

Data Management Challenges to selected Financial Sectors in Malaysia: Tools and Practices

Mansur Aliyu
Department of Information System
Faculty of Information & Communication Technology, International Islamic
University Malaysia 10, 50728 Kuala Lumpur, Malaysia
Ph. 0142280569, mansuraliyu@yahoo.com

ABSTRACT

This paper presents an analysis of current data management challenges, tools, and practices in selected financial institutions developed (i.e. United Kingdom) and developing (i.e. Malaysia) countries. The paper attempts to explore how SAS tools were used to tackle those challenges and the benefits gained by implementing SAS software. Also, the paper examined the business data management tools and practices used by the selected organization to propose alternative technologies for improvement and best practice.

Keywords: *Data management; financial institutions; SAS; tools; practice.*

INTRODUCTION

The importance of data management (DM) in the 21st century economy is indispensable. The effective management and utilization of the diverse data and information obtained from financial transactions today is critical to enterprise governance and customer relations management. Several technologies/tools are being employed to help manage the vast amount of data at all levels in the financial sector. The challenges in managing and exchanging data in real time within and outside financial institution requires the use of sophisticated tools and practices for reliable and efficient financial transactions. Financial institutions today combine a wide range of product and service offerings, across banking, insurance and asset management firms in global cross border markets (Teodoru, 2009). Their sizes had gone beyond their corporate buildings and countries, with increasing collaborations with investors, suppliers, and customers both online and face-to-face. Creating more sophisticated

products and services for the relentlessly competitive marketplace. Those who automate and streamline their operations and services most effectively and efficiently will gain significant competitive advantage and build greater market share (Teodoru et al 2009). As such, financial institutions are generally confronted with ever-increasing data, information, and knowledge which force them to accumulate vast amount of data daily for processing and warehousing. The management and processing of these vast financial data is no longer feasible manually, and so the need to employ and implement data management technologies across branches and departments. Data management is defined as the planning, execution and oversight of policies, practices and projects that acquire, control, protect, deliver, and enhance the value of data and information assets (Mosley et al. 2009). Nowadays, there are advance data management tools and practices adopted by several financial institutions both in developed and developing countries to provide solutions to various data management problems. That will provide business organizations with business intelligence opportunities, increase market share, gain competitive advantage, and improve decision making process.

Definitely the use and integration of these tools with financial services/products provides financial organizations with an enterprise-wide control of devices and data for managerial decision making and corporate IT governance. As data integration, linkages of information, data availability & redundancy, fast data access, timeliness & updating of information, and information standardization are very important requirements for data/information management that are not yet met in a satisfactory way (Meissner, et al. 2002). These requirements are a great challenge especially to banks when exchanging data on real time bases with competing partners. This is because they all involve the use of communication networks (data & voice)

both private and public for information access and data transfer. Most critical is that customers use public networks to carry out some transactions with their financial service providers and these networks are beyond the organization's control, therefore imposes challenges on security, risk, speed, and unreliable mode of transaction, or sometime having infrastructural downtime.

In the light of all these challenges, this paper reviews the literature on recent data management issues and challenges, followed by the evaluation of identified DM tools used in financial sector. The paper also discusses the data management practice in financial institutions in developed and developing countries that implemented SAS software. Finally, the paper concludes with the impact of DM tools on the identified financial organizations in both the developed and developing countries.

DATA MANAGEMENT CHALLENGES

Many of the financial institutions had grown to become big corporate enterprise with many branches within and outside their country of origin. These force them to adopt enterprise governance in order to manage the vast amount of data generated at all levels and branches. Meissner et al. (2002) argued that exchanging data in real time between the right entities is a key challenge as information flow needs to be controlled all the time, for that reliability and performance are considered a big challenge in managing corporate financial data. Reliability been defined in the business context, as an ability to perform the promised service dependably and accurately (Parasuraman et al. 1988). However, the reliability on the Internet focuses more on the technical aspect (Song and Zinkhan, 2003). Technically, reliability is seen as the extent to which the website is available and functioning properly (Zeithaml et al. 2002). On the other hand, performance includes high transmission

rate with high and free bandwidth availability (Meissner, et al. 2002). Accordingly operational reliability and system performance if not addressed properly could affect the overall organizational efficiency and response time which eventually could pose a great challenge to the organization. Similarly, data integrity poses an interesting challenge to data management as it requires several complex data structures to be made flexible for exchange while supporting compatibility of different versions of data schemas.

Conversely, risk management is identified as a major data management issue requiring close attention in the financial sector. Power et al. (2009) challenges the core elements of enterprise risk management (ERM) as part of intellectual failure that contributes to financial crisis. The authors argued that senior management and boards must understand risk appetite more as the consequence of a dynamic organizational process involving values as much as metrics. Explaining that risk management and mitigation processes should be explicitly related to organizational and sub-organizational objectives, design controls and mitigations which produce a residual risk consistent with a target risk appetite, and monitor this entire process, making feedback adjustments as necessary (Power et al. 2009). Similarly, Cummins et al. (2009) studied efficiency of insurance firms with endogenous risk management and financial intermediation activities, in which they found that risk management is a complicated data management issue, because nowadays customers are really concerned about risk practices and exposure.

Additionally, Teodoru et al. (2009) reported that business process management and integration solution could be a challenge to data management processes. Integration is now more than ever the key to efficiency, enabling lower transaction costs and increased sales volumes, which holds true for capital markets,

for retail financial services, and for the corporate sector. Teodoru (2009) argued that integration and process optimization not only has to extend across the enterprise, but must also embrace third parties who often supply key components of today's complex, multi-instrument financial products. There is no doubt that only a sophisticated and efficient data management software can automatically handle these business intelligence processes effectively.

Personal data management is another challenge to data management in financial institutions. As electronic transactions today make it necessary for the customers to give away their personal data to the service provider and hope that the latter will not use them in a malicious way (Efraimidis et al 2009). In order to protect customer's personal information financial organization's had to manage and secure that information alongside financial information, which increases the volume of data to manage and attracts higher costs. For example, banks are responsible for the confidentiality, integrity, and authenticity of customer's information. This responsibility is strongly enforceable as a result of the existence of privacy regulations that make sure financials organizations to protect customer's personal information. Thus, managing and protecting customer's personal information becomes a challenge to financial institutions, even though they take advantage of that to study customer's income inflow and expenses. That will give them the opportunity to understanding what products and services are affordable to individual or category of customers.

METHODOLOGY

An exploratory content analysis was conducted to examine some selected data management tools used mostly in financial sectors in the UK and Malaysia. The content analysis was conducted between 2nd and 10th February, 2010. In all 26 DM

tools were selected and each of the vendor's website was evaluated to determine solutions provided by these tools (see Appendix). Out of the 26 tools evaluated 16 were found given more focused on business intelligence in financial and other sectors. Health, manufacturing and services sectors had three (3) tools each out of the 26 evaluated. Although, majority of the DM tools evaluated were Open Source, three (3) vendors (SAS, IBM, Oracle, Pervasive, and Gain) were found to be the leading proprietary software providers for data management. These vendors provides the standardized products/solutions that cut across all aspects of data analytics and integration, most especially on business intelligence, risk management, and customer relations. Among all the 26 DM tools examined SAS was found to be the most popular tool in use with more than 45,000 business, government and university sites relying on SAS, covering 92% of the top 100 companies on the 2009 Fortune Global 500 List (www.sas.com). Therefore, SAS is adopted in this study, to examine the impact of data management in financial sectors of developed (UK) and developing (Malaysia) countries.

ANALYSIS OF FINDINGS FROM SELECTED SAS USERS

SAS tools were selected to examine the challenges faced by developed (UK) and developing (Malaysia) countries. The findings shows that industries in developed countries were the major users of SAS, with United States having the highest number of 208 (i.e. 43.2%) out of the 481 organizations found to be using SAS as at the time of the study (www.sas.com), with United Kingdom having 21 organizations that implemented SAS. Among developing countries, Malaysia and China were the major users of SAS tools having 13 organizations each. In this section, SAS users from

developing (Malaysia) and developed (United Kingdom) were examined based on the DM challenges faced, tools used, and practical benefits achieved.

SAS DM CHALLENGES IN MALAYSIA

Out of the 13 Malaysian organizations using SAS 6 are financial institutions comprising 4 banks and 2 insurance companies. The finding shows that all these organizations benefited from the SAS software, even though implemented for different solutions. Table 1 summarizes the findings revealed from the exploratory content analysis on the 6 financial institutions in Malaysia that implemented SAS tools.

Table 1: Financial organizations using SAS in Malaysia

Organization	Challenges	Tools	Benefits
AFFINBANK	<ol style="list-style-type: none"> 1. Integrate risk management procedures 2. Comply with Basel II Accord. 	SAS® Enterprise Risk Management	<ul style="list-style-type: none"> • Met the Basel II deadline (Jan. 08) ahead of schedule. • Better risk management practice. • Offer better risk-adjusted pricing to customers.
Alliance Bank	<ol style="list-style-type: none"> 1. Banking-specific solution to integrate disparate data. 2. Provide timely data access for critical decisions. 3. Leave transparent and auditable reporting trail. 	SAS Banking Intelligence Architecture with SAS Data Integration Server and SAS Data Integration	<ul style="list-style-type: none"> • Integrated eight source systems to give a single enterprise-wide view of customers, products and services. • Detailed transactional data, increases productivity and efficiency through reduced dependency on information systems. • Risk compliance, customer info.
CIMB Bank	<ol style="list-style-type: none"> 1. Improve credit scoring capabilities 2. Continue its growth and 	SAS Credit Scoring for Banking	<ul style="list-style-type: none"> • The bank builds up its internal capability in risk scorecard development. • Reduces the turnaround time for credit application

	speed up profitability		processing. <ul style="list-style-type: none"> • Able to price products competitively based on risk • Build sophisticated application and behavioral scorecards
EON Bank Group	<ol style="list-style-type: none"> 1. Consolidate multisource data. 2. Meet credit risk requirements for Basel II compliance. 	SAS [®] Credit Risk Management for Banking	<ul style="list-style-type: none"> • Decreased credit losses through improved risk models and smarter customer segmentation capabilities. • Enhanced credit policies and smoother internal processes.
Insurance Services Malaysia	<ol style="list-style-type: none"> 1. Help Malaysian insurers become more competitive. 	SAS Enterprise BI Server	<ul style="list-style-type: none"> • ISM's members advance their businesses with the help of speedy, accurate and consistent information. • Industry depth along with predictive analytics, risk scoring and intelligence about operational trends.
Malaysia Deposit Insurance Corporation	<ol style="list-style-type: none"> 1. Assess, monitor and manage risk in the Malaysian banking community 	SAS [®] Financial Management and SAS [®] Strategic Performance Management	<ul style="list-style-type: none"> • Reduce data gathering and processing time. • Allows PIDM to gather and report on data from banks across the country

(Source: www.sas.com)

The findings from Table 1 shows that all the four (4) banks (Affinbank, Alliance bank, CIMB bank, and EON bank) were faced with risk management challenges as such they employed SAS tools to help them manage their risk procedures. Although they implement slightly different SAS tool components, their target was to improve risk management practices. Being one of the DM functions, risk management is an important mission critical to the health of the financial sector. Adequate risk management systems are not only of great concern to the stakeholders and investors but also the bank's customers. Other DM challenges faced by banks in developing countries are:

- Integration of multiple data sources to give a single enterprise view
- Provision of timely data access for critical decision;
- Improved credit scoring capabilities;
- Growth and speed up profitability;
- Meeting credit risk requirements for Basel II compliance.

The two insurance companies (i.e. Insurance Services Malaysia and Malaysia Deposit Insurance Corporation) also implement SAS tools in order to assess, monitor and manage risk in the Malaysian banking community as well as help Malaysian insurers become more competitive. Again, the finding shows that the two insurance companies implemented different versions of the SAS software (i.e. SAS Enterprise BI Server and SAS® Financial Management & Strategic Performance Management) as shown in Table 1.

On the organizational impact, all the organizations examined reported that they achieved the target benefits through the use of SAS. Although, the chief risk officer of Affinbank said, “SAS is a powerful tool but yet is not able to give us a big advantage for being so uniquely flexible.” Therefore, they still need SAS® Enterprise Risk Management suite to be more flexible in handling risk procedures. Nevertheless, Alliance Bank, Group CEO said, “*Our collaboration with SAS has enabled us to gain insights into our customers’ behavior and needs, thus allowing us the opportunity to offer ‘Banking Made Personal’ for our customers through our suite of products and services.*” Thus, the findings revealed that all the financial organizations that implemented SAS tools in Malaysia had achieved the target benefits that met the user’s requirements.

DM CHALLENGES IN UNITED KINGDOM

Table 2 shows that the financial organizations using SAS in UK implemented different SAS components, although there are similarities in the challenges they all face. Their major challenges include targeting customers in a highly competitive marketplace, lowering costs & increasing profitability, and reducing risks with more accuracy in their marketing campaigns.

Table 2: Financial organizations using SAS in UK

Organization	Challenges	Tools	Practical Benefits
1 st Credit	Business model depends on its ability to price batches of debt more accurately and swiftly than the competition.	SAS software-based models	<ul style="list-style-type: none"> • Ability to get good business fast, and then manage debt collection effectively, has enabled 1st Credit to grow at a rate of 50% per annum.
Bank of America Europe Card Services	Enable sustainable improvements in large-scale complex card marketing campaigns for an already successful business: improve targeting, increase success, manage risk and reduce costs.	SAS Marketing Optimization	<ul style="list-style-type: none"> • Improving campaign and business performance to help push an already leading market share. • A wide-ranging analytical platform to optimize campaigns and allocate promotional interest rates more effectively.
Confused.com	Making use of valuable data in a competitive marketplace to gain new customer insights, better target campaigns and improve operational efficiency, enhance cross-selling and increase revenue.	SAS Analytics	<ul style="list-style-type: none"> • Greater understanding of customers means smarter targeting, improved retention marketing, reduced wastage and lower campaign costs, with an opportunity to exploit new communications channels.
HSBC	Reduce incidence of fraud, lower costs and increase customer confidence.	SAS [®] Fraud Management, part of the SAS Fraud Framework for Banking.	<ul style="list-style-type: none"> • HSBC has achieved significantly lower incidence of fraud across tens of millions of debit and credit card accounts,

			significantly exceeding aggressive objectives.
JPMORGAN ASSET MANAGEMENT	Understanding and controlling costs in a complex global asset management business, in the face of uncertain markets and lower margin areas, to improve product, client and channel profitability.	SAS Activity-Based Management from Oros software	<ul style="list-style-type: none"> Improved understanding of costs and enhanced control of profitability within a global business, enabling more joined-up management targeted at sustained profitability, plus significant time-savings in gaining ABC and ABM insights and providing reports to the business.
SWINTON	Improve speed, control, effectiveness and accuracy in marketing campaigns designed to target valuable customers, generate leads and build market share in a relentlessly competitive marketplace.	SAS® Marketing Automation	<ul style="list-style-type: none"> Operational efficiency gains provided immediate ROI; by improving campaigns effectiveness SAS will help Swinton to acquire new customers, retain existing ones and drive market share.

(Source: www.sas.com)

The table above shows that Swinton & Europe Card Services implemented SAS marketing tools, HSBC uses SAS Fraud Management, and Confused.com uses SAS Analytics, while JPMorgan and 1st Credit uses SAS Activity-based and Software-based models respectively.

The findings revealed that all the organizations have improved their business performance as a result of gaining greater understanding of their customer's needs, improved marketing campaigns, and optimized profitability within a relentlessly competitive marketplace. 1st Credit reported that they had achieved growth rate of 50% per annum, while HSBC said with SAS fraud management tool they have achieved a significant reduction in fraud cases across tens of millions of debit and credit card accounts, considerably exceeding their aggressive objectives.

Confused.com, Customer Director says “SAS gives us a much better idea of who we should be targeting... I can certainly see us improving customer retention significantly and improving the relevance of campaigns. And there’s also a lot of potential to improve onsite processes and help inform new product development, so there are wider impacts for the business.” Similarly, Ian Grime, Head of Data management & Analytics (Bank of America Europe Card Services) said about SAS that “we took what was already the best in the market and improved it, while introducing new dimensions of flexibility and adaptability.” This clearly indicates that SAS products positively impacted on the financial institutions using the product in the UK. These firms have reaped great benefits from utilizing SAS products and have achieved their set targets.

CONCLUSION

The paper discussed the data management challenges in financial institutions of two selected countries. The authors identified 26 most popular data management tools available with their vendors, and evaluates those tools by selecting the leading technology used in both developed and developing countries. SAS was found to be widely implemented in many financial institutions in most developed and few developing countries. The paper critically identified the challenges, tools and benefits of data management in financial organizations in UK and Malaysia through SAS implementation.

SAS was found to be mostly used in developed countries (e.g. UK) to improve customer retention and confidence in a highly competitive marketplace, while developing countries (e.g. Malaysia) widely use SAS for risk management. This shows that financial institutions in developed countries pay more attention to targeting

new customers for increased revenue and market share. Whereas those in developing countries focus more attention on protecting customer's investments with a more secured system. Most importantly, both regions employed SAS tools to meet customer's needs and satisfaction in order for them to survive the highly dynamic and competitive financial environment through the implementation of SAS software, as clearly revealed in Tables 1 and 2.

REFERENCES

- Cummins, J. D., Dionne, G., Gagne, G., & Nouira, A. (2009). Efficiency of insurance firms with endogenous risk management and financial intermediation activities. *Journal of Productivity Analysis*, 32 (2), 145 – 159.
- Data management tools and vendors. (2010). Retrieved on February 6, 2010, from http://ict.iiu.edu.my/~webmaster/claroline/claroline/document/goto/index.php?url=%2FINDIVIDUAL_PRESENTATION_TOPIC_and_SCHEDULE_-_final.pdf&cidReq=INFO6110
- Efraimidis, P. S., Drosatos, G., Nalbadis, F., & Tasidou, A. (2009). Towards privacy in personal data management. Emerald Group Publishing Limited. Retrieved on March 2, 2010, from http://www.emeraldinsight.com/Insight/ViewContentServlet?Filename=/published/emeraldfulltextarticle/pdf/imcs-12-2008-0056_rtc_cl_final.pdf.
- Meissner, A., Luckenbach, T., Risse, T., Kirste, T., & Kirchner, H. (2002). Design challenges for an integrated disaster management communication and information system. *IEEE INFOCOM 2002*
- Mosley, M., Bracket, M., Early, S., & Henderson, D. (2009). *The DAMA guide to data management body of knowledge*. Bradley Beach.
- Parasuraman, A., Zeithaml, V., & Berry, L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64, 12-40.
- Power, M. (2009). The risk management of nothing. ScienceDirect Volume 34, Issues 6-7, August-October 2009, Pages 849-855
- SAS customer success (n.d.). Retrieved on February 2, 2010, from <http://www.sas.com/success/indexByCountry.html>
- Song, J.H. and Zinkhan, M.G. (2003). *Features of website design, perceptions of web site quality, and patronage behavior*. Retrieved November 4, 2009, from <http://www.sbaer.uca.edu/research/acme/2003/papers/new/16.pdf>
- Teodoru, S. F. (2009). Business process management integration solution in financial sector. *Information Economica*, 4 (1), 47. Retrieved on March 2, 2010, from <http://revistaie.ase.ro/content/49/005%20-%20Teodoru>.
- Zeithaml, V., Parasuraman, A., & Malhtra, A. (2002), "An Empirical Examination of the Service Quality-Value-Loyalty Chain in the Electronic Channel," Working Paper, University of North Carolina.

Appendix: Data management tool's vendors with solutions offered

SN	DM TOOL	VENDOR	SECTOR
1	The Facts™	Quantum Compliance Systems, Inc http://www.qcs-facts.com	Health & Safety Sector
2	DATIRIS™	Datiris - http://www.datiris.com	Retail & Manufacturing
3	SAS® Data Quality Solution	SAS - http://www.sas.com/	Financial
4	PowerCenter	Informatica http://www.informatica.com	Manufacturing
5	Pentaho Data Integration	Pentaho - http://www.pentaho.com	Financial
6	MapForce	Altova - http://www.altova.com	Services
7	Genedata Phylosopher®	Genedata - http://www.genedata.com	Health
8	Sybase IQ	Sybase - http://www.sybase.com	Business Intelligence
9	OneData	Data Foundations http://www.datafoundations.com	Business
10	Oracle Hyperion	Oracle - http://www.oracle.com	Business/Financial
11	GAIN Data Management	AIMSoftware http://www.aimsoftware.com	Business/Financial
12	Talend Integration Suite	Talend - http://www.talend.com	Business
13	Zoomix Accelerator™	Zoomix - http://www.zoomix.com	
14	Veracity™	KIKA - http://www.kikamedical.com	Health
15	iLuminate	Illuminate www.i-illuminate.com	Business Intelligence
16	ZEMA v3	Zema - http://www.zemasuite.com	Manufacturing
17	DecisionStream™	IBM® Cognos® http://www.ibm.com	Business Intelligence
18	OpenDQ™	Infosolve Technologies http://www.infosolvetechn.com	Services Sector
19	DBclassify	Zettapoint http://www.zettapoint.com	Business
20	dn:Director	Datanomic http://www.datanomic.com	Financial
21	Data Match 2009	Data Ladder www.dataladder.com	Business/ Financial
22	DonorIQ	EQDS	Services

		http://www.equitydecisions.com	
23	Viscovery Suite	Viscovery - http://www.viscovery.net	Business
24	qMDM	Data Flux - http://www.dataflux.com/	Business/ Financial
25	Pervasive Data Integrator™	Pervasive – http://www.pervasive.com/	Business
26	NetWeaver	SAP - http://www.sap.com/	Business

(Source: <http://ict.iiu.edu.my/~webmaster/claroline>)