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A retail bank's BPM experience

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A RETAIL BANK'S BPM EXPERIENCE

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ABSTRACT

This real-life case study, which was undertaken by a leading financial services group in the Asia-Pacific region, is used to demonstrate the innovative use of BPM (Business Process Management) technology in a competitive business area. It describes how a BPM project, within the Application Verification and Capture (AVC), was conceived, designed and implemented in order to deliver strategic value to the organization. Hereafter, the financial services group will be referred to as "the bank". The AVC project was targeted at one of the bank's processes called the Application Verification and Capture (AVC) process for unit trust products. This process involved extensive paperwork and numerous manual tasks that resulted in slow processing, manual errors, rework and customer dissatisfaction. By combining process redesign and automation using information technology, the process was improved significantly.

Keywords: BPM, Retail Bank, Process Improvements, Technical Solution

INTRODUCTION

At their core, a bank has a set of business processes that manage information flows. For example, a loans process has a sequence of activities that are performed by various roles namely customer service representative, approver, underwriter, etc. Each role performs an activity in the process thus creating new information (e.g. customer details, loan details, etc.), which are then used by other roles. IT systems have enabled banks and other financial institutions to automate many of these processes so as to minimize processing time and service delivery costs. Over time, a large portion of business processes have become deeply embedded in IT systems. As banking IT systems proliferated and matured, it became the case that business processes had to accommodate IT systems rather than the other way around. Thus, a complex web of interconnected systems was required to deliver core business services, and IT system integration became a key concern (Duran, 2012; Duran, 2013).

Enterprise application integration (EAI) technology helped to address some of the complexity issues by rationalizing and simplifying the connectivity between systems (Lam and Shankararaman, 2007). However, many business processes remained fragmented across multiple disparate systems. It is not uncommon for changes to a single business process to require modifications to multiple IT systems. The emergence of Business Process Management Systems (BPMS) has gone a long way towards addressing the complexity concerns and to better manage a process that extends over multiple IT systems and involves multiple roles. Hence, banks have been early adopters of BPM and have both benefited from and struggled with BPM's evolution (Küng and Hagen, 2007; Climent et. al., 2009). In a broader sense, Business Process Management (BPM) provides a framework, a methodology, and a set of tools to manage processes thus going beyond pure enactment. The ultimate goal of BPM is to help organizations manage and improve their business processes on an ongoing basis. In order to effectively manage this, organizations have to address the business process concerns at different levels namely, enterprise, process, and technology (Harmon, 2007; Shankararaman et. al., 2007).

BPM aims at improving process performance by studying inputs and outputs through modelling and simulation techniques. BPM follows the methodology of documenting the process flow, assessing the process to find out the scope for continuous improvement, improving the process by way of quality, customer satisfaction, productivity and so on, and, managing the process through information flow and related actions.

CASE BACKGROUND

The bank provides a full range of services in corporate, SME, consumer and wholesale banking activities across Asia and the Middle East. It has one of the highest credit ratings in the region, and serves customers in sixteen different countries.

In August 2005, an Indonesian subsidiary of the bank launched its priority banking service, which targeted the mass affluent in major cities in Indonesia. The subsidiary has a network of branches that provide a full range of banking services including corporate and consumer lending, trade finance, time deposits, current accounts, savings accounts, and money market and foreign exchange services.

The AVC project was designed to support the Indonesian subsidiary of the bank. The project team consisted of a technical architect, project manager, business analysts, and integration specialists and developers. The requirements were gathered in Indonesia by the business analysts; the project solution was architected and designed in Singapore; and system deployment was carried out in Indonesia. The project heavily leveraged existing infrastructure at the bank headquarters in Singapore to help achieve the architecture goals of security, reliability, scalability and maintainability.

The AVC process involved significant paperwork, manual verification and frequent physical transportation of documents. These activities contributed to slow processing and re-work, leading the Indonesian branches to receive numerous customer complaints. Hence, the VP of Investment Banking Unit, Ms Fiona Ong, decided that this process has to be improved, leading to the

conception of the AVC project. The project was successfully implemented within three months and with limited resources.

The delivery methodology followed by the AVC project was akin to the one described in (Fischer, 2009). The initial focus was to document the AS-IS process and perform a static analysis to understand the issues. Capturing the details of the existing process was achieved by conducting interview sessions with staff fulfilling various roles in the AVC process. Next, the TO-BE process models were designed by conducting a walkthrough of the TO-BE process to help ensure that it would be able to meeting the required Key Performance Indicators (KPIs). From the outset, Ms Fiona Ong decided that automation would be a central consideration when designing the TO-BE process. Due to time constraints, dynamic analysis of the TO-BE process using simulation software was not undertaken for this project. Alternatively, resources were focused on incorporating technology into the newly designed process to minimize the process' cycle time and ensure that the process was completed within a few minutes.

BPM PHASE: UNDERSTANDING AND ANALYZING AS-IS AVC PROCESS

Application Verification and Capture is a business process for unit trust products. When a customer decides to invest in a unit trust, the investment application form is received, verified and then either approved or rejected by the bank. Then, documents are then sent to the customer to confirm purchase or inform them the reasons for rejection. A detailed description of the AVC process follows.

Process Description

Following is a brief description of the AS-IS AVC process. Usually these processes are captured as a process model using business process modeling notation (BPMN) (Grosskopf et. al., 2009; Ko et. al., 2009). Figures 1a shows the organization model that depicts the various roles involved in the process, and Figure 1b shows the location model that depicts the geographic centers that are involved in the AVC process.

When a customer approaches a Relationship Manager (RM) to purchase a unit trust, the RM fills out a hardcopy application form. The details recorded fall into four categories:

Sales person information – e.g. RM name, branch ID, sales certification number
Customer information – e.g. customer name, customer ID, customer address
Product information – e.g. product name, fee, transaction amount
Transaction information – e.g. buy, sell, quantity

The RM gets the customer to sign the application form and then verifies the product availability, transaction amount, fee amount and other parameters using information from the bank's information technology (IT) systems and the various spreadsheets that are periodically sent from the regional headquarters. These spreadsheets contain information such as the product availability, fees, and financial amount for the unit trust products. If the application is successfully verified, the application form is sent to the Treasury Sales Support officer (TSS) for further processing.

If any of the verification checks fail, then the RM manually routes the paper application form to a member of the Approver Team (ATEAM) for approval. The reevaluation and approval by ATEAM involves a number of steps, and hence is considered as a sub-process activity. The ATEAM members are geographically distributed and each one is responsible for approving a specific type of exception. For example, the Regional Branch Manager can approve new applications when the product is not available, whereas the Deposits, Investments and Insurance Approver can approve transaction amounts that are above the specified limits.

The approval process is performed sequentially. For example, if a customer application requires approval for both product availability and transaction limits, the application is first sent to the Regional Branch Manager and then to Deposits, Insurance and Investment Approver. As shown in Figure 2b, these roles are situated in different geographical locations. The final approver in the chain sends the paper application form to Treasury Sales Support (TSS) officer. If any approver in the approval sequence rejects the application, it is the responsibility of that approver to send the application form back to RM, who then informs the customer and cancels the application.

For approved applications, the TSS officer scans the application form. The TSS then consolidates other related documentation with the application and forwards them to the Treasury Customer Service Manager (TCSM) for a final completeness check and approval. The TCSM performs the final checks using information from IT systems and other relevant spreadsheets. Once these checks have been completed and if the application is approved, the TCSM sends the application form with the supporting documents to the Consumer Banking Operation officer (CBO) who enters the information into the core banking system for the processing. If the TCSM does not approve the application, it is the responsibility of the TCSM to inform RM who then cancels the application and informs the customer.

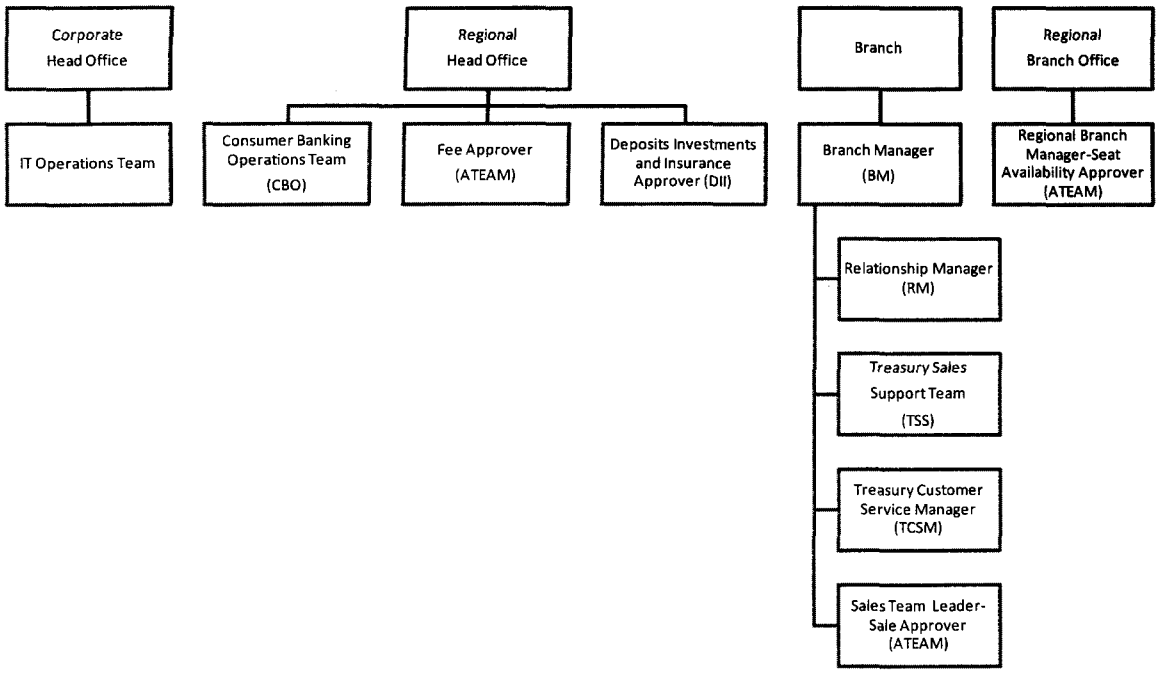

Figure 1a Organization Model for the AS-IS AVC Process

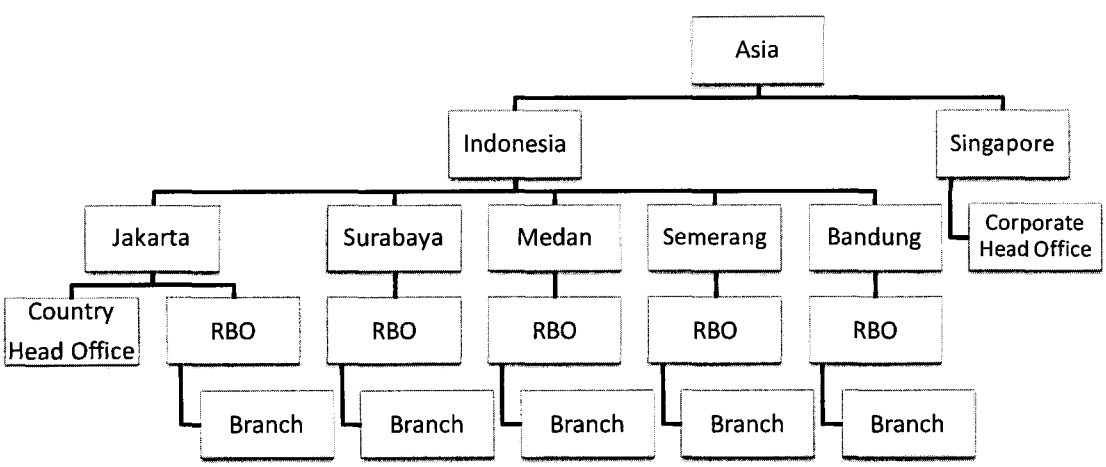

Figure 1b Location Model for the AS-IS AVC Process

Identification of Process Issues

From the above description it is apparent that the AS-IS AVC process was heavily paper-based; furthermore, many of the steps involved mailing hard copies of documents. From a business perspective, the AS-IS paper based AVC process had significant issues as below:

- The manual process of passing the paper documents among multiple geographically dispersed departments led to delay, loss of documents, substantial rework and numerous interactions with the customer.
- Performing customer and product verification checks manually led to high error rates and substantial re-work.
- The RM was required to navigate through multiple modules and screens of the bank's IT systems, which was quite cumbersome.
- Data used for checks at various stages in the process came from different sources and was presented in different formats (e.g. printed forms, spreadsheets and system screens). Dealing with the many different types of data was time consuming and led to errors.
- There was no facility for monitoring the process. If a customer called in to check the status of the application, there was no way for the RM to determine the applications current status and what stage of the process the application had reached.
- The process cycle time was long – particularly exceptions occurred – resulting in customer complaints.
- Incomplete applications were identified very late in the process, requiring a lot of rework. For example, in some instances the incompleteness in the form is identified only when it reaches the Deposits, Investments and Insurance approver in the Regional Head Office. As a consequence, documents are returned to the branch of origin for rework. Rework of incomplete applications occurred on a daily basis.

BPM PHASE: DESIGNING THE TO-BE AVC PROCESS

Target Key Performance Indicators

The bank's management, together with the project team, defined the key performance indicators to be achieved for the re-designed AVC process. The expected key performance indicators for management included:

1. To improve the processing time required for verifying application details (performed by the RM) from 20-30 minutes to a few seconds
2. To reduce error and avoid rework
3. To remove manual tasks where possible and automate using appropriate technology (e.g. Image System)
4. To reduce movement of paper work through using a system for various roles to view and approve the application
5. To provide process tracking and monitoring capability and ensure audit trails are maintained.
6. Efficiently handle the increasing number of transactions in next few years

Additionally, a KPI was defined for the Branch Manager to achieve certain revenue targets set by the management and to ensure compliance with internal rules and external regulations pertaining to sale of unit trust products.

Areas for Improvement

From the outset, the TO-BE business process was designed to be automated. Key process improvements areas expected to be achieved through automation included:

1. Automating the checking of customer information for application approval
2. Collecting data from existing spreadsheets and other systems into a central database
3. Enabling the RM to submit an electronic application form through an online
4. Replacing manual verification steps performed by the RM with automated rules rule-based verification
5. Identifying exceptions during the creation of the application
6. Routing the application electronically (as a workflow case) to the relevant approvers and other roles as dictated by the process logic flow

These improvements were achieved by the TO-BE AVC process and its associated IT solution.

BPM PHASE: DESIGNING AND IMPLEMENTING THE AVC SOLUTION

Requirements

The AVC Solution was designed to implement the TO-BE AVC Process. The key functional requirements of the TO-BE AVC Process are summarized in Table 1.

Modules	Functional Requirements
Customer	Search and populate customer details
Unit Trust Product	Search and populate product information
Sales	Search and populate sales information
Business Rules	Define and manage customer rules, product rules, transaction rules, sales rules and approver rules
Workflow	Manage and route the work to appropriate roles – such as ATEAM approvers, TSS, and TCSM – using work queues.
Image	Scan, index and retrieve documents
Interface	Provide appropriate user interface for the various roles
Integration	Allow integration between the front end interface, back end database, the workflow module and the Image Module

Table 1 AVC Solution Functional Requirements

Besides satisfying the various functional requirements, the solution had to satisfy the following non-functional requirements as defined in Table 2.

Focus Area	Non-Functional Requirements
Infrastructure	The project had to leverage and integrate with the existing bank infrastructure.
Security	The new solution had to integrate with the bank's corporate LDAP system for authentication.
Technical Architecture	All technology tools used in the project had to fall within the standards specified bank's architecture group.
System Monitoring	All technology servers used in the AVC Solution had to integrate with the bank's system management tools so that the IT operations team could monitor and manage all the servers used in the projects.
Quality Control	System integration and end-to-end testing was required before the AVC Solution could be used in the bank's production environment.
Release Management	The full rollout of the solution would only be performed after the pilot testing at least four branches in Indonesia was completed successfully.

Table 2 AVC Solution Non-Functional Requirements

Having understood the functional requirements and non-functional requirements, the project team had to select the appropriate technologies for implementing the solution.

Technology Used in the AVC Solution

The following is brief description of the key technologies that were used in the project. Figure 2 shows the interaction between these technologies and the various roles in the AVC TO-BE Process.

Workflow and Integration Server: A process management and workflow platform that supports business process modeling, implementation, execution and monitoring. This tool is responsible for routing the workflow case to the appropriate roles. Additionally, it provides the integration backbone that connects disparate applications and data with little to no programming.

Rich Internet Application (RIA) Software: Is used to build and deploy web-based applications and components that have the rich look and feel, emulating the capabilities of thick-client desktop software.

Process Analytics Server: Analyzes and displays both real-time and historical information regarding the process. This information is available to the users through a dashboard interface.

Image and Content Management Server (ICMS): Scans, stores and manages huge volumes of documents. It is configured to provide highly availability.

Relational Database: Enables storing, searching and retrieving of financial product, customer, sales, approval and process information.

Spreadsheets: Provides features for modeling and communicating business information such as unit trust product details, current policies and business rules.

AVC Solution Logical Architecture

The solution design was based on the three-layer architecture shown in Figure 3.

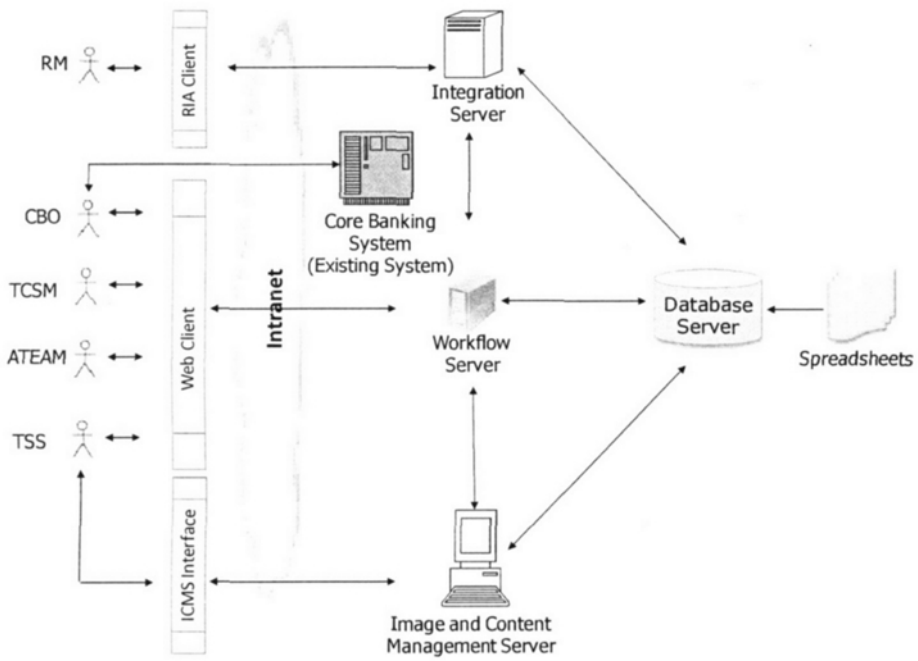

Figure 2 AVC Technology Solution

Presentation Layer: This is the visible part of the solution. This layer is comprised of three parts: a RIA client and web client, and image and content management server interface. The RIA client uses AJAX technology that retrieves data on as required providing the benefits of both thick and thin clients. The RIA client uses a dynamic web form that integrates with the database to retrieve and populate the data through AJAX calls. The web client is also used to display process information in a dashboard form. The image and content management interface provides functionality to scan, index and store the image and associated documents.

Business Layer: In this layer the workflow process logic, which controls the process sequence, is defined. Business rules are defined to control the flow between specific process steps at decision points. User queues are used to support routing of workflow cases to specific roles involved in the process. Reports are also generated periodically.

Data Layer: A database is used to store the customer application data as well as process data. The configuration data for the various modules are also stored in the database. Data contained in spreadsheets are periodically imported into the database.

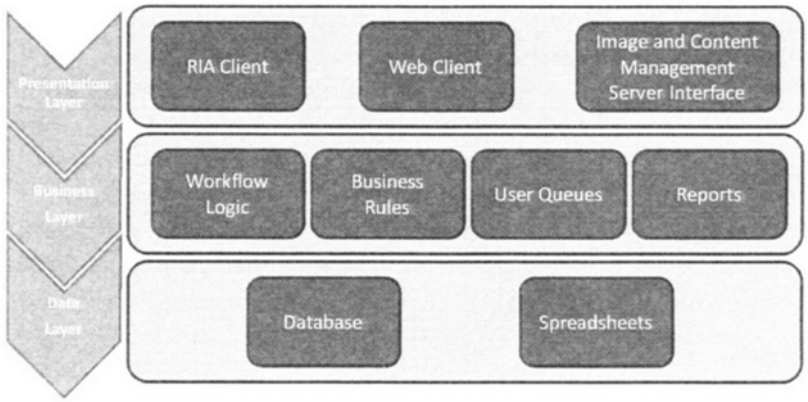

Figure 3 AVC Solution Logical Architecture

AVC Solution Physical Architecture

The regional head office in Singapore hosts all infrastructure applications and is the base of the IT operation team. Hence, all the most of the AVC Solution servers are located in Singapore to facilitate monitoring and maintenance. The Image and Content Management Cache Server is located in Indonesia where duplicate image and document data are saved. This arrangement helps to speed up the loading of the image and associated documents to the screens of users, who are also based in Indonesia. End users have the image and content management server interface installed locally on their workstations. Figure 4 depicts the physical architecture.

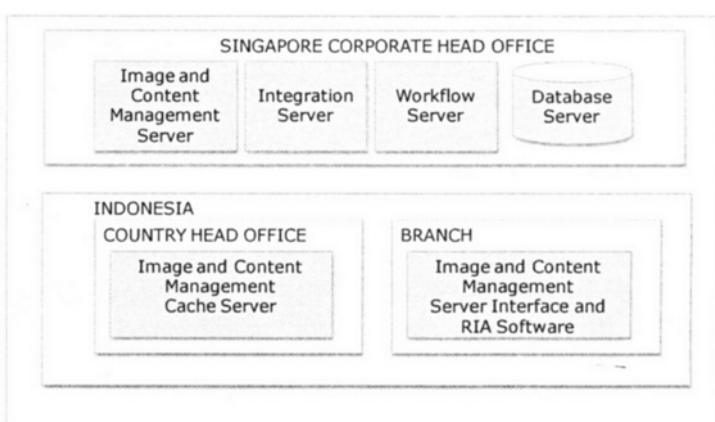

Figure 4 AVC Solution Physical Architecture

BPM PROJECT RISKS AND HURDLES

The following points summarize the key risks and management hurdles that were encountered during the project.

1. The project resources were limited – four people for three months – and the budget was fixed. Hence, the project team had to focus on core requirements and avoid tangential concerns.
2. The project team members had to quickly come up to speed both with the business process used on the project.
3. Given time and resource constraints user regarding the scope of the project had to be closely managed. The project team worked with the business users to prioritize new requests and worked with the developers to determine what changes could be accommodated without negatively impacting the previously agreed functionality. By following a formal change control procedure, that was documented using change requests (CRs) the project team was able to minimized disputes over new requests for additional functionality.

BMP PROJECT BENEFITS

A number of benefits were achieved by implementing the AVC Solution. These benefits can be broadly classified into different areas, namely customer service, process control, business support and cost reduction.

Customer service directly benefited from the re-engineered and automated AVC process, mainly due to the significant reduction in the time required to verify an application, from over 20 minutes to about 8 minutes. This processing time reduction was achieved by embedding the verification and checking steps in the application data capture process. This change in process structure greatly improved the amount of processing that was done during each customer visit to a branch. Additionally, the simplified process reduced the number of interactions required between the customer, RM and branch staff.

The automated solution improved process visibility, which helped support process control activities. Furthermore, embedding controls into the process execution help ensure compliance with internal and external controls and regulatory standards. Fraud was reduced by the reduced use of paper application forms, which can easily be tampered with or copied. Accessing customer profile information from a database could help ensure that product risk was consistent with the customer's risk profile. Access controls that were built into the AVC solution also prevented unauthorized staff from selling unit trust products.

The TO-BE AVC process and AVC Solution provided a better visibility into the application processing and transaction lifecycle. Dashboards facilities in the AVC Solution made information related to sales performance and pipelines easily accessible by management, enabling the sales staff to focus more drive business value than tracking and reporting. Likewise, increased transparency also helped to highlight the status of the exceptions encountered during the approval process. Availability of application information in a database also supported the development of new applications, such as customer reward programs, cross-selling campaigns and sales staff commission calculations.

Various cost benefits were achieved with the implementation of the AVC solution. The enhanced TO-BE AVC process required fewer support staff, and the same number of staff could be used

support a larger number of branches and increased application volumes. The automated process reduced physical paper flows, which in turn, decreased the paper, courier, and storage costs. Additionally, reduced ad-hoc communication between the different process roles led to reduced fax and phone costs. The projected cost savings for three years after project implementation is shown in Figure 5.

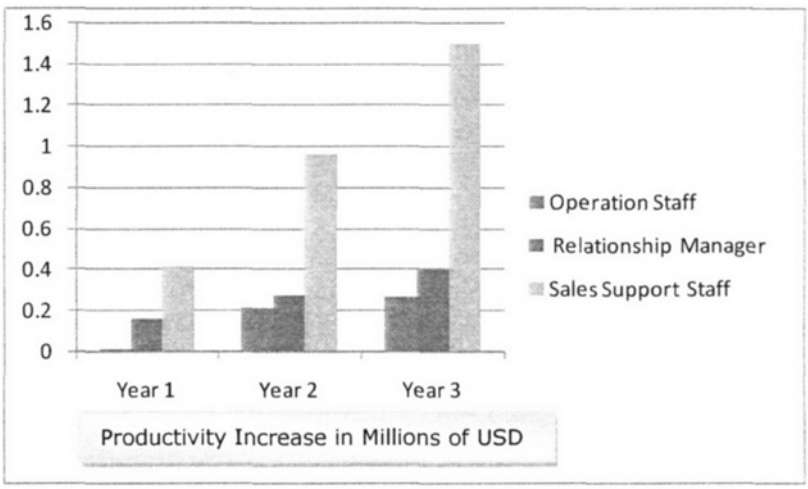

Figure 5 Expected Cost Savings in millions of USD

Moreover, automating the customer application process was a stepping-stone for integration with the core banking system so as to achieve straight-through processing. While this capability was not in scope of the AVC project, the AVC Solution made substantial progress towards achieving this goal.

LESSONS LEARNT AND FUTURE EXTENSIONS

Agile Methodology

Robust processes and effective technology are dependent on both alignment and agility (Cockburn, 2006). The project used an Agile delivery approach with time boxing, fixed cost and controlled project scope. In addition, it relied heavily on user feedback that was provided during the various stages of the project. Active user involvement helped lead to better user acceptance. However, during the analysis and design stage, a top down approach was chosen instead of iterative approach. This strategy was driven largely by resource limitations. Using a top-down approach for the early-stage activities eliminated the need for unnecessary development cycles and helped reduced the project time.

Network Issues

When the project went live there were issues related to insufficient bandwidth at some of the branches in Indonesia causing some disruption to the business services. However, the team was able to resolve these issues shortly after they were identified. Ideally, these issues should have been identified during the testing stage of the project.

Database Issues
A key problem was that the database administrator was from a different IT group than the project team and did not consistently attend the AVC project meetings. As a result, some of the data mapping activities encountered issues, requiring rework and leading to delay of the project. In hindsight, the project team should have designated one of the team members to be responsible for ensuring the robustness and completeness of the data analysis at the design phase of the project.

Furthermore, the next phase of the AVC project would potentially address

- Eliminating the CBO role by directly integrating the AVC Solution with the core banking system
- Enhancing the solution to provide some basic CRM capabilities for the sales staff
- Creating administration facilities for the Regional Head Office enter of new customer or product update information, instead of emailing the IT Operations team to update the data in the Oracle database.

CONCLUSION

With BPM much of the research focus has been on advanced features such as modeling and simulation; however, in practice there are many "quick wins" that can be achieved by applying a combination of imaging, process management and low-impact process redesign. The focus of this case study has been on retail banking processes – specifically, the automation of cross-border operations of an Asia Pacific-based financial institution. While the project in this example has some unique aspects to it, the overall technology approach and lessons learned are also applicable to other business functions and geographic domains.

The omission of the post-implementation business improvement steps can be attributed mainly to the dynamics of real world projects; once the project is completed the team begins to focus on other, new projects and responsibilities are handed over to the IT operations team. Not much attention is given to analyzing performance data of the new process implementation or how it can be further improved. The continuous cycle of process improvement is something that is lacking in industry. There is clearly an opportunity to support and enforce the tail end of the improvement cycle. Automating the mechanism used to collecting and analyzing data from running processes to identify further process improvements would help address this concern.

Looking forward, finding banks that will allow examination of their processes for research purposes as well as financial institutions that are effectively using BPM technology platforms will likely be an ongoing challenge. Yet, as more banking BPM case studies emerge, there will be opportunities for new research areas to be explored. Specifically, other business improvement methodologies can be examined in context of real-world cases. Likewise, the benefit of other technology platforms that support BPM, such as enterprise content management, can be evaluated. Moreover, it would be useful to better understand how the type of financial institution – i.e. retail bank, commercial bank, or investment bank – and its geographic location relate to the benefits achieved by using BPM for process improvement.

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