Measuring Green Banking Practices:
Evidence from Sri Lanka

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Abstract

In recent years, both academics and practitioners are paying more attention to green banking concept due to its significant influence on environment management in banking context. In Sri Lanka, banks are launching green banking initiatives in recent years. Apparently, there are lacunas in empirical studies undertaken in Sri Lankan context regarding green banking practices and how to measure the level of intensity of green banking. As the green banking has become an emerging concept, both researchers and practitioners have called for a set of reliable and valid instrument for measuring green banking concept. The objectives of this paper are to explore the green banking practices in Sri Lanka and to develop an instrument to measure the green banking concept/practices. In order to achieve the first objective, data were collected from the secondary sources, mainly from the last three years annual reports of the selected banks in Sri Lanka and content analysis was applied. Regarding second objective, an instrument was developed to measure green banking practices and tested among the 155 bank staff of selected bank branches. In connection with the first objective, this study has identified and explored 98 green banking practices among the four private sector Commercial Banks in Sri Lanka. Regarding the second objective, a 16 items instrument with four key dimensions were developed to measure green banking. It is a reliable and valid instrument in measuring green banking practices from the perspective of Sri Lanka.

Keywords: Green Banking Practice, Sri Lanka, Scale Development, Reliability, Validity

INTRODUCTION

Banks play a very crucial role in the economic development of nations. A strong banking sector is needed for the creation of jobs, generation of wealth, and eradication of poverty, entrepreneurial activity, and overall prosperity of the country. Banking sector is one of the major sources of financing to the many industries and businesses. This financing role of banks creates huge responsibility and accountability to the banks because, this may indirectly lead to environmental pollution if banks fail to exercise strong verification measures regarding the negative environmental impacts of those industries and businesses prior to financing. Encouraging environmentally accountable investments and lending must be the prime responsibilities of banks (Thombre, 2011). If a bank finances environmental polluting industries and businesses, that particular bank will contribute definitely to the environmental degradation. On the other hand, banks should play a pro-active role to oblige industries for mandated investment for environmental management, use appropriate technologies and management systems (Masukujjaman and Aktar, 2013). For a long time, these issues were regarded as hardly relevant to the financial sector. Within the last few decades this view has changed, and banks have recognized that the sector is increasingly affecting, and is affected by, environmental issues (Kiernan, 2001; McKenzie and Wolfe, 2004). Thus banks can act as an ethical organization by the disbursement of loans only to those organizations, which have environmental concerns (Muhamat et al. 2011; Goyal and Joshi, 2011; Thombre, 2011). In this way, banks can contribute to improve the overall environment, the quality and conservation of life, level of efficiency in using materials and energy, quality of services and products even though environmental protection is not a primary goal of banking industry.

Apart from these, along with socio-economic activities, banks are increasingly involved in environmental protection and management initiatives to reduce carbon emissions by introducing green banking practices. Green banking is making technological improvements, operational improvements and changing client habits in the banking sector. It is known that banking activities are not physically related to the environment, but the external impact of their customer activities is substantial. Banks should promote environment friendly products, processes and technology which substantially reduce the carbon footprint from the environment. Hart and Ahuja (1996) stated that there is a positive correlation between environmental performance and financial performance. Initially, banks were doing analysis of their financial performance only, but now it is time to do analysis of social and environmental performance as well. Thus, green banking is not only a corporate social responsibility (CSR)

activity of a bank, but also it is about making the society habitable without any considerable damage.

Green banking means promoting environmental friendly practices and reducing carbon footprint from banking activities (Schultz, 2010). This comes in many forms such as using online banking instead of branch banking, paying bills online instead of mailing them, purchasing green mortgage, opening up of CDs, green credit cards and money market accounts at online banks instead of large multi-branch banks. According to Indian Banks Association (2014), Green Bank is like a normal bank, which considers all the social and environmental/ecological factors with an aim to protect the environment and conserve natural resources. It is also known as ethical bank or sustainable bank.

The ultimate objective of green banking is to protect and safeguard the natural environment. Basically, it can take place in two ways. They are: (1) technological innovation in banking, (2) behavioral and management innovations in banking practices. Technological innovation in banking can help banks to reduce their negative environmental impacts or to improve their positive environmental impacts. For example, using online banking instead of traditional banking system, online bills payment system instead of manual payment system, and etc. These kinds of technological innovations in banking will reduce banks' carbon footprint and negative environmental impacts. Similarly, behavioral and management innovations in banking practices can also contribute to reduce negative environmental impacts of the banks. For example, energy saving behavior of bank staff in their respective branches, waste reduction efforts of bank employees, environmental friendly initiatives of bank employees, providing loans to the environmental friendly project and etc. These kinds of behavioral and management innovations in banking practices can reduce banks' carbon footprint and negative environmental impacts.

In Sri Lanka, banking sector is started to practice green banking concept recently. This sector consists of 25 licensed Commercial Banks (LCBs) and 7 licensed specialized banks (LSBs) in Sri Lanka (Central Bank of Sri Lanka-CBSL, 2015). Out of these 25 licensed Commercial Banks, 13 banks are domestic banks. Among these 13 domestic banks, most of the banks are private sector Commercial Banks. However, only few domestic banks (4-5) are formally initiated green banking concept in Sri Lanka. Among the private sector Commercial Banks, banks which are initiated green banking concepts are leading private sector Commercial

Banks in Sri Lanka. These banks are pioneering banks in adopting green banking concept in Sri Lanka. Green banking concept is recently initiated and started to spread other Commercial Banks (including state sector banks) in Sri Lanka. Because environmental protection is a primary responsibility of everyone in this world. Hence, irrespective of the market power and competitive position of the banks, it is the fundamental duty and responsibility of every bank to practice green banking concept in order to contribute environmental protection and management. So, banks act as corporate citizens that are socially responsible in their activities (Mani, 2011). In the future, adoption of green banking concept may also decide the market power and competitive position of Commercial Banks in Sri Lanka.

Since green banking is emerging rapidly in developing countries, their dire need, now, is to adopt green banking practices that would ultimately result in saving the environment and its resources, and that would bring about several benefits to their business/investment. So in this context, it is very imperative to study the green banking practices undertaken by the Sri Lankan banks for promoting the green banking and maintaining environmental sustainability. If Sri Lankan banks desire to enter global markets, it is important that they must recognize their environmental and social responsibilities. But, today, many Sri Lankan banks are making efforts to "Go Green" through offering various green products and services to their customers and taking initiatives in their day to day business operations for the environmental concerns. However, this area of research is not well explored in Sri Lanka.

The review of literature reveals that various scholars at the international level have initiated different studies on different aspects of green banking (Bahl, 2012; Bihari, 2011; Masukujjaman and Aktar, 2013; Ragupathi and Sujatha, 2015). However, at the national level there are very few studies initiated towards green banking (Fernando and Fernando, 2016; Silva and Dananjaya, 2016). Although few research works have been done on green banking in Sri Lanka however, no instrument has been developed to measure green banking in Sri Lanka. As green banking is becoming a novel technology oriented strategic initiative for Sri Lankan banks, both researchers and practitioners have called for a set of reliable and valid instrument to measure green banking. If there is a reliable and valid tool to measure green banking, banks can use that instrument to measure the level or degree of intensity of existing green banking. It is also useful to identify strengths and weaknesses of existing green banking practices and banks can make desired improvements.

Based on the above evidences, green banking is critical to determine the sustainability of the banks. Apparently, there are lacunas in empirical studies undertaken in Sri Lankan context regarding green banking practices and how to measure the level of intensity of green banking. In order to fulfill these gaps, this study was conducted as an exploratory research by exploring green banking practices in Sri Lanka and initiation to develop an instrument that can be utilized to measure the level of green banking. Hence, the objectives of this paper are to explore the green banking practices in Sri Lanka and to develop an instrument to measure the green banking concept/practices.

LITERATURE REVIEW

The concept of green banking was established in 1980 at Triodos bank from Dutch origin which started the environmental sustainability in the banking sector from the very first day. In 1990, the bank launched 'green fund' for funding environment friendly projects and all the other projects followed later (Dash, 2008). Taking this bank as example, the banks all over the world are motivated to proceed with green banking initiatives. So, it is visible that green banking is the way of conducting the banking business along with considering the social and environmental impacts of its activities (Jha and Bhome, 2013; Mishra, 2013; Biswas, 2011). Moreover, the first green bank commenced its operations in Mt. Dora, Florida, United States in 2009. The bank is known to focus entirely on environmentally friendly banking practices.

"Green" in green banking principally indicates banks' environmental accountability and environmental performances in business operation (Bai, 2011). Green banking is a kind of banking conducted in selected area and technique that helps in reduction of internal carbon footprint and external carbon emissions (Bahl, 2012). According to Azam (2012), green banking means eco-friendly or environment friendly banking to stop environmental degradation to make this planet more habitable. Green banks are to use resources with responsibility, avoid waste and give priority to environment and society (Habib, 2010). Green banking helps the overall reduction of external carbon emission and internal carbon footprint. Banks can reduce their carbon footprints by adopting the following measures such as paper-less banking, energy consciousness, using mass transportation, green building, go online, save paper, use of solar and wind energy (Chaurasia, 2014).

Bhardwaj and Maholtra (2013) elucidated that green banking is an effort by the banks to make the industries grow green and in the process restores the natural environment. And also

the concept of green banking will be beneficial to the environment, banking industries as well as economy and it will not only ensure the greening of industries but also facilitate the improving in asset quality in the future (Biswas, 2011).

Green banking includes promoting social responsibility where banks consider before financing a project whether it is environment friendly and has any future environmental implications (Bihari, 2011). Thus, to aid the reduction of external carbon emission, banks should finance green technology and pollution reducing projects. Although, banking is never considered as a polluting industry, the present scale of banking operations have considerably increased the carbon footprint of banks due to their massive use of energy (e.g., excessive usage of lighting, air conditioning, electronic/electrical equipments, IT, etc.), high paper wastage, lack of green buildings, and etc. In this context, the green banking initiatives can be considered as good evidences to prove that, some banks are very keen in reducing their carbon footprint and energy consumptions in Sri Lanka.

It is revealed that Hatton National Bank (HNB) has embarked on a massive 1.3 megawatt solar power project to carry out its operations in an environmentally sustainable manner. This project is expected to generate two million kilowatt-hours of power per annum, which will enable HNB to cover 15% of its total power needs through solar energy which will reduce the carbon footprint of the bank by 850 metric tons (Daily Mirror, 2016). The same bank has also opened two green bank buildings in Sri Lanka (HNB, 2016). Similarly, Commercial Bank of Ceylon has already generated 40kW of solar power for its four branches and will increase this figure to 240kW when the installation of solar power systems at another five branches in Sri Lanka is complete (Daily News, 2015).

Green banking has many benefits and advantages (Ragupathi and Sujatha, 2015). They are: (1) basically green banking avoids paper work and all the transactions are done through online banking, (2) creating awareness to business people about environmental and social responsibility enabling them to do an environmental friendly business practice, and (3) banks follow environmental standards for lending, which is really a good idea and it will make business owners to change their business to environmental friendly which is good for the future generations.

Ginovsky (2009) stated that banks should launch new banking products which promote the sustainable practices and also needs to restructure their back office operations in order to implement ecologically friendly practices. The author suggested two strategies which banks should follow to go for green banking. They are: (1) use of paperless banking which results in reducing the carbon footprint from internal banking operations and cost saving to banks, and (2) adoption of green street lending, which means offering low rate of interest to consumers and businesses for installing solar energy systems and energy-saving equipments. According to Dharwal and Agarwal (2013), green banking is a key in mitigating the credit risk, legal risk and reputation risk. The author had suggested some green banking strategies like carbon credit business, green financial products, green mortgages, carbon footprint reduction, energy consciousness, green buildings and social responsibility services towards the society.

When implementing green banking, banks face several challenges and issues (Gupta, 2015). The challenges are: (1) it is a new concept and customer will take time to adopt this, (2) green banking requires a technology which will be highly costly, (3) it requires renewable and recycling technique which is costly, (4) data protection is another challenge for the adoption of green banking, and (5) bank employees need training for all green practices.

Based on the above literature, there are many studies carried out in this field and they are mostly carried out with different aspects of green banking other than exploring existing green banking practices and developing an instrument for measuring green banking concept. It is found that only few studies are carried out in this field in Sri Lanka. In this context, there is a need to explore green banking practices in Sri Lanka and to develop an instrument to measure the green banking practices. Hence, this study was initiated in Sri Lankan context in order to fill these knowledge gaps.

METHODOLOGY

In order to achieve the objectives of this study, at first, secondary data were collected mainly from the published annual reports of the selected private banks such as Commercial Bank of Ceylon PLC, HNB PLC, Sampath Bank PLC and Seylan Bank PLC for the last three years (2013, 2014 and 2015). This study considered only four private banks in Sri Lanka because, these are the only banks currently involved in practicing green banking concept in certain levels. Hence, exploratory nature of first research question/objective of this study did not consider the other banks in exploring green banking practices in Sri Lanka. The collected

data were analyzed by using systematic content analysis. The types and number of green banking practices were identified and counted respectively from the collected data through content analysis. The main theme or content of this exploration was 'green banking practice'. Based on the findings for the first objective, an instrument development process was initiated in order to measure the green banking practices. In this process, firstly, researchers have eliminated overlapping among the identified 98 green banking practices by comparing similarities and differences among them. Secondly, based on the result of first step, 16 key green banking practices were identified and categorized under the four dimensions. Thirdly, based on the result of second step, a 16 items instrument with four key dimensions was developed and pilot test was conducted among the limited number of respondents. Based on the inputs (suggestions and comments) of the pilot test that instrument was revised and modified. Finally, the reliability and validity of that instrument was tested among the 155 bank staff.

RESULTS AND DISCUSSION

In connection with first objective, this study has identified and explored 98 green banking practices among the four private sector Commercial Banks in Sri Lanka. Researchers have developed Exhibits 1 to 4, in order to show green banking practices of selected private sector banks in Sri Lanka.

Exhibit 1: Green Banking Practices of Private Bank-I (Commercial Bank PLC Limited)

1. Apply the criteria of the Banks Social and Environmental Management System (SEMS) to all credit proposals and own activities. (p.28, 2014)
2. Carried out process developments to reduce use of paper. (p.66, 2014)
3. Improved procurement practices and policies for reduction of energy use and minimize waste. (p.66, 2014)
4. Undertook a green project at National Hospital of Sri Lanka through our CSR Trust Fund. (p.66, 2014)
5. Energy consumption and the sourcing and disposal of goods. (p.111, 2014)
6. CSR Trust Fund projects and initiatives designed to create an enhanced environmental footprint. (p.111, 2014)
7. Procurement of ATMs and IT equipment that have Energy Star 5 ratings and are compliant with the ROHS standards. (p.111, 2014)

8. Investing in energy-efficient lighting and air conditioning equipment, conserving energy over the long term. (p.111, 2014)

9. Completed the server virtualization and consolidation project to further reduce energy use. (p.111, 2014)

10. Designing new branches to use more natural lighting. (p.111, 2014)

11. Giving procurement preference to ATMs that can function without an air-conditioned environment. (p.111, 2014)

12. Protecting the environment by reducing the carbon footprint through migration to e-Statements, Document Workflow and Soft Copy and Electronic Banking channels. (p.149, 2014)

13. Returning used IT equipment to recyclers certified by the Central Environmental Authority to dispose them as per international standards. (p.149, 2014)

14. Bank funded the cost of a coral replanting project and it is ongoing. (p.39, 2013)

15. A new centralized loan-approval system saves a substantial amount of paper. (p.42, 2013)

16. E-Statements are now sent to credit cardholders. (p.42, 2013)

17. The Banks email system and intranets are widely used for internal and external communications. (p.42, 2013)

18. Web-based salary slips, as well as e-attendance and e-leave systems, all save paper. (p.42, 2013)

19. Green strategic planning. (p.113, 2013)

20. Setting up green branches. (p.113, 2013)

21. Predetermined screening on environmental and social aspects on all suppliers prior to sourcing. (p.127, 2013)

22. Lending to renewable energy generation projects. (p.127, 2013)

23. Paper Recycled. (p.22, 2015)

24. Acquisition of 20 more paperless deposit machines. (p.417, 2015)

25. Installation of solar power systems. (p.417, 2015)

Exhibit 2: Green Banking Practices of Private Bank-II (Hatton National Bank)

1. Progressed towards implementation of an Environmental and Social Management System (ESMS) for lending decision making. (p.55, 2014)

2. Continued to fund renewable energy projects. (p.55, 2014)

3. Offered rebates on bill payments via electronic channels in place of the traditional which require more paper and visits to branches. (p.55, 2014)

4. Offered concessionary rates on leasing facilities for hybrid vehicles. (p.55, 2014)

5. Minimize use of paper in office and for meetings. (p.55, 2014)

6. 3 R policy – Reduce, Reuse and Recycle towards all tangible resources. (p.55, 2014)

7. 80% of employees have been converted to e-statements. (p.55, 2014)

8. Automation of SWIFT transfers eliminating the printing of copies. (p.55, 2014)

9. Introduction of energy efficient lighting, signages and air conditioners. (p.55, 2014)

10. Introduction of solar PV systems. (p.55, 2014)

11. Promote environmental conservation at the work place through the Green Pledge. (p.58, 2014)

12. Promote responsible lending practices through green banking and green procurement. (p.58, 2014)

13. The implementation of e-Space, a system for credit approval and processing in order to create a paperless environment, reduce documentation formalities. (p.49, 2013)

14. Green procurement. (p.157, 2013)

15. Energy efficient buildings and construction of "Green Buildings". (p.161, 2013)

16. Tree planting initiatives in a bid to reverse the impact as measured against the amount of paper consumed. (p.161, 2013)

17. Responsible lending practices through green banking. (p.177, 2013)

18. E-waste programmes. (p.177, 2013)

19. Scorecards and rating systems to assess environmental and social impact of lending activity. (p.204, 2013)

20. Measurement of environmental sustainability criteria against key performance indicators reducing carbon foot print, energy and water consumption, reduction in CFC emissions and waste disposal. (p.204, 2013)

21. Initiatives to enhance the environmental credibility by minimizing carbon footprint. (p.204, 2013)

22. Green Finance. (p.205, 2013)

23. Funding for green projects. (p.206, 2013)

24. Annual green audit. (p.35, 2015)

25. Green procurement Systems. (p.43, 2015)

26. Green investments. (p.51, 2015)

27. Maintained correct indoor air quality. (p.82, 2015)

Exhibit 3: Green Banking Practices of Private Bank-III (Sampath Bank PLC Limited)

1. Adopt lean resource consumption practices across operations, to reduce the use of paper, energy and non-biodegradable material. (p.101, 2014)

2. Ensure proper disposal of waste, to minimize harmful environmental impacts. (p.101, 2014)

3. Create awareness of protecting and conserving the environment among employees, customers and other stakeholders. (p.101, 2014)

4. Facilitate green enterprises, through special incentives, grants, loans and guidance. (p.101, 2014)

5. A new trilingual "e- mail indemnity" has been implemented to cover all communications by the bank via e-mail with the objective of minimizing the volume of paper. (p.102, 2014)

6. Automated covering approval system - An online system for approval of facilities which reduce consumption of paper. (p.103, 2014)

7. Installation of energy efficient LED lighting solutions to replace existing CFL lighting. (p.103, 2014)

8. Recycling of CFL bulbs in partnership with Hayleys Electronics Lighting (Pvt) Ltd. (p.103, 2014)

9. Campaign on reduction of energy consumption. (p.103, 2014)

10. Training programme to educate staff on energy saving tips. (p.103, 2014)

11. Green lending schemes. (p.103, 2014)

12. Island wide tree planting projects. (p.105, 2014)

13. The coral restoration project. (p.105, 2014)

14. Calculation of carbon footprint at head office. (p.105, 2014)

15. Waste management. (p.107, 2014)

16. Environmental management and resource efficiency to reduce the impact of the bank's carbon footprint. (p.196, 2013)

17. Green Recognition. (p.42, 2015)

18. Special Effort to promote a "Green" Culture. (p.79, 2015)

19. Paper Recycling. (p.191, 2015)

20. Ensure compliance with environmental regulations in all our business transactions. (p.192, 2015)

21. Used of fluorescent lamps with electronic ballast, where possible. (p.193, 2015)

22. Introduction of a Solar Energy Systems in possible locations and installation of solar reduction film for branch exterior to minimize heat transfer. (p.193, 2015)

23. Replace old AC units at all branches with new energy efficient AC units and installation of Inverter ACs at Off-site ATMS. (p.193, 2015)

24. Commissioning of new UPS units (Equipped with inbuilt power factor correction technology) and commissioning capacitor banks to regulate electricity consumption levels at branches that consume a "heavy load" of electricity. (p.193, 2015)

25. E-statements. (p.195, 2015)

Exhibit 4: Green Banking Practices of Private Bank-IV (Seylan Bank PLC Limited)

1. The bank adopts recycle, re-use, reduce towards all tangible resources. (p.75, 2014)

2. E-waste management. (p.75, 2014)

3. Bank's commitment to investing in Green IT, replacing old equipment with more energy-efficient solutions. (p.76, 2014)

4. Funding for Energy Saving and Conservation Projects. (p.77, 2014)

5. Encouraging Eco-friendly Projects. (p.69, 2013)

6. The Bank carries out various energy-saving measures at all operational centres, such as a lights-off policy, gradual conversion to LED illumination etc. (p.70, 2013)

7. Promote green compliance. (p.25, 2015)

8. Eco-friendly lending. (p.25, 2015)

9. The printing of salary slip was discontinued and monthly statements sent through online. (p.64, 2015)

10. E-Circulars platform for disseminating circulars electronically and enabling retrieval on demand. (p.112, 2015)

11. E-Board papers system to deliver and maintain history of Board papers to Directors with secure connections to iPads. (p.112, 2015)

12. HR systems e-learning and attendance. (p.112, 2015)

13. Automated selected staff payments (e-payments). (p.112, 2015)

14. Online staff loan application facility. (p.112, 2015)

15. Water Management. (p.113, 2015)

16. Emission Control. (p.113, 2015)

17. Ethical Environmental Practices. (p.114, 2015)

18. Supplier Environmental Assessment. (p.114, 2015)

19. Environmental Grievance Mechanisms. (p.114, 2015)

20. Conducted training programs on cost effective and eco-friendly use and maintenance of vehicles. (p.114, 2015)

21. Waste Paper Recycled. (p.116, 2015)

(Source: Annual Reports of Private Banks I, II, III and IV- 2013, 2014 and 2015)

Table 1 shows number of green banking practices in Sri Lanka based on secondary data analysis. All most all four Commercial Banks have many green banking practices in Sri Lanka. In connection with the first objective, this study revealed that Commercial Bank PLC (Private Bank-I) and HNB PLC (Private Bank-II) have more green banking practices when compared with other banks (Private Banks III and IV) which are included in this study. The common green banking practices found in this study are implementation of social and environmental management system (SEMS), installation of energy saving equipments, e-waste management and usage of e-mail and Intranet for communication and introduction of 3R policy.

Table 1: Number of Green Banking Practices

Banks	Number of Green Banking Practices
Commercial Bank of Ceylon PLC	25
Hatton National Bank PLC	27
Sampath Bank PLC Limited	25
Seylan Bank PLC Limited	21
Total	**98**

(Source: Annual Reports, 2013, 2014 and 2015)

Regarding the second objective, a 16 items instrument with four key dimensions was developed to measure the green banking practices. These dimensions are: (1) employee related green banking practice, (2) daily operation related green banking practice, (3) customer related green banking practice, and (4) bank's policy related green banking practice. Employee related practice encourages employees inputs in creating and sustaining green banking concept in practice. Daily operation related practice refers to making day-to-day banking operations greener by following green banking practices and making them

environmentally friendly. The customer related practice enables the customers to involve in projects or business which are not harmful to the environment and through that they can also contribute to green banking. Finally, the bank's policy related practice is about banks' environmental friendly systems, policies, principles and decisions to become a greener bank. Theoretically, stakeholder theory (Freeman, 1984) underpins the four components model of green banking developed through this study. Because each component/dimension is representing one or more key stakeholder(s) of green banking. Collectively, these dimensions are related with employees, top management, branch managers, customers, suppliers and regulatory authorities. They are the key stakeholders of green banking. Their contributions, supports and good relationships among them are needed to implement and sustain green banking concept in practice. A bank is understood as being part of a politico-economic system of stakeholders who interact and influence banking practices including green banking. Green banking practices are determined by the interactions of a complex system of actors or stakeholders. In this context, stakeholder theory (Freeman, 1984) provides a new perspective in developing theoretical foundation for green banking. Stakeholder theory and the framework of stakeholder analysis underpin measurement model developed through this study.

Table 2: Four Components Model of Green Banking

Dimension		Question Item
1. Employee related Practice	(1)	Environmental Training and Education
	(2)	Green Performance Evaluation
	(3)	Green Reward System
2. Daily Operation related Practice	(1)	Paper Usage
	(2)	Energy Efficient Equipment
	(3)	E-waste Management
	(4)	Eco-friendly Banking
3. Customer related Practice	(1)	Green Loan
	(2)	Green Project
	(3)	Facilitate Green Enterprises
	(4)	Green Credit Evaluation

4. Bank's Policy related Practice	(1)	Green Branch
	(2)	Green Policy
	(3)	Green Partnership
	(4)	Green Strategic Planning
	(5)	Green Procurement

(Source: Developed by Authors)

Table 2 shows the question items of each constructs. Each item of this instrument was rated using a five points Likert scale (1 = strongly disagree to 5 = strongly agree) to indicate how respondents agree or disagree regarding availability of green banking practices in their banks. In order to establish the content validity of the instrument, items were subjected to experts' evaluation. The experts were drawn from the field of banking. Necessary modifications were made with the feedback and comments given by the experts. Prior to conduct the final testing, the pilot test was conducted among the limited number of respondents (n = 10) to test the instrument. Bank staff and managers were encouraged to express their doubts freely during the pilot test. Necessary modifications were made with the experience, suggestions and comments gained through this pilot test. Based on these inputs, the instrument was further revised and adjusted.

Validation Study: The total population for the study was 185 staff of selected Commercial Banks in Batticaloa. Out of these 155 staff were selected as sample to conduct this study by using disproportionate stratified sampling method, because to assure representation of staff belonging to different grades in selected banks to test the finalized instrument. Proper instructions were given before the administration of the questionnaire. The staff were asked to respond to all the statements and no time limit was imposed. During the time of administration the researchers gave proper assistance and directions whenever necessary.

Reliability Analysis: Reliability analysis was done to determine the reliability of the questionnaire. Internal consistency of the items was measured by using Cronbach's alpha (Cronbach, 1946) coefficient. This study was conducted to develop a reliable and valid instrument for measuring green banking practices. According to Nunnally and Bernstein (1994), Cronbach's alpha test of reliability is the most popular estimate for measuring the

internal consistency (reliability) of items in a scale. Findings of the reliability analysis have shown in Table 3. The Cronbach's alpha test of reliability indicates a good inter item consistency reliability for all four dimensions of the instrument (Kottawatta, 2014).

Table 3: Reliability Test

Variables	No. of Question Items	Cronbach's Alpha
Employee related Practice	03	0.75
Daily Operation related Practice	04	0.79
Customer related Practice	04	0.83
Bank's Policy related Practice	05	0.86
Green Banking	**16**	**0.94**

(Source: Survey Data)

Test-Retest Reliability: The reliability coefficient obtained with a repetition of the same measure on second occasion is called test-retest reliability (Opatha, 2003; Sekaran, 2006). The test-retest reliability was obtained by administering the instrument to the same respondent on two different occasion. An average three to four weeks time interval between the two administrations was maintained to minimize the memory effects and the likelihood of true rating changes. Test-retest data were collected from only 10 respondents who were selected as per convenient sampling method. The test-retest coefficients were 0.85, 0.87, 0.90 and 0.89 for employee related practice, daily operation related practice, customer related practice and bank's policy related practice respectively. All these coefficients were high. It indicates that better test-retest reliability and consequently, the stability (external reliability) of the measure across time. It means that all four dimensions of the instrument possessed an adequate degree of stability (external reliability).

Further, Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of Sphericity were applied to measure the sampling adequacy and appropriateness of the factors extracted (Thomas, 1996; Tabachnick and Fidell, 2001). The sample and factors extracted were considered as adequate and appropriate if (i) KMO value was more than 0.5 and (ii) Bartlett's test was significant (p-value less than 0.05).

Table 4: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.841
Bartlett's Test of Sphericity	Approx. Chi-Square	544.133
	df	6
	Sig.	.000

(Source: Survey Data)

The sample was adequate and appropriate (see Table 4) as indicated by (i) a KMO value of 0.841 and (ii) Bartlett's test of Sphericity being significant (p-value < 0.05).This allows the data of this study for the factor analysis. Table 5 showed the confirmatory factor analysis results where four components model. The analysis showed that all the items were well loaded on the four components with factor loadings more than 0.5. Standardized factor loadings showed that all the items in this model well loaded on each latent construct.

Table 5: The Confirmatory Factor Analysis of the 16 Items of Green Banking

No.	Question Item	Factors (Standardized Factor Loading)				ItemR^2	Error variance
		1 Employee related Practice	2 Daily Operation related Practice	3 Customer related Practice	4 Bank's Policy related Practice		
(1)	Environmental Training and Education	0.56				0.31	0.69
(2)	Green Performance Evaluation	0.81				0.66	0.34
(3)	Green Reward System	0.76				0.59	0.41
(4)	Paper Usage		0.64			0.42	0.58
(5)	Energy Efficient Equipment		0.88			0.77	0.23
(6)	E-waste Management		0.52			0.27	0.73
(7)	Eco-friendly Banking		0.77			0.59	0.41
(8)	Green Loan			0.69		0.48	0.52
(9)	Green Project			0.66		0.44	0.56
(10)	Facilitate Green Enterprises			0.86		0.73	0.27
(11)	Green Credit Evaluation			0.76		0.58	0.42
(12)	Green Branch				0.64	0.41	0.59
(13)	Green Policy				0.74	0.55	0.45
(14)	Green Partnership				0.76	0.58	0.42
(15)	Green Strategic Planning				0.82	0.67	0.33
(16)	Green Procurement				0.76	0.58	0.42

(Source: Survey Data)

Based on this model, Average Variance Extracted (AVE) and Composite Reliability (CR) were calculated manually by computing formulas given by Fornell and Larckers (1981) using Microsoft Excel 2010 (refer to Table 6 for the formulas). The Average Variance Extracted

(AVE) values of (1) employee related green banking practice, (2) daily operation related green banking practice, (3) customer related green banking practice, and (4) bank's policy related green banking practice were more than 0.5 indicating adequate convergent validity. The Composite Reliability (CR) values for the four dimensions of green banking practice were more than 0.6 indicated that they had good construct reliability.

Table 6: The Reliability Analysis of the 16 Items of Green Banking based on Final Model

Dimension	No.	Question Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha	[a]AVE	[b]CR
1.Employee related Practice	(1)	Environmental training and education	0.486	0.766	0.75	0.52	0.76
	(2)	Green performance evaluation	0.639	0.595			
	(3)	Green reward system	0.617	0.621			
2.Daily Operation related Practice	(4)	Paper Usage	0.605	0.737	0.79	0.51	0.80
	(5)	Energy Efficient Equipment	0.707	0.686			
	(6)	E-waste Management	0.492	0.801			
	(7)	Eco-friendly Banking	0.619	0.732			
3.Customer related Practice	(8)	Green Loan	0.621	0.802	0.83	0.56	0.83
	(9)	Green Project	0.579	0.819			
	(10)	Facilitate Green Enterprises	0.747	0.744			
	(11)	Green Credit Evaluation	0.687	0.772			
4.Bank's Policy related Practice	(12)	Green Branch	0.603	0.851	0.86	0.56	0.86
	(13)	Green Policy	0.697	0.824			
	(14)	Green Partnership	0.693	0.821			
	(15)	Green Strategic Planning	0.714	0.816			
	(16)	Green Procurement	0.682	0.825			

[a]AVE (Average Variance Extracted) was calculated manually based on formula given by Fornell and Larckers (1981):

$AVE = \frac{\sum_{i=1}^{n} \acute{y}^2}{n}$ where: $\acute{y}$ = standardized factor loading, n = number of items

[b]CR (Composite Reliability) was calculated for formula given by Fornell and Larckers (1981):

$CR = \frac{(\sum_{i=1}^{n} \acute{y})^2}{(\sum_{i=1}^{n} \acute{y}^2) + (\sum_{i=1}^{n} \delta)}$ where: $\acute{y}$ = standardized factor loading, w = error variance

(Source: Survey Data)

The results of Univariate analysis also presented in Table 7 and a correlation among the four dimensions of the model is shown in Table 8.

Table 7: Univariate Analysis

	Employee related Practice	Daily Operation related Practice	Customer related Practice	Bank's Policy related Practice
Valid	155	155	155	155
Mean	3.9441	4.1952	3.8742	3.9561
Std. Error of Mean	.06109	.05189	.06069	.05738
Median	4.0000	4.2500	4.0000	4.0000
Mode	3.67	4.75	4.00	3.80[a]
Std. Deviation	.76051	.64609	.75559	.71433
Variance	.578	.417	.571	.510
Skewness	-.761	-1.277	-.729	-.944
Std. Error of Skewness	.195	.195	.195	.195
Kurtosis	1.184	2.619	.448	2.093
Std. Error of Kurtosis	.387	.387	.387	.387
Range	4.00	3.50	3.50	4.00
Minimum	1.00	1.50	1.50	1.00
Maximum	5.00	5.00	5.00	5.00
a. Multiple modes exist. The smallest value is shown				

(Source: Survey Data)

Table 8: Corrections among the Four Dimensions of the Model

		Employee related Practice	Daily Operation related Practice	Customer related Practice	Bank's Policy related Practice
Employee related Practice	Pearson Correlation	1			
Daily Operation related Practice	Pearson Correlation	.683[**]	1		
	Sig. (2-tailed)	.000			
Customer related Practice	Pearson Correlation	.791[**]	.740[**]	1	
	Sig. (2-tailed)	.000	.000		.000
Bank's Policy related Practice	Pearson Correlation	.849[**]	.724[**]	.867[**]	1
	Sig. (2-tailed)	.000	.000	.000	

Table 8: Corrections among the Four Dimensions of the Model

		Employee related Practice	Daily Operation related Practice	Customer related Practice	Bank's Policy related Practice
Employee related Practice	Pearson Correlation	1			
Daily Operation related Practice	Pearson Correlation	.683**	1		
	Sig. (2-tailed)	.000			
Customer related Practice	Pearson Correlation	.791**	.740**	1	
	Sig. (2-tailed)	.000	.000		.000
Bank's Policy related Practice	Pearson Correlation	.849**	.724**	.867**	1
	Sig. (2-tailed)	.000	.000	.000	
**. Correlation is significant at the 0.01 level (2-tailed). N=155					

(Source: Survey Data)

There are good correlations among the four dimensions of green banking practices indicating they were not exclusively independent of each other (the r value ranged from 0.683 to 0.867).

CONCLUSION

Many research works have been done in green banking however, exploring the existing green banking practices based on secondary data and developing an instrument to measure green banking practices has not been done so far. Hence, to fulfill these gaps researchers have identified and explored 98 green banking practices based on 2013, 2014 and 2015 annual reports of selected private banks in Sri Lanka such as Commercial bank, HNB, Sampath bank and Seylan bank and developed and tested an instrument to measure green banking concept/practices from the perspective of Sri Lanka. This instrument consists of a 16 items under the four components/dimensions such as employee related practice, daily operation related practice, customer related practice and bank's policy related practice.

The study has implications for both academicians and practitioners. The study intends to build on recent banks' annual reports of selected private banks, aimed at extending the boundaries of how green banking is defined and researched. The contribution of the study includes development of a reliable and valid instrument to measure green banking practices. By adopting an appropriate methodology and ensuring reliability and validity, the study has a sound basis for both theoretical and managerial implications.

This type of exploratory research has many implications. Empirically, this study explores the existing green banking practices in Sri Lanka. And it also provides an instrument to measure the green banking from the perspective of Sri Lanka. As the concept of green banking becomes popular, both researchers and practitioners have called for a set of reliable and valid instrument for measuring green banking. The measurement instrument developed through this study provides an effective tool to measure green banking. Apart from these key contributions, this study has some more implications. Firstly, it helps other banks which may have plans to implement green banking practices in future more effectively. Secondly, the banks which are practicing green banking concept can compare with other green banks and understand the strength and weakness of their own green practices and performances through this study. Thirdly, this study also promotes and motivates green banking practices of banking sector in Sri Lanka and fills the knowledge gaps stated in this study. Fourthly, through this study, the employees of the banks will become knowledgeable about green banking practices and successfully involve in implementing green banking practices in future. Finally, this study may contribute to environmental protection and management by exploring green banking practices in Sri Lanka.

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Appendix-1: Questionnaire: Information Regarding Green banking Practices

Please mark "X" to show to what extent you agree with the following statements.

No.	Statements	1	2	3	4	5
01	My bank provides training and education to the staff on environmental protection, energy saving, and etc.					
02	My bank has environmental (green) performance evaluation practices (environmental sustainability measures, energy saving measures and calculation of carbon footprint).					
03	My bank implements environmental (green) reward system in the branches who support the green banking initiatives.					
		1	2	3	4	5
04	My bank has initiatives to reduce paper usage and other wastage of materials.					
05	My bank has introduced energy efficient equipments, system solutions and practices (ATMs, LED lighting, SWIFT transfer, and etc.).					
06	My bank uses e-waste management practices.					
07	My bank has environmental friendly banking practices (e-mail, intranet, e-statements, online approval system, and etc.).					
		1	2	3	4	5
08	My bank provides loan to environmental protection and energy saving related projects.					
09	My bank implements certain independent and unique green initiatives, projects, and etc. (e.g. tree planting).					
10	My bank promotes and facilitates environmental oriented enterprises through special grants, loans and guidance.					
11	My bank uses social and environmental management system or any other mechanisms to evaluate all credit proposals.					
		1	2	3	4	5
12	My bank involves in setting up green branches (energy efficient buildings/green buildings).					
13	My bank has environmental (green) policy.					
14	My bank has environmental related agreements with relevant parties/stakeholders (suppliers, customers, and etc.).					
15	In my bank, head office level or top management involves in environmental protection related planning and implementation.					
16	My bank purchases its stationeries, equipments and other items from environmental friendly companies (e.g. printers, computers, and etc.).					

1 - Strongly disagree	2 - Disagree	3 - Uncertain	4 - Agree	5 - Strongly agree