

The interface between electronic banking and accounting modules

A case analysis of companies in Vietnam

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Abstract

Purpose – There is a substantial lack of the need for adopting interface between accounting systems of companies and banks in Vietnam. The purpose of this paper is to bring out the benefits and lacunas in the adoption of interface for companies as well identify the factors that possibly could be crucial in making the interface adoption a success or failure.

Design/methodology/approach – The study is set in the context of case analysis and has adopted a mixed method approach. In this study, a contrast between successful adopters of interface and non-adopters of interface is discussed to identify the motivating factors for interface as well as the factors which form the barriers for non-adopters.

Findings – By conducting a case study-based analysis for intensive data comparison of two companies as interface adopters and two as non-adopters in Vietnam, it is found that the success of the interface adoption is influenced by inter-related factors such as the manager characteristics, industrial environment, company characteristic and innovation characteristics. Particularly, the effectiveness of the interface can be well demonstrated by cost saving, manpower reduction, data consistency, accuracy, and speed of the process.

Research limitations/implications – The impact on the banker is not analyzed. Furthermore, this research only focuses on the effects of interface on the electronic banking system and accounting modules in the form of electronic payment, while in reality, banks provide a variety of services which can also be explored by other researchers.

Originality/value – This is one of the first studies in the context of Vietnam. This study is highly relevant in the current context, given the significant growth in the number of industries and export markets in Vietnam.

Keywords Interface, Electronic banking, Electronic funds transfer, Transaction process

Paper type Case study

1. Introduction

Electronic banking system (EBS), which was based on internet, was widely developed in the mid- to late-1990s in Vietnam. Considerable discussions and applications were generated in order to assess its effectiveness to the business operation of a company in Vietnam. However, the process of accepting and implementing the EBS was gradual because of several factors such as business ownership, company structure, and national infrastructure. In the early part of 1997, Vietnam's economy started to flourish simultaneously with the development of the country's banking services. Thus, the introduction of EBS was made possible during this period and it was found useful by corporations in Vietnam for the electronic funds transfer (EFT).

In December 2011, the prime minister approved Decision No. 2453 that aimed to boost non-cash payments through the banking system and further popularized them during the 2011-2015 period (*Vietnam News*, 2013). Based on the legal framework, nowadays in Vietnam every bank has its own website where customers can access to view banking information, and make payment via internet banking. Hence, most of the companies in Vietnam have used



banking website or EBS for the EFT. However, only a few foreign-owned banks such as ANZ, Citibank, HSBC, Deutsch Bank and BNP bank can provide a real EBS in which their EBS can interface with some modules of accounting information system (AIS) used in companies. With this advance, companies had to change certain business processes in order to achieve competitive advantage. Among of these, the adoption of interface between EBS and AIS was established to benefit the use of interface in the context of payment process to vendor and collection process from customers.

The interface between EBS and accounting modules is a process of partially and fully integrating the data extracted or uploaded between EBS and certain accounting modules such as accounts payable (AP) module for payment and accounts receivable (AR) module for collection transactions via internet base.

Based on the advance technology above, many companies have implemented the interface of accounting system with electronic banking successfully to speed up the process and substantially benefit from the efficiency of this interface in business, as shown in Figures 1 and 2.

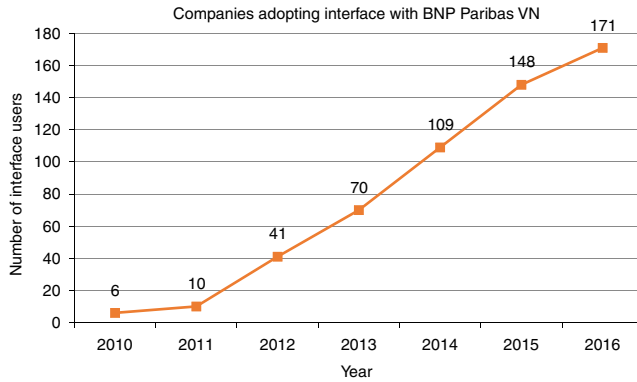


Figure 1.
Number of companies adopting interface with BNP Paribas Bank Vietnam as a secondary data

Source: IT Department of BNP Bank Vietnam

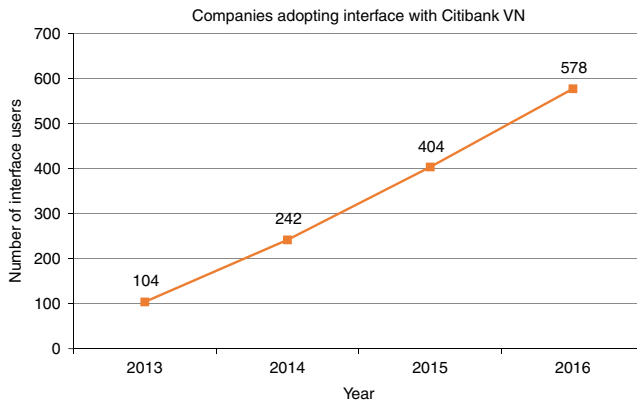


Figure 2.
Number of companies adopting interface with Citibank Vietnam as a secondary data

Source: IT Department of Citibank Vietnam

2. Literature review

Internet offers a new channel for the distribution of banking services (e-banking) which is contributing positively to firms in Vietnam. While this technology offers new opportunities to banks, it also brings in new challenges to the customers in adapting to the opportunities for better business performance in competitive markets. Dabholkar (1996) noted that banks that can persuade their corporate clients to adopt technology for document movement in order to enhance current and future relationships, rather than focusing price-based competition, can offer significant benefits compared with those from conventional bank-customer channels. Katz and Aspen (1997) and Tilden (1996) also emphasized that corporate clients have the propensity to use online banking because it is perceived as the most cost effective of all channels.

Premaratne (2009) suggested that two levels of improvement in the integrated approach must be followed in order to apply a suitable e-banking system in an automation process: first, business process modeling and second, process functionalities. Thus, the proposed integrated approach for business process improvement is to improve the overall blue print of an ERP system through enhanced process integration, automation, and optimization. A company has to be prepared for integration. Jeff and Willem (2002) suggested the need for business object systems to implement a fundamental concept that would characterize future adaptive systems like automated workflow drives business processes in place of human interaction. Once this is achieved, enterprises can achieve the highest level of integration.

However, the integration of ERP in companies into a banking system is a complex process depending on many factors to be successful. First, risk and security are among important factors influencing company adopting internet banking. As pointed out by Koskosas and Paul (2004), security risks may arise due to the failure in obtaining some or all of the goals that are relevant to the integrity, confidentiality, and availability of information through the internet banking. Liao and Cheung (2003) warned that transaction risks would create a significant barrier to market acceptance, since a company's management and control operations are crucial for its business reputation and the promotion of consumer confidence as well as in operational efficiency. The primary reason for low internet banking usage is that customers may perceive EFT as a higher level of risk than other traditional payment methods. Harris *et al.* (2011) added that privacy and security were functionally important factors in predicting the level of electronic payment system (EPS) use.

Second, the observed trust performs a critical function in promoting consumers' EPS use. Trust, in turn, has a positive effect on the behavioral intention to use e-banking (Hanzaee and Alinejad, 2012). Kaur and Rajneesh (2014) revealed that in developing countries, many clients either do not trust or do not access to the needful infrastructure that is to be able to process electronic payments. In addition, Chauhan and Choudhary (2015) confirmed that trust plays a key role for e-banking, but the lack of trust is the main issue in the growth and development of electronic banking.

Third, Schein (1990) showed that organizational culture affects the way an organization behaves, its values, and its basic underlying assumption to technology diffusion. Thus, it is evident that the culture of an organization either facilitates or impedes the process of technological diffusion.

A large organization also creates factors that directly influence the adoption of technology within an organizational context. Among them, management support is commonly studied. Ang and Pavri (1994) pointed out that IT success within an organization can be determined by considering a management's commitment to IT by allocating necessary resources. Thong and Yap (1995) and Fink (1998) added that top management factor could be important for the success of information system within organizations. In addition, the study of Eastin (2002) revealed that perceived convenience was the strongest predictor of online banking usage. Nasri (2011) and Al-Smadi (2012) found in their

studies that the perceived ease of use and perceived usefulness have a positive and significant impact on customers' attitude toward electronic banking service.

Customers can enjoy a variety of e-banking services. It is argued that one of the greatest benefits of e-banking is that e-banking products/services are inexpensive or may even be free and that customers save even more money as well as time because they do not have to travel to or from a bank branch (Pham, 2010). Recently, Nigudge's (2014) study has added that the benefits of electronic banking adoption lead to productivity gains, low banking cost, reduced errors, and reduced fraud in electronic banking transactions.

Finally, Igudia (2016) revealed that benefits and perceived trust positively facilitate the volume of e-payment systems usage among SMEs. Enterprises are increasingly seeking for the ERP solution for supporting their business in the best way. The greatest value ERP solution provides enterprises with process and management experience and best-practice in profession (Thang, 2016).

Goldman (2007) discussed the periodical payment model. Unlike traditional model which assumes immediate transfer of fund, periodical payment does not. Instead, this process works in a schedule-type framework, whereby the initial (and only) customer-merchant interaction only establishes the terms of each scheduled transaction. Payment transactions require no customer involvement during each transaction and empower the merchant to initiate payment transaction whichever is convenient. Moreover, a fundamentally different approach to electronic payments was adopted which formed the most important basis for his research. Instead of treating each payment transaction as a point-to-point transfer of funds, payments were viewed as a series of linked transactions called batch jobs. As stated by Kouril and Basney (2005), these tasks were commonly referred to as batch jobs because they were not executed when submitted, but were scheduled and executed when appropriate hosts were found and enough resources were allocated to execute them.

Under the operation of interface with electronic banking, the transaction including multiples invoices as a batch job was not executed when submitted to banking system, but was scheduled to process based on authentication, validation, reconciliation, and confirmation of payment instruction. Reviewing these discussions, we found that the paper of Goldman (2007) gave us a fundamental approach for further research. Moreover, the paper did not reveal how firms received payments from customers through electronic fund transfers, nor did it mention how these batch job processes are manually uploaded or automatically linked with accounting modules applied in firms. Therefore, there is a huge gap between the paper of Goldman (2007) and this research.

To summarize, it can be said that the literature offers several interesting studies on numerous EPSs that have been proposed and developed over the years. However, none of the authors have expanded their approach so as to include specific interface between EBSs with accounting modules. Thus, only some studies have directly influenced the direction of this paper. Hence, there is a strong need to study the level of interface as well as the advantages arising out of adopting such interface in Vietnam. Though there are entities that have adopted interface in Vietnam, there is no documented evidence on the advantages arising out of these.

To document the evidence based on the experience of adopting such interface, a suitable method to study would be a case study approach. Further, a case study would also aid in comparing the benefits derived by adopters *vis-à-vis* the non-adopters. Conducting a case study on the adoption of interface between EBSs with accounting module in firms would provide validity for generalizability in Vietnam. Therefore, this research applied the theories of technology acceptance and the diffusion of innovations to the adoption of EFT technologies under interface between electronic banking and accounting modules of firms. In the next section, an empirical examination on the characteristics and benefits that describe a firm's adoption process of interface is described in the subsequent section with the help of case studies.

3. Practical review and case study

Despite an extensive literature search, it can be confidently stated that there is absolutely no research on the interface between the EBS and the accounting modules in the context of Vietnam. Hence, this research is focused on the interface between EBS and accounting modules in the companies doing business in the context of Vietnam. By this, its benefits can be well measured in terms of efficiency in the performance of accounting transactions, manpower reduction, data flow consistency, and accuracy. Due to a lack of previous studies addressing this phenomenon, which is both complex and contemporary, the case study method may be appropriate, as stated by Yin (1994) and Benbasat *et al.* (1987).

The scope includes identifying the attributes of both interface and non-interface adopters. Interface adopters are those who have used electronic banking and interfaced it with accounting modules (AR and AP modules) for both payment and collection transaction. Non-interface adopters are those companies which have used electronic banking, but have not yet applied the interface with accounting modules. The companies which have not used electronic banking are not under the scope of this research barring a study on them which is used for comparison.

The interface between electronic banking and accounting modules is a process of partially and fully integrating the data extracted or uploaded between the EBS and certain accounting modules of companies for payment and collection transactions via internet base. Both customers and vendors of a company are encouraged to use electronic payments and collections for more efficiency. Thus, the electronic delivery of banking service reduces the conventional customer-client interface, and it has also changed the traditional way of conducting the accounting process, as illustrated in Figures 3 and 4.

Payment process description.

1a: accountant staff manually makes input of vendor invoice data to electronic banking for payment process to vendor.

2a: accountant staff gets approval and process payment in EBS to vendor bank account.

3a: based on electronic banking information, accountant staff manually updates on AP modules to net off vendor invoices and at the same time clearing transaction is posted to cash books modules.

4a: accountant staff does a manual reconciliation between cash books with balance on EBS.

Collection process description:

1b: customer makes payment to seller's bank account.

2b: based on electronic banking information, accountant staff manually updates on AR module to net off customer invoice.

3b: at the same time, accountant staff manually updates on cash books module.

4b: accountant staff does a manual reconciliation between cash books with balance on EBS.

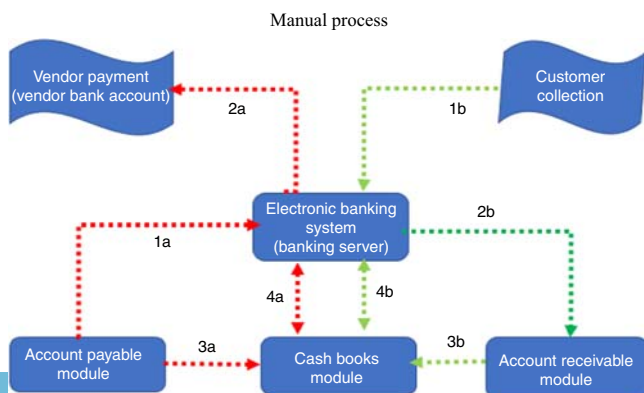


Figure 3. The traditional approach to an accounting system

Figure 4.
The interface
approach to an
accounting system

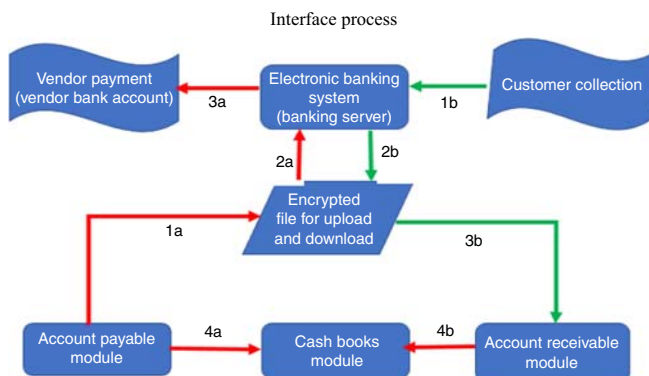


Figure 3 presents the traditional way (manual process) of payment to vendors and collection from customers. In the traditional approach, a manual paper-based process is required as shown in the figure. Payment information includes the vendor's name, invoice number, invoice date, and invoice amount; all are clearly keyed into electronic system of the bank. A single payment can be applied for several invoices depending on bank's rules. The electronic form is then faxed or brought directly to the bank for the payment process based on the agreement between the company and banker. Posting will be carried out later in AP and cash books modules in the accounting system manually, once the payment transaction in electronic banking was executed completely.

Similarly, receipts from customers are only acknowledged once the collection has been updated in the electronic banking. The company will then process the account posting in AR and cash books modules in the accounting system manually. A manual reconciliation between cash books with balance on EBS is required for every transaction of payment to vendors and collection from customers.

Payment process description.

1a: data are downloaded from AP module to the file which is then encrypted.

2a: the encrypted file is uploaded to EBS.

3a: Citibank processes payment run based on the value date/payment instruction to vendor bank account.

4a: once payment run is completed, accountant staff posts payment batch to cash books module.

Collection process description.

1b: customer makes payment to seller's bank account.

2b: bank staff collects data and encrypts it into a file which then is uploaded to EBS.

3b: accountant staff downloads the encrypted file to link with AR modules to net off customer invoices.

4b: at the same time, accountant staff posts receipt batch to cash books module.

Vendor payments are scheduled in advance in accordance with the plan of payments for that year; it can be weekly or biweekly depending on the company's management. Based on the payment schedule plan, a payment proposal is processed in which detailed information of invoices that are due in the value date set in future will be extracted from the APs in accounting system. After the review and approval of the file of payment proposal, the company's file will then be encrypted to a designed file format which is uploaded to the EBS awaiting processing at the bank following the date requested by the company. Once the payment is processed in the bank, the data of the paid invoices in EBS are posted back to the accounting system of the company.

For bill collections, customers are required to provide payment instructions with the invoice information to be paid specified on the payment form or in EBS they have used. The required information included the invoice number, date, customer virtual code, and invoice amount. These are provided by the customers when paying either through electronic banking or manual payment. All payment transactions from customers are compiled to a designed file format which is then uploaded to the EBS. The company will then process and download the file back to the accounting system on daily basis based on company procedures.

Figures 3 and 4 present the different processes of workflow between interface and non-interface (i.e. manual process) and between electronic banking and accounting modules.

The electronic delivery of banking services reduces the conventional customer-client interface. Moreover, the interface between EBS and accounting modules has also changed the traditional way of conducting accounting processes by reducing staff workload and enhancing the reliability, accuracy, speed, and consistency of data flow in the accounting system. The interface also ensures that data consistently flow from the EBS to accounting modules or vice versa which is applied for customer collection in the AR modules or for vendor payment in the AP module. Based on that, the interface can bring a paperless method in the online business, and it reduces the time and cost in accessing the data with more convenience and effectiveness.

Though the efficiency of an interface system is documented, the benefit derived from the system depends on the combination of several key efficiency drivers in interface adoption. They are considered to be influential in enhancing the accuracy and speed of data flow in the accounting system. The main drivers are as follows:

- manpower reduction;
- swiftness of routing and time saving;
- data flow consistency and accuracy;
- safety and security;
- vendor and customer service enhancement; and
- regional advantage of shared service center (SSC).

To examine the benefits as well as the challenges of adopting an electronic interface, this study has focused on two companies which are in mixed manufacturing and trading industry that have attempted to enhance their performance by adopting interface, and two companies that have not adopted interface in the accounting process with electronic banking. This paper proves that implementing the internet-based interface benefits tremendously the accounting process of a company.

DSM Nutritional Products Vietnam Ltd (DNP VN), the interface adopter case 1, was examined intensively. Data collection was recorded and analyzed directly from Systems, Applications and Products (SAP) system. The benefits of interface have been empirically observed in daily operation of the company. Based on these findings, the questionnaires are built to apply an interview for other three cases whether the interface adopter can benefit the same or not. This is to aim that the findings in benefits of interface are consistently found in other interface users.

3.1 Interface system, case 1: DNP VN

Company background. DSM, formed in 1902, creates innovative products and services in Life Sciences and Materials Sciences that contribute to the quality of life.

In 2003, DSM acquired an international vitamins division from Roche to strengthen its core vitamins business. The company's name, Roche Vitamin Vietnam Ltd, is one of Roche

affiliates located in Binh Duong Province, Vietnam was later changed to retaining its business activities and employees. Through personal observations and first-hand information, it can be argued that innovation of interface between the accounting system and e-banking system efficiently supports accounting transactional process in the company.

DNP VN purchases raw materials from local and overseas vendors; of which, 70 percent are inter-company transactions and other 30 percent are from third parties. These materials are then processed to produce premixed products which are supplied to feed mills across Vietnam. Therefore, the transactions involved both AP and AR. Currently, the company has more than 500 vendors and 40 local customers.

Originally, the company used Accpac, an ERP software system, for its accounting applications in 2001. At that time, the company was a small enterprise with annual sales of USD40,000 and 17 employees. However, from 2006, the company has grown with sales revenue of USD70 million and 60 staff in 2015 the company has converted from Accpac to SAP system which is a standardized ERP system in DSM group.

Previous recorded keeping and accounting process. In 2001, the accounting department of Roche Vitamins Vietnam Ltd employed three staff: a finance controller, AR, and AP clerks. The company operated through Roche's corporate bank accounts in Citibank Vietnam. Because the e-banking system was not implemented during this period, transactions made with vendors and customers were manually processed.

First, source documents for AP such as invoices were viewed and processed for payment once they were due manually by preparing the payment advice form provided by Citibank. The form was then faxed to Citibank with the supporting documents for processing. Once completed, a bank transaction note was sent back each week via courier which could take approximately four days to reach the company. The accountant would then net off the payments already made with invoices in the AP, and cash books are updated to reduce the amount of payment due. Supporting documents were also required by the bank for physical inspection before any payment was processed. Therefore, it normally took a week to complete the full payment process depending on the date of receipt of the bank documents. Moreover, manual processing of payments took a lot of time for the company particularly because it had to record data for both the AP and cash books module in the accounting system. It took an average of 15 minutes to complete whole manual process for every transaction.

Similarly, it took approximately three to four days for the banker to send documents to the company through its courier. Upon receipt, the receivable clerks manually netted off the paid invoiced in the AR module. The clerk also updated the collection amount in the cashbook by following the information provided in the bank payment note or applying first-in first-out rule if there is no invoice information mentioned on the bank document. Normally, it took 5 minutes to complete one collection transaction, and the company has about 20-30 paid invoices each month or 300-400 invoices every year. During this time, the company was unable to set appropriate key performance indicators (KPIs) for the accounting staff because standardized clearing and settlement of transaction for each type of operational transaction could not be defined.

In 2002, Citibank provided the company with an e-banking system called CitiDirect to replace the payment advice form normally used and also to enhance the payment process. With this new system, payment transactions are keyed in directly into CitiDirect, and the manager was able to approve directly through the system using a security access card. Thus, a banker was no longer required to reenter transactions into their system like before, and faxing the payment advice form to the bank from the company for payment process was no longer required. CitiDirect also allowed users to view their bank statement status online at any time.

Because of a lack of interface with e-banking system, the company still required the manual input of other transactions. For example, an accounting staff needed to post each

transaction manually to the AP and cash books module to net off invoice once the payment was fully processed. It took about ten minutes to complete whole manual process required for one invoice payment including bank reconciliation task.

For collection purposes, the main advantage is that a bank statement can be viewed anytime when needed by a staff using CitiDirect. Similarly, invoice paid by customers is manually netted off in the AR and cashbook modules. It took about seven minutes to complete whole manual process required for one receipt including bank reconciliation task.

In the early part of 2004, Citibank offered a new payment process wherein it designed an excel format in such a way that accounting staff could extract many invoice information for payment processing from the AP, and then copied to an excel file. The excel file which can include multiple invoices was sent from the company to the bank for payment process. However, a strict format for characters and texts entered in the excel file had to be followed by the company. Managers also needed to approve the file which was sent to the bank. Once the file reached the bank, Citibank then uploaded the excel file to CitiDirect to complete the payment transaction to vendors. In this process, accounting staff did not have to manually enter information of invoice payment into CitiDirect. As the rest of accounting process remains unchanged as manual, the workload is relatively less because of the new payment process. However, the text description of invoice information keyed in the file is very sensitively accepted which required significant time for excel file preparation. Bank reconciliation was still required in this practice. It took five minutes to complete one payment invoice or one receipt including bank reconciliation task.

New accounting processed description with the interface. In 2006, upon the acquisition of the Roche vitamin division, Roche Vitamins Vietnam Ltd, by the DSM group, the company changed its name to DNP VN who then converted its accounting system from Accpac to SAP system used by the DSM group worldwide. Besides this, the company also made a significant transformation by implementing an innovative idea of integrating the accounting system with CitiDirect via the designed file encrypted data. This file could then be uploaded for payment and downloaded from CitiDirect for collection. A single transaction can include multiple invoices of payment and collection. Since then, the regional treasury department in Singapore has acted as a SSC that mainly processed payment and collection activities for affiliates.

In the new process, the payment run was executed weekly based on the set date as agreed between the regional treasury team and local accounting staff. For scheduled payment runs in the year, mass invoice downloading is executed by the SSC in Singapore from the AP and it is then prepared in a pdf format called a payment proposal. After which, the file is sent to a local accounting staff for verification. In cases where an invoice needed an adjustment or had to be put on hold, a local staff member made the adjustment or had to remove the invoice from the payment run, and the file is sent back with a justification for the change to the SSC for adjustment. Once adjusted, the file in pdf version is returned to the local accounting staff for the local managers' final approval. The company used an electronic signature for efficient processing of the payments, which is processed by the SSC. Finally, the SSC encrypted the file which was designed by Citibank using an SAP transaction, and sent to the CitiDirect for further processing in banking system. Upon completion, all data of payment transactions were updated and recorded in the bank statement report available on CitiDirect wherein staff can view transactions right away. The SSC then processed the posting of the transaction in SAP to update the AP and cash books modules. Because of this, the bank reconciliation task is significantly reduced and cross checking of transactions is only required at the end of each month. In cases where payments cannot be processed due to wrong information on items, such as bank account or beneficiary name, the payment is put on hold, and the bank advises the company to return to the company bank account, and it is then followed in next payment run.

For collection purposes, customers have to provide all invoice information when making payments using the bank advice form, or through electronic banking by using an assigned virtual account. In addition, the invoice number and amount are provided in the payment instruction. The bank collects all the information and uploads the details on CitiDirect, the SSC will download it on the file in the SAP interface design. Then, the collected amount is netted off with the invoice following the invoice matching. In case there is a mismatched invoice, the SSC would have to request the local accounting staff to verify the mismatch. Once the mismatch is verified, the local accountant will inform the SSC to net off the invoice manually in the system.

With the interface, the company's accounting process for payments and collections is significantly streamlined in terms of fast response, security for payment, reduction of time-consuming bookkeeping, processing of mass invoice payment and collection, minimization of manual process, and data flow consistency.

Interface implementation and its purpose. The interface for the company in Vietnam was implemented as a global strategy of standardizing operational process for payment and collection task among affiliates. Through this strategy, a company has an influence on a SSC that supports affiliates within the group. Moreover, the use of interface allows a company to streamline parts of the accounting process within its overseas departments, thus saving a lot of money.

The project was implemented in 2006 in combination with the transition of accounting software to a new accounting software called SAP from the Accpac system at the site, and it was completed in three months as expected timeline and a number of allocated headcount from regional ICT team. The project committee members joined the regional ICT team who came to Vietnam and were involved in the discussion with the banker from the start of the project in order to ensure that the local bank can apply the same technology successfully used in other DSM affiliates.

With the successfully implemented interface, the company benefitted significantly from its efficiency in the performance of accounting transactions, manpower reduction, data flow consistency and accuracy, swiftness and secure process.

Efficient manpower use. As mentioned in the previous section, the accounting department had only one clerk responsible for general accounting and "AP" from 2001, at the minimum level 1; however, the full-time employee (FTE) can no longer be reduced when the interface was operational. Despite this, the FTE has continued to handle AP transactions while business sales increased in the last 15 years, from \$20,000 to \$70,000,000, tremendously driving the invoice volume up.

Table I shows the amount of purchase and sales invoices processed via the interface in the company DNP VN, during 2010-2015.

| Year | Numbers of purchase invoices | Payment run | | Numbers of sales invoices | Receipt run | |
|-------|------------------------------|-------------------------|--------------------------|---------------------------|------------------------|--------------------------|
| | | Numbers of payment runs | Invoices per payment run | | Numbers of receipt run | Invoices per receipt run |
| 2010 | 3,417 | 96 | 36 | 2,852 | 785 | 4 |
| 2011 | 3,550 | 77 | 46 | 3,330 | 964 | 3 |
| 2012 | 4,112 | 84 | 49 | 3,529 | 858 | 4 |
| 2013 | 3,890 | 93 | 42 | 3,752 | 777 | 5 |
| 2014 | 4,103 | 100 | 41 | 3,697 | 696 | 5 |
| 2015 | 3,899 | 70 | 56 | 4,287 | 684 | 6 |
| Total | 22,971 | 520 | 44 | 21,447 | 4,764 | 5 |

Table I.
Numbers of purchase and sales invoices processed via the interface during 2010-2015 in DSM Nutritional Products Vietnam Ltd

Efficient process. As shown in Table I, an average of 44 invoices or an average of 5 receipts in one transaction could then be processed via integration at one time. The rate at which transactions is processed does not depend on the number of invoices or numbers of receipt included in a batch of payment run as compared to the traditional method that requires one-by-one processing.

Another advantage is that payments can be processed or initiated by the company at any time regardless of location. In fact, the company located in Binh Duong, 50 kilometers away from the Citibank office, is extremely efficient with the process. It has replaced the traditional method with which the company is used to fax and e-mail payment documents to the bank for payment process. Moreover, the company can view transactions details immediately on CitiDirect once payments are completely processed by the bank. The company can otherwise view payment collections on CitiDirect immediately after payments have been received from customers.

It took about 15 minutes to complete whole accounting process required for 1 payment run of 44 invoices, an average time spent for 1 invoice process is 0.34 minutes. Similarly, it was 15 minutes to complete whole accounting process required for 1 receipt run of 5 receipts, an average time spent for 1 receipt process is 3 minutes. Compared those with time spent for the same task in 2004, it saved 4.66 minutes for invoice process and 2 minutes for receipt process. Tables II and III showed the saving time in accounting process during 2010-2015 in the company.

Table II showed that an average saving time from payment process is 37.16 days/year, while Table III showed that an average saving time from receipt process is 17.85 days/year (8 working hours per day).

Fast bank reconciliation. The workload required for bank reconciliation has reduced significantly because of the integration of files between the accounting system and CitiDirect. Staff can no longer interfere in the changes in data processed for payment, as they are fully uploaded to Citidirect. Hence, the company no longer requires to do a bank reconciliation for every payment run. As requirement are standardized for every company, bank reconciliation has to be performed at the end of each month for reporting purposes.

| Year | Number of purchase invoices | Saving time/minute | Saving time (equivalent to day) |
|-------|-----------------------------|--------------------|---------------------------------|
| 2010 | 3,417 | 15,920 | 33 |
| 2011 | 3,550 | 16,540 | 34 |
| 2012 | 4,112 | 19,158 | 40 |
| 2013 | 3,890 | 18,124 | 38 |
| 2014 | 4,103 | 19,116 | 40 |
| 2015 | 3,899 | 18,166 | 38 |
| Total | | | 37.16 |

Table II.
Saving time from
payment process
during 2010-2015 in
DSM Nutritional
Products Vietnam Ltd

| Year | Numbers of sales invoices | Saving time/minute | Saving time (equivalent to day) |
|-------|---------------------------|--------------------|---------------------------------|
| 2010 | 3,206 | 6,412 | 13 |
| 2011 | 3,815 | 7,630 | 16 |
| 2012 | 4,157 | 8,314 | 17 |
| 2013 | 4,581 | 9,162 | 19 |
| 2014 | 4,556 | 9,112 | 19 |
| 2015 | 5,382 | 10,764 | 22 |
| Total | | | 17.85 |

Table III.
Saving time from
receipt process during
2010-2015 in DSM
Nutritional Products
Vietnam Ltd

With the interface system, reconciliation tasks have reduced considerably despite significant increase in transactions.

Payment process flexibility. The system provides improved process of payment approvals regardless of location. Managers can approve payments by e-mail as long as a manager's computer is connected to the internet. This can also accelerate the process of approval significantly while the manager is away. In fact, the company has set approval matrices which include six overseas managers together with three local managers.

Operating cost reduction. By standardizing the workflow and processes, the company can dramatically decrease costs by reducing mistakes from human errors as a result of the manual processing of payments. The payment process on average involves 44 invoices each time, which can be executed within one day at a much faster rate than the manual process or compared with other manual processes done in the past. In addition, data flow from the accounting system to electronic banking is consistently secured. It was obviously found that error was entirely eliminated as recorded by the company. Payment rejection was incurred only when vendors did not inform the company of bank account change to update in vendor profile. In this case, rejection amount goes back to company's bank account as a receipt.

Consistency and accuracy of data flow. Because the data from the accounting system to the EBS or vice versa are consistently uploaded, processing is consistent and accurate. Manual interventions of staff members are no longer necessary during the transaction process. As a result, cases of fraudulence by any of the staff have not been recorded. By empirical observation on daily operation of interface practice, data flow was 100 percent consistent with the source from AP module.

The online data file transferred from the accounting system to the EBS or vice versa is multiply encrypted providing high security against hacking. The interface approach uses file-to-file configurations instead of the host-to-host interface, so a complicated connection method is not required. However, security is necessary for folders located in the bank's server with restricted access. So far, no fraud and case of file hacking have been found in the operation of interface process in the company. Moreover, there is no case reported in Vietnam.

Vendor and customer satisfaction. The company's streamlined operations and overall company's positive performance have resulted in repeat business and referrals from customers who were satisfied with their transactions. In reality, vendors and customers are more likely to deal with the companies that have applied the interface primarily because of the quality of the transaction. The improved accuracy in which transactions were processed has reduced administrative work for both vendors and customers. Vendors are satisfied with the in-time payment in the company using the interface. Payment run was scheduled in advance weekly through the year excluding public holiday and reporting period. As such, invoices were paid either early or late to invoice due date some days. In general, in-time payment fairly met vendor's expectation.

Gains from SSC. The company has a SSC in India. Opting for the interface enables the SSC to provide the company and other regional affiliates with financial assistance. The SCC handles the process of payment and receipt transactions in SAP. Moreover, the SCC on behalf of local company actively arranges hedging deals with the bank based on the invoice data of overseas vendors. The hedging agreement has the same value date as the scheduled payment run in the future. The State Bank of Vietnam has controlled strictly overseas payment. All hedging deals are not allowed to park in the company's bank account more than two days before invoice is due. Hence, this hedging arrangement significantly enhances the payment process for overseas invoice. It also reduces hedging cost at minimum level because the hedging amount is paid to overseas vendor on the same date of invoice due.

Summary. Based on the findings above, it is necessary to summarize benefit gained from the interface adoption in each period, as shown in Table IV.

| Period | FTE reduction | Time spent for 1 payment transaction/minute | Time spent for 1 receipt transaction/minute | Fast bank reconciliation/month | Payment process flexibility | Operating cost reduction | Consistency and accuracy of data flow | Vendor and customer satisfaction | Gains from shared service center | Accounting process transformation |
|----------------------|--|---|---|--------------------------------|-----------------------------|--------------------------|---------------------------------------|----------------------------------|----------------------------------|--|
| Up to end 2001 | No | 15 | 15 | Low | Low | Low | Low | Low | na | Full manual, single posting, full paper-based process |
| 2002 to end 2003 | No | 10 | 7 | Low | Low | Low | Low | Low | na | Electronic banking system, Full manual, single posting, less paper-based process |
| 2004 to end 2005 | No | 5 | 5 | Low | Medium | Low | Low | Medium | Medium | Electronic banking system, with excel upload, single posting, less paper-based process |
| From 2006 to current | No, but current FTEs have coped well with large of transaction scale | 0.34 | 3 | High | High | High | High | High | High | Partial Interface adoption, encrypted file upload and download, batch posting, electronic documents transfer to bank |

Table IV. Summary of benefits gained from the interface adoption in case 1

3.2 Interface system, case 2: animal feeds and agrochemicals

In this research, the company chosen as the interface case 2 is operated in the same industry as DNP VN. Thus, the transformation for the company is more likely to be the same. Studying these two companies proves that adapting process innovations like the interface system clearly benefits both companies.

Company background. The company case 2 has business activities in animal feeds and agrochemicals in Vietnam, employing 500 people, USD80 million in sales and was a part of a multinational company based in Germany. The interviewee was the head of finance and accounting department of the company and has worked for 18 years in the company, assuming various roles.

The company, on the other hand, sourced its raw materials from more than 800 local and overseas vendors and trade products both locally and internationally. Therefore, the company also has AP and AR in Vietnam.

Purpose of interface implementation and transformation process. The company has used SAP for its accounting and operation systems to support its business, and partially implemented the interface in 2004. The purpose of implementation of the interface in Vietnam is to integrate the company's accounting system with the bank service, and also to follow the group's strategy of system integration and consistency. The interface has been implemented successfully in many countries within the group before it was brought to Vietnam. Obviously, the company has seen all benefits of integrating the accounting system with the bank system. Hence, the global top-down approach in deciding on interface application required only minor local discussions.

The success of the interface can also be attributed to the size of the company and the appropriate resources allocated for the project. It is important to note that a large company must be able to provide an effective software like SAP that is compatible with the bank's software.

Past and new processed description. As mentioned above, interface system was partially installed during the first phase. The payment process was applied following specific steps. Based on value date of the payment run, the file was downloaded from the SAP system to the designed format form, and was manually uploaded to the EBS called CitiDirect. Once the file was uploaded, the bank further processed it on CitiDirect; then, all payment transaction records were updated and recorded in the bank statement report as shown on CitiDirect and where accounting staff can view transactions at once.

For the AR, a customer has to provide all information as instructed when making payments at the bank, using electronic banking, or manually filling out a transaction form. The payment details are captured on CitiDirect where staff can extract them into a designed file which is then uploaded back to the SAP system. The invoice is netted off with the payment received by matching the information provided by the customers. In case of a mismatch between the invoice amount and the paid amount from customer, an automated notification e-mail is generated from the system to the accounts manager to verify the information with the customer. Once information verified correctly, a manual modification or adjustment is still involved to net off the invoice in the SAP. In 2014, full automation interface was completed leading to no manual action from staff to the interface process.

Benefit of full interface. Some benefits from the use of the interface were obviously recognized by the company. Payment runs involve daily processing of local invoices of about 100 invoices each day, while inter-company invoices are scheduled on a weekly basis for 200 transactions. In total, about 3,000 invoices per month are processed for payments.

Manpower reduction. As soon as the interface was adapted, the number of employees handling the AP and AR transactions was reduced to 10 from 15 staff. Moreover, the existing staff can undertake other responsibilities in other departments. They can also allocate more time in assisting other business groups in the company. In the last ten years,

the company is still able to cope well with the increasing amount of transactions without the required increase in staff; thus, the company has no intention of adding AR and AP positions in the future.

Assuming that the salary for a position in the AR and AP section is USD700/month plus two-month bonus, the yearly cost saving for five staff is equal to USD49,000.

Flexibility in payment approval. Another advantage is that the approval process is not limited to a particular geographical area or where the manager is located at that time. Managers can approve payments in SAP system which will be transferred to banking system directly, provided their computers are connected to the internet and that they have an SAP access. Compared with traditional method, this process significantly speeds up the process of getting approval while the manager is away.

Error reduction and efficiency through automation. Instead of a single payment process, the payment process includes, an average, 200 payments for each batch of payment run executed. Thus, it is much faster than the manual process with more accuracy and speed. Data flow from the accounting system to electronic banking is consistent and is secured with no interference by staff. Company records show that more than 80-90 percent of errors were reduced using automation compared with the traditional method. It has, in fact, a reputation of having achieved 86 percent on-time payment in 2014. Based on the standardized process, the company can set their KPIs for its accounting staff or accounting department which was not possible before the interface.

Moreover, the data that flowed from the accounting system to the EBS or vice versa were fully transferred. Hence, the processed data are very consistent and accurate, and manual interventions by staff are not necessary. As a result, there were no cases of fraudulence by staff.

Improved data security. The data saved on file and transferred via the internet from the accounting system to the EBS, and vice versa, are multiply encrypted providing high security. Hence, risks of being hacked or malfunctioning are nil. The interface system uses file-to-file configurations instead of host-to-host interface, so a complicated installation is not required. However, security is also required for folders located in the bank's server with a restricted access. So far, no cases of hacking have been found in Vietnam, as reported by Citibank and other banks.

Improved bank reconciliation process. The company has applied cash discounts for earlier payments by customers. With the interface, the company could easily check in the system the exact date when payments were made by customers, and cash discounts are automatically calculated without further document verification. As a result, the task of bank reconciliation is reduced significantly. Although bank reconciliation should be done daily in the company, automation has reduced much of the work at the end of the month. Staff was able to save a lot of time, and errors had been significantly reduced.

Customer and vendor satisfaction. Vendors and customers are more likely to deal with a company which utilizes interface because the transactions are generally highly accurate reducing administrative work for vendors and customers. For instance, vendors appreciate high on-time payment with application of the interface. Every two years, the company does a survey of all vendors, and the company has received a very positive feedback for its service from both vendors and customers.

Gains from SSC. The company has a regional office in Philippines where the treasury department is located. With the interface, the treasury department overseas can view cash availability at the companies immediately, which can assist in maximizing in-house cash in the company's currency resource. Since the company has a SSC in Philippines, it is able to handle all operational transactions. The use of an outsourced party for this service reduces the company's task of paying fixed salaries to employees locally (Table V).

Table V.
Summary of benefits
gained from the
interface adoption
in case 2

| Period | FTE reduction | Time spent for 1 payment transaction/ minute | Time spent for 1 receipt transaction/ minute | Fast Bank reconciliation/ month | Payment process flexibility | Operating cost reduction | Consistency and accuracy of data flow | Vendor and customer satisfaction | Gains from shared service center | Accounting process transformation |
|------------------|------------------|---|---|---------------------------------------|-----------------------------------|--------------------------------|--|---|--|---|
| Up to end 2004 | No | 15 | 15 | Low | Low | Low | Low | Low | Low | Full manual, single posting, full paper-based process |
| 2005 to end 2013 | Cut 5 | 0.3 | 0.5 | High | High | High | High | High | High | Partial interface adoption, encrypted file upload, batch posting, electronic documents |
| 2014 to Current | Cut 3 | Very small | Very small | Very high | High | High | Very high | High | High | Full interface adoption, host-to-host interface, electronic documents transfer to bank |

3.3 Non-interface system, case 3: metal packaging products for beverages

Company background. The interviewed US-based company has manufacturing plants in four different locations in Vietnam: Ho Chi Minh, Dong Nai, Da Nang, and Hanoi. The company provides metal packaging products to beverage companies; its manufacturing plants are located locally for the purpose of fast delivery and convenient warehouse service. The interviewee is a company employee based in Dong Nai. The manufacturing plant in Dong Nai has 350 employees, of which, 8 are in the finance and accounting department which includes the head of finance and accounting. At the time of the interview, the interviewee was the finance manager in the company.

The company purchased raw materials from an estimated 100 suppliers to produce its goods and sold it to an estimated 50 customers in Vietnam. About 500 invoices for payment and 100 invoices for collection are processed each month. The finance and accounting department has two employees in charge of the AP and one employee for the AR. Payments are scheduled twice a month, while collections are executed on daily basis.

Reasons for not applying the interface. Several reasons were put forward as to why the company has not implemented the interface. First, the company was concerned about the risks associated with the interface operation. In its view, transactions are highly exposed to risk when transferred via the company's file from to the bank over the internet. Moreover, the company is apprehensive that the encrypted file can be hacked, and as a result, a huge amount of money can be intentionally transferred to a wrong bank account which belongs to an outsider or hacker. This can lead to a huge financial loss for the company. Hong Kong Shanghai Bank Corporation has tried several times to convince the company regarding the benefits of applying the interface in its core business operations. However, the company remains concerned about the risks. Another problem that concerns the company is the common understanding that risks are passed on from the bank to their clients when they happen. However, the interviewee confirmed that there has never been any case of fraud or disputed transactions reported by banks in Vietnam or those coming from Vietnam's banking industry.

Moreover, current laws on disputes are ambiguous in practice, and they do not generally support a company interest in cases of losses. The company perceived that local authorities do not conduct enough investigations to trace the stolen money, or to find the intruders or hackers.

Payment process description. Currently, the company is using the SUN system for its operations. It is utilizing the EBS only for viewing bank statements provided by Vietcombank and HSBC Vietnam Bank. However, the company does not use the e-banking system for making payments and the e-banking system is not integrated with the accounting system of the company. Therefore, transactions in the AR and AP are manually processed using the traditional method. The finance and accounting department employed two persons responsible for the AP and AR. Payment process is scheduled twice a month, and on average, about 500 local and overseas invoices are processed for each time.

The company is using a paper-based system for the payment process. The accounting staff had to write all the payment details on the payment form provided by the bank. After which, it was physically signed by the authorized persons, and a staff had to bring the original signed payment advice together with the original supporting documents to the bank. The bank, then, had to check and process these payments in the bank. Once completed, all details of transaction were updated and shown on the e-banking system. Finally, the accounting staff used the details for bank reconciliation and in updating the AP and cash book module in the accounting system. With the manual and physical process of accounting for transactions, staff had to spend a significant amount of time to complete all transactions for both AP and AR.

Risk concerns and disadvantages of the current process: steadiness and errors. From the description above, it is obvious that the current payment process requires a lot of manual

operations that have a significant impact on the speed by which accounting process is practiced. Accountant staff needs to post manually the transactions to the AP module one by one to net off the invoice when payment is completed. On average, each transaction takes three minutes to complete.

To illustrate, the total time spent for posting 500 invoices in AP and cash module each month can be 50 hours. Thus, if the company had implemented the interface, it could have saved almost 45 hours each month by running payments two times via the interface process.

The paper-based method is also applied which carries risks, since a staff member has to carry all original documents to the bank such as the original payment advice, invoice, and supporting documents for payments. At the bank, banker enters the information manually onto the banking system where loss of original documents, typo errors, and incorrect vendor information can arise.

In cases where managers are not available on site, the payment process is delayed because they are not able to physically sign on the payment advice form. Thus, this practice considerably slows down the payment process sometimes.

Loss of documents. Another major concern is when a staff member brings the original documents to the bank. Many factors slow down the payment process such as traffic congestion, means of transportation, and geographical location. Because of these factors, missing payments is unavoidable sometimes. In worst case, the original supporting documents can be lost. Although the company can apply a fax indemnity for payments, it can only apply for small amounts and simple transactions. The rest is still executed at the bank.

Slow responsive time. Given the fact that traditional process is still used, the company has applied some mitigating control strategies by applying mass transactions into one batch. Interestingly, it pointed out that payments can be processed as a mass transaction such as the payroll, and multiple invoices for one vendor are dealt with through the local Vietcombank only. However, this type of strategy could not be applied with HSBC, a bank highly regarded for its e-banking system. The company then has to prepare all the necessary details on the excel file such as vendor information, invoice amount, and invoice number, and transmit the file to the person in charge at the bank for review. It is then compared with the original payment advices carried by a staff member at the bank. If all information is correct, the file with the mass transactions is uploaded to their banking system.

Approval bottleneck. Obtaining a signature on the payment advice form is also a major concern for the company. Manually signing on 500 invoices per payment is a huge work for a manager. In addition, there is no flexibility of getting the manager's signature when he/she is out of the office. In this case, the payment process is delayed further leading to late payments.

Since the interface was not applied, the company had to report the amount of cash balance in the banks to regional office before 9:00 a.m. daily. At the regional level, this report on cash availability can be viewed by all affiliates for treasury purposes. However, this practice required some local staff to be on standby to report changes daily. In case of missing information, the person in charge at the regional level sends the reminder to the local staff.

High workload of bank reconciliation. Bank reconciliation is maintained intensively on a daily basis and especially at the end of the month as required of every company. The non-application of an e-banking interface means that the company has to spend a huge amount of time for bank reconciliation to ensure that all transactions correspond with cash book in the accounting department. As stated in the previous sections, invoice details are downloaded directly from the linked tool and then printed out to the bank advice form. The accountant or staff member needs to follow-up on the payment which is either rejected or

adjusted for processing. To fill the gap, staff personnels are required to spend more time on bank reconciliation to ensure that data on both the e-banking system and accounting system are entirely matched.

Expensive bank charge. The interviewee also stated that the fee for processing payments using the e-banking system offered by HSBC and Vietcombank is less costly than that required in the manual payment process, at about 70 percent less (Table VI).

3.4 Non-interface system, case 4: Wacoal (Vietnam) Ltd

Company background. The next case study is of Vietnam's Wacoal Corporation. The company's core business is the manufacturing of underwear and sportswear products mainly for women. It is a part of Wacoal Corporation based in Japan. Currently, the company has more than 2,000 workers and had \$40 million revenue in 2015. It has a built-in office and a factory in Dong Nai, Vietnam. The interviewee, who was the general manager, has worked for the company for more than 18 years in the same position.

Based on the main activities discussed above, the company has retained one employee who handles the AP and another employee who takes care of the AR in Vietnam.

Reason for not applying the interface. Currently, the company has not implemented the interface between accounting system and e-banking system due to several reasons. First, the company group does not have a corporate accounting system, so each affiliate has to use its own system. The company in Vietnam has been using the Sun system since its establishment in 1997. Moreover, the headquarters do not require the company to apply the interface in Vietnam. The company also does not have many transactions to process. At the time of the interview, the company had been having monthly payment invoices of only 70 and collection invoices of 8 which are all from other affiliates.

Current transaction process. The company follows a full manual processing of payments, collections, and posting to the ledger accounts from the beginning of the company's establishment. For local payments, the company has used the payment advice form issued by Vietcombank, whereby managers have to sign directly on the form, and accounting staff has to bring the original signed form to the bank for processing. The accounting staff had to wait and collect the payment advice form back on which payment endorsement was made by the bank. Based on the bank's endorsement, the accounting staff processes the transaction in the AP and cash modules in the accounting system.

For overseas payments, the company has been using the form issued by Tokyo Mitsubishi UFJ in Vietnam. The form, after signed, is then faxed to the bank for processing. A day later, the bank faxes back the summary payment transaction to the company. Then, the accounting staff processes the transaction to the AP and cash modules in the accounting system. However, in 2015, the company has recently started to use the e-banking system of Tokyo Mitsubishi UFJ for the main purpose of viewing bank statements quickly.

Based on the nature of the company's operation and its small number of transactions, the company disclosed that interface implementation is not necessary in the near future considering current business growth rate (Table VII).

4. Discussion and conclusions

Based on the findings from the four cases and the first-hand experience in the application of the interface for ten years in the company, this research confirms the benefits of using the interface system in business operations. In fact, DNP VN was able to cope well with the significant increase in the amount of processed invoices in the last ten years despite having only two employees handling the AR and AP. Saving time driven by the interface adoption is potentially measured at 44.6 days/year from payment and 21.4 days/year from receipt process.

Table VI.
Summary of findings
from the non-interface
adoption in case 3

| Period | FTE reduction | Time spent for 1 payment transaction/ minute | Time spent for 1 receipt transaction/ minute | Fast Bank reconciliation/ month | Payment process flexibility | Operating cost reduction | Consistency and accuracy of data flow | Vendor and customer satisfaction | Gains from shared service center | Accounting process transformation |
|-----------------|------------------|---|---|---------------------------------------|-----------------------------------|--------------------------------|--|---|--|--|
| Up to end 2013 | No | 15 | 15 | Low | Low | Low | Low | Low | na | Full manual, single posting, full paper-based process |
| 2014 to current | No | 5 | 5 | Medium | Low | Low | Low | Low | na | Electronic banking system, with excel upload, single posting, less paper- based process |

| Period | FTE reduction | Time spent for 1 payment/ transaction/ minute | Time spent for 1 receipt transaction/ minute | Fast Bank reconciliation/ month | Payment process flexibility | Operating cost reduction | Consistency and accuracy of data flow | Vendor and customer satisfaction | Gains from shared service center | Accounting process transformation |
|-----------------|---------------|---|--|---------------------------------|-----------------------------|--------------------------|---------------------------------------|----------------------------------|----------------------------------|--|
| Up to end 2014 | No | 15 | 15 | Low | Low | Low | Low | na | na | Full manual, single posting, full paper-based process |
| 2015 to current | No | 5 | 5 | Low | Low | Low | Low | na | na | Electronic banking system but for viewing only, excel file upload, single posting, paper-based process |

Table VII.
Summary of benefits gained from the non-interface adoption in case 4

In addition, another interviewee has confirmed that his company benefited from a reduction of about 30 percent in FTE (equivalent to five FTE) as a result of the interface application at the first phase while no FTE was required for the AR when the interface has been fully integrated. The total reduction in personnel costs for the accounting department was estimated at USD49,000 per year. Similarly, the accounting staff in both companies with the interface system has been handling an increasing number of invoices due to the significant growth in business within the last ten years. Thus, the potential cost saving is huge.

4.1 Managerial implications

From the managerial perspective, adopting interface leads to efficient gains in the process of accounting transaction. Multiple invoices are quickly processed at a single point of time without interacting with bank employees, substantially reducing time consumption for manual process in traditional method. The accounting transaction is processed with high accuracy level. Utilizing the interface prevents data error caused by keyboard slips or user error. Data flow via the interface is fully consistent and it is secured with no manual intervention, which eliminates fraud. Additionally, opting for the interface significantly reduces the workload for reconciliation between bank accounts and cash books module. Besides those mentioned above, the interface can provide many efficiencies in business performance such as payment process flexibility with fast payment approval by managers working overseas, high level of customer and vendor satisfaction.

The interface infrastructure is also applied in the SSC located overseas which also handles parts of the accounting process. Thus, the FTE in accounting process can be leveraged. In addition, such an advanced set up is in the roadmap to streamline and optimize several sections of the financial process in large companies that have applied the standardized accounting software system. These benefits identified are significant for any entity to adopt interface. Obviously, it can reduce the costs of financial operations in the future. The fact that adoption of interface has seen significant benefits across aspects should form a key motivator for enterprises in Vietnam to adopt interface. The key aspects that could be used by interface providers are savings in cost, time, accuracy, and security of the transactions. Therefore, there is strong evidence that companies in Vietnam that have applied the interface system in their business operations have gained enormously.

Adoption of interface helps in ease of maintaining financial transaction records and also tracking them easily. In addition, since transaction trails can be easily identified, the effect or possibility of fraud is minimized to a substantial extent or is completely eliminated. The complexity of auditing the transactions is also reduced given the fact the every transaction trail can be easily identified. This leads to substantial enhancement of governance and ease in monitoring for the top management. With the geographical distance between markets shrinking and the continued interactions between developed and emerging markets, the need for such an integrated system is highly essential. An integrated system helps in matching with the systems in the rest of the world ensuring transparency and confidence for other stakeholders such as the clients. This transparency could throw open new markets as well as increase the scale of operations for which again an integrated system is necessary to ensure efficiency.

However, concerns regarding exposures to risk with the use of the interface are still high, particularly for the metal packaging company. It is for that reason that the company has not yet applied the interface in its operations. Despite the strong evidence of the benefits from using the interface, and lack of proofs concerning the risks involved, the company has maintained the use of the traditional method regardless of its disadvantages such as risk of document loss, slow processing, high error possibility, and expensive bank charges. However, in the future, the company might reconsider the use of innovation in the future depending on the manager's attitude and business requirements. With regards to the

potential benefits of having a SSC, the two non-interface companies have lost the opportunity to reduce operating cost from implementing a standardized accounting process.

This research paper has highlighted the importance of the interface system between electronic banking and accounting modules for companies doing business in Vietnam. The information provided in this paper will enhance the awareness of scholars and practitioners on the positive impact of not only the interface system, but also the application of innovations and advanced technology to banking services. However, the interface cannot completely replace the traditional system despite the gains. From this paper, enterprises can gain a new perspective on the benefits from the interface; however, its impact on banks is not analyzed. Therefore, this is an interesting area for future research studies. Furthermore, this paper only focuses on the effects of interface between EBS and accounting modules in the form of electronic payment and file-to-file interface. In reality, banks provide a variety of services which can also be explored by other researchers.

References

- Al-Smadi, M.O. (2012), "Factors affecting adoption of electronic banking: an analysis of the perspectives of banks' customers", *International Journal of Business and Social Science*, Vol. 3 No. 17, pp. 294-309.
- Ang, J. and Pavri, F. (1994), "A survey and critique of the impact of information technology", *International Journal of Information Management*, Vol. 17 No. 3, pp. 122-130.
- Chauhan, V. and Choudhary, V. (2015), "Internet banking: challenges and opportunities in Indian context", *Journal of Management Sciences and Technology*, Vol. 2 No. 3, pp. 29-40.
- Dabholkar, P. (1996), "Technology-based service delivery", *Advances in Service Marketing and Management*, Vol. 3 No. 1, pp. 241-71.
- Eastin, M. (2002), "Diffusion of e-commerce: an analysis of the adoption of four e-commerce activities", *Telemetric and Informatics*, Vol. 19 No. 3, pp. 251-267.
- Fink, D. (1998), "Guidelines for the successful adoption of information technology in small and medium enterprise", *International Journal of Information Management*, Vol. 18 No. 4, pp. 243-253.
- Goldman, G. (2007), "Periodical payment model using restricted proxy certificates", *ACSC '07: Proceedings of the Thirtieth Australasian Conference on Computer Science*, pp. 131-139.
- Hanzaee, K.H. and Alinejad, S. (2012), "An investigation about customers perceptions of security and trust in e-payment systems among Iranian online consumers", *Journal of Basic and Applied Scientific Research*, Vol. 2 No. 2, pp. 1575-1581.
- Harris, H., Guru, B.K. and Avvari, M.V. (2011), "Evidence of firms' perception towards electronic payment systems (EPY) in Malaysia", *International Journal of Business and Information*, Vol. 6 No. 2, pp. 226-245.
- Jeff, S. and Willem, H. (2002), "'Enterprises application integration and complex adaptive systems' – could system integration and cooperation be improved with agentified enterprise components?", *Communications of the ACM*, Vol. 45 No. 10, pp. 59-64.
- Katz, J. and Aspen, P. (1997), "Motivation for and barriers to Internet usage: results of a national public opinion survey", *Internet Research: Electronic Networking Applications and Policy*, Vol. 7 No. 3, pp. 170-188.
- Kaur, K. and Rajneesh. (2014), "Electronic banking in India: innovations, challenges, and opportunities", *International Journal of Management and Commerce Innovations*, Vol. 2 No. 1, pp. 86-93.
- Koskosas, I. and Paul, R. (2004), "The interrelationship and effect of culture and risk communication in setting internet banking security goals", *Communication of the International Information Management Association*, Vol. 4 No. 2.
- Kouril, D. and Basney, J. (2005), "A credential renewal service for long-running jobs", *Proceedings of the 6th IEEE/ACM International Workshop on Grid Computing*, IEEE Computer Society Press, Seattle, WA, pp. 63-68.

- Liao and Cheung, M.T. (2003), "Mobile computing opportunities and challenges", *Communications of the ACM*, Vol. 46 No. 12, pp. 80-85.
- Nasri, W. (2011), "Factors influencing the adoption of internet banking in Tunisia", *International Journal of Business and Management*, Vol. 6 No. 8, pp. 143-160.
- Nigudge, S. (2014), "E-banking: service, importance in business, advantages, challenges and adoption in India", *Asian Journal of Management Science*, Vol. 2 No. 3, pp. 190-192.
- Pham, L. (2010), "A conceptual framework for ebanking service quality in Vietnam", *The Business Studies Journal*, Vol. 2 No. 1, pp. 81-95.
- Premaratne, S. (2009), "Business process integration, automation, and optimization in ERP", *Business Process Management Journal*, Vol. 15 No. 4, pp. 504-526.
- Schein, E. (1990), "Organizational culture", *American Psychologist*, Vol. 45 No. 2, pp. 109-119.
- Thang, V.M. (2016), "Vietnam ERP market and ERP applying orientation in the enterprise", available at: <https://tech.fpt.com.vn/language/en/vietnam-erp-market-and-erp-applying-orientation-in-the-enterprise/> (accessed August 9, 2017).
- Thong, J.Y.L. and Yap, C.S. (1995), "CEO characteristics, organizational characteristics and information technology adoption in small businesses", *Omega: International Journal of Management Science*, Vol. 23 No. 4, pp. 429-442.
- Tilden, M. (1996), "Channel vision", *Retail Banking International*, Vol. 28 No. 1, pp. 12-15.
- Vietnam News* (2013), "VN set to embrace mobile banking", *Vietnam News*, May 25, p. 1.
- Yin, R. (1994), *Case Study Research: Design and Methods*, Sage Publications, Thousand Oaks, CA.

Further reading

- Asher, J. (1999), "Small business: suddenly everyone wants a piece of it", *American Association Banker Journal*, Vol. 91 No. 4, pp. 53-67.
- Bernard, H.R. (1995), *Research Methods in Anthropology*, Sage Publications, Thousand Oaks, CA.
- Jianquan, G. and Chiliang, S. (2003), "Regional advantages under the net-based environment", *Proceedings of the 5th International Conference on Electronic Commerce*, pp. 339-347.
- Karjaluoto, H., Mattila, M. and Pentto, T. (2002), "Electronic banking in Finland: consumer beliefs and reactions to a new delivery channel", *Journal of Financial Services Marketing*, Vol. 6 No. 4, pp. 346-361.

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