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MODULE CM0343: INDIVIDUAL PROJECT**

DETERMINING THE SCOPE FOR FUTURE AUTOMATION OF BANKING PROCESSES

Interim Report

ABSTRACT

The banks of today exist in a turbulent consumer environment, much of which is brought about by high-profile mistakes highlighted in the media and a poor record of consistency and quality of service. This project aims to determine the viability of automation of a number of processes that exist in banks today and produce recommendations based on this. Since each bank is likely to operate in different way, a 'generic bank' will be defined and modelled using the collation of mission statements and purposes of existing banks from a number of perspectives. This interim report provides an introduction to the problem in question and a description of the approach that will be taken.

Determining the Scope for Future Automation of Banking Processes

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INTRODUCTION

Since 2007 [1], the banking industry has been in crisis and has suffered from a lack of customer confidence. This has led to a largely negative perception of banks and how they operate. Much of the antagonism shown towards the banks of today are for reasons such as requiring a 'bail out' by the government using billions of pounds of taxpayer's money or charging what can be deemed as 'excessive' overdraft fees. Another area of contention is with regards to the seven-figure bonuses that some executives still receive despite the banks regularly making losses in the billions [2].

Much of the losses the past year have been attributed to the demand of the Financial Services Authority (FSA) for banks to repay Payment Protection Insurance (PPI) as a result of it previously being mis-sold [3]. However, a large share of the recent losses can also be credited to risk-taking actions that the banks undertake with consumer's capital, of which RBS is a prime example and will be investigated as part of the background of this project. These are decisions that are made by the people charged with running the bank and when mistakes occur, the whole economy can suffer as result [4].

With banks already facing an agitated customer base due to these factors, the possibility of human error only exacerbates the issue. Despite the increasing value of the use of technology in industry today [5], many processes within banks remain labour-intensive. Such examples include transaction processing by till operators, complaint handling and financial report production. Some banks, HSBC as one example, offer entirely self-service branches where all transactions are processed automatically while the majority of other major banks now include self service machines within branches. However the bulk of transactions are still executed at counter positions by employees. Complaint handling is an almost entirely manual process with most of the minor complaints handled and closed by the employee at first point of contact. Major complaints or those that require further assistance will be handed off to a manager or dedicated Customer Relations department. Humans play a major role in these processes and the issue with these situations is that they are open to human error or multiple perceptions of the same incident. For example, if the same complaint was taken to multiple bank employees, there may well be multiple different outcomes if each employee takes a different perspective on the situation, the customer or the best course of action to take. These inconsistencies in service can often lead to further complaints being made, resulting in more negative press for the banks.

With technology in banks on the rise, self-service machines currently stand at the forefront of this shift. However there is still much scope for further automation of processes with the aim of the improvement of a variety of aspects. Potential benefits from the automation of processes include improved customer service in terms of both speed and quality, increased consistency of service, reduced costs of human resources and greater overall stability for the bank. While these benefits may be achievable through the automation of a number of processes, excess computerisation can result in public controversy if it leads to job losses. It

can also have a number of other prospective drawbacks, including a reduction in subject matter expert employees, the initial costs involved of automating and a lack of accountability if problems arise. Each of these possible outcomes will be analysed in detail between this Interim Report and the Final Report.

Through automation of everyday processes, the consistency and quality of service seen within could be improved, which may mean a rise in the confidence levels that consumers would have when interacting with banks.

Aims and Objectives

This aim of this project is to identify the viability of automation of a number of processes by identifying the high-level purpose for a 'generic bank' from a variety of perspectives and modelling this standard organisation before analysing the activities and systems that are currently in place. A number of approaches have been considered to enable the aims of this project to be achieved and will be highlighted later in this report. Before recommendations based on this analysis can be made, a number of concepts must also be investigated, such as the validity and value of using general models and how my personal experiences of employment by a bank can relate to other organisations in the industry.

LITERATURE REVIEW

During the early stages of this project, several resources were used to gain a prior understanding of the topics that will be covered. These include Soft Systems Methodology (SSM), automation principles and banking-related literature. A number of these resources and the information they provided are described below.

Soft Systems Methodology: Conceptual Model Building and its Contribution by Brian Wilson (2001, Published by John Wiley & Sons Ltd [Chichester])

When presented with a problematic situation and given the task of making recommendations on how to improve the current system, the use of SSM provides the analyst with a thorough overview of the system, making it easier to spot weaknesses than in traditional 'hard' methods where the problem must be well-defined and have a clear solution. This book presents the advantages that SSM can offer when modelling systems, both in the real-world and in more general terms, which relates to the goals of this project. The banking industry has dealt with a number of problems in recent years and the Consensus Primary Task Model (CPTM) is a powerful tool, allowing each of these to be included within a single model. This single CPTM model can then be decomposed into the various sub-systems, such as strategic management or product selection for example, to create an Enterprise Model. When conducting the SSM analysis during this project, this resource will be particularly useful in determining the correctness of the Root Definitions and the associated models.

Modern Automation by David Foster (1963, Published by Rowse Muir Publications Ltd [London])

Despite first being published in 1963, this book provides a sound clarification on what can be meant by the term 'automation' and how it separates itself from simple 'mechanisation' of processes. David Foster recognised that the concept of automation must simulate human psychic functions in such a way that the process takes on board certain human characteristics, such as memory, standards and intelligence and be optimized to operate as such. He also goes on to explain how the reliability of systems is related to the rigidity of the testing that occurs and how rapid faults are identified when they occur. The greater reliability a system has, the more confidence people will have in using it, the theory of which can be translated to customer interacting with a bank. A further area of interest which is described in this book is the financial aspect of automation, such as the short-term costs of design and implementation as well as the ongoing maintenance costs of operating the resulting system. These costs are compared in detail to the potential benefits that

automation may bring, and it is these benefits that will help justify any final recommendations that are made from this project.

Automation, Production Systems, and Computer-Integrated Manufacturing by Mikell P. Groover (2001, Published by Prentice-Hall Inc. [New Jersey])

In comparison with Modern Automation by David Foster, this book offers an insight into a number of different strategies for automation such as specialisation of operations or combining a number of operations for greater efficiency while it also looks at the different levels of automation, from a basic device or machine level up to the highest level, an enterprise. The enterprise level of automation consists of the corporate information system and is concerned with a variety of aspects of the business, from marketing and sales to research and finance. An area of concern that will be addressed later is with the quality and consistency of service that banks can offer and this book reflects on automation from a quality perspective with discussions on quality assurance and inspection principles and methods.

Why Automate Business Processes by Nigel Leeming (2004, Available at: <http://www.ivencia.com/softwarearchitect/articles/bpm/BPM2%20-%20Why%20automate%20business%20processes.pdf> [Accessed: 25/10/11])

This paper serves as one part of a set of papers on Business Process Management (BPM) and outlines the reasons for automation of business processes. This paper lists the possible benefits of automation and why is it often required. When businesses grow, their needs often change with it and it is frequently the case that the existing IT systems never completely fulfil these alternate needs. In situations such as this, people generally fill the gap but as Nigel Leeming states "More people doing more work results in more difficulty, more mistakes and more layers of management". He advocates adding automation to an existing legacy system so that it continues to carry out the processing it is efficient at while new workflows are included. This reduces the people required to carry out the process, freeing up valuable work-hours and increasing the speed and accuracy of the systems.

Business Process Modelling and Automation in the Banking Sector: A Case Study by Mara Nikolaidou et al. (2001, International Journal of Simulation: Systems, Science and Technology 2(2), Available at: <http://ducati.doc.ntu.ac.uk/uksim/journal/Vol-2/No-2-Hlupic%20Special/paper-7%20Nikolai/Nikolai%20etal.pdf> [Accessed: 25/10/11])

This report from the University of Athens was particularly useful in relation to this project as it focuses on the automation of processes in an existing bank's loan department. The results

of this paper identify the types of processes that can realistically be automated in a bank and the activities involved in doing so. While this project aims to assess the viability of automating a number of processes and make recommendations based on this, the paper reviewed here covered the implementation stage of the process too, using Lotus Domino/Notes software to automate the business process models that were created using a specific modelling methodology. Understanding how the automation recommendations could physically be implemented will allow me to add further clarity to any recommendations that are made as these previous examples can be cited.

Improving Customer Service in the Banking Industry: Implementing Automation Around an Integrated Customer Information System by Microsoft (2003, Available at: http://www.washburncommunication.com/services/portfolio/Washburn_Financial_Services_White_Paper.pdf [Accessed: 31/10/11])

This paper from Microsoft identifies how customer service can be improved through automation using Microsoft products. While this paper is effectively trying to sell products it does offer some examples of situations where automation would save both the bank and customer considerable time and money. This may prove particularly useful later in this project where recommendations have to be made as it provides an illustration of a variety of IS and IT solutions, although Integrated Customer Information Systems are already present in banks such as Lloyds, as my personal experiences have shown.

BACKGROUND

Dynamics of the Banking Industry

The banking industry and the economy as a whole resides in an ongoing cyclic trend of booms and busts. The current diverse nature of banks leads them to become more vulnerable to the failure of other banks, a theory which is outlined by Professor Lord Robert May [4]. Lord May states that the banking industry could take lessons from ecosystems, where the system stability is increased through the number of individual nodes and the strength of their interactions. Due to the dependence of today's banks on each other, because of diversification of assets and interbank lending and borrowing, any form of system failure can propagate through the banking system like an infectious disease. These failures can then result in banks becoming unwilling to lend or unable to borrow capital, with the effect of further damage to the economy.

However the fate of banks is not just decided by the economic cycle and links with its competitors. Using Royal Bank of Scotland (RBS) as a case study example, a recent report by the Financial Service Authority (FSA) into the near-collapse of RBS puts many of the failings down to poor management decisions and a lack of proper regulation [6]. Much of the blame has been placed on the former CEO of RBS, who oversaw multiple acquisitions which took the bank to being the fifth largest banking organisation in the world. However, it then emerged that much of RBS' growth was based on poor-quality funding and the bank was too reliant on the economic market, which inevitably would hit a downswing. This failure in the management of RBS cost £45bn of public money and 27,500 jobs. Before the near-collapse, the relations between RBS and the FSA were so strained that the bank refused access to the FSA to review the full extent of its finances, although the subsequent takeovers were still approved [7]. This poor management and lack of thorough regulation which resulted in the near-collapse of one of the biggest banks in the world is just one example of many failings. Recent others include Halifax Bank of Scotland and Northern Rock in the UK and Lehman Brothers in the United States. With history such as this, there is little wonder that the public currently has a negative perception of banks, which only seems to worsen as new financial reports are released [8].

The Problem with People

With an already negative perception of banks existing, the problem worsens when customers have poor interaction with bank employees. Sometimes this may be for a number of reasons out of the employee's control, such as the behaviour of the customer or unreasonable demands, but it can often be attributed to people problems. People problems can be defined as deviations in both performance and behaviour and can be brought on by a large number of reasons [9]. These can include a lack of care or commitment to the role,

personal problems, a confrontational manner or a lack of the necessary skills to adequately deal with a situation, to name a few. Each of these issues is likely to have a detrimental impact on the quality and consistency of service and any end product that is produced. For example, in June 2011, Santander was voted the worst financial services company for the second year in a row [10]. According to Steve Goodheart [11], performance and publicity such as this will undoubtedly drive potential customers away, and in relation to banks, the potential loss from not attracting customers can be devastating.

Automation

A number of the issues mentioned previously could have been resolved or avoided through the improvements and benefits that automation can offer if implemented successfully. One of the papers assessed in the literature review, *Why Automate Business Processes?* [12], offers a number of proposed benefits of automation including improved compliance, governance, accuracy and processing speed, reduced employee training requirements and greater customer satisfaction. A study undertaken in 1992 regarding the automation of processes in a Brazilian bank showed that the impact of the automation resulted in greater productivity and dampened financial instability [13]. While it would be required on a far grander scale with today's banks, greater financial stability would vastly increase the confidence customers would have of investing their wealth. A recent study on the European debt crisis identified that current consumer confidence levels in France were at their lowest since the height of the recession in 2009 [14].

Despite the potential benefits that can be seen from the automation of business processes, it does have its detractors and consequences. Automation of processes can be seen as a factor in increasing job losses and an example of such automation would include the use of self-service checkouts at supermarkets. Many business leaders see this as a necessary consequence of growth in the pursuit of greater profits [15], but excessive job losses within an organisation can result in a backlash from both the existing workforce and the external public. A study into why humans were so vital after years of automation also brings up a number of interesting points [16]. It can be argued that automation of systems involved in decision-making, for example, can have a detrimental effect if the system is not presented with all of the relevant information or an unpredictable event occurs. In these situations, it may prove beneficial to have people present to assist in the decision-making process. This study also identified possible trust issues between the operators and automated systems. If the operator trusted their own ability to complete a task more than the automated system, they would tend to complete it manually. I have seen this in banks myself where some customers are reluctant to use any of the self-service facilities because they "don't trust machines". For automation to work effectively, this trust must be earned to the degree where customers are happy to use the system and satisfied with the resulting service.

Another area of contention is that constant automation is de-humanising the interactions with banks and their staff, but the fact is that many transactions now take place with the customer looking at a computer. This is emphasized by a 2011 survey by PayYouWay.org which showed that a quarter of British people with internet access use online banking facilities every day and nearly 40% use them weekly [17]. A popular tactic to bring the remaining doubters on board is to try to humanise any interaction that takes place between a user and a computer to build up the confidence and satisfaction of using the automated system. Examples of achieving this include personalisation of the interface or configuring the system so that it seems as if it has the user's best interests in mind, as opposed to simply offering rigid instructions for use [18]. The case study of automation in a bank loan department, shown in the literature review, shows that successful automation in financial organisations can be achieved if the correct processes are selected.

When conducting research into possible automation solutions, it became apparent that many companies are already offering business process automation services. A selected few are described below.

- Microsoft [19] – This products promises to offer prospective clients increased productivity and operational excellence and better decision making through two main solutions that Microsoft call 'Channel Renewal' and 'Payments'. The former focuses on implementing reusable components when channels, such as ATMs or branches, are renewed leading to more consistent customer experience and reduced costs while the latter offers standardisation of payment processing and archiving, resulting in reduced system complexity and increased customer knowledge.
- AutoMate [20] – This product offers automation of data transmission between relevant parties within a financial services environment, ensuring the transmission is reliable and secure, as well as automation of a number of other business processes. A case study included on the company website states that a previous AutoMate client credits this product for saving 400 hours per month in IT costs after the automation of website monitoring tasks and database audits.
- TIBCO [21] – The Business Process Management software offered by TIBCO is used to automate back office processes and has already been used by a number of banking organisations. Examples cited by TIBCO include the automation of 300 back office processes in a large European bank which affected 3000 end users but is now seen by the bank as an area of operational excellence. Resulting benefits from the automation include faster turnaround of customer requests and reduced human resource costs without a drop in the quality of customer service due to increased efficiency.

Each of these solutions refers to a number of possible benefits from implementation but the chosen solution must be suitable to the activity in question and this will be explored later in this project when an SSM analysis is conducted.

Academic Questions

While the aim of the project is clear, a number of questions have arisen which may hinder the validity of any recommendations that are made as a result of the analysis to take place. Using my own experiences of employment with Lloyds Banking Group (LBG) will prove to be a great help throughout this project in both analysing the existing processes and making recommendations but it has to be determined whether these experiences relate to other banks or if they are specific to LBG. I am fortunate enough to have built a number of quality contacts within LBG that I plan to use to gain further insight into areas of the business that I have not had a great deal of experience of working in. In addition, I have a number of former colleagues now working at Santander that I will be able to interview with the objective of ascertaining how similar the two banks operate. If two or more banks function in a similar fashion, it will give far more foundation and validity to any recommendations that are made towards the end of this project. Already in this project I have used a report into the automation of processes in a bank's loan department as a case study and while it offers a range of possible solutions that should prove valuable, how much it relates to this project is yet to be determined. Generalising from case studies and personal experiences can offer another viewpoint from what might be supposed from the outside. It is this knowledge of both internal and external factors that can supplement research findings to form stronger theories. Past research into the value of generalising from case studies has shown that case studies possess greater structure as they are influenced by a myriad of external factors, such as culture, regulation and current practises which can still apply to situations beyond just the case study in question [22]. The use of case studies over a period of time is also shown to solidify theories if the various sets of results are consistent and these theories can then be deployed in similar circumstances.

This project involves the creation of a number of conceptual models of a 'generic bank', which essentially will be a fictitious organisation. Since the resulting models are highly unlikely to be an exact match for any existing organisation, an issue arises regarding how they will be validated. When an SSM analysis is conducted on an existing system, it can be validated in a number of ways, such as interviews or asking a focus group of appropriate people, as used by W.D. Wilde et al when validating a conceptual model for the outsourcing of IT security [23]. However, in the case of generic models, a different approach is required. This issue was investigated by M. I. Smith et al in their paper 'Verification and Validation Issues in a Generic Model of Electro-Optic Sensor Systems' [24]. They go on to recommend that validation of the models should be undertaken iteratively at numerous stages throughout and with a bottom-up approach. It also advocates the use of external validation, which can include validation done by an outside party, such as an expert in the field or through a comparison with previously validated models that cover a similar situation. For example, if models exist for real world financial institutions, while the whole model may not be relevant to a generic bank, certain systems or tasks may be fulfilled in the same way if it the easiest or most efficient way for it to be done.

While it has been ascertained that generic models can be validated, can they be trusted when used as a basis for theory or recommendations for change? It is a concept that is examined by Professor Brian Wilson in an as yet unpublished manuscript on generic systems [25]. In this paper, Professor Wilson presents a variety of situations in which generic, non-specific conceptual models are still applicable. One prevalent example is the implementation of an international standard throughout a non-specific organisation, the theory of which can be extrapolated towards the implementation of automation in a 'generic bank'. If the purpose of the system in question is well understood, the resulting root definition, as long as it is thorough and complete, will be of use to the analyst and can develop sound conceptual models. Another of the examples in the paper regards the model of a generic company. This model was originally developed to capture surveying activities across a variety of companies but it can be of equal relevance to a large number of organisations as it includes the basic activities that many businesses will undertake such as satisfying customer requirements and generating profits. Essentially this paper highlights that the use of generic models can be effective as long as the purpose of the system is properly understood beforehand.

SELECTION OF APPROACH

To enable the aims of this project to be realised, a number of approaches were considered. The reasons as to why SSM, for example, was chosen but other methods were discarded is outlined in this section.

Chosen methods:

1. Soft Systems Methodology

Since this project involves the creation of a fictitious 'generic bank', SSM was chosen as a suitable method as it allows for the modelling of an ideal system, which can then be compared to the messy complex situations that occur in reality. To capture all of the necessary activities that take place in a banking organisation, an enterprise model approach will be taken as this encapsulates not only the purpose of the business, but also the linking, support and planning, monitoring and controlling activities that occur. A number of existing banks will be researched to derive an overall purpose for the generic bank. This will result in multiple Root Definitions that will then be used to create a CPTM of the generic bank, which can be decomposed into sub-systems to show the enterprise as a whole. In all likelihood, a number of models will be required to fully show each aspect of the organisation. These models will require validation of some kind to show their correctness and this will be achieved through inspection and interviews, to be described in the following section.

Once the enterprise model has been created, each activity can be analysed to determine its viability for some form of automation and the resulting benefits or costs of doing so. This stage will allow justifiable recommendations to be made for future automation of banking processes.

SSM is a suitable tool to use for this project as it allows the standard or ideal activities to be described and compared to the real world processes. Along with the knowledge gained from extensive research on automation principles and related examples, the SSM analysis will allow appropriate recommendations can be made.

2. Interviews

Interviewing suitable and knowledgeable people about their opinion of the Root Definitions, Conceptual Models and resulting recommendations is a good way to gain valuable feedback which can be used to validate and improve existing work. As shown by W.D. Wilde et al in their research paper on the derivation of Conceptual Models for outsourcing IT security [23], gaining feedback from appropriate people is a sound form of validation and results in valuable information from a range of perspectives, as long as relevant questions are derived beforehand. This participant validation will also be supplemented through inspection of the

Root Definitions and Conceptual Models by the project supervisor and fellow students throughout the project.

Conducting interviews is a viable option as I have contacts in a number of banks. I have worked in a Lloyds Banking Group branch for approximately 4 years and have gained working relationships with people not only in the branch network, but also in the Credit Cards and Finance departments. This should allow me to interview colleagues in a number of business departments to capture multiple views of the outcomes of this project. A number of former colleagues at Lloyds have recently moved to Santander and I plan to use these contacts to be able to show how my experiences and the Conceptual Models of a generic bank can relate to multiple existing banking organisations.

Other methods considered:

1. System Dynamics

System dynamics is used to understand the behaviours of a complex system over a period of time. This approach uses tools such as influence diagrams to achieve this understanding. The main reason that this approach was discarded from this project was that influence diagrams in particular model the various influencing factors that exist in a real world system whereas this project involves the modelling of a fictitious, generic organisation. In reality, the majority of the factors that exist for organisations exist because of the choices the organisation make such as its location and its customer base for example.

SSM was deemed a more valuable approach to model a generic system that can then be compared to reality with the aim of identifying a number of processes suitable for automation.

2. Business Process Modelling

In the initial project plan, Business Process Modelling (BPM) was outlined to be undertaken after the analysis of activities from the enterprise model had taken place. However, research showed that BPM is used to analyse current processes with the aim of improvement. It takes the inputs of a process and highlights the outputs while taking into account the necessary constraints in place and resources required. BPM is an effective approach to identifying areas for improvement and even possible areas for automation but in the context of existing systems. Similar to how the system dynamics approach was rejected, BPM will not be as effective as SSM in defining the ideal system as opposed to a present version. BPM may still be used at a reduced level to identify how some processes work in existing banks, using my own knowledge or that gathered from research, but the results will only supplement the main SSM analysis rather than be a basis for theories.

CONCLUSIONS

The research that has been conducted has identified a number of alterations for the project from what was initially outlined in the Initial Project Plan (Appendix 1). The most significant change is with regards to the interviews with existing bank employees. Originally these interviews were going to be used to supplement the research but it has now been decided that they would be more valuable if used later on to provide feedback on the analysis that has been undertaken and the resulting recommendations for automation. A number of studies have also shown that using knowledgeable participants such as this can also be an effective way of validating generic models which may not be fully comparable a single real world situation.

As highlighted in the weekly project diary (Appendix 3), there were a number of weeks where other commitments meant no work was done on the project and as a result it is slightly behind the stage it was predicted to be at. To counter this delay, changes have been made to the work plan (Appendix 2) to include some activities taking place over the holiday period, which had previously been identified as non-working days. During this additional work, regular interaction will be required with the project supervisor to determine correctness of the root definitions and models, ensuring that they will be of the required quality. Despite currently running slightly behind schedule, the research has shown that if the analysis is undertaken correctly and in sufficient detail, it should allow the project to meet the aims previously outlined.

To date, the research has uncovered a rich variety of background information that will prove valuable as the project progresses. Determining the benefits of automation and the reasons as to why it is often required means that if any of the recommendations are questioned, they can be effectively justified. While SSM was something that I have had practise with in the past, reading around the topic has provided further knowledge to enable greater quality models to be developed and analysis to be done. Based on this analysis, recommendations for automation will be made and the background information that has been uncovered regarding automation principles, solutions and examples will allow for greater clarity and validity of results. It was also brought to my attention that there may be issues around basing recommendations around analysis of generic models. This concept was investigated and it was determined that with a thorough understanding of the purpose of the type of organisation in question, it was still possible to develop valuable models that can be used to suggest improvements. These models can then be validated in a variety of ways, such as through interviews with existing employees or comparing the models with previously validated models that are similar in nature.

The next steps for this project, outlined in the updated work plan, primarily involve the research into the purpose of existing banks and the development of root definitions and conceptual models around this. This and the subsequent analysis will be included in the final

report, to be handed in at a later date. Any further changes or background research that takes place will also be identified in the final report.

APPENDICES

Appendix 1: Initial Project Plan and Gantt Chart

CM0343 – Individual Project: Initial Project Plan

Determining the Scope for Future Automation of Banking Processes

Introduction

People play a major role in the operations of banks today. However, they are expensive resources which can show a lack of consistency of service. While two situations may appear similar, there can invariably be different outcomes when humans are involved. This can be caused by a variety of traits, ranging from personality to quality of training received.

Accelerating change describes the increase in speed of development over time, meaning newer technology is released quicker than previous versions. As more systems become computerized, the value placed on a human workforce in banks may diminish over time, therefore reducing the need for the current levels of costly human resources.

By gathering insights from existing bank stakeholders and published missions statements, a purpose for a 'generic bank' can be derived. Using this purpose, the generic bank can be defined and modelled to produce a comprehensive list of activities in which humans currently play a crucial role. These activities will be analysed in turn, to determine whether existing or developing technologies can be used to do the task to the same standards.

Methods

The primary tool used during this project will be Soft Systems Methodology (SSM), which includes the use of rich pictures and creation of a root definition, conceptual model and enterprise model, which can then be compared with reality. This comparison could include an interview with an existing bank employee, which would also provide a valuable insight into how staff would perceive these changes. The enterprise model will be developed for the generic bank as a whole, showing the various departments and their tasks. This will be used to analyse specific tasks with the view of concluding whether or not they could be computerised. A large part of the background research stage of the project will be studying Brian Wilson's SSM principles as well as study into the background of the problem itself.

One of the main challenges of this project will be validating the model for the generic bank and seeing how it can relate to the real world.

There are currently occasions where customers have to deal with human employees at banks, such as opening accounts in branch and making a complaint. As part of the recommendations of the project, a number of processes will be selected and described using process modelling highlight where changes could be made.

Aims and Objectives

The overall objective of the project will be to determine the scope for future automation of banking processes using the methods described above. Once this is defined, recommendations will be made for further action with evaluations of their perceived effectiveness. Examples of benefits that may be seen could be cost savings, greater efficiency, reduced waste and increased consistency.

As part of the recommendations and evaluation, a number of key questions can be answered relating to the increased use of computers in the banking industry, such as;

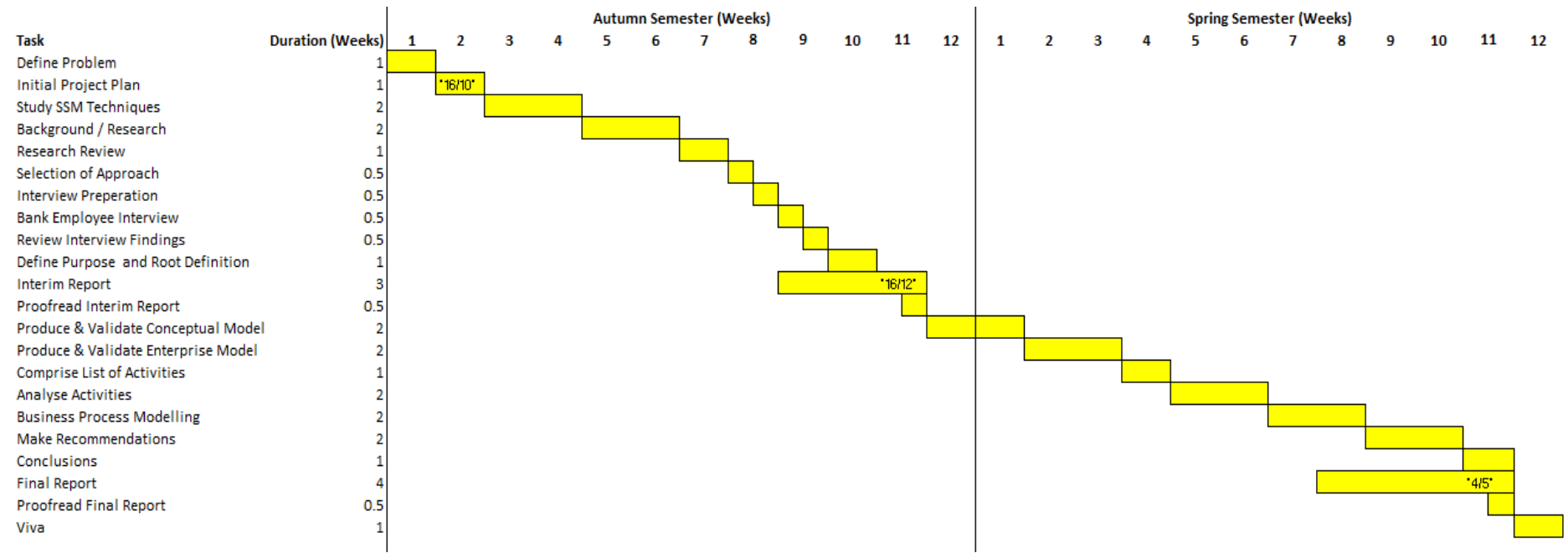
- Will computerising more systems save banks money?
- How will existing services and products be affected?
- Will these process changes increase consistency of service?
- How will customers react to the changes?

The two reports that will be produced during this project will offer an interim and final view of the progress of the project and its conclusions. The interim report, to be completed by 16/12/11, will primarily look at the current progress of the project and review the background research that was undertaken. At this point, the project is estimated to be at the SSM stage and an ongoing assessment of its progress will also be included. If any of the requirements or objectives of the project has changed during the first stage, these will also be explained here. This report will be written concurrently with various stages of the project.

The final report, which has a deadline of 4/5/12, will include the remainder of the SSM work, a completed enterprise model and process models, along with the analysis and relevant conclusions. This final report will aim to answer the overall question posed by the project, by taking all work into account and providing a balanced view of the theory. As with the Interim report, the final report will be produced alongside the remaining stages at this point.

WORK PLAN

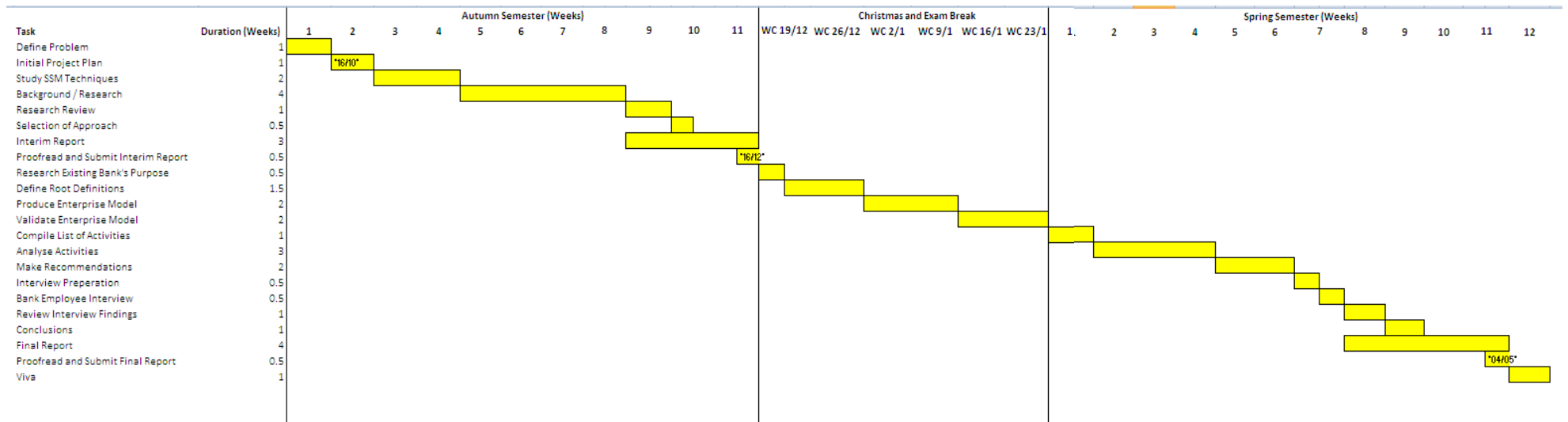
The following Gantt chart highlights the deadlines throughout the project, designated by *, as well as the expected progress. The exam break between semesters has been defined as non-working days.



Appendix 2: Updated Gantt Chart

WORK PLAN

The following Gantt chart highlights the deadlines throughout the project, designated by *, as well as the expected progress. Changes in the schedule from the original work plan, such as work to complete during the break between semesters, has been included in this update. The interim report was initially started in week 9, while other tasks were still ongoing and a similar situation will occur when the final report is written in the spring semester.



Appendix 3: Project Diary

PROJECT DIARY

WC = Week Commencing

Autumn Semester

Week 1 (WC 03/10/11) – I gained approval from my supervisor regarding the project topic and began to draft initial project plan.

Week 2 (WC 10/10/11) – Showed the first draft of the initial project plan to both the project supervisor and moderator to get feedback on any required changes. Once the changes were included, the completed initial project plan was uploaded onto PATS for final approval.

Week 3 (WC 17/10/11) – Began my research into the related topics by finding a number of relevant articles, journals, websites and books as well as purchasing Brian Wilson's book on SSM to be used as a reference and a guide throughout the project.

Week 4 (WC 24/10/11) – I continued research into related areas, focussing primarily on process automation and previous examples of automation in the global banking industry.

Week 5 (WC 31/10/11) – Focus of the research shifted to the academic questions posed by the project such as validation of models and value of generic models. I also met with my project supervisor to discuss research progress.

Week 6 (WC 07/11/11) – No project work carried out due to coursework commitments.

Week 7 (WC 14/11/11) – No project work carried out due to coursework commitments.

Week 8 (WC 21/11/11) – No project work carried out due to coursework commitments.

Week 9 (WC 28/11/11) – Results of previous research collated together and the basic structure of Interim Report was set.

Week 10 (WC 05/12/11) – I attended the project lecture regarding the Interim Report and amended my structure accordingly to include the relevant details. I also began to write the report with first draft of the introduction and literature review completed.

Week 11 (WC 12/12/11) – Met with project supervisor to discuss the structure and content of the Interim report and he suggested some minor alterations. Wrote up the remaining sections of the report and proofread before online submission to PATS.

REFERENCES

- [1] – BBC. 2009. *Timeline: Credit Crunch to Downturn* [Online]. Available at: <http://news.bbc.co.uk/1/hi/7521250.stm> [Accessed: 28/11/11].
- [2] – Treanor, J. 2011. *RBS Bankers get £950m in Bonuses Despite £1.1bn Loss* [Online]. Available at: <http://www.guardian.co.uk/business/2011/feb/24/rbs-bankers-bonuses-despite-loss> [Accessed: 28/11/11].
- [3] – Moore, E & Goff, S. 2011. *Banks Ordered to Repay Loan Insurance* [Online]. Available at: <http://www.ft.com/cms/s/2/1b687c0a-6a6d-11e0-a464-00144feab49a.html#axzz1fqk1TGsC> [Accessed: 28/11/11].
- [4] – Oxford Martin School, University of Oxford. 2010. *The Dynamics of Banking Systems* [Online]. Available at: <http://www.oxfordmartin.ox.ac.uk/blog/view/50> [Accessed: 28/11/11].
- [5] – Jacowski, T. 2006. *The Importance of Technology in Business* [Online]. Available at: <http://www.articlesbase.com/technology-articles/the-importance-of-technology-in-business-27771.html> [Accessed: 15/12/11].
- [6] – Norman, J. 2011. *The FSA's Report on RBS Doesn't Do Enough to Counter Crony Capitalism* [Online]. Available at: <http://www.guardian.co.uk/commentisfree/2011/dec/12/fsa-end-crony-capitalism> [Accessed: 12/12/11].
- [7] – Wilson, H. 2011. *RBS Report: 'Poor Decisions' by Management and FSA Blamed for Failure* [Online]. Available at: <http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/8950115/RBS-report-poor-decisions-by-management-and-FSA-blamed-for-failure.html> [Accessed: 12/12/11].
- [8] – YouGov. 2011. *Public Perception of Bank Results* [Online]. Available at: <http://labs.yougov.co.uk/news/2011/03/03/public-perception-bank-results/> [Accessed: 28/11/11].
- [9] – Business Process Inc. No Date Available. *But What Are People Problems?* [Online]. Available at: <http://cart.critical-thinking.com/but-what-about-people-problems> [Accessed: 30/11/11].
- [10] – Rutt, R. 2011. *Santander Voted Worst for Customer Service* [Online]. Available at: <http://www.moneywise.co.uk/news/2011-05-16/santander-voted-worst-customer-service> [Accessed: 30/11/11].
- [11] – TheMultiChannelRetailer.com. 2009. *Poor Customer Service Will Still Drive Away Trade, No Matter How Good the Bargains* [Online]. Available at: http://www.themultichannelretailer.com/news/6636/poor_customer_service_will_still_drive_away_trade_no_matter_how_good_the_bargains/ [Accessed: 30/11/11].
- [12] – Leeming, N. 2004. *Why Automate Business Processes?* [Online]. Available at: <http://www.ivencia.com/softwarearchitect/articles/bpm/BPM2%20-%20Why%20automate%20business%20processes.pdf> [Accessed: 25/10/11].

- [13] – Frischtak, C. 1992. Banking Automation and Productivity Change: The Brazilian Experience. *World Development* 20(12), pp. 1769-1784.
- [14] – Inman, P. 2011. *French Business and Consumer Confidence Hit by European Debt Crisis* [Online]. Available at: <http://www.guardian.co.uk/business/2011/sep/23/french-business-consumer-confidence-debt-crisis> [Accessed: 6/12/11].
- [15] – Socialist Labor Party of America. 2005. *Technology and Job Loss: What Workers Can do About it* [Online]. Available at: http://slp.org/res_state_hm/tech_jobloss.html [Accessed: 6/12/11].
- [16] – Parasuraman, R & Wickens, C. 2008. Humans: Still Vital After All These Years of Automation. *Human Factors: The Journal of the Human Factors and Ergonomics Society* 50, pp. 511-520.
- [17] – Skinner, C. 2011. *25% of Brits Use Online Banking Every Day* [Online]. Available at: <http://www.pcadvisor.co.uk/news/internet/3317038/25-of-brits-use-online-banking-every-day/> [Accessed: 7/12/11].
- [18] – Dooley, R. 2011. *Computers as People: Happy Customers and Automation* [Online]. Available at: <http://www.neurosciencemarketing.com/blog/articles/computers-as-people-happy-customers-and-automation.htm> [Accessed: 7/12/11].
- [19] – Microsoft. 2006. *Business Process Automation in Financial Services* [Online]. Available at: <http://download.microsoft.com/download/0/B/8/0B832C3D-FE8D-4CF3-8480-206CD683ABB7/Financial.pdf> [Accessed: 25/10/11].
- [20] – Network Automation. No Date Available. *Financial Services Firm Credits AutoMate with Saving 400 Hours/Month in IT Tasks* [Online]. Available at: <http://www.networkautomation.com/news/case-studies/42/> [Accessed: 25/10/11].
- [21] – TIBCO. 2011. *Automating the Back Office* [Online]. Available at: http://www.tibco.com/multimedia/wp-automating-the-back-office_tcm8-9772.pdf [Accessed: 25/10/11].
- [22] – Evers, C & Wu, E. 2006. On Generalising From Single Case Studies: Epistemological Reflections. *Journal of Philosophy of Education* 40(4).
- [23] – Wilde, W et al. 2006. The Derivation of a Conceptual Model For Outsourcing of IT Security. *IADIS International Conference e-Society 2006*, pp. 234-238. Available at: http://www.iadis.net/dl/final_uploads/200604S115.pdf [Accessed: 9/12/11].
- [24] – Smith, M et al. 2007. Verification and Validation Issues in a Generic Model of Electro-Optic Sensor Systems. *Journal of Defense Modelling and Simulation* 4(1), pp. 17-27.
- [25] – Wilson, B. 2010. 'Generic Systems' [Unpublished].