Due Date: 27 October 2015

BIS 511 Information Systems and Technologies
Homework1

Answer the questions 2-13, 2-14, 2-15, 2-16.

Please do not send your answers electronically!!!

Modernization of NTUC Income

CASE STUDY

NTUC Income (Income), one of Singapore’s largest insurers, has over 2 million policy holders with total assets of S$31.3 billion. The insurer employs about 3,400 insurance advisors and 1,200 office staff, with the majority located across an eight-branch network. In 2014, the company solidified its status as a market leader in Singapore, but its modernization began years ago with a critical information systems upgrade.

On June 1, 2003, Income succeeded in the migration of its legacy insurance systems to a digital Web-based system. The Herculean task required not only the upgrading of hardware and applications, it also required Income to streamline its decade-old business processes and IT practices.

Up until a few years prior to the revamp, Income's insurance processes were very tedious and paper-based. The entire insurance process started with customers meeting an agent, filling in forms, and submitting documents. The agent would then submit the forms at branches, from where they were sent by couriers to the office services department. The collection schedule could introduce delays of two to three days. Office Services would log documents, sort them, and then send them to departments for underwriting. Proposals were allocated to underwriting staff, mostly randomly. Accepted proposals were sent for printing at the computer services department and then redistributed. For storage, all original documents were packed and sent to warehouses where, over two to three days, a total of seven staff would log and store the documents. In all, paper policies comprising 45 million documents were stored in over 16,000 cartons at three warehouses. Whenever a document needed to be retrieved, it would take about two days to locate and ship it by courier. Re-filling would again take about two days.

In 2002, despite periodic investments to upgrade the HP 3000 mainframe that hosted the core insurance applications as well as the accounting and management information systems, it still frequently broke down. According to James Kang, then CIO at Income, “The system breakdowns were a real nightmare. Work would stop and the staff had to choose either data reconciliation, or backup. However, the HP 3000 backup system allowed restoration to only up to the previous day’s backup data. If the daily backup was not completed at the end of the day, the affected day’s data would be lost and costly and tedious reconciliation would be needed to bring the data up to date.” In one of the hardware crashes, reconciliation took several months to restore the data loss. In all, the HP 3000 system experienced a total of three major hardware failures, resulting in a total of six days of complete downtime.

That was not enough. The COBOL programs that were developed in the early 1980s and maintained by Income’s in-house IT team also broke multiple times, halted the systems, and caused temporary interruptions. In addition, the IT team found developing new products in COBOL to be quite cumbersome and the time taken to launch new products ranged from a few weeks to months.

At the same time, transaction processing for policy underwriting was still a batch process and information was not available to agents and advisors in real-time. As a result, when staff processed a new customer application for motor insurance, they did not know if the applicant was an existing customer of Income, which led to the loss of opportunities for cross-product sales. Commenting on the problems faced by the agents, Kang said, “When the agents tried to submit the documents using notebooks, they ran into a lot of problems. HP 3000 was a terrible machine to connect to such devices. And with more of the advisors telecommuting, availability became an issue too.” In addition, various departments did not have up-to-date information and had to pass physical documents among each other.

All this changed in June 2003, when Income switched to the Java-based eBao Life System from eBao Technology. The software comprised three sub-systems: Policy Administration, Sales Management, and Supplementary Resources. Commenting on its features, Kang said, “It has everything we are looking for—a customer-centric design, seamless integration with imaging and barcode technology, a product definition module that supports new products, new channels and changes in business processes.”

Implementation work started in September 2002 and the project was completed in nine months. By May 2003, all the customization, data migration of Income’s individual and group life insurance businesses and training were completed.
The new system was immediately operational on a high-availability platform. All applications resided on two or more servers, each connected by two or more communication lines, all of which were "load balanced." This robust architecture minimized downtime occurrence due to hardware or operating system failures.

As part of eBao implementation, Income decided to replace its entire IT infrastructure with a more robust, scalable architecture. For example, all servicing branches were equipped with scanners, monitors were changed to 20 inches, PC RAM size was upgraded to 128 MB; and new hardware and software for application servers, database servers, Web servers, and disk storage systems were installed. Furthermore, the LAN cables were replaced with faster cables, a fiber-optic backbone, and wireless capability.

In addition, Income also revamped its business continuity and disaster-recovery plans. A real-time hot backup disaster-recovery center was implemented, where the machines were always running and fully operational. Data was transmitted immediately on the fly from the primary data center to the backup machines' data storage. In the event of the data center site becoming unavailable, the operations could be switched quickly to the disaster-recovery site without the need to rely on restoration of previous day data.

Moving to a paperless environment, however, was not easy. Income had to throw away all paper records, including legal paper documents. Under the new system, all documents were scanned and stored on "trusted" storage devices—secured, reliable digital vaults that enabled strict compliance with stringent statutory requirements. Income had to train employees who had been accustomed to working with paper to use the eBao system and change the way they worked.

As a result of adopting eBao Life System, about 500 office staff and 3,400 insurance advisors could access the system anytime, anywhere. Staff members who would telecommute enjoyed faster access to information, almost as fast as those who accessed the information in the office.

According to Kang, "We got a singular view of every customer—across products and channels and even better life and general insurance business lines. That allowed us opportunities to cross-sell and improve customer service. In addition, because of the straightforward processing workflow capabilities, we had 50 percent savings on both the time and cost needed to process policies. We had also cut the time needed to design and launch new products which was reduced from weeks to just days using the table-driven rule-based product-definition module."

Commenting on the benefits of eBao system, former CEO Tan Kin Lian remarked, "...eBaoTech LifeSystem has the best straight through processing workflow and it is very flexible. It cuts our new product launch time from months to days. It also allows us to support agents, brokers, and customers to do online services easily. I got a fantastic deal: the best system with much lower cost and much shorter implementation time. I have to say that this is a revolution!"

Although the eBao system has undergone improvements since its initial rollout, Income's culture of innovation and modernization continues. In 2011, Income announced plans to invest $4 million annually to improve its customer service as part of its "Orange Revolution" campaign. The broader goal of the campaign was to establish NTUC Income as a friendlier, more honest insurance company known for superlative customer service. The sub-goals include Orange Speak, to standardize usage of simple-to-understand English across the firm, and Orange Force, to create a more visible presence of NTUC Income insurance advisors in the public eye.

For example, as part of Orange Speak, the company released a series of television advertisements and videos poking fun at the insurance industry's complicated verbiage, casting themselves as a simpler, more straightforward alternative. As part of Orange Force, the company created a task force of 30 motorcyclists with a distinctive orange NTUC Income color palette with the objective of being able to ride to traffic accidents in the surrounding areas within 20 minutes.

In 2014, the campaign was finally completed and has been a resounding success, resulting in multiple national awards for exemplary service, a reduction of average monthly complaints from 274 before the launch of the campaign to approximately 70 midway through the campaign's completion, and improving the company's bottom line, boosting profits slightly over the course of the campaign.

Technologically, the company continues to keep pace. In 2013, Income adopted Singapore's national two-factor authentication system, becoming the first local insurer to do so. The system uses a physical token resembling a credit card that links to individual NTUC Income accounts and generates one-use passwords for online transactions. The system will help NTUC policyholders to stay safe online while sharing sensitive personal information. The
company also continues to bolster its policy offerings, announcing plans to extend insurance to children with special needs such as Down syndrome and autism, insurance for low-income families with young children, and more comprehensive motorcycle insurance. The legacy of modernization established in the 2000s continues at NTUC Income to the present day.

**CASE STUDY QUESTIONS**

2-13 What were the problems faced by Income in this case? How were the problems resolved by the new digital system?

2-14 What types of information systems and business processes were used by Income before migrating to the fully digital system?

2-15 Describe the Information systems and IT infrastructure at Income after migrating to the fully digital system.

2-16 What benefits did Income reap from the new system?

2-17 How well is Income prepared for the future? Are the problems described in the case likely to be repeated?

*Case prepared by Neerja Sethi and Vijay Sethi, Nanyang Technological University.*