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Nova School of Business and Economics
Work Project

**A Financial analysis on Business Activity Monitoring
Mechanisms in Millennium BCP**

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Abstract

This work project is related to the business project on Business Activity Monitoring Mechanisms and Culture in Millennium BCP. The report is focused mainly on three aspects: the analysis of the Portuguese banking industry, where Millennium BCP is inserted in and the company's characteristics; the exposition of the work done throughout the business project; and the deepening of the cost-benefit analysis that Business Activity Monitoring can bring to a bank. In the end, a summary of the cost-benefit analysis is attached that could be used as a model to understand the financial perspective of BAM to a bank, as Millennium BCP.

Keywords: Business Activity Monitoring, bank, roadmap, cost-benefit.

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1 Brief Context

1.1 Client – Millennium BCP

Millennium BCP is the largest privately held Portuguese bank, according to its website (2015), operating through 695 branches in Portugal and with operations in Portugal, Poland, Switzerland, Angola and Mozambique. In Portugal the bank has over 2,3 million clients, representing a market share of about 20%, and in, a global scale, 5,2 million clients spread out in the countries where Millennium is present.

The bank was founded in June 1985, and throughout its 30-year-old history it has been able to stand as a reference in Portugal. Today, it provides a number of services to clients, ranging from banking services and products to financial solutions. Millennium BCP also prides itself of its high standards in corporate social responsibility initiatives. By the end of 2014, there were 7.795 employees in Millennium BCP in Portugal and a total of 17.703 worldwide.¹

In Portugal, the bank has activities in different sectors, such as insurances (Millennium BCP Ageas), management of real estate funds (Interfundos) and a bank only dedicated to users intensively using new technologies (ActivoBank).

In my analysis the focus is on the core activity: Millennium BCP “Universal bank”, operating in Portugal, so any further reference to Millennium BCP refers not to the entire group but only to this bank.

1.2 Market overview

“The Espírito Santos are a banking dynasty whose name is as resonant in Portugal as the Rockefellers in America. But their reign ended abruptly on August 3rd as Banco Espírito Santo (BES), a big Portuguese bank in which the family business had a stake of 20%, was restructured.”² (The Economist, 2014)

This quote highlights one of the biggest determinants of the current banking market in Portugal. In the summer of 2014, less than one year ago, one of the largest private banks in Portugal – Banco Espírito Santo – had to be rescued by 4,9 billion euros and split into a “«good bank», renamed Novo Banco, and a «bad bank», which will house BES's exposures to the troubled Espírito Santo business empire as well as its Angolan

¹ RELATÓRIO E CONTAS DE 2014 BANCO COMERCIAL PORTUGUÊS, S.A., (2015).
RELATÓRIO E CONTAS DE 2014 BANCO COMERCIAL PORTUGUÊS, S.A. (Annual Report)

² The Economist, (2014). *Sharing the pain.*

subsidiary”³. This event had enormous consequences to the banking market in Portugal and has determined its current state.

According to the Bank of Portugal⁴, there are 35 banks registered with operations in Portugal, including some investment banks and banks operating only in Azores and Madeira. Observing the data available in Bank of Portugal’s database, we can see that, by the end of 2013 (last available), there were 5 banks that stood out from the rest in terms of Credit to Clients and Total Assets. However, from those 5 we must exclude BES, so we can say that Portugal has 4 major players in the banking sector: Millennium BCP, Caixa Geral de Depósitos, Banco BPI and Santander Totta. Millennium BCP is the largest privately held bank and the largest listed lender. Caixa Geral de Depósitos is the largest state-owned bank, which has a dimension similar to Millennium BCP. Banco BPI is the second largest private listed lender. Santander Totta is a Spanish bank whose subsidiary in Portugal has a similar size to Banco BPI. Then there are smaller players in the market such as Banif and Montepio Geral⁵.

Another important aspect of the market is that it had just been recovering from a recession period when the BES crisis occurred. To be more precise, in the period of 2005 to 2008 the growth of banking assets was of 9,5% YOY, in the period of 2008 to 2010 that growth was of 8,7% and in the period of 2010 to 2013 the same growth was of -0,1%⁶. This last period happened in the context of the Economic and Financial Assistance Program that Portugal had for the bailout of European funds.

In that context, it is also important to mention the Contingent Convertible Bonds, («CoCos»), which were extremely “popular as a mechanism for the recapitalization of the banking system given the context of the 2008 financial crisis and the current sovereign debt crisis in Europe”⁷. Out of the then five major players, three of them issued CoCos between 2010 and 2012 in the total amount of over 6 billion euros⁸. The only two that did not were Santander Totta, who is a Spanish bank and therefore was not as affected as Portuguese banks by the troika program, and Banco Espírito Santo, which, not long after, “had to be rescued”, as mentioned before.

³ Gonçalves, S. (2015). *Portugal in 4.9 billion euro rescue of Banco Espírito Santo*. Reuters UK.

⁴ Banco de Portugal, (2014). *Instituições de crédito e sociedades financeiras*.

⁵ APB - Associação Portuguesa de Bancos,. (2013). *Estudos e Publicações | Estatísticas*.

⁶ APB - Associação Portuguesa de Bancos,. (2013). *OVERVIEW DO SISTEMA BANCÁRIO PORTUGUÊS*.

⁷ Mota Pinto, A. (2012). *OS «COCOS» E A RECAPITALIZAÇÃO DO SISTEMA BANCÁRIO PORTUGUÊS*. *Actualidad Jurídica Uría Menéndez*.

⁸ EuroInvestor,. (2012). *Portugal Finalizes Capital Injection Into Banks*.

However, this recession is now over and the CoCos are no longer the problem in the Portuguese banking market; the problem now is really the sale of Novo Banco, the “good bank” that was left of BES that, depending on who gets to buy it in the end, is going to change the banking market in Portugal.

1.3 Millennium BCP’s current situation

There are a lot of interesting aspects to refer about the current situation of Millennium BCP.

Looking at the financial results, we can see in its annual report of 2014 that the net income for the year of 2014 was of -226,6 million euros, which must be compared to the net income of 2013 of -740,5 million euros – it shows that the bank has seriously improved their profitability during the year of 2014, although there is still space for improvement. Also, in the annual report, it is possible to see that the operational costs decreased by 19,1%, from of 852,9 million euros in 2013 to 690,2 million euros in 2014, which, once more, reflects a big effort of the bank to improve net results.⁹

Furthermore, we should stress that, since 2005, the bank started a phase of restructuring that involved the disinvestment on assets that were “not strategic” to Millennium. This shows a concern for focusing on core and profitable activities.

In terms of market share, again according to Millennium BCP’s annual report of 2014, the bank has a 18,9% market share in Portugal in terms of credit and a 18,6% in terms of deposits – as mentioned previously this corresponds to one of the largest market shares in Portugal, only beaten by a state-owned bank, Caixa Geral de Depósitos. Regarding Millennium BCP’s stock, it had a maximum quote of 0,146 euros and a minimum of 0,065 euros during the year of 2014. For the past two months (March and April 2015), the stock price has been floating around 0,09 euros¹⁰. On this subject, it is important to mention that the stock price was around 0,22 in the end of 2010 and beginning of 2011, but due to the start of the bailout program in Portugal, by the end of 2011, the stock price was as low as 0,04 euros per stock. In the beginning of 2014 the price was slowly recovering, achieving a high of 0,14 euros in April 2014, but then, because of the Espírito Santo’s crisis, it went back down to 0,06 euros, from where it is currently recovering.

⁹ RELATÓRIO E CONTAS DE 2014 BANCO COMERCIAL PORTUGUÊS, S.A., (2015). *RELATÓRIO E CONTAS DE 2014 BANCO COMERCIAL PORTUGUÊS, S.A.*

¹⁰ Reuters,. (2015). *Banco Comercial Português SA (BCP.LS) Chart| Reuters.com.*

1.4. The business project challenge

Although the company I was doing the business project with is a bank, which would initially point at the topic of the business project being finance related, the challenge is actually far from a finance perspective.

The business project I worked in was actually related with the Process Optimization Department of Millennium BCP (MBCP, from now on).

There were two key dimensions that composed the challenge of the project: first of all the fact that my group had to know some insights of IT issues and process management aspects, there was a student in the group coming from an undergraduate degree in engineering and another that had taken a course in process management, but, aside from that, our knowledge was not extensive on the business project subject. Secondly, it implied that we got to know the company from within – the business project implied that we understood the company’s culture and structure. So, in order to overcome these difficulties we attended a lot of meetings with different people both from IT institutions (like IBM and Safira from KPMG) and from different departments of MBCP.

However, these two challenging dimensions made this business project enriching. On one hand we actually got to learn about different subjects than what we had already studied during our masters degrees, and, on the other hand, we were “obliged” (in order to successfully execute the business project) to really be present at MBCP, and learn about different departments within the bank, talk to many employees with diverse perspectives on our project – and all of that led us to gain very useful theoretical and, above all, practical knowledge.

2 Reflection on the work done

2.1 Problem definition – Business Activity Monitoring

The problem came from the fact that in 2012 this department of the bank (Process Optimization Department) understood that there was a need to introduce Business Processes Management (BPM) tools in the bank, which would facilitate business process architecture, auditing, compliance and would optimize their processes. MBCP asked IBM to provide a BPM solution for this purpose, but IBM offered to introduce a different idea: Business Activity Monitoring (BAM).

MBCP accepted the proposal and BAM was implemented. However, less than two years later, the project had to be disconnected for a number of reasons: first of all, the goal of BAM is very different than the goal of BPM, so the bank was searching for a solution BAM could not provide. Secondly, BAM requires a lot of technological compliances and IBM was unable to supply the needed technological support to solve specific issues that are very important in a BAM implementation (for example: event management – some events got lost – and the platform was not stable). Aside from that, the approach was more technological than business oriented, business managers were not prepared for a BAM approach, plus, there was no roadmap and no consultant support so this initial implementation turned out to fail.

However, BAM required a big investment from MBCP and the solution, from a general perspective, seemed to be a beneficial idea.

Hence, to briefly explain it, our project was precisely to understand what exactly BAM is, what its benefits are and what are the requirements a company has to have for it to be successfully implemented (critical success factors). Then, we had to analyze how MBCP positioned itself in regard to these critical success factors to realize if it was possible to implement the solution. Thirdly, the idea was to design a roadmap with the steps MBCP would have to follow to be able to overcome the difficulties it had in the first implementation of BAM. Lastly, our aim was also to experiment this roadmap with a specific process, like a pilot test to make sure our idea of the roadmap worked successfully. These steps will be explained in further detail in the following sections of the work project.

To better understand the problem definition it is important to know what BAM actually is before going through the methodology used when elaborating the Business Project.

According to Gartner¹¹, “the focus in BAM is on real-time capturing, filtering and presentation of events, but a "hidden" challenge lies in providing the data context against which events must be analyzed (...) Business activity monitoring (BAM) provides real-time access to critical business performance indicators to improve the speed and effectiveness of business operations”. Basically BAM is a technological solution that can provide several business benefits by optimizing process management. To simplify, it is a software that keeps track on real-time of all the steps

¹¹ Friedman, T., Sinur, J. (2002). *Business Activity Monitoring: The Data Perspective*. Gartner.

of the process that are taking place at each moment and that is able to interact with the stakeholders involved in the process: BAM can have active features and understand when specific problems happen and solve them, or it can have passive features and provide warnings regarding events that are occurring, such as errors, exceptions or unexpected actions or procedures. With the information that BAM provides managers can take decisions that will improve the process.

2.2 Methodology

2.2.1 Hypothesis

Primarily, when we read the initial paper that described what the topic of our business project was, it seemed to be an implementation project, meaning that what we initially grasped was that we had to implement BAM in MBCP. But, from the start we realized that such a goal would be a technological (and not business) project.

On a later stage, when we had the first meeting with our academic advisor, we realized that BAM's implementation failure was due less to technological reasons than to resistance from the MBCP organizational culture. Maybe the stakeholders involved in the process did not react well to the new solution or maybe they did not take the decisions that would justify the need of BAM and generate its benefits. Hence, we thought that a culture change would be the main focus of our project.

However, after we had our first meeting with our corporate advisor we discovered that what our project was about was really to plan the right way of how BAM could be implemented in what it comes to business. Meaning that what we had to do was to design a path for MBCP to follow, regarding business steps (for example: training employees involved in the process or assessing what are the information needs for each department) that, when concluded, would allow a successful implementation of BAM, which would be technological and, hence, out of the scope of our project.

2.2.2 Analysis

In order to be able to design this path we had to go through four main stages:

First of all, we had to obtain a clearer vision of what BAM is. So, to begin with, we went through the main definitions of BAM and the main concepts that were related with BAM. Then, we numbered the five main benefits that BAM implementation can bring to a company. Those are: process automation, real-time monitoring, proactive operational control, end-to-end process visibility and user interaction. After that, we

wanted to check whether or not these benefits actually took place in real life, so we analyzed two case studies of banks where BAM was implemented and, in fact, it generated the expected benefits – those banks were BNP Paribas Fortis in Belgium and Bank of America. To end the first stage, we found the characteristics that a company should have so that BAM could be implemented without encountering major obstacles that may avoid successful implementation – which we called the critical success factors. From the literature we consulted and the meetings we had with people linked in different ways to BAM, we identified 11 different critical success factors for implementation.

Having done this, the second stage was to understand what MBCP's current state was, regarding the previously mentioned critical success factors. To achieve that, we had several meetings and interviews with employees from different departments of MBCP and to all of them we asked some questions, whose answer led to finding out which critical success factors MBCP fulfilled and which it did not. The analysis for this stage consisted of the processing of the answers we obtained, followed by a short summary with the evaluation for each critical success factor. By the end of this stage, the conclusions we obtained were that MBCP fulfilled most of the critical success factors but none of them was entirely achieved yet, so we could determine that there was the need to bridge that gap.

Going to the third stage of our analysis, we elaborated a roadmap where we precisely stressed the steps MBCP had to go through so it could have the right conditions for a proper BAM implementation. Those steps would bridge the gap between MBCP's current characteristics and the critical success factors it should have, as they also lead to the necessary conditions for BAM implementation. In general lines, we identified 6 steps: 1) Creation of a multidisciplinary team, 2) Functional Assessment of the bank process in four layers (cost-benefit, business process optimization, IT and people), 3) Process automation culture implementation, 4) Implementation through blocks, 5) Iterative construction and 6) Implementation of stable version and monitoring.

The reason that led us to define these six steps was so the roadmap could cover every issue that needs to be solved for BAM implementation.

The first step ensures that there is a group of employees responsible for taking care of all the following steps, which guarantees that the project of implementation is not left to just anyone but yes to a fully capable team.

The second step defines if each specific process is suitable to having a BAM solution – some processes may need and in fact make a good use out of BAM but for others it is possible that BAM only raises complications, so this assessment is essential.

The third step is intimately related with one aspect that failed in the first implementation of BAM in MBCP: people involved in the processes did not know what to do with the solution or how to improve the processes through it. Thus this step is precisely to safeguard the knowledge and capability that stakeholders of the process need to have for BAM to be successfully implemented.

The fourth step has the aim of implementing the solution with the needed time and resources, so instead of bringing BAM to a process all at the same time, it was clear from our interviews that implementation should be taken cautiously, prioritizing what are the decisions that are most important and implementing BAM by a “block” of decisions at a time so the end-to-end vision can become clear from the start.

The fifth step expresses the idea that our work is not fully binding, meaning that the implementation should be iterative. For the implementation in the first process, the multidisciplinary team should follow this roadmap, but if they find any issue or have any idea that could improve the roadmap that should be added to a new version of the roadmap, that should be later implemented to that process to check if it works better. This way, the final version of the roadmap, making it an iterative process, would almost be flawless.

Once this final version is done, it is time for the sixth step, which consists of implementing this final version of the roadmap in the processes that are adequate for BAM and monitoring the solution, to ensure everything runs smoothly and solve any problems (business wise, or IT wise) that may arise.

To finalize the third stage of our analysis, we also designed prototype dashboards to communicate clearly BAM's outputs.

The fourth and last stage of our analysis was to perform a pilot test of our roadmap. We were limited by two major constraints in this stage: first of all, there was the tight schedule we had to complete the business project, which would never allow us to go very deep into this pilot test. And also there was the issue that we did not have the technological resources or knowledge to implement the actual BAM solution, so the idea of this business case was just to choose a process within MBCP and understand how the roadmap designed could fit into this process. The process chosen was Personal Credit, for being a process that is fully mapped end-to-end in MBCP and

also it is a reality that is close to us, so it would be easier to understand every task involved in the process. The first step of the roadmap was not applicable in this case because the “multidisciplinary team” for the pilot test would be my group. The functional assessment was done in a general way, because, for example, we did not have the time or information to do a concrete financial analysis, but still, the conclusions from the assessment was that this bank process would be suitable for BAM implementation. Even with our constraints, the process owner and a process manager from Personal Credit agreed with this conclusion. Regarding the third step, stakeholders involved in the process were said to be willing to cooperate if proper training was given, so in this sense, BAM implementation should also be possible. The fourth step was also performed regarding the decisions that had to be made in Personal Credit and the need the process managers have for passive warnings (one of the outputs BAM can bring as mentioned previously). The fifth and sixth step were impossible to take through because they imply technological implementation, but from our analysis they seemed feasible in this process.

Having gone through these four important stages of analysis, we were able to provide MBCP with recommendations, which I will express later on in this report.

2.2.3 Work plan

From the very beginning of the Business Project, my group decided it was essential to organize and plan everything we had to do along the project. To do so, we started by working on an Excel spreadsheet where we wrote, with the help of our academic and corporate advisors, the tasks we had to perform and the deadlines we had to have them accomplished by (table present in Appendix, exhibit 1).

This was done using tools of project management: first of all we used task definitions, to clarify what had to be done to complete the project. Secondly, in the context of time and resources management, we used a Gantt chart, where we assigned the different tasks that had to be made to the elements of the group and we established how long those tasks would take to be finalized and how many people would be needed to be available to do them. Thirdly, we also considered risk management: with the help of our corporate advisor we stressed every risk the project could face and figured out possible ways of mitigating them.

However, this initial plan quickly showed to be missing a lot of important aspects. As soon as we met with Mr. Jorge Pereira, Manager of Process Optimization Department,

he was able to tell us that focusing on a cultural problem would not allow us to reach our goal of defining the path for Millennium BCP should follow to implement BAM with success.

In that meeting, on February 27th 2015, (also with Mr. João Costa, our corporate advisor and Coordinator of the Business Process Management Competence Center) we were able to achieve two very important objectives: goal setting and scheduling of next meetings. The goal setting was very important because it was in this meeting that we realized the four steps that we then had to work on (BAM definition, critical success factors analysis, roadmap design and business case applying the roadmap), in order to reach the results the bank needed from this project. For Mr. Jorge Pereira, the most important things we had to deliver was the answer to if BAM should be implemented and if so, how should Millennium BCP do it, and that was why we agreed on proceeding with the steps mentioned. The scheduling of next meetings was also extremely important because it made us understand, on one hand, who we needed to talk to so we could understand better MBCP's situation and BAM requirements and, at the same time, with whom we would be able to actually speak with.

Thus, after this meeting, we were able to have a better outlook of what our final work should look like.

Yet, there were a lot of issues that came up while we were working on the business project that made us change slightly the content of the report.

For example, from the literature we had initially found 9 critical success factors for BAM implementation, so we were working on those 9 for the gap analysis between MBCP's current state and the ideal state. But, when we had a meeting with Mr. Rui Duarte, Systems Middleware Sales Leader for Portugal with BPM and BAM products from IBM, where we were just supposed to get a better understanding of why the initial version of BAM failed in MBCP, he also mentioned two other critical success factors (identify Sponsor within the Company, and General Awareness of BAM) that we realized to be important to include in our analysis.

One other situation was also regarding the critical success factors. We decided that we would talk mainly to managers of MBCP to see where the bank positioned itself regarding the critical success factors, and we scheduled a number of meetings to be able to obtain those answers. However, there was one manager from IT department that would be the only one able to answer the questions regarding critical success factors 8 and 9, with whom we never got the opportunity to meet, impeding us to do

an analysis as deep as we did for the previous critical success factors. In the end we had to find an alternative of analysis, by trying to extrapolate the answers from other meetings, but still we were aware it would be better if we had the meeting with IT. However, these issues were not large enough to make us change significantly the aims of the project that we outlined in that meeting with Mr. Jorge Pereira and Mr. João Costa, so we could say the work plan was well structured from that meeting onwards.

2.3 Recommendations to the company

As already mentioned in this report, the main recommendations that we did to Millennium BCP consist of a roadmap with six main steps to follow in order to successfully implement BAM.

However, while executing the business project and through the meetings we were able to reach three main recommendations, patent in the roadmap and conclusions:

First of all, the implementation of BAM should not be a general decision, completely assertive for the entire bank. When in the roadmap we stress that there is a need for assessing the bank process in consideration, we mean that there are some characteristics in each process that make BAM beneficial, but the absence of those characteristics justifies that BAM is not implemented. For example, if the cost-benefit layer proves to be negative, meaning that if the multidisciplinary team estimates that for a specific process the costs that BAM implementation will incur into are too high and will not be overcome by the financial benefits, it makes no sense to implement BAM in that specific process. And this is just an example, the non-fulfillment of the other layers, can also lead to excluding BAM implementation from a process once that, if information is not required in a regular basis for a specific process, it also makes no sense to proceed with the solution implementation.

But, at the same time, that does not mean that BAM is not suitable for all the processes in the bank, because, for example, for some processes the financial prospective may be positive and actually incremental for the bank – so **one of the most important recommendations to the bank is that this implementation is done on a case-by-case basis.**

The **second important recommendation**, mainly present in the fourth step of the roadmap, is that **the implementation of BAM should be done through blocks**, meaning that if the process is understood to need BAM, then it shouldn't be implemented all at once. That was actually one of the biggest issues in the first

implementation: all the decisions were mapped through BAM, and at every second everyone could have access to a personalized dashboard that would provide information and possible drilldowns about every part of the process. However, that is not a good idea because it becomes less useful for practical needs, more confusing, and, above all, stakeholders will mostly look at the dashboards out of curiosity instead of doing so to make the best possible decisions. In that sense, when implementing BAM, MBCP should be careful and start by prioritizing what are the parts of the process that are really important to be shown in the dashboards and that can really be useful. So, at least for a start, stakeholders should only have access to information and drilldowns on key parts of the process, which actually can lead to optimization decisions, apart from the warnings of exceptions and mistakes occurring (those should be available for the entire process so they could be solved right away). After that, if process managers and decision makers understand that more variables could be present in the dashboards, which would be useful and not add confusion, some other parts of the process could be added, but always taking caution to not overload the dashboards with information.

The **third and last most important recommendation** is related to the fifth and sixth steps of the roadmap. It is that **the implementation is done in an iterative way** and, as BAM is being implemented, there is always a learning component that can be used in implementations in other processes. That is, the implementation in the first processes should be monitored in a way that helps building further the proposed roadmap: maybe there is a step that we have missed for not concretely implementing BAM and that, once the implementation is being carried forward, is noticed to be missing. That step, or those steps, should be incorporated in a new version of the roadmap, which should be again tested until a stable improved version is found. So may cost some resources but it guarantees that no further resources will have to be spent in errors that may have occurred if this iterative implementation had not been done.

These recommendations are for the implementation of BAM in general for MBCP's different processes. Since we actually proceeded with a business case for the Personal Credit process, we also find it is worth to mention that this process should be the first where the implementation takes place, since there was already a meeting with the process owner and with a process manager where we were able to see both a need for BAM and, at the same time, a willingness to cooperate in order to make the

implementation work. In this process, BAM should focus on its passive features, since their largest requirement is to know about occurring mistakes or exceptions in real-time. However, and following the first recommendation we did, the multidisciplinary team should not discard a deeper functional assessment, namely in what regards the cost-benefit layer, because, as mentioned, if the project will have no financial return, even if everyone is cooperating, it will not be worth it and will just spend again many bank resources.

Finally, the main conclusions that we were able to take from this project are that MBCP needs BAM to optimize processes, but that need should be assessed on a case-by-case basis. Also, Millennium BCP can fulfill the requirements in order to implement successfully BAM if the bank follows the roadmap mentioned, in order to overcome the gaps it is currently facing regarding the critical success factors.

2.4 Concerns and limitations

There are a number of aspects that are a source of concern in what comes to this business project. Among them I have identified the four most important that are worth considering before proceeding with the implementation.

The first is that **Millennium BCP may not consider this project a priority so BAM is never really implemented**. This project was a concern expressed by Millennium BCP, but it was more of a concern to the specific department of Process Optimization. Moreover, the bank had already previously invested a lot on the implementation of BAM and it did not work, so it is not obvious that the bank will be willing to spend again more resources for the possibility of it working this time. And, even if the message from the business project report is well conveyed and that the bank top management finds it could really work, right now there are so many issues that the bank has to deal with (such as the concern with the sale of Novo Banco that can completely alter the banking industry in Portugal as mentioned) that MBCP does not consider this project to be something urgent and just postpones it until “better times come”.

The second is that the **message we tried to express in the business project report is not well transmitted to stakeholders in MBCP**, which can lead to severe consequences regarding the implementation of BAM. Those consequences can be very diverse. Maybe the BAM solution is not well communicated to other process owners, and maybe they do not understand how beneficial it can be so they will not

even want the assessment of their process to occur and will not cooperate. For example, in the meeting we had with Information Management Department they showed not to think that this solution was such a good idea, but mainly it seemed that they did not entirely understand what positive outcomes BAM could bring. Or, perhaps, the training that should be done with stakeholders of the process so that they can work well and better in the presence of BAM and learn how to interpret the different dashboards is not well done, or not done at all, for not being clear why it should happen. Once again BAM implementation will fail for lack of understanding how to cope with it.

The **third is regarding the multidisciplinary team**. We believe, as mentioned in the business project report, that this team should have different areas of expertise, but should be willing and available to work together for the successful implementation of BAM. However, we are aware that it is hard to find such a team, to be able to make them work together coming from different backgrounds, and, above all, we are not sure whether or not the bank would be willing to spare time of their employees to dedicate to this mission and even less if it would be willing to outsource some of the employees in this team and financially compensate them for this. This would be a serious situation, because the multidisciplinary team ensures that the implementation is being taken forward, and that there is someone responsible for it. Without the multidisciplinary team it is likely the implementation will fail again for lack of support and accountability.

The **fourth concern is very intimately related to the two biggest limitations on this business project: tight schedule and limited resources**. By this I mean that for the amount of goals we had to work on and with the amount of meetings we had to have, there was not a lot of time to perform some analysis that would be important. Apart from that, even if there was more time, there was a lot of analysis we could not have made for lack of knowledge or available information.

There are two strongest examples that constitute this concern. First of all, the absence of an actual pilot-test. Since we did not have the technology or the time available to implement BAM in Personal Credit, the business case we performed is not as reliable as it could be if we observed it happening concretely. Watching how the solution functioned, how stakeholders were (or not) able to work with it and how decision makers were able to make more and better decisions with the BAM solution would be an excellent incentive to implement it in other departments of the bank. The second is

the factual financial analysis, which we were not able to perform for lack of information regarding the costs of BAM. Of course the costs would depend on the extent that BAM would be required (on how many processes it would be used, how many features it would need to have), but even the fixed costs were impossible for us to find. The benchmarks we found from other providers of the solution were too broad and we asked for an estimate in the meetings we had with IBM and with Safira, but they could not tell us. As for the financial benefits, they would be extremely difficult for us to estimate and too time consuming. This analysis (as the pilot-test) would be helpful for the decision makers to choose whether or not to take this project forward.

However, although these concerns are legitimate as explained, I believe that all of them can be overcome. The first three concerns depend on who takes the project forward from now onwards: on one hand, our corporate advisor was truly motivated with the project, so it is likely that he is able to take it to top management and convey the message well; on the other hand, since we were able to speak with so many people inside Millennium BCP it is also probable that the managers from the different departments have expectations on the development of this project so they might help the project to not be left to just a good idea.

As for the fourth concern, I am sure that if the multidisciplinary team conducts these two components (the pilot test and the financial analysis), their work will be much simpler and more reliable than ours would be, once they can have access to more resources, a broader set of competences and also not such a tight deadline.

3 Reflection on learning

3.1 Previous knowledge

When considering the financial aspects that I should include in this Work Project, many alternatives came to my mind. The three that stood out as most relevant were:

- 1) A valuation of the BAM solution through the discounted cash flow model
- 2) The relevance that the BAM solution can have for the banking industry
- 3) A deeper analysis and discrimination on the benefit-cost layer of the functional assessment of the bank process step of the roadmap

All these alternatives seemed to be both a good way of applying my knowledge in Finance to my business project and, at the same time, add some finance-related value to the project conducted.

Yet, I decided to focus only on one of these aspects to be able to do a deeper analysis. I excluded the valuation through the DCF model because it would be unrealistic to estimate accurately the costs and revenues for BAM, it would be extremely difficult to find a relevant discount rate and, above all, it would not add much value to the project for the weakness of the underlying assumptions.

Considering the second alternative, I thought it could be a good way of adding some theoretical content to the Work Project but then I realized that, on one hand, I did not take any course in banking, so it would not be “previous knowledge” application and, on the other hand, that would also not add that relevant practical value to the business project, which in my consideration is important.

Hence, the best aspect I believed to be worth looking at from a financial perspective was to make a deeper analysis and discrimination on the financial costs and benefits that BAM could bring to MBCP or any other bank wanting to implement the solution. One other very important reason for this choice was also that I talked to my corporate advisor, who said this would be the most useful analysis.

In the business project report, my group and I simply divided the benefits into three main categories – reduce waste, optimize process and reduce costumers’ complaints – and also the costs into three main categories – IT costs, implementation costs and monitoring costs. However, from my courses in Corporate Finance, such as Applied Corporate Finance, Mergers, Acquisitions and Restructuring and Private Equity, I learned how important it is to understand the different costs the firm is incurring into and what are the real sources of revenues, so, I find that it is important to drill down these three categories of costs and benefits to get a better idea of how the financial structure of the project will be like. Moreover, this has a lot of practical value since it facilitates the search for costs and benefits for the multidisciplinary team when doing the financial assessment.

First of all, I will analyze the costs BAM may have. When it comes to fixed costs, there are a number of costs needed to consider. It is not easy to find these costs, but I based myself in the literature there is for BPM¹², which is very different than BAM in what regards outputs, but for the costs structure, it is very similar. Considering the first category of costs mentioned in the Business Project, IT costs, there are three fixed costs to consider: the hardware structure cost needed for BAM implementation,

¹² Ruden, J. (2007). *Making the Case for BPM: A Benefits Checklist*. BPTrends.

including the installation of the Information Intelligence Center, the devices needed to connect all the applications used by the bank processes to BAM and the hardware improvements in the current technological system of MBCP or other bank so it can support BAM; the software fixed costs – connection of all applications of the process to BAM center, dashboards development and features programing; and the services fixed costs – price IBM charges for their fixed services.

Then, there are the implementation fixed costs and those include: the price of the license for using BAM solution; the personnel costs for contracting and compensating the multidisciplinary team; and the training costs for explaining to whole the stakeholders of the process how BAM works.

Lastly, there is the monitoring fixed costs, which include: the price IBM charges for regular revision of the solution; the extra compensation that will have to be paid to the part of the multidisciplinary team that stays after implementation, so they can also monitor the ongoing functioning of BAM and the repairing costs that have to be taken into account to be prepared for potential mistakes and errors that may happen.

It is likely that when a bank asks for a quote from the solution provider, it will include most of the above-mentioned costs in the final price, so the bank will not have to discriminate them. But still, it is relevant to look at them individually because perhaps the bank is able to conduct some of the activities proposed at a lower cost.

As for variable costs, investigating in the IBM official website¹³ (who would be the solution provider for MBCP), I found that the company elaborates their cost structure based on what the client needs are. Those needs can be: Application development; Information management; Integrating data and content; Messaging & collaboration; Software and system development; System management/security; Transaction management and integration; Web application/commerce. So, according to the requirements of features a bank has for BAM solution, the final price charged by IBM will differ. Also, another important aspect worth considering in the variable costs analysis is the size of the solution that MBCP is looking for. As mentioned, not all bank processes should be suitable for the implementation of BAM, and, according to the number of processes that in fact need and are capable of supporting BAM, the cost will differ. So the variable costs depend on the number of features the bank wants in the solution and on the reach that BAM will have within the bank.

¹³ IBM,. (2015). *IBM Request a Quote for BAM solutions*.

Now I shall look at the financial benefits that come from the implementation of a BAM solution. First of all, it is important to stress that there is a lot of skepticism when it comes to factually identifying benefits coming from IT project¹⁴, such as is the BAM implementation. However, the authors of “Managing the Realization of Business Benefits from IT Investments”, professors from Cranfield School of Management and Open University Business School, claim that “engaging business managers in a way that enables them to apply their collective knowledge can create business value from IT enabled change”. Also they present some evidences that prove improved results thanks to IT projects. Hence, we can see that it is possible for a bank to obtain actual financial value from BAM implementation.

These financial benefits can be divided into different categories. In the business project report, my group and I had stressed three main benefits: waste reduction, process optimization and number of costumer complaints decrease. Yet, these categories can be further explored. Systar¹⁵, a competitor of IBM in providing BAM solutions, identifies the sources of financial benefits as being the following: “i) Improve operational performance continuously; ii) Eliminate surprises such as missed cut-offs and SLAs; iii) Reduce costs through greater efficiency and avoid penalties; iv) Identify areas to grow customer satisfaction and revenues; v) Demonstrate operational control to regulators and auditors”.

In order to convert these expressions into foreseeable financial benefits, the bank would have to: (i) Estimate the number of processes that could be done per day, given the extra time the decisions made thanks to BAM would bring and what is the incremental value of that higher number of processes. (ii) Estimate the percentage of surprise and exceptions that would be reduced with BAM and use that cost reduction as a financial benefit. (iii) Estimate the decrease in penalties (such as costumers’ complaints) and the corresponding decrease in costs, which would also result in a financial benefit. (iv) Investigate what areas the performance improvements due to BAM could turn out in costumer base growth and estimate the potential revenues coming from that growth. (v) Estimate costs that are spent with regulators and auditors that would be cut due to the presence of BAM system monitoring and warning delivering, which would also correspond to financial benefits.

¹⁴ Peppard, J., Ward, J., & Daniel, E. (2007). *Managing the Realization of Business Benefits from IT Investments*. *MIS Quarterly Executive*.

¹⁵ Systar,. (2015). *Business Activity Monitoring for Banking by Systar*.

This concludes the analysis of financial costs and benefits and by looking at all these rubrics and estimating their numbers, the multidisciplinary team could have a simpler task in doing the cost-benefit layer of the functional assessment. A summary of this analysis of costs and benefits can be seen in Exhibit 2 of the Appendix.

3.2 New knowledge

From my perspective, there were two main areas that were key for my learning from this business project.

First of all, there are the management tools that I gained from the project. From the very beginning I had to use some project management tools (such as the Gantt chart and the responsibilities assignment table) that I only had a very narrow idea of how to deal with, and was definitely an important input for the rest of my professional life. Also regarding process management, which was an area I had really never dealt with, I gained some very interesting insights. Since the first meeting, our corporate advisor always showed us the process mapping and the task chain, and that was an aspect of the work that in the beginning I had some problems understanding but, through studying the concepts and diagrams and with my colleagues help, I ended up comprehending the importance of those concepts and generally how they work. Lastly, and also very importantly in this area, I obtained some important insights about Human Resources Management. Through my undergraduate degree in Economics and my masters degree in Finance I never learned about this subject and it was interesting to deal with it, throughout the interviews that we had with the managers from different departments within the bank and it also provided me with some very important tools for my life.

The second area that I find important to mention is the social competences area, which I believe to have developed very deeply throughout this project. It is true that this was not my first time working in a group of different people, nor was it my first interaction with a company. Still, I never had to work for so long and for such an important work with a diverse group and it was challenging to try to overcome all our differences and find what were our different strengths that we could leverage in the project. Also the contact with Millennium BCP was very uplifting, as I was the only one to speak Portuguese natively, so the managers would more often direct their conversations at me. That made me in a way responsible for the contact of the group with the company, which was definitely enriching for my skills.

3.3 Personal Experience

For my personal experience, I will start by expressing those of my strengths that I believe to have been used positively and further developed due to this project. There are two strengths I would like to highlight in this sense: first, my leadership skills, which in several moments of the project were important to keep the group working and motivating them. Second, my hardworking skills that played an important role especially in parts of the project where we had little time to write down the questions from an interview with a manager to other and working efficiently and under pressure was essential. Also, it is important to recognize my weaknesses and I will again mention two. Sometimes I became stressed for us not having advanced as much as we should by each point, which might have been negative for the group. Lastly, at a certain point I became insistent so each member would get his or her part done, which was likely unpleasant for the rest of the group.

As for a plan to improve these characteristics, in the meeting of peer evaluation that my group and I will have after the final presentation of the BP, I will ask them what they thought I could do to make progress regarding these flaws. Also, another strategy that I have been trying to put in place, and will definitely keep on pushing in this sense, is to re-read the emails and written comments I send to the rest of the group, to ensure I always include a compliment or a thank you note for the work they have been doing, in order to not convey my stress to others or insist so strictly on them.

3.4 Benefit of hindsight

When looking in retrospective to the work performed for this business project, there were two main points that most added value. First of all, as predicted, the elaboration of the roadmap – I observed throughout the project that the employees in the Process Optimization Department in Millennium BCP are mired in work and would not have the time to develop this roadmap that can lead to significant process optimization in the bank. Secondly, and this was not that predictable, our work added value by raising awareness in Millennium BCP for the importance and usefulness of BAM, for all the meetings we had with different departments that brought this solution to the attention of managers that will now be more interest in BAM implementation. As for what should have been done differently: it would have been extremely helpful if we actually observed BAM functioning in real life and, as mentioned, having more time to develop this project would also be extremely valuable.

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Appendix

Exhibit 1. Initial work plan – project management

Tasks that need to be done:		Needs to be done by...
A	Read the literature on BAM	20-Feb
	A1 Gartner literature	20-Feb
	A2 IBM literature	20-Feb
	A3 MBCP literature	20-Feb
	A4 Comparable case studies	20-Feb
B	Define what's BAM, what's real time intelligence, etc.	27-Feb
C	Define the critical factors that allow for BAM to take place	27-Feb
D	Evaluate company's current culture	20-Mar
	D1 Elaborate a questionnaire to give out to employees	13-Mar
	D2 Send out the questionnaire and collect answers	13-Mar
	D3 Analyze and process the answers	20-Mar
	D4 Take conclusions on the company's culture	20-Mar
E	Gap analysis: Compare to what the culture should be for BAM to fit	27-Mar
F	Understand steps that need to be taken so BAM can come to BCP	27-Mar
G	Conclude part 1 - Cultural gap analysis to incorporate BAM	27-Mar
H	Plan general roadmap so BAM could be applied to BCP	03-Apr
I	Revise the roadmap so it can be applied to each sector in BCP	10-Apr
J	Conclude part 2 - Roadmap to incorporate BAM	17-Apr
K	Choose area of the company where pilot test could be more easily done	24-Apr
L	Plan how the roadmap would work in that area of the company	24-Apr
M	Take first steps towards BAM in that area	24-Apr
N	Install BAM and make questionnaire to see differences in culture	01-May
O	Conclude part 3 - Report on entire project	01-May
P	Revise, correct and add what is needed	08-May

Exhibit 2. Cost-benefit summarized analysis

Financial Benefits	
Increase in revenues	
Source of revenue	How to find it
Improve operational performance continuously	Incremental value of that higher number of processes due to less time spent in each
Identify areas to grow customer satisfaction and revenues	Estimated revenues coming from customer growth due to process improvement
Decrease in costs	
Source of cost cut	How to find it
Eliminate surprises such as missed cut-offs and SLAs	Cost reduction of estimated decrease in number of surprises and exceptions
Reduce costs through greater efficiency and avoid penalties	Cost reduction associated with estimated decrease in penalties such as complaints
Demonstrate operational control to regulators and auditors	Costs of regulators and auditors that would be cut due to BAM system monitoring and warning delivering

Financial Costs		
Fixed costs		
IT costs	Hardware	Installation of Information Intelligence center Devices to connect apps to BAM center Hardware improvements for BAM support
	Software	Connection of applications to BAM center Dashboards development BAM features programing
	Services	IBM services price
Implementation costs		Price of the license for using BAM solution Personnel costs for multidisciplinary team Training costs for staff and stakeholders
Monitoring costs		Price IBM charges for regular revision of the solution Extra compensation to part of team that stays after implementation Repairing costs for potential mistakes
Variable costs		
Features required		Application development Information management Integrating data and content Messaging & collaboration Software and system development System management/security Transaction management and integration Web application/commerce
Needed size of solution		Number of processes BAM is implemented in Extension of decision levels that BAM is needed within processes