

Chapter 8

Sustainable Banking—Scale Development and Validation



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Abstract Sustainable banking is a relatively new term which is concerned with the various measures adopted by the banking sector towards meaningful contribution to the triple bottom line (people, planet and profit). This study is aimed at developing a framework for sustainable banking. Towards achieving this objective, a comprehensive review of literature has been conducted to identify the variables of sustainable banking. These variables are then structured in the form of a questionnaire. Data is collected from banking professionals through survey method. The process thus entails the formation and empirical validation of a scale for sustainable banking. Since such a comprehensive framework is not known to exist, this study is unique and presents value to both researchers and banking industry professionals.

Keywords Sustainable banking · Scale development · Exploratory factor analysis · Confirmatory factor analysis · Green products and services · Banking structures · Service channels

8.1 Introduction

The concept of sustainability is gaining prominence since it is recognized as a key driver that contributes to the development of an economy. There is widespread acceptance for the integration of sustainability principles into policy to ease their adoption

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by all stakeholders in the society. From a business perspective, the impact on the environment and effect on society needs to be considered before engaging in any activity. With this realisation, most of the large business corporations have re-engineered their processes to have minimal impact on the natural environment and thus contribute to the overall betterment of society (Shamshad et al. 2018). Similarly, other stakeholders have also started realising the importance of sustainability and are showing more interest in the adoption of sustainability parameters by following the principles laid down by the triple bottom line approach.

These principles include the overall welfare of people, planet and prosperity by inculcating sustainability (Adams and Frost 2008). Since the last two decades, many studies have highlighted the important role played by corporate sustainability for the achievement of overall sustainable development of a nation (Dyllick and Hockerts 2002; Salzmann et al. 2005; Weber et al. 2008).

The impetus gained by sustainability can be further enhanced by the contribution of the banking sector. Through what is being termed 'Sustainable Banking', banks can play a vital role by integrating sustainability procedures in their routine activities. Sustainability from a banking perspective concerns the contribution of banks towards the economic, social and environmental development of a nation without compromising the needs of the future generations. It includes the adoption of new and innovative techniques such as green loans, green credit cards, green service counters, less paper and electricity consumption, hospital and education facilities for the poor and underdeveloped, green investment opportunities and many more. The concept of sustainable banking has a very wide scope. It also envisages promotion of projects which are aimed at reducing their carbon production by applying innovative techniques, and thus helps in environment building. It is felt that the term sustainable banking is all-encompassing to include the 17 Sustainable Development Goals (SDGs) towards achievement of Agenda 2030 (Lindenberg and Volz 2016). The contribution towards achievement of the SDGs by a large developing country like India is likely to have a crucial impact on the success of the program globally (Zaini and Akhtar 2019).

In the modern world, the banking industry plays an important role in promoting sustainability for the overall economic development of a nation (Jeucken and Bouma 1999; UNEP FI 2016). Banks, after realizing the importance of sustainable development, have now started adopting sustainability practices through incorporating the triple bottom line approach of environmental, social and governance (ESG) in their day to day operations and have moved beyond the concept of traditional banking (Hermes et al. 2005).

A large number of rules and regulations regarding sustainability have been developed in the last two decades. Many organisations have started implementing these in daily operations to improve their social and environmental conducts. Some of these codes include United Nations Environment Programme Finance Initiative (UNEP FI), Global Reporting Initiative (GRI), United Nations Global Compact (UNGC) principles, Equator Principles etc. (Gupta and Mohanty 2014; Isaksson and Steimle 2009; Mitra and Schmidpeter 2017).

In developed nations, the area of sustainable banking has been explored widely by some of the renowned scholars of this field (Jeucken 2001; Amacanin 2005; Scholtens 2009; Roca and Searcy 2012; Weber 2016; Caré 2018). On the other hand, developing countries are still facing the problem of scarcity of literature on such an important issue (Khan et al. 2011) and in the Indian context, this concept is still unexplored (Prakash et al. 2018).

The Indian banking sector is slow in the adoption of sustainable banking parameters and is lagging far behind their counterparts (Sahoo and Nayak 2007). Most of the Indian banks have limited their green banking practices just to internet banking, paperless transactions, installing solar panels, use of Automated Teller Machines (ATMs) etc. (Biswas 2011). The Indian banking sector's indifference towards the adoption of sustainability parameters is evident from the slow pace of adherence (Rajput et al. 2013). The Reserve Bank of India (RBI), India's central bank, should take the initiative to develop some codes of conduct to promote the concept of sustainable banking in the country in a regulated manner.

The approaches of green banking followed by Indian public and private sector banks to safeguard environmental sustainability were examined in a recent study conducted by Yadav and Pathak (2013). Most of the studies on sustainable development of banks in India are focused on green banking strategies (Bahl 2012; Bihari 2010; Jha and Bhome 2013; Tara and Singh 2014) and Corporate Social Responsibility (CSR) actions followed by the Indian banks (Narwal 2007; Sharma and Mani 2013).

The concept of sustainable banking is still evolving and there is ample scope for addition to the existing literature. In the context of a developing country like India, there is limited implementation of sustainability practices in the banking sector. The present paper attempts to address this gap by developing a scale on the dimensions of sustainable banking, which are identified with the help of extensive literature review. The four broad dimensions are:

1. Banking structures and sustainability (BSS),
2. Borrowers' ability to meet financial obligations (BAMFO),
3. Green products and services (GPS), and,
4. Sustainability of banks service channels (SBSC).

A structured questionnaire was developed based on these dimensions of sustainable banking and responses were recorded from the top-level managers of banks in India. Exploratory factor analysis was used to explore the dimensions. Subsequently, confirmatory factor analysis was performed to confirm the structure of the questionnaire. Thereafter, validity and reliability of the questionnaire was tested by using Cronbach's alpha, composite reliability and average variance extracted.

8.2 Sustainable Banking and Dimensions—Literature Review

Sustainability as a concept extends beyond the effective utilization of natural resources and lowering of carbon emission levels. The banking sector, as regards to sustainability, is concerned with the formulation, construction and delivery of banking services based on six C's of sustainable banking which are: clients, culture, compliance, compensation, costs and capital (Straw 2013). It has been reported that the banking sector in India is increasingly adopting the green banking approach by taking various initiatives (Yadav and Pathak 2013). Also, public sector banks are more responsive to the call for sustainable banking practices as compared to private sector banks. A comparison of sustainable banks with Global Systemically Important Financial Institutions (GSIFIs) on several key parameters has concluded that the banks working on the principles of sustainable banking offer a more stable route towards sustainable banking as compared to banks with conventional working structures (Korslund 2013). A study on European banks found that the banks are moving towards the creation of a socially responsible industry and can improve upon this approach by adopting corporate social responsibility through focusing on the triple bottom line (Birindelli et al. 2015). The study further reported that there is scope for a lot of improvement in case of international agreements, certifications and indices as many international standards and principles are not yet adhered to by banks. Vaithilingam et al. (2006) concluded with the help of empirical evidence the impact of key factors such as infrastructure, intellectual capital, institutions, integrity, interaction and innovation (6I's) on the soundness of the banking industry in developed, developing and under-developed nations. The domain of sustainability has gained attention in the last few decades with the adoption of sustainability by the banking industry a more recent development since banking was earlier considered as an environment-friendly industry (Hoijtink 2005). Some banks in developed nations have been early-movers in the adoption of sustainability principles and started with the implementation of an Environmental Management System (EMS) which led to the elimination of projects not conforming to the accepted principles of sustainability. Many other banks also started offering Socially Responsible Investment (SRI) opportunities, environmental damage or recycling insurances, green credit cards, micro credit to help people out of financial and social exclusion, and trading in Renewable Energy Certificates and emissions.

8.2.1 Brief Description of the Dimensions

These are the dimensions of sustainable banking which are identified based on extensive literature review.

Banking Structures and Sustainability (BSS)

Banks which follow the principles of sustainability are required to have formal and well-designed operating structures in accordance with the said principles. The business should be structured to promote environment-friendly operations. For instance, lending decisions should also consider environmental implications (Thompson and Cowton, 2004). The processes should promote innovation and look towards improvement of stakeholder relations.

Borrower's Ability to Meet Financial Obligations (BAMFO)

Proper assessment of borrowers' needs and their ability to pay should be evaluated before sanctioning of loans. Otherwise, it may lead to default and have a negative impact on the lender. This may also affect the sustainability initiatives of the bank. Borrowers should therefore ensure the proper repayment of loans according to pre-determined timelines (IISD 2019). A healthy credit rating helps both parties in their respective objectives. Most banks in China have adopted environmental and social risk management practices which has led to the distribution of green credit (Rao et al. 2017).

Green Products and Services (GPS)

With the help of innovative practices in new product development, banks are increasingly introducing products and services which are compliant with international standards on sustainability. These 'green' products and services are developed with a focus on the social and environmental aspects of banking (Zimmermann and Mayer 2000).

Sustainability of Banks Service Channels (SBSC)

As part of the efforts for sustainability in the banking sector, delivery of core and allied banking services are also being evolved to ensure that they are less impactful on the environment. New techniques centred on information and communication technology are being employed so that the delivery of products and services takes place in an efficient and sustainable manner. As part of green banking initiatives, banks are encouraging the use of cleaner service delivery mechanisms like branchless banking, internet banking etc. The reliance on self-service technology is also evident with the increasing use of ATMs (Prendergast and Marr 1994).

8.3 Objectives

- To identify the dimensions of sustainable banking by conducting an in-depth literature review.

- To develop and validate an attitudinal scale of sustainable banking.

8.4 Methodology

The dimensions of sustainable banking are identified through literature survey and a structured questionnaire is developed based on those dimensions to check the attitude of bank employees towards sustainable banking in India. All the necessary steps are considered to give a final shape to this measurement scale. These steps are performed as per Churchill's (1979) work of scale development. The first step is to identify the dimensions to be measured with the help of available literature. Secondly, to establish the face validity of the questionnaire with a group of academic experts and finally to conduct the pilot study. The pilot study was conducted on a sample of 25 responses to check for discrepancies in the research instrument and modify the content wherever necessary. This pilot study collected responses from academicians, researchers and other industry experts besides the target population of top-level managers of banks. The top-level managers of banks include bank personnel assigned as General Managers, Deputy General Managers, Assistant General Managers, Principal Officers and other higher order employees of the banks.

The rationale of selecting top level employees of the bank was that, since most banks in India do not have separate departments or functional areas dedicated to sustainability, it was presumed that employees higher up in the hierarchical order would be better equipped to comment on sustainability issues on the basis of their larger experience in the industry. Thus, this study undertook a purposive sampling technique. This technique of sampling is used where particular settings, persons or events are to be selected deliberately to obtain the important information which cannot be obtained through other choices (Maxwell 1997). Finally, data is collected from a total of 410 bank employees.

The initial questionnaire consisted of 19 items under 5 dimensions which described the main determinants of sustainable banking. A 5-point Likert scale was used to measure responses on these items. The scale ranged from points 1 to 5 to record responses from 'strongly disagree' to 'strongly agree' respectively. The questionnaire was developed on the Google docs platform and data was collected by sending the online link of the questionnaire through mails to the respondents.

The structure of questionnaire was explored through Exploratory Factor Analysis (EFA) and to confirm the structure Confirmatory factor analysis (CFA) was used. Cronbach's alpha, Composite reliability (CR) and average variance extracted (AVE) were used to test the validity and reliability of the questionnaire. Statistical packages used for data analysis were IBM SPSS 22 and AMOS 24.

Table 8.1 Nature of banks

Type banks	Frequency	Percentage
Public sector banks	174	42.40
Private sector banks	148	36.10
Foreign private Banks	65	15.90
Regional rural banks	23	5.60
Total	410	100

Source Authors

Table 8.2 Designation of respondents

Sector of banks	Frequency	Percentage
General manager	121	29.50
Deputy general manager	144	35.10
Assistant general Manager	62	15.10
Principal officer	54	13.20
Others	29	7.10
Total	410	100

Source Authors

8.5 Analysis and Interpretation

8.5.1 Demographics of the Respondents

Demographic break down of the respondents are shown in Tables 8.1 and 8.2 as regards the type of bank and the designation of the respondents respectively. Data is collected from managerial level employees of different banks based on convenience sampling method from different parts of India. For the purpose of the survey, public sector banks comprise 42.40%, while private sector banks make up 36.10%. Foreign private banks constitute 15.90% and regional rural banks constitute 5.60% from which a total of 410 responses were collected. In the same manner, out of the total number of 410 respondents, 121 were General Managers, 144 were Deputy General Managers, 62 were Assistant General Managers, 54 were Principal Officers and 29 were from other top positions in the banks.

8.5.2 Exploratory Factor Analysis

KMO and Bartlett’s Test

The questionnaire used in the study was developed on the basis of available literature since there was no standard questionnaire for this specific kind of research. The scale so developed was then checked for reliability and validity in order to draw valid

Table 8.3 KMO and Bartlett's test

Kaiser–Meyer–Olkin Measure of Sampling Adequacy	0.747
Bartlett's Test of Sphericity Approx. Chi-Square	5555.882
Df	136
Sig	0.000

Source Authors

outputs from the study. The validity and reliability of the instrument was determined with the help of SPSS 22 and AMOS 24.

For extraction of the factors, Exploratory Factor Analysis (EFA) was performed to check the factor loading of all the items. To determine if data gathered is likely to factor well, before proceeding with EFA, Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's Tests of Sphericity were performed. If KMO is found to be greater than 0.50 then one can proceed with the factor analysis (Kaiser 1974). The KMO value determined in the present study was 0.747, showing that the value is good (Hutcheson and Sofroniu 1999) and thus the data is suitable for factor analysis.

Initially research commenced with five dimensions, but the rotated component matrix was able to extract the results in four variables, namely: BSS, BAMFO, GPS and SBSC. The KMO value on these dimensions was found to be 0.424 which was lower than the acceptable limit of 0.5 and hence two items from the instrument were removed because of multiple factor loading (Ahmad and Khan 2017; Büyüköztürk et al. 2004; Kline 2014 and Metin et al. 2012). Finally, after removing these two items, the value of KMO came out to be 0.747 which lies in between middling and meritorious on the scale suggested by Kaiser (1974). This improved figure of 0.747 (Table 8.3) of KMO is finally accepted and used for further analysis. Now the number of items is reduced to 17 from the initial figure of 19 items. The Rotated component matrix with the value of factor loadings of these 17 items are shown in Table 8.4.

Table 8.4 Rotated component matrix

Items	Factor loadings	Items	Factor loadings
S1D1	0.77	S4D2	0.72
S2D1	0.70	S1D3	0.75
S3D1	0.80	S2D3	0.86
S4D	0.69	S3D3	0.87
S5D1	0.81	S4D3	0.74
S6D1	0.88	S1D4	0.64
S1D2	0.80	S2D4	0.82
S2D2	0.75	S3D4	0.79
S3D2	0.84		

Source Authors

Extraction method: Principal component analysis

Bartlett’s Test of Sphericity measures the presence of correlations among the variables. It provides the statistical probability that the correlation matrix has significant correlation among at least some of variables. Thus, a significant Bartlett’s Test of Sphericity is required (Field 2009). Since $p = 0.000$ (its associative probability is less than 0.05) for the scale, factor analysis was performed. The statistics related to KMO and Bartlett’s test are shown in Table 8.3. These four dimensions of sustainable banking in India explained 75.12% of the total variance in the model. The values of Total Variance explained are shown in Table 8.5.

Reliability

To validate a questionnaire, it is necessary to check the reliability of the scale. Reliability means that the questionnaire used should consistently reflect the construct which it is measuring (Field 2009). Cronbach’s Alpha (α) is the most common measure of scale reliability. The common accepted value of α is from 0.7 to 0.8 (Kline 2014). The value of Cronbach’s Alpha in case of overall reliability of the questionnaire was 0.876, which shows that the scale is reliable (Hair et al. 2006; Kerlinger and Lee 2000; Khan and Adil 2013). Separate values of Cronbach’s alpha is also calculated for each dimension which is shown in Table 8.6.

Table 8.5 Total variance explained

Component	Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	5.92	34.82	34.82	3.84	22.56	22.56
2	3.15	18.53	53.34	3.62	21.30	43.86
3	2.48	14.57	67.91	3.28	19.30	63.16
4	1.22	7.20	75.12	2.03	11.96	75.12

Extraction Method: Principal Component Analysis

Source Authors

Table 8.6 Reliability

S.No.	Dimensions	Cronbach’s Alpha
1	BSS	0.879
2	BAMFO	0.830
3	GPS	0.855
4	SBSC	0.821
Overall		0.876

Source Authors

8.5.3 Confirmatory Factor Analysis (CFA)

EFA has certain limitations such as the items which show multiple factor loadings remain unexplained. These items might correlate with each other statistically (Ahire et al. 1996; Khan and Adil 2013). To overcome these underlying limitations of EFA, generally CFA is recommended (Lee, 2008; Khan and Adil 2013). Therefore, in this study also CFA was performed on the four dimensions (BSS, BAMFO, GPS and SBSC) of sustainable banking in India on the AMOS 24 platform. The factor loadings of each item were stated, and the hypothesized measurement model was developed and tested. The factor loadings of all the items of these four dimensions are mentioned in Fig. 8.1 and Table 8.7.

All the items of the scale are loaded on their respective dimensions and all the factor loadings are within the recommended range of more than 0.4 (Ryu et al. 2010) as shown in Table 8.7. The methodology suggested by Gerbing and Anderson (1988) was used to assess the measurement model. The obtained values of fit indices are shown in Table 8.8. All the values of fit indices were found to be within the acceptable range except the value of AGFI which slightly falls short of the recommended value.

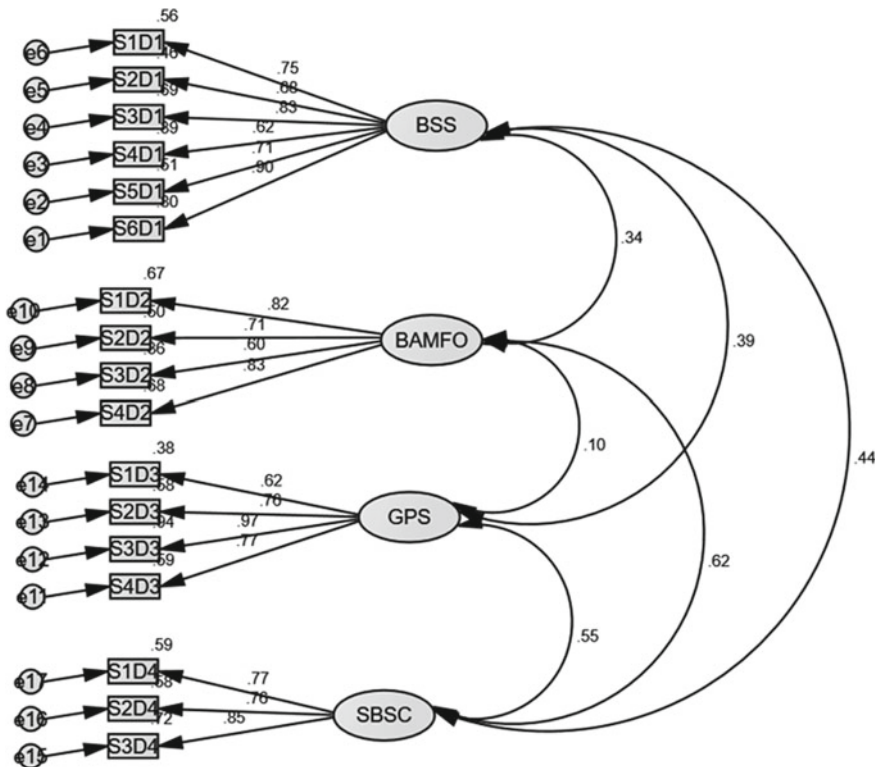


Fig. 8.1 Measurement Model. Source Authors

Table 8.7 Standardised regression weights (CFA)

	Estimate
S6D1 β BSS	0.896
S5D1 β BSS	0.714
S4D1 β BSS	0.623
S3D1 β BSS	0.830
S2D1 β BSS	0.676
S1D1 β BSS	0.746
S4D2 β BAMFO	0.827
S3D2 β BAMFO	0.599
S2D2 β BAMFO	0.708
S1D2 β BAMFO	0.816
S4D3 β GPS	0.770
S3D3 β GPS	0.970
S2D3 β GPS	0.759
S1D3 β GPS	0.619
S3D4 β SBSC	0.848
S2D4 β SBSC	0.763
S1D4 β SBSC	0.767

Source Authors

Table 8.8 fit indices of measurement model (CFA)

Fit Index	Recommended values ^a	Observed values
CMIN/DF	< 3.0	2.536
GFI	0.90	0.902
AGFI	0.90	0.865
NFI	0.90	0.913
CFI	0.90	0.935
RMSEA	<0.070	0.064

^aSource Hair et al. (2010), Hooper et al. (2008); Hu and Bentler (1998); Malhotra and Dash (2011)

The Values of GFI, NFI and CFI were found to be 0.902, 0.913 and 0.935 respectively. All these three values are more than the required value of 0.9. Similarly, the values of CMIN/DF and RMSEA were 2.536 and 0.064 respectively which were also with in the acceptable range. The value of AGFI was 0.865 which is slightly lower than the acceptable value of 0.9. The value of Chi-square measure was 192.736 with 76 degrees of freedom (df) and $p < 0.05$. These values were also found to be in the acceptable range.

The validity of the scale is measured with the help of Average Variance Extracted (AVE) which has been suggested as a healthy measure of validity by many researchers

Table 8.9 Reliability and validity

	CR	AVE	BSS	BAMFO	GPS	SBSC
BSS	0.866	0.623	0.789			
BAMFO	0.890	0.576	0.380	0.759		
GPS	0.829	0.552	0.094	0.344	0.743	
SBSC	0.836	0.629	0.547	0.428	0.619	0.793

(Fornell and Larcker 1981; Hair et al. 2010). In this study also, the convergent and discriminant validity of the scale are calculated with the help of AVE. all the values of AVE were found to be more than the threshold limit of 0.5 which indicates sufficient convergent validity (Fornell and Larcker 1981; Hair et al. 2010; Khan and Adil 2013; O’Leary-Kelly and Vokurka 1998). The values of AVE (Table 8.9) were 0.623, 0.576, 0.552 and 0.629 for BSS, BAMFO, GPS and SBSC respectively.

Similarly, the result of scale validity, which is calculated by taking square root of AVE, also shows sufficient discriminant validity as the value of each dimension was more than its inter-dimensional correlation (Fornell and Larcker 1981; Hair et al. 2010; O’Leary-Kelly and Vokurka 1998) and is presented in Table 8.9. The values of discriminant validity were found to be 0.789, 0.759, 0.743 and 0.793 for BSS, BAMFO, GPS and SBSC respectively.

The values of composite reliability (CR) of each dimension were also higher than the suggested limit of 0.70 which is a good indicator of sufficient scale reliability (Fornell and Larcker 1981; Hair et al. 2010; Malhotra and Dash 2011). The values of CR were 0.866, 0.890, 0.829 and 0.836 for BSS, BAMFO, GPS and SBSC respectively.

8.6 Discussion

Sustainable banking is among the newly developed and fastest growing concepts which is aimed at achieving sustainable development with the help of the banking sector. The Indian banking sector is lagging far behind in utilizing the concept of sustainability in their daily operations. There is an urgent need to develop a comprehensive framework of sustainable banking in India. This framework will guide the banking organisations towards the path of sustainable development (Shamshad et al. 2018). Banking sector is the only sector which can help in achieving all the three aspects of sustainable development i.e. The Environmental Sustainability, Social Sustainability and Economic Sustainability (Hoiijtink 2005).

In the Indian context, since sustainability integration in the banking sector is almost unheard of, there arises a need to develop a comprehensive scale for sustainable banking. The researchers tried to fill this gap by developing a scale on the most important dimensions of sustainable banking in the Indian context. This scale will help the future researchers to further enhance their research in this area. This scale

will also contribute in further refining and developing the aforesaid area by providing them a path to work upon and guide them towards a sustainable banking approach.

8.7 Conclusion and Recommendations

Researchers working in the area of banking and sustainability must be aware of these dimensions of sustainable banking which influence the working of banks towards achieving the goal of sustainable development. Banks should develop themselves more strategically by analysing and prioritizing their daily operations towards the achievement of overall sustainable growth. There is a long journey ahead for Indian banks to develop themselves as sustainable banks. Some of the renowned Indian banks have already started their journey towards sustainability but most of them are yet tread this path.

This scale of four dimensions will help the banks to develop themselves in the path of achieving sustainable development. The first dimension of this scale i.e. BSS will help the Indian banks to redesign their structures (including products and services) towards achieving sustainable development. In the same manner, the second dimension, BAMFO, enables banks to focus on their lending and borrowing practices in a sustainable manner. The third dimension of GPS relates to the development of environment friendly products and services as one of the most important ways to achieve sustainability. The fourth dimension of SBSC talks about the sustainability aspects of bank's service channels. If the service channels of a bank are following sustainability procedures, then it becomes easier for any bank to develop itself overall as a sustainable bank.

Besides these, the results of this study also provide important insights to those academicians and experts who are exploring this area of sustainable banking. This study will give them a way forward for better understanding and conceptualising the outcomes of further research in this area.

8.8 Limitations and Future Research Directions

Although not much literature is available on sustainable banking in India, this research tries to contribute to that existing body of knowledge. Like many other studies, this study also has some limitations which can be addressed by researchers in further studies.

One of the most important limitations of this study is the number of dimensions. This study revolves around only four dimensions of sustainable banking. It becomes very difficult to identify a greater number of dimensions because of the availability of limited amount of literature. This presents a direction to researchers to identify and add more dimensions of sustainable banking which may enhance the quality of the scale for sustainable banking.

In this research, an attempt is made to have representation from the different types of banks in the Indian banking sector. However, the sample size of 410 respondents is quite small considering it is drawn from the large pool of Indian banks. Since the study required responses from top management employees in banks, the task of data collection was quite difficult due to their busy schedules. This sample size of 410 respondents from the Indian banking sector can be increased by future researchers so as to achieve more generalised findings.

This study adopts the convenience sampling method which restricts the reach to respondents all over the country. This is also one of the limitations of this study which can be overcome by future researchers by targeting the whole country with the help of any probabilistic method of sampling. In probability-based method of sampling, the banks from all over the country will get equal chance to participate in such important researches.

One of the limitations may be attributed to the fact that Indian banks do not have any specific department or authority designated for sustainability aspects. This is the reason why it was difficult to identify suitable respondents to answer questions on sustainability aspects of banking. This limitation can be overcome in future if banks come up with some specific departments or authorities to cater to the need of sustainable development in the banking industry.

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