a more significant individual incentive for the Business Project that ensured everyone would work proactively, especially across schools.

Conclusion

Given the current situation of MBCP, a change in the approach to the market is critical right now. With no management accounting system to support either pricing²⁹ or decision-making, they are currently a drift from the best practices, with little solution apart from following the competition. This is where ABC can make a difference, allowing the firm to change the internal mentality of the bank and its approach to customer relationship management. By focusing on a more cost-to-serve approach like they are trying to do now with the implementation of lean management system, ABC can provide the next step to ensure a break from negativity surrounding the bank. Regarding the internal reflection, I believe there are significant misaligned incentives that should be corrected in the future. Also, gaining awareness of the social skills importance for work that interconnects several institutions is crucial and one I should be further prepared to.

Reference List

- ¹ Millennium BCP (2013). *Institutional Presentation*, p1-87.
- ² Saunders, Anthony & Cornett, Marcia (2008). *Financial Institutions Management : A Risk Management Approach*. 6th Ed. New York: McGraw-Hill. p656-658.
- ³ Millennium BCP (2013). Internal Cost of Funding Report, p1.
- ⁴ Thomson Reuters. (2012). *Earnings Conference Call*. Available:
http://ind.millenniumbcp.pt/pt/Institucional/investidores/Documents/ResultadosTrimestrais/Final_transcript_1_t_443213a.pdf.
- ⁵ Millennium BCP (2005-2012). Annual Report.
- ⁶ Witherite , Jeffrey and Kim, Il-woon (2006). Implementing Activity-Based Costing in the Banking Industry. *Bank Accounting & Finance*, p29-34.
- ⁷ DCCP Meeting
- ⁸ DIG Meeting
- ⁹ Carvalho, Helena. (2008). A Implementação e Manutenção do Activity Based Costing num Banco Português. *Master Thesis at ISCTE*, p1-120.
- ¹⁰ Vieira, Rui. (2002). Accounting and Change in the Financial Services Sector: The case of Activity Based Costing in a Portuguese Bank. *PhD. Thesis at Warwick Business School*, p1-335.
- ¹¹ Trigueiros, João. (2013). Millennium BCP Internal Report about Activity Based Costing in Portugal.
- ¹² Reinhold Leichtfuss, Reinhard Messenböck, Vincent Chin, Matthew Rogozinski, Steven Thogmartin, and André Xavier. (2010) Retail Banking: Winning Strategies and Business Models Revisited. *The Boston Consulting Group (BCG)*, p1-12.
- ¹³ Euske, K. J., & Vercio, A. (2007). Enhancing the ABC Cross. *Management Accounting Quarterly*, 8(4), p48-61.
- ¹⁴ Luckie, Steven & Crouse, Ted. (2013). *Knowledge, Not Data, Drives Customer Profitability*. Available:
<http://www.kpmg.com/ca/en/issuesandinsights/articlespublications/insights-into-canadian-banking/pages/knowledge-not-data-drives-customer-profitability.aspx>.
- ¹⁵ Han, K., Lee, G., & Choi, S. (2013). Manufacturing cycle time reduction for batch production in a shared worker environment. *International Journal Of Production Research*, 51(1), p1-8
- ¹⁶ Meyer, C. (2001). While Customers Wait, Add Value. *Harvard Business Review*, 79(7), p24-26.
- ¹⁷ Sharman, Paul. Activity-Based Costing Provides Insights into the Economics of Banking. *Focused Management Information*, p1-5.
- ¹⁸ Parida, B., & Baksi, A. (2011). Customer Retention and Profitability: CRM Environment. *SCMS Journal Of Indian Management*, 8(2), p66-84.
- ¹⁹ Novičević, Blagoje & Antić, Ljilja. (1999). Total Quality Management and Activity Based Costing. *Economics and Organization*, 7 (1), p1–8.
- ²⁰ Faculty of Finance and Management. (2002). Customer profitability analysis. *The Institute of Chartered Accountants*. 37 (1), p1-36.
- ²¹ Bortolotti, T., & Romano, P. (2012). ‘Lean first, then automate’: a framework for process improvement in pure service companies - A case study. *Production Planning & Control*, 23(7), p513-522.

²²Gamal, Sarah. (2011). A suggested Framework for the Integration of Activity Based Costing (ABC) in a Lean environment to enhance companies competitive positioning – A case study in Egypt. *AAA 2012 Management Accounting Section (MAS) Meeting Paper*, p1-30.

²³Taylor, E. C. (2012). Competitive Improvement Planning: Using Ansoff's Matrix with Abell's Model to Inform the strategic Management Process. *Allied Academies International Conference: Proceedings Of The Academy Of Strategic Management (ASM)*, 11(1), p21-27.

²⁴Krumwiede, Kip & Charles, Shannon. (2011). The Use of Activity-based Costing with Competitive Strategies: Impact on Firm Performance. p1-52

²⁵ Mihir, Desai & Masako, Egawa. (2004). The Continuing Transformation of Asahi Glass: Implementing EVA. Harvard Business School.

²⁶ Kaplan, Robert & Kiron, David. (2007). Accounting Fraud at WorldCom. Harvard Business School.

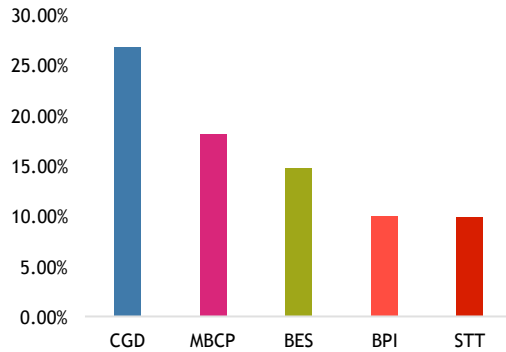
²⁷ Narayanan, V.. (2007). Customer Profitability and Customer Relationship Management at RBC Financial Group (Abridged). Harvard Business School.

²⁸Varian, Hal. (2008). *Intermediate Microeconomics: A Modern Approach*. 8th Ed. New York: W. W. Norton & Company. p730-740.

²⁹Max, Mitchell. (2008). ABC Trends in the Banking Sector: A Practitioner's Perspective. *Journal of Performance Management*. 21 (1), p32-47.

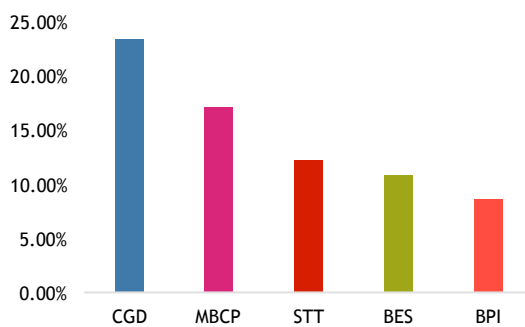
Appendices

Appendix 1 – Customer Loans Market Share evolution (in %)



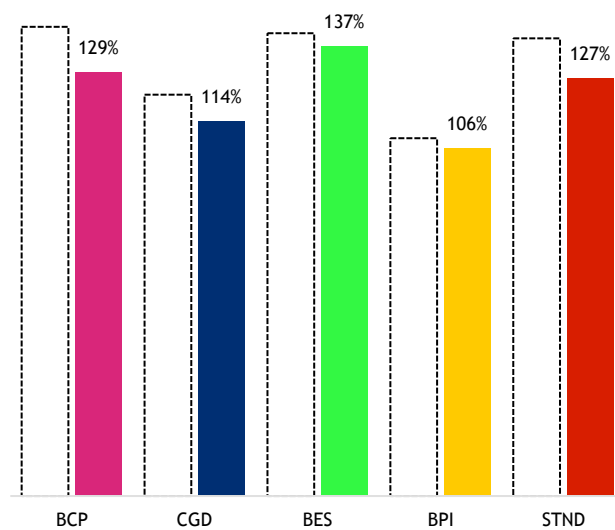
Source: Annual Reports of All Banks Considered

Appendix 2 – Customer Deposits Market Share evolution (in %)



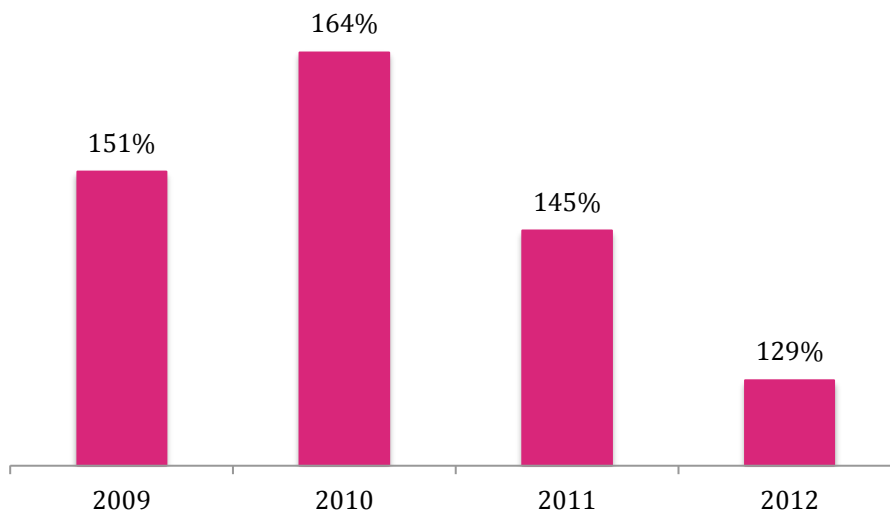
Source: Annual Reports of All Banks Considered

Appendix 3 – Competitive positioning in Transformation Ratio - 2012



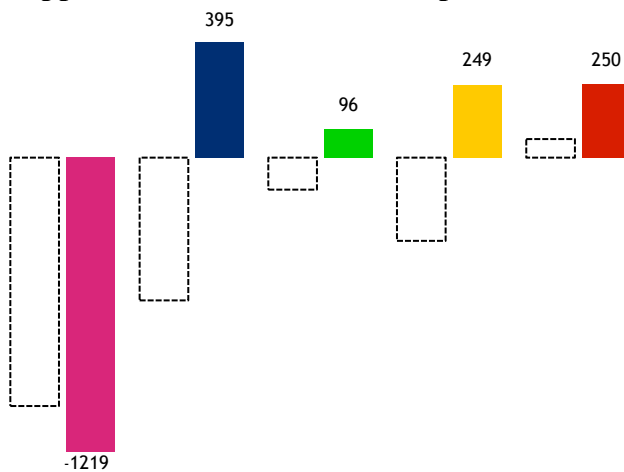
Source: Annual Reports of All Banks Considered

Appendix 4 – Transformation Ratio Evolution



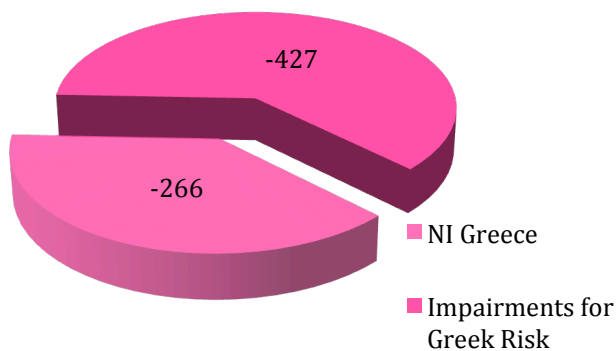
Source: Millennium BCP Annual Report (2009-2012)

Appendix 5 – Net Income Competitiveness Evolution - 2012



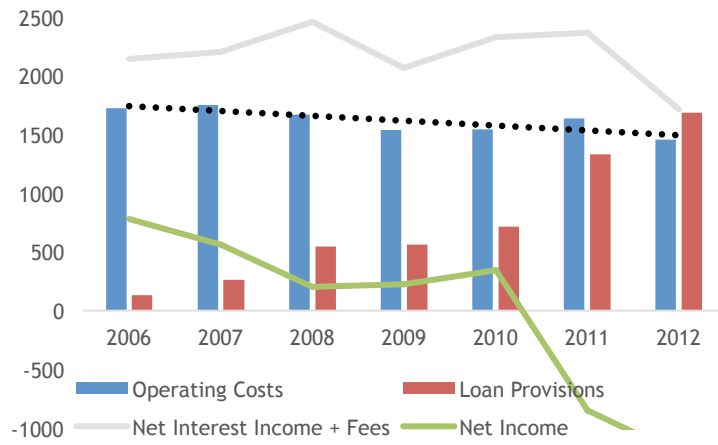
Source: Annual Reports of All Banks Considered

Appendix 6 – Greece Operations in 2012 (total of -694 Million Euros)



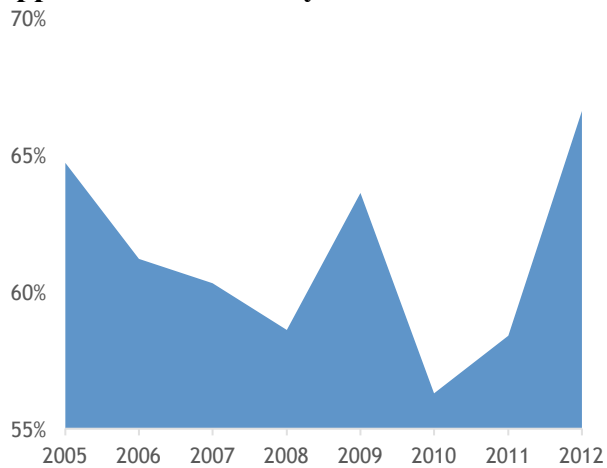
Source: Millennium BCP Annual Report

Appendix 7 – Discipline in Capital and Cost Management



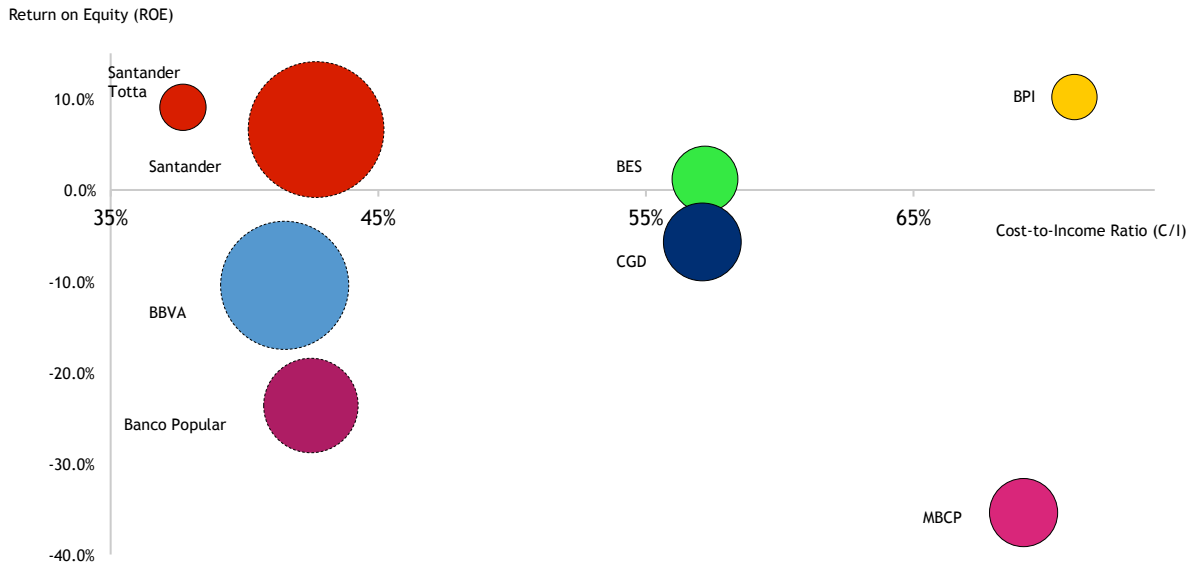
Source: Millennium BCP Annual Report (2006-2012)

Appendix 8 – Efficiency level evolution



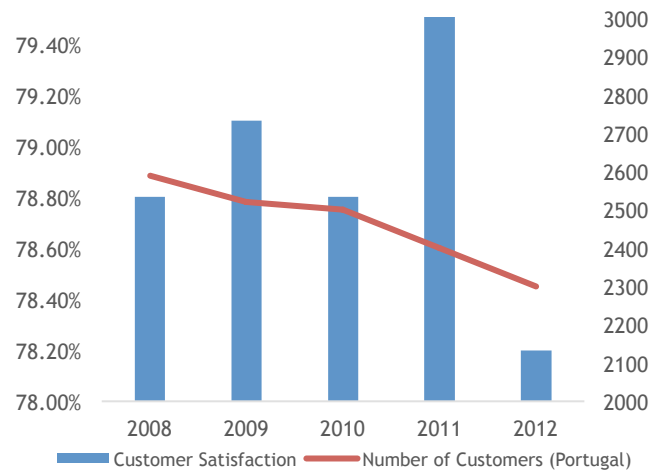
Source: Millennium BCP Annual Report (2006-2012)

Appendix 9 – Cost-to-Income Competitive Positioning



Source: Annual Reports of All Banks Considered

Appendix 10 – Customer Relationship Management



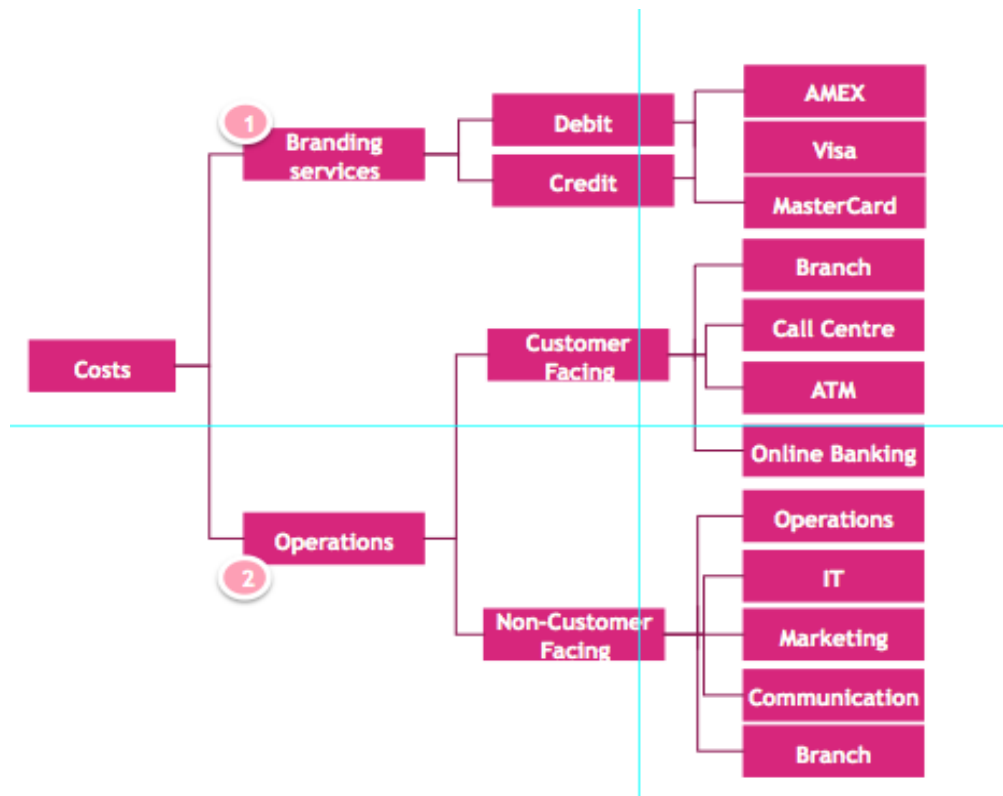
Source: Millennium BCP Annual Report (2008-2012)

Appendix 11 – Allocation Grip for Operations Department

Division	Weights	Handling of Captured Cards on ATM and CAT	Checking Oppened Accounts	Monitoring PIN Blocks, Urgent Cards, KITS Stocks	New Product Quality Testing	Revised Product Specifications Quality Testing	Retail Network Support
Credit	45%	0.0016	0.0023	0.0230	0.0352	0.0117	0.1641
AMEX	40%	0.0039	0.0055	0.0540	0.0827	0.0276	0.3859
Mass Market	16%	0.0017	0.0024	0.0236	0.0361	0.0120	0.1683
Prestige	12%	0.0364	0.0518	0.5079	0.7774	0.2591	3.6279
Business	5%	0.0091	0.0130	0.1272	0.1946	0.0649	0.9083
Visa Credit	3%	0.0002	0.0003	0.0031	0.0048	0.0016	0.0222
Mass Market	1%	0.0020	0.0028	0.0277	0.0424	0.0141	0.1980
Prestige	1%	0.0194	0.0277	0.2711	0.4150	0.1383	1.9367
Business	1%	0.0019	0.0027	0.0261	0.0399	0.0133	0.1863
Master Card Credit	3%	0.0003	0.0005	0.0049	0.0075	0.0025	0.0348
Mass Market	1%	0.0027	0.0039	0.0378	0.0578	0.0193	0.2697
Prestige	1%	0.0096	0.0137	0.1338	0.2048	0.0683	0.9558
Business	0%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Debit	55%	0.0009	0.0014	0.0133	0.0203	0.0068	0.0947
Visa Debit	28%	0.0037	0.0053	0.0521	0.0798	0.0266	0.3723
Mass Market	11%	0.0117	0.0166	0.1629	0.2493	0.0831	1.1633
Prestige	8%	0.0026	0.0037	0.0365	0.0558	0.0186	0.2604
Business	8%	0.0034	0.0049	0.0479	0.0733	0.0244	0.3421
Master Card Debit	28%	0.0005	0.0008	0.0076	0.0116	0.0039	0.0542
Mass Market	15%	0.0003	0.0005	0.0044	0.0068	0.0023	0.0317
Prestige	0%	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Business	12%	0.0193	0.0275	0.2695	0.4125	0.1375	1.9249

Source: Internal Calculations for the Business Project

Appendix 12 – Cost Tree Framework



Source: Internally Developed for the Business Project

Appendix 13 – Sensitivity Analysis to Opening an Account

		Cost per minute						
		€0.20	€0.30	€0.36	€0.40	€0.50	€0.60	€0.80
Time to open an account	5	1.50	2.17	2.57	2.84	3.51	4.18	5.53
	10	2.84	4.18	4.99	5.53	6.87	8.21	10.90
	15	4.18	6.20	7.41	8.21	10.22	12.24	16.27
	20	5.53	8.21	9.82	10.90	13.58	16.27	21.64
	30	8.21	12.24	14.66	16.27	20.29	24.32	32.38
	40	10.90	16.27	19.49	21.64	27.01	32.38	43.12
	60	16.27	24.32	29.15	32.38	40.43	48.49	64.59
	120	32.38	48.49	58.15	64.59	80.70	96.81	129.03

Source: Internal Calculations for the Business Project

Appendix 14 – Sensitivity Analysis 1 to IT Costs

		% of IT Applications used by Cards						
		5%	7.50%	10%	12.50%	15%	20%	30%
IT costs allocated to cards	€10,000,000	0.55	0.60	0.64	0.69	0.73	0.82	1.01
	€12,500,000	0.69	0.74	0.80	0.86	0.92	1.03	1.26
	€15,905,000	0.87	0.95	1.02	1.09	1.17	1.31	1.60
	€17,500,000	0.96	1.04	1.12	1.20	1.28	1.44	1.76
	€20,000,000	1.10	1.19	1.28	1.37	1.47	1.65	2.02
	€25,000,000	1.37	1.49	1.60	1.72	1.83	2.06	2.52
	€30,000,000	1.65	1.79	1.92	2.06	2.20	2.47	3.02
	€50,000,000	2.75	2.98	3.21	3.43	3.66	4.12	5.04

Source: Internal Calculations for the Business Project

Appendix 15 – Sensitivity Analysis 2 to IT

		% of IT Applications used by Cards						
		0%	5%	10%	15%	20%	30%	40%
IT costs allocated to cards	€10,000,000	0.46	0.78	1.10	1.42	1.74	2.37	3.01
	€12,500,000	0.57	0.97	1.37	1.77	2.17	2.97	3.77
	€15,905,000	0.73	1.24	1.74	2.25	2.76	3.78	4.79
	€20,000,000	0.92	1.55	2.19	2.83	3.47	4.75	6.03
	€25,000,000	1.14	1.94	2.74	3.54	4.34	5.93	7.53
	€30,000,000	1.37	2.33	3.29	4.25	5.21	7.12	9.04
	€40,000,000	1.83	3.11	4.39	5.66	6.94	9.50	12.05
	€50,000,000	2.29	3.88	5.48	7.08	8.68	11.87	15.06

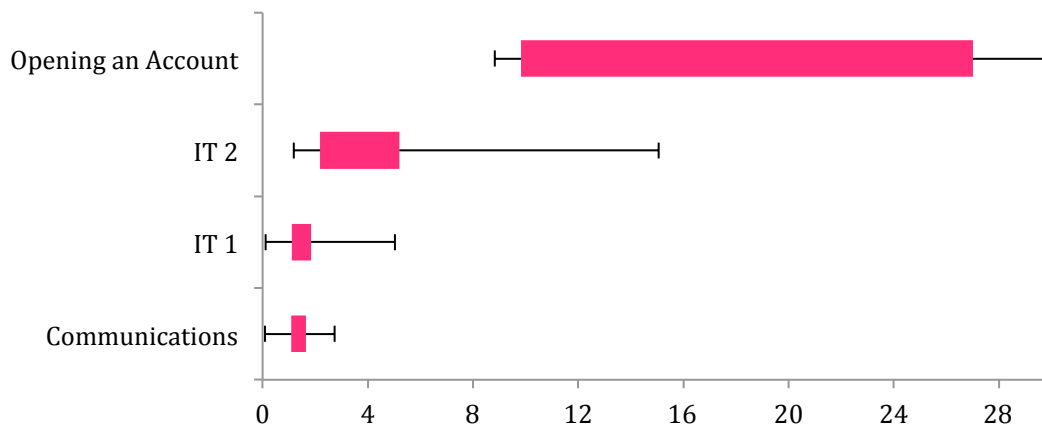
Source: Internal Calculations for the Business Project

Appendix 16 – Sensitivity Analysis To Communication Costs

		Number of employees allocated to cards						
		15	20	25	27	30	40	50
% of costs allocated to cards	5%	0.54	0.68	0.81	0.87	0.95	1.22	1.49
	8%	0.63	0.76	0.90	0.95	1.03	1.30	1.57
	10%	0.68	0.82	0.95	1.01	1.09	1.36	1.63
	15%	0.82	0.96	1.09	1.15	1.23	1.50	1.77
	20%	0.96	1.09	1.23	1.28	1.37	1.64	1.91
	30%	1.24	1.37	1.51	1.56	1.64	1.91	2.18
	40%	1.51	1.65	1.78	1.84	1.92	2.19	2.46
	50%	1.79	1.93	2.06	2.12	2.20	2.47	2.74

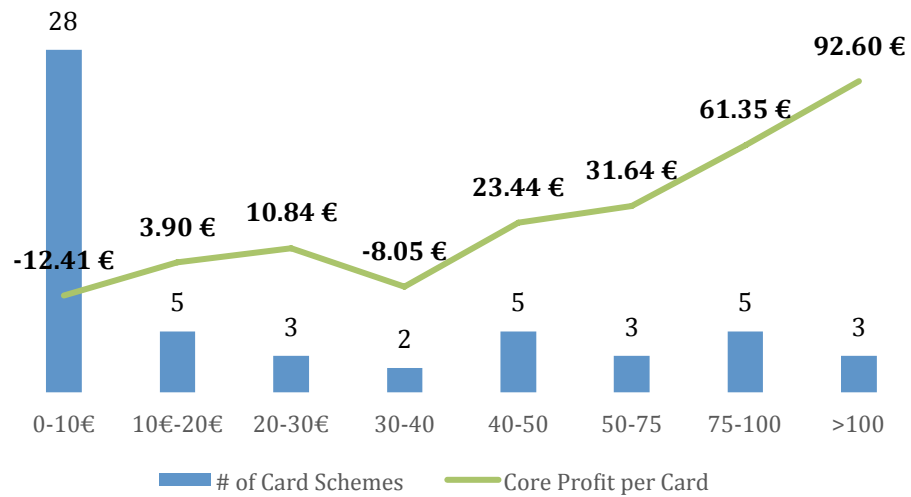
Source: Internal Calculations for the Business Project

Appendix 17 – Estimation Deviations



Source: Internal Calculations for the Business Project

Appendix 18 – Core Cost Profitability Across Card Scheme Revenues



Source: Internal Calculations for the Business Project

