The Implementation of MIS in Banks of Tuzla Canton

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Abstract

Information Systems (IS) are playing an important role in the banking sector. Increasing speed and power of information and communication technologies and their innovative applications enable banks operating in developed economies to gain competitive advantage and enhance their customer satisfaction. The purpose of this study was to investigate the role of banking IS in the context of a transitional economy. In particular, a survey study was conducted to audit the implementation of IS in banks operating in Canton Tuzla, Bosnia and Herzegovina. The data were collected from the employees who were users of IS in these banks. The collected data were analysed using descriptive tests. The results revealed some interesting patterns. These findings and their implications are discussed in detail and some plausible directions are recommended for future research.

Keywords: Information systems (IS), IS sophistication, IS usage, IS success, banking sector, survey study, Bosnia and Herzegovina

Introduction

Banksarebecomingincreasinglydependant on informationsystems (IS) fortheirday-to-dayperformance. IS isplaying a vital role in increasingefficiencyandreducingcost, as well as in differentiation of bankingproductsfromitscompetitors.

Increasingspeedandpower of informationandcommunicationtechnologiesandtheirinnovativeapplicationsenablebanksoperating in developedeconomiestogaincompetitiveadvantageandenhancetheircustomersatisfaction. However, thenewrequirementsforinformation, largeexposuresandstresstestingpresentnewchallengestothefinancialsector. Therefore, banksneedtocontinuoslylook at how theyareaddressingthere IS requirements.

The 2011 survey of managementinformationsystemsconductedbytheAssociation of ForeignBanks (2011) reportedslowprogressfromtoomuchdependence on spreadsheetstoincreasedinvestments in businessintelligencetechnology. However, verylittleresearchexiststhatinvestigatesthe role of IS in thebankingsector of thedevelopingandtransitionaleconomies.

Recognisingtheimportance of the role that IS plays in thebankingsector, thepurpose of thisstudy is toaddresstheissue in thecontext of BosniaandHerzegovina. Inparticular, thestudyaimstogain an insightintothestate of IS implementation in thebanksoperating in

Tuzla Canton, a region of BosniaandHerzegovina. Canton Tuzla is a homeregion of one of theauthorsandtherefore of specialinterest.

LiteratureReview

Information systems (IS) are defined as inter-related sets of hardware, software, people, procedures and data components (Turban et al, 1999). The main goal of IS is to collect, manipulate and disseminate information in order to help individuals and collectives to improve their business operation and decision making.

The literature classifies IS into different types on the basis of the activities and functions they support (Laudon and Laudon, 2006, 2007). The major types of IS mentioned in the literature include: Transaction Processing Systems; Enterprise Systems that cover Supply Chain Management Systems and Customer Relationship Management Systems, as well as various Functional Information Systems such as Human Resources Management Systems, Accounting, Finance, Marketing Information Systems; Managerial Support Systems that include Management Information Systems, Decision-Support Systems, Executive Support Systems, Knowledge Management and Business Intelligence Systems, There are also special purpose systems like Geographic Information Systems.

The role of transaction processing systems is seen in capturing and recoding daily business transactions such as sales, receipts, orders, cash deposits, payroll records etc. Management information systems support operational management by summarising and reporting basic operations using data from the transaction processing systems. Decision support systems focus on solving semi-structured decision problems. Executive support systems are concerned with internal and external data needed for long-term planning. More recently, knowledge management and business intelligence/analytics systems are becoming popular means of support for organisational knowledge development and transfer (Post and Anderson, 2006; Oz, 2009).

Enterprise systems comprise of two major subsystems: supply chain management and customer relationship management systems. The first one supports purchasing of raw materials, and manufacturing and assembly activities. The second one manages organisation's relationships with customers. The major goal is to increase the quality of customer service. Enterprise systems also include various functional systems (eg. human resources, accounting and finance management) that provide support for secondary activities in the value chain.

All these types of systems can be found in the banking sector where they support various primary and secondary value chain activities. For example, retail banks use internet and phone banking to provide maximum customer services on loans, accounts, credit cards, insurance, etc. (Pond, 2007). Wholesale banking provides internet solutions for commercial banking, corporate banking, specialised lending services, treasury management etc. (Hoyt, 2012). Customer identification (Rhodes, 2012) systems provide security, employee records (Islam, 2011) monitor the working efficiency of an employee, complaints system gives an opportunity to a customer to complain via a written and online communication (European Investment Bank, 2010; Uppal, 2010). Account opening is simplified (Sinha 2012) and ATM enables easy withdrawal of cash (Hayashi et al, 2006). Electronic banking has been seen as an inevitable aspect of financial services (Harris and Spence, 2012). More recently, mobile banking is being encouraged (Hayashi, n.d.). Electronic clearing service deals with bulk and repeating payment transactions (Reserve

Bank of India, 2011). RTGS (real time gross settlement) service facilitates interbank money transfer (Kaushik, 2012). Finally, e-billing solutions increase convenience and decrease biller's cost (Radecki and Wenninger, 1999).

Research Methodology

Descriptive survey was selected as a preferred research method to investigate the level of sophistication, usage and impact of information systems (IS) implemented in major banks operating in Canton Tuzla. This method enabled systematic gathering of quantitative data from a sample of individuals for the purposes of describing the attributes of the larger population of which the individuals were members (Glock, 1967).

For the purpose of the current study, IS sophistication was evaluated in terms of the availability and quality of various IS types from the bank employee-user point of view. IS usage was examined in terms of the level of support provided for internal bank activities, as well as bank obligations towards external regulatory bodies. Finally, IS impact was assessed in terms of its perceived effectiveness and user satisfaction.

The collection of data was carried out through surveys of employees who were working in different bank departments. A total of 21 employees from 4 different banks participated in the study on a voluntary basis. The survey forms were distributed to respondents personally by one of the researchers. The names of the participating banks and employees are not disclosed in this paper in order to protect their privacy.

In responding to the survey questions, the respondents provided basic demographic information (ie. position, education, experience, sex, age, duties). Then they rated various aspects of their bank IS (ie. sophistication, usage, impact) on seven-point Likert scales, with 1 and 7 representing the most negative and positive end-points. They were also asked to provide optional textual comments and/or suggestions. Their responses were encoded and analysed using MS Excel descriptive statistics. In addition, bank websites and documents were used to collect secondary data about the prevailing bank culture and strategy.

Results

The overall results shown in Table 1 indicate that almost all aspects of the banking IS were positive. These positive assessments were demonstrated by the average scores greater than 4 (out of 7). The only negative assessment was obtained for ERP. Its average score of 3.79 was lesser than 4 (out of 7). Respondents were somewhat undecided with respect to IS Usage for fulfilling their bank obligations towards state. This was demonstrated by the overall mean score equal to 4 (out of 7). The results further show that all average scores were below 7. Such scores point to major weaknesses and obstacles and indicate that there is room for further improvement.

The most sophisticated types of IS were electronic banking (6.57) and communication systems (6.43). They were followed by basic banking system (5.90), clearing system (5.76) and RTGS (5.71). Business intelligence systems were fairly good (4.80). In contrast, enterprise resource planning systems were poor (3.79).

With respect to IS usage, the results indicate that the systems were used mostly for management support (6.06). This was followed by fullfiling obligations towards regulatory bodies (5.35). As mentioned before, respondents were unsure about IS usage for fullfiling obligations towards state.

The results for IS impact show that the users of the evaluated bank IS were very satisfied with their systems (6.43) and that these systems were highly effective (6.14) in supporting their work.

Table 1: Mean Respondents' Scores of Various IS Aspects Examined

Aspect of Information Systems	*Score*
IS Sophistication:	
Basic banking system	5.90
Business intelligence	4.80
Enterprise resource planning	3.79
Electronic banking	6.57
RTGS	5.71
Clearing system	5.76
Communication systems	6.43
IS Usage:	
Management support	6.06
Support for obligations towards regulatory bodies	5.35
Support for obligations towards state	4.00
IS Impact:	
System effectiveness	6.14
User satisfaction	6.43

Further analysis of collected data was performed to examine any potential differences among four banks with respect to their IS sophistication, IS usage and IS impact. The results of the comparative analysis among banks is presented in Figure 1.
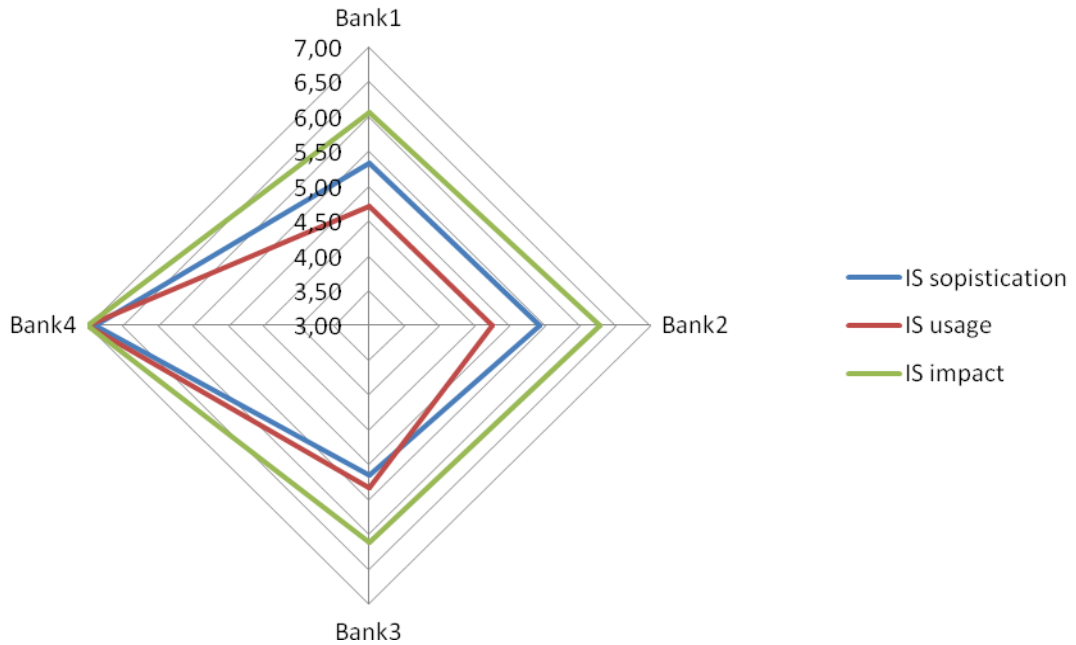
Figure 1: Comparative Analysis of IS Aspects in Four Banks

Figure 1 shows clear differences between four banks. One bank (bank 4) has much higher scores than other three banks (bank 1,2,3) for all three IS aspects evaluated. The mean score for IS sophistication of bank 4 (6.90) is higher than those of bank 2,1 and 3 (5.43, 5.33 & 5.14). Similarly, the mean score for IS usage of bank 4 (7.00) is higher than those for bank 3,2 and 1 (5.33, 4.76 & 4.71). Finally, The mean score for IS impact of bank 4 (7.00) is higher than those for other banks 2,3 and 1 (6.29,6.13 & 6.07).

Only three respondents from the same bank gave written comments. Two were negative and one positive. One respondent commented that the bank had "poor equipment", and another one that the bank "needs to improve its information system due to frequent break downs". In contrast, the third respondent from the same bank claimed that "in our bank, all functions well".

Discussion

This study examined the implementation of IS in the banking sector of one specific region (Canton Tuzla) of a national economy in transition (Bosnia and Herzegovina). The study found out that the banks operating in this economy and region: (a) possess sophisticated IS, (b) use IS extensively to support their banking activities; and (c) banking IS have positive impact on business. The study also determined that some banks were more successful than others in implementing IS.

With respect to IS sophistication, the overall findings indicate that transaction processing types of systems were highly sophisticated, business intelligence systems were fair, while enterprise resource planning systems were poor. Such findings are consistent with early stages of IS maturity. They suggest the need to better integrate disparate functional systems, as well as front-end and back office systems in order to provide full support along the primary upstream/downstream and supporting activities in the value chain. The findings also suggest that the banks could better use their business intelligence systems to discover valuable patterns from their transaction data.

The overall findings regarding IS usage indicate that the systems were mainly used for the operational management, and to a lesser extent for fulfilling regulatory obligations and still lesser extent for fulfilling state obligations. This is consistent with the earlier study finding of poor integrated enterprise systems and fair business intelligence systems. Yet, these systems are essential for providing key performance indicators across banking activities.

Finally, he study found that the participants were overall satisfied with their IS and perceived them as effective in supporting their daily work. Given that most respondents were employees in positions of tellers, cashiers and bank officers rather than managers, this is not surprising. These employees were prime users of various transaction processing systems that were assessed as highly sophisticated and used to support operational management.

However, a comparative analysis of four banks showed that one bank was more successful than other three banks in implementing a successful IS system. Bank 4 was dominant with perfect or near-perfect mean scores on all three aspects of IS (sophistication, usage and impact) that were evaluated.

Deeper analysis of this bank revealed that it was a very successful big international bank with very high standards established in every aspect of their operation. In contrast, the other three banks need a lot of catching up. The encouraging finding from one of these banks is that some respondents from this bank recognised the problem they had with poor equipment and frequent system break downs.

Conclusions

This study made two important contributions to research and practice. For research, the study provided an insight into the state of IS implementation in the context of a transitional economy and at a regional level. The findings revealed notable differences among banks and system types implemented. For practice, the study pointed out major weaknesses and obstacles that need to be overcome by banks in order to provide full support for their banking activities.

However, the study is not without limitations. It examined IS implementation from the bank employees' rather than the bank customers' perspective. The number of participants was rather small. This may affect its reliability. Data were collected in Bosnia and Herzegovina. The question is whether these results would hold in a different economy and culture.

Further research is recommended to overcome these limitations. Future research may replicate and extend the current investigation to other contexts, systems and subjects in order to verify and generalise these findings. Future research is also encouraged to develop new research models and variables aimed at enriching our collective understanding of the successful IS implementation.

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