ABSTRACT
National Economy and Development growth have left no choice but to seriously think of measures to contain Global Warming and other Green Environmental related issues. Global environmental issues have gained greater attention and the pressure is being placed on all industries, including financial services, to implement “green” initiatives. Green banking products and services are not yet the key reasons for most customers to select one financial institution over another. However, customer demands and environmental awareness are driving a number of financial institutions to go green.

Over the past few years technology based platforms have successfully removed a great deal of paper from the cash management process. Opportunities continue to exist for the cash management industry to operate more efficiently and with fewer paper exchanges. Green IT banking is a win-win situation for all participants.

Chanel Common Gateway using ISO [International Standard Organisations] standard model showing how banking services can be changed into greener banking. Integrating all alternative channels into single common standard platform in ISO standard message format will give greater convenience to customers. In this paper, we present our Common Gateway model in banking services to link customers, suppliers, manufacturers, organizations, Card Merchants and Government Services with Bank, while helping the environment and implementing a green IT solution.

KEY WORDS
Environment, Green Banking, Green IT, Channels, IT services

1. INTRODUCTION
Financial institutions would be well served in their efforts to bring these benefits to the attention of the clients in an increasingly competitive marketplace. Accepting greener banking practices, businesses will not only help the environment, but will also benefit from greater operational efficiencies, a lower vulnerability to manual errors, frauds and cost reductions. Banks are already offering many of the services necessary for businesses to enjoy these benefits, and they must be more vocal about the inherent green value propositions [Unhelkar, 2011].

Converting a traditional banking customer to an e-customer is the biggest challenge. Customer education plays a major role in adopting channel based banking practices and going green. It is important that financial institutions recognize their environmental and social responsibilities when entering into their day to day business requirements. In a rapidly changing market economy where globalization of markets has intensified the competition, the industries and firms are vulnerable to stringent public policies, severe law suits or consumer boycotts [Lentz et al, 2011]. This would affect the banks and financial institutions to recover their returns from investments. Thus, the banks should play a pro-active role to take environmental and ecological aspects as part of their lending principles which would force industries to go for mandated investments for environmental management, use of appropriate technologies and management systems.

“Going Green” means supporting the conservation of earth’s Natural Resources as well as supporting the “Preservation of your Personal Resources”, i.e. Family, Friends, Businesses, Lifestyles, Communities and Legacy [Lentz et al, 2011]. Being Green is growth. It is becoming more efficient to operate your personal and business life by “eliminating wasteful spending based on habits that no longer serve your purpose”. Being Green is being fruitful. It is taking advantage of new technologies, tools and trends to improve your personal and business life at a fraction of the cost of traditional methods. Being Green is spiritually rejuvenating. We analyze the ways in which financial institutions can help their corporate and retail customers to eliminate paper-ridden processes and gain potential environmental benefits from those initiatives. These channels when used for virtual banking services will in turn help the bank to go green. In this paper new low cost channel like Internet Banking, Mobile Banking, ATM, Kiosk, NFC Cards and Call Centre/IVR are discussed to enable banks to reach a wider consumer base across geographies with slight effort.
2. BACKGROUND

Current external environment in a brick-and-mortar institution have made the banks highly competitive, finding it difficult to compete on rates alone, and needs to look at other ways to retain customers. Corporate and retail customers become more sophisticated, hence it has become essential for banks to consider the use of technology [Wikibon, 2011] to respond to their continuously changing requirements. It is clearly seen that delivery channels are lacking in meeting the demands of the customer by not making them aware of e-banking and using obsolete or not too up-to-date technology.

Financial organizations are stepping into the field of IT, in an effort to increase their productivity and expand their customer base. Today all the banks of the world are adopting tools for Electronic Banking. The need of Electronic Banking was felt over last 8 to 9 years. Channel based banking concept emerged as an essential tool for successful bank management. Lack of use of techno based products and interfacing with other external sources are restricting customers to enjoy this facility.

The Greening process includes Virtualization, Data Center Redesign, Cleaning the Information systems and Hardware Recycling [Velte and Elsenpeter, 2008; Webber and Wallace, 2009]. Bank products and services can also reflect a green banking commitment. Every organization today wants to or claims to have become a learning organization. But what is a learning organization? What are the various issues involved? What strategies are available for implementing Green IT Based practice? It is the right time to adopt green practices in financial institutions considering the future generation.

3. GLOBAL DEVELOPMENT & ECONOMIC GROWTH

Government and society as a whole have responsibility to save this earth from ecological disaster. Consumer realise that cooperatives, particularly the Financial and Commercial sector, too have a role to play in this task of immense importance through an action plan and strategy. Supporting and energizing commercial and entrepreneurial base environmental issues gain greater attention and pressure is being placed on all industries, including financial services, to implement Green IT initiatives.

The leading Government Banks and Private Banks in Sri Lanka have experienced higher cost to maintain the...
traditional customer as shown in Table 1. Converting traditional customer, to E Banking Customer will have an impact on revenue model and reduce operational cost in longer term. Besides, it will also directly bring the environmental benefits and economic growth.

Table 1: Sri Lankan Traditional Banking Customer Cost

<table>
<thead>
<tr>
<th>Location</th>
<th>Average cost per customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombo District Branches</td>
<td>Rs 7300 – Rs 9500</td>
</tr>
<tr>
<td>Greater Colombo Regional Branches</td>
<td>Rs 4800 - Rs 6000</td>
</tr>
<tr>
<td>Out Station Main town branches [Metropolitan]</td>
<td>Rs 5000 – Rs 6000</td>
</tr>
<tr>
<td>Sub Urban Branches</td>
<td>Rs 3000 - Rs 4200</td>
</tr>
<tr>
<td>Out Station Branches</td>
<td>Rs 1800 – Rs 2400</td>
</tr>
</tbody>
</table>


Following factors considered when calculating above cost, [Operational Cost, Human Capital Cost Interest Cost]

4. COMPETITION IN FINANCIAL SECTOR

Due to high competition in the banking industry and to attract more business for the bank with better convenience for the existing and prospective clients, extended banking hours has been introduced. By which the employees are compelled to cover up the work as late as 8.00 pm and sometimes till 9.00 pm, even during the holidays and weekends. The above causes stress to the employees, affect their efficiency level and give hardly any time for recreation. Besides, their family life is affected as one cannot devote adequate time to look after the family needs in particular the children who are demanding better attention on them. In view of the above situation alternative solutions have to be evolved to provide more convenience to the clients instead of the extended banking hours. In doing so our green banking model is proposed for consideration.

5. GREEN BANKING MODEL

5.1 The Way Forward – Alternative Channel Services

New mantra for present day banks is “Channelize through channels”, which in earlier times relied solely on the branch network to fulfil transactions, sell products and acquire customers [Babin and Nicholson, 2011]. In those days, expanding the business meant adding more branches at high costs. That problem has been largely addressed by the invention of new low cost channels. What’s more, channels like the Internet Banking, Mobile Banking, Call Centre /IVR and EDN have enabled banks to reach a wide consumer base across geographies with little effort. The Internet and mobile channels have also provided customers of convenience to access any financial details. Figure 1 presents our green banking model showing how banking services are accessed by Customers, Suppliers etc via the channels. Merchant agent activities involving POS – Credit & Debit Cards, linking Payee Partners such as utility payments and dealing the Banking Governance, Investments and Taxations identifies other channel services.

5.2 Impact on Electronic Banking and Research Model

Electronic banking solution enables customers to save cost, time, take control of their personal finances and even help the Green IT initiatives. Research conducted by Javelin Strategy & Research, shown that 61 million households regularly use Internet banking today, and virtually 82 million banking households are expected by 2012. For Internet banking users, online banking services are the third most important driver of financial institution selection, falling just behind rates/fees and customer service. In today’s competitive world, it’s not good enough to simply offer virtual banking services, however. Maintain the existing customers and attract new ones, financial institutions need to keep their offerings up to date with the latest features.

Research indicates that 89 percent of young adults have tried Internet banking, with 53 percent reporting they had banked virtually within the previous seven days. Considering 30 percent of virtual bankers aged 25 to 34 join to save time and 21 percent join to get more control over their finances.

E Banking users [Mobile, Internet, IVR, and ATM] conveniently access their financial information and conduct activity anytime, anywhere and immediate access to information to conduct daily tasks while “on the go.” With the implementation of Two Factor Authentication customers joined for better control, which comprises improved security, as well as the ability to manage account activity and household budgeting and to better organize financial records. [Aite Group Channel Services 2012]

Figure 2 below indicates the penetration of electronic channel usage in US by all banks. In 2012, First Quarter and Second Quarter results indicate there is sharp increase in usage of Electronic Banking channels and 47 % increase in Mobile Banking.
5.3 Internet Banking

The traditional banking practice has changed with the arrival of the World Wide Web and other technologies have radically changed banking, and cash management sector is not behind in using this technology. [Starogiannis, 2006] Financial institutions have been able to improve cross sales by placing relevant advertisements on online banking portals. Online tools are very useful for financial planning / decision making and goal tracking. In fact, many banks provide dynamic product selectors to assist customers choose financial products based on their needs and expectations of return. Online banking enables customers to interact with a relationship manager using the chat facility, giving them a branch-like experience without the costs. Last but not least, it makes transactions paperless.

On their part, banks must pay attention to the following issues pertaining to the online channel:

• Customers reluctance to use electronic interactions for cash management decisions.
• Cyber-attacks on portals.
• Server maintenance in order to support high traffic.
• Unauthorized access and fraudulent transactions.

Green online channels - which is secure, fast and reliable even under severe load - comprises of the larger pie of technology investment. A strong back end, which can interface with the front end of online banking, is imperative in order to process requests without delay. An online banking solution that works on request mode will not succeed in the cash management business where timing and speed of execution are very important for customer satisfaction.

5.4 Mobile Banking

Development in mobile technology has turned the mobile device into much sophisticated instrument in banking industry. Indeed, high end devices can perform tasks similar to a PC and provide users access to an enormous range of applications. This channel provides banks viable access to outreach areas and at the same time enables them to improve customer convenience and profitability by mobilizing cash management products [Any Time, Any Where, Any How]. Mobile alerts and Smartphone applications help investors take informed decisions and perform transactions similar to those on Internet banking. All the tools available online can be provided to Smartphone users through mobile applications.

The research conducted by Aite Group indicates from 14 countries importance of mobile banking applications. [See Figure.3].

Have you used your mobile phone for banking [such as checking your balance or moving money] in the last six months?

<table>
<thead>
<tr>
<th>Country</th>
<th>Usage Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>18%</td>
</tr>
<tr>
<td>Germany</td>
<td>24%</td>
</tr>
<tr>
<td>France</td>
<td>30%</td>
</tr>
<tr>
<td>U.K</td>
<td>31%</td>
</tr>
<tr>
<td>Australia</td>
<td>35%</td>
</tr>
<tr>
<td>Sweden</td>
<td>37%</td>
</tr>
<tr>
<td>U.S</td>
<td>38%</td>
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<tr>
<td>Italy</td>
<td>42%</td>
</tr>
<tr>
<td>Brazil</td>
<td>47%</td>
</tr>
<tr>
<td>Singapore</td>
<td>54%</td>
</tr>
<tr>
<td>U.A.E</td>
<td>59%</td>
</tr>
<tr>
<td>South Africa</td>
<td>61%</td>
</tr>
<tr>
<td>China</td>
<td>70%</td>
</tr>
<tr>
<td>India</td>
<td>76%</td>
</tr>
</tbody>
</table>

Figure 3. Mobile Banking Usage
Aite Group; ACI Worldwide study of 4,200 consumers in 14 countries, Q1 2012

5.5 ATM [Automated Teller Machine]

Since 1960 ATM – popularly known as Any Time Money – has been around in financial sector for customer convenience. This channel has been helpful in reducing the teller counters efforts [eWeek, 2012]. Most banks offer cash management products through the ATM, which acts more like a Point of Sale counter rather than an advisory channel. ATM adds convenience and quick solution to the well informed customer. The ATM allows the customer to track and schedule their investments, redeem holdings and purchase additional products at their convenience.

To make Greener based ATM, Banks should look for strong back end systems in cash management, with the capability to honour and respond to service requests.
without delay in processing. Strong expertise in service oriented architecture and integrating with other services would be an added functionality.

5.6 Call Centre / IVR [Interactive Voice Response]

Financial Institutions moving for 24 x 7 branches based experience through the call centre, also known as IVR, is another channel that banks use in cash management. This channel has helped banks to cut branch and employee costs. While most banks first established in-house call centres, the majority of them later outsourced them for economic reasons. Thanks to the progress in call centre / IVR technology, banks are able to offer more functionality to investors over these channels. The facility to speak to a call centre executive at any time during the transaction adds the all important human element and enables a branch-like experience, albeit without the face to face meeting. Although cash management services are still not provided round the clock by most banks, the call centre does help to bridge time and distance.

A good Green based call centre should look for strong CRM [Customer Relationship Management] back end systems with the capability to provide a 360 degree view of every customer portfolio. Also access to the backend should be made in quick and accurate data should be fetched in order to save the integrity and accuracy of the data.

5.7 Electronic Data Network [EDN]

Through EDN all accounts details are updated real time basis between bank and organisation and to say bye-bye to invoices, envelopes, postage, late payments, excessive administrative costs and bad check fees. In your average receivables and sending money related transactions using the EDN solution, it will reduce paper work and other operational cost. On the specified transaction or billing date each cycle, EDN electronically collects [via ACH – Automated Clearing House] payments from customer’s bank account and credits the funds to your business checking account “as cash for your immediate”. The results are more convenience for organizations which involves massive outlets operations and sending goods and money among these networks. This is green based powerful cash-flow management tool for corporate business.

5.8 Point of Sale [POS] – Credit & Debit Cards

In Credit cards and Debit cards that reward consumers with carbon offsetting credits or royalty points to encourage use Point of Sale options during any transactions. The warning on green credit cards is to remember to keep consumption in check [Gingichashvili, 2007]. It is far better for the environment not to purchase things that you don’t need than to rack up points on your green credit card.

6. BUSINESS VALUE

6.1 Business Transformation

Common channel based services are convergence and mobility making transactions more convenient. Enhancing revenues from service areas like Wealth Management and asset management, institutions can boost operational efficiency with portfolio rationalization while driving down costs with consolidation and simplification of channel based system infrastructure.

6.2 Efficient Operations

Best practices approach can smoothly run the operational procedures in user friendly manner. For example if the customer forget the password then real time re generating the password through internet or using form factor authentication.

6.3 Regulatory Compliance and Risk Management

All the financial institutions are governed by Central Authority Board in the respective of countries. Anti-money Laundering and Know Your Customer policy play a major role in e banking users. Commonalities in governance, risk and compliance entities, integrating these functions can play a big role in weighted, sound decision making.

7. PAYEE PARTNERS

Payee partners are used for paying utility bills online and other day to activities of the customer cash flow activities. It promotes environmental-friendly practices and reduce carbon footprint from banking activities. This comes in many forms, such as maximizing the use online banking instead of traditional banking. This practice will reduced mailing bills, other statements and reduced the operational cost, human capital cost and transportation cost. Sustainable performance, partnering every person and every business, and by igniting the capacities of microfinance through financial inclusion, are viewed as the cornerstones for sustainable growth and sustainable wealth creation for the nation. In this context green banking is not yet a key reason for most customers to select one financial institution over another. Customer demands and greater environmental awareness are driving a number of financial institutions to go green.

8. BANKING GOVERNANCE, INVESTMENTS AND TAXATION

Another important aspect of green banking model [see Figure 1] is the involvement and outreach from the individual banks to their Taxes, EPF, ETF payments and Investment related activities. This is where a bank can
make a real difference. Using a channel to transfer Payee
details [EPF, ETF and Pension] and tax related transfer, a
whole new revolution has started in the payments world.
Technology has now advanced far enough that real time
payments, once a dream of the past, is now a reality. This
payment model will capture the attention of the public
and investors as more innovative payments solutions.

9. UNIQUE ADVANTAGES OF ELECTRONIC
BASED APPLICATIONS AND IMPACT TO
RETAIL BANKING STRATEGY

The E channel supports all the traditional benefits of a
retail baking distribution channel. In addition, it opens up
an amazing set of possibilities: [Anish kakar 2012]

1. Closer to the customer – Internet Banking and
Mobile phones are the closest that banks can get
to a customer.

2. Anytime access – ‘always on’ nature of mobile
banking takes connectivity to a higher level
compared to even computers.

3. Channel of choice for younger generation – The
Mobile Marketing Association reports that 24%
of surveyed 18-34 year olds in the UK are
already using mobile banking. Getting the
mobile strategy right will be key for banks to
attract and retain this customer segment.

4. Security – E channel security is an evolving
topic. However, the possibility of biometric
scanning, voice recognition, etc., makes it a very
suitable candidate for two factor authentication
[applying something you know and something
you are].

5. Capabilities that were supported by multiple
channels can be supported from single channel
applications.

a. Pictures & video – for document images and
live person interaction.

b. Email or SMS alert – for immediate alerts
even in low signal areas.

c. Anytime access to account information –
through downloaded/pre-loaded application
or internet, thus avoiding the need for a
computer-based access.

d. Replace plastic – NFC/contactless chips can
enable functions currently supported by
plastic cards. Contactless readers have
started appearing in mainstream retail shops
and beside quick serve counters at parking
lots, gas stations and drive through services.
This will provide higher acceptance for
mobile phones in payment space.

e. Cash dispensing – As more customers are
shifting to cash back at point-of-sale, ATM
usage is declining. POS transactions can be
supported by contactless/NFC chip on
mobile phones.

6. Location awareness in real-time – Banks spend
significant effort in targeted marketing. Location
awareness from mobile phones can help in
making campaigns more timely and contextual.

Personalized services and assistance – Internet Banking,
Mobile phones support video [chip, or real-time], audio
and text [SMS or documents]. This makes them ideal for
helping customers during a banking transaction.

10. INTERNAL STRUCTURE, OUTREACH AND
OPERATIONS

Sri Lankans are starting to turn to eco-friendly banking as
a way to help reduce the carbon footprint from their
normal banking activities. This new move away from
branch and paper banking is being led by green banks that
believe in social responsibility. Next area is to meet and
overcome conservation and environmental challenges in
financial industry [BCS, 2012]. The Green Banking is to
start using the virtual banking services that are available.
Benefits of virtual or online banking include less
paperwork, less mail and less driving to branch offices,
which all have a positive impact on the environment.
Interestingly, online banking can also increase the
efficiency and profitability of a bank. A bank can lower
their own costs that result from paper overload,
operational cost and bulk mailing fees as more customers
use online banking, making a positive imprint on the
environment while lessening our dependency and impact.
Green IT best practices include responsible lending,
Green Mortgage policy, Green Deposits, Green practices
and Green procurement, Green Credit Card, Employ
innovative business solutions to cascade Green
sustainability.

11. TECHNICAL ARCHITECTURE

Most of the standard ISO [International Standard
Organization] Common Gateway Interface is for web
server software to delegate the generation of web content
to executable message communications files between
sender and request. When such files are transferred using
two different channels as shown in Figure 1 will update
the both request and sender applications real time basis.
These programs are often stand-alone applications,
usually written in a scripting language. Architecture for
dynamic websites or Virtual Private Network architecture can also be used for interconnecting bank customer relationship system and with external banks entities. This approach taken by solutions including Java based applications where in order to serve dynamic content and optionally static content. Application optimization or optimal configuration for any web application depends on application-specific details, amount of traffic, and complexity of the transaction; these tradeoffs need to be analyzed to determine the best implementation for a given task and time budget.

12. ENVIRONMENTAL BENEFITS

Sustainable Green banking overall is great for the environment. All electronic customer correspondence means less paper is used generating statements. Less fuel is used delivering statements to customers, and customers take fewer trips to the bank or ATMs. Truly green bank will reduce their carbon footprint by building more efficient branches, implementing energy-efficient IT based operational procedures. Promoting sustainable banking and increasing their lending in environment-sensitive industries [Esty and Winston, 2006]. Banks can also support eco-friendly groups and raise money for local environment initiatives through Green app Zone foundation [Bank + Online Payee Partners].

In Financial Institution Channels play an important role in the ever changing Eco environment based practices. Sri Lanka Telecommunication infrastructure development is the key factor for adopting the channel based services [CBSL, 2012]. Especially now when every bank around the world is searching for solutions, that can reduce costs without impacting customer service. Electronic channels are not the most effective at generating new sales, but could improve customer satisfaction and retention. With the help of Hybrid technology, the banking industry can develop or expand into new channels to survive in the current competitive environment. Any new channel involves cost and in alternate channels, technology plays a vital role in terms of providing a near to branch experience to the well-informed cash management customer.

13. CONCLUSION

From a national business perspective, the financial sector plays a major role in championing behavioural change to create a more conducive social and economic focus in view of the future environmental related issues. Joint ventures between the stakeholders of the Common Gateway Banking Model [see Figure 1] will lead to enhanced customer experience and drastic reduction in consumption on Fuel, Paper and Human Effort. Optimization on usage of technology will reduce power consumption giving way to environmental conservation and proper usage of natural resources. Interfacing various corporate sectors remains critical to the end objective, and this has been one of the key drivers for greater engagement between the Bank and the external community at large [see Figure 1]. Consumer education remains an area of acute interest for Banks to implement use of Eco friendly banking practices. Technology based green products and accessibility to banking services can be achieved through the quality of education. Green IT based practices in banking as critical to the future development of the nation and national progress. Bank considers education as the most potent change agent, one that is fundamental in the creation of a younger generation that is more empathic to not only future economic progress but is also towards the conservation of national culture and heritage. A number of flagship projects such as “Nenasala Centers”, e-Sri Lanka and e-Governance have been catalyzing change, assisting rural students to have access to the most modern in technology and knowledge Green banking is a good first step for banks. Eco-friendly banks should also focus in encouraging alternative channels based on best practices for Customers, Employees and its Stakeholders. Every small step taken today will have a positive effect on the future of our planet.

REFERENCES


