

Customer Knowledge and Awareness on Green Banking at Indonesian Public Banks

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Abstract—This study aims at determining and improving the customer knowledge and awareness level towards green banking at public banks in Indonesia. Questionnaire is used as data collection tool. Data were collected using a questionnaire distributed to 100 customers of two banks that is accidentally sampled at an office of each bank. Data were analyzed using descriptive analysis. Cause identification is performed by using a Fishbone diagram. The result shows the customer knowledge towards green banking which is still at the average level (48.90%). However, the customers are already aware that green banking contributes to the environmental improvement (74.76%). The causes of the lack of the customer knowledge level are the customer low interest in reading, the customer less concern on the environmental issues, the customer needs that have been already fulfilled by the banking services used, the lack of dissemination, the less appropriate dissemination methods, the incomplete and unorganized information, and the inadequate infrastructure.

Index Terms— green banking, customer knowledge and awareness, descriptive analysis, comparative analysis, fishbone diagram

I. INTRODUCTION

ANKS can affect the environment directly and indirectly. During daily business activities, such as the use of paper, electricity, air conditioning, lighting, and other electronic equipments, banks contribute directly to the increasing of greenhouse gas emissions. While the indirect impact given by financing businesses provides some serious impacts on the environment, such as the plantation business doing illegal logging, industries producing waste damage the environment, and failing to have the environmental management system. Therefore, the green concept becomes a need for a bank by developing a green concept in the banking business which is known as green banking.

Green banking means, using all the resources of banks by having a responsibility and a sense of caring, avoiding waste, and providing priority to choose to become sustainable [5]. Green banking concept has been developed to reduce the environment adverse impacts, both direct and indirect impacts. By adopting the principles of sustainable development that ensures the undertaken development, it has a balance on three viewpoints (Triple Bottom Line); such as Profit, People, and Planet. The application of green banking will not interfere banking activities. On the contrary, it

will give it advantages, both in tangible and intangible [1].

Bank A and Bank B are the two banks that have implemented the green banking and actively run their business process in Padang, Indonesia. As the committed banks in implementing the green banking, these two banks have made several initiatives and products to promote the environmental protection mission.

However, based on the result of the preliminary survey by distributing the questionnaire to 20 customers of these two banks regarding their understanding of green banking in general, it is known that only few customers who know about green banking. The preliminary survey shows there are still many customers who are not familiar with this concept.

This fact can impede the implementation of green banking in these two banks, because the implementation of green banking should involve all stakeholders, including customers [3]. Knowledge and awareness of customers towards green banking will influence the successfulness of its implementation. In addition, one of benefits of the implementation of green banking cannot be obtained by these two banks, because the customers do not know the green banking concept implemented. In fact, banks that have implemented the green banking should be able to gain more customers. According to a study by Javelin in Strategy and Research, 43% of customers prefer to do business with a bank that has implemented the green concept [4]. Therefore, it is necessary to determine and improve the customer knowledge and awareness level towards green banking at these two banks. Thus, the attempts to find the appropriate solutions to increase the green banking implementation will be easier.

II. METHOD

Data were collected using the questionnaire that is consisted of three parts which are knowledge, awareness, e-Banking services quality. Knowledge part is consisted of three categories which are green banking in general, green lending policy, and e-Banking services. The statements in the category of green banking in general and green lending policy are the implementation and the concepts. On the other hand, the statements in the category of e-Banking services are the features and media access of each service. Awareness part is also consisted of same categories with the knowledge part. The statements consisted in this part are the contribution of green banking, green lending, and e-Banking services in the environment improvement.

Accidental random sampling is used as sampling technique. The sample sizes are determined using Lemeshow formula, because the number of population (number of customers of the two banks in Padang, Indonesia) is unknown. The equation is as follow [2]:

$$n = \frac{Z_{1-\alpha/2}^2 \times P(1-P)}{d^2} \quad (1)$$

Manuscript received November 9th, 2016; revised January 10, 2017.

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n refers to number of samples, Z refers to Z value with confidence level of 95%, p refers to maximal estimation = 0.5, and d refers to error estimation = 10%. Based on (1), the number of sample in this study is 100, 50 customers of each bank.

The questionnaire had been distributed at office of Bank A, Branch Andalas University, Limau Manis for three days, started from July 15, 2016 until July 18, 2016 and at office of Bank B Padang, St. Jend. Ahmad Yani No. 18, for a day, on July 29th, 2016. After the data collection, the validity and reliability test is performed using IBM SPSS Statistics version 20. Validity test is performed using the Pearson correlation and reliability test is performed using Cronbach Alpha.

Data analysis techniques used are descriptive analysis and comparative analysis. Descriptive analysis is performed using percentage calculation, whereas, the comparative analysis is performed using Mann Whitney test with 0.05 significances level. The equation of percentage calculation is as follow:

$$\%AS = \frac{AS}{IS} \times 100\% \tag{2}$$

$$AS = \sum(S) \tag{3}$$

$$S = NS \times WS \tag{4}$$

$$IS = HW \times N \tag{5}$$

%AS refers to percentage of actual score (knowledge or awareness level), AS refers to actual score, S refers to score of each scale, NS refers to the number of customers who choose the scale, WS refers to weight of the scale, IS refers to ideal score, HW refers to the highest weight, and N refers to the number of respondent.

The percentage scores of the customer knowledge and awareness are categorized into five categories (Table I).

TABLE I
CRITERIA OF PERCENTAGE SCORE

Range of % Score	Categories
0%-20%	Very Poor
21%-40%	Poor
41%-60%	Average
51%-80%	Good
81-100%	Very Good

Cause identification is performed using Fishbone diagram by conducting brainstorming with four experts from the two banks. The experts are Head of Bank A Padang, Head of Bank A Branch of Andalas University, Head of Operations Division of Bank B Padang, Indonesia and Head of Customer Service of Bank B Padang, Indonesia. Recommendations for a better knowledge and awareness level of customers are also designed based on the brainstorming.

III. RESULT

The result is presented in five parts. Those are respondent background, knowledge level, awareness level, comparative analysis of knowledge and awareness level between Bank A and Bank B, and cause identification.

A. Respondent Background

Table II shows the background of the customers based on gender which is quite representative. There are 52% of male customers and 48% of female customers.

TABLE II
RESPONDENT BACKGROUND BASED ON GENDER

Gender	Frequency	Percentage
Male	52	52%
Female	48	48%

Respondents are from the variety of age groups but dominated by respondents aged 20-30 years old. There are 58% of respondents with the age range of 20-30 years old, 23% of 31-40 years old, 11% of 41-50 years old, and 8% of 51-60 years old (Table III).

TABLE III
RESPONDENT BACKGROUND BASED ON AGE

Age	Frequency	Percentage
20-30 years	58	58%
31-40 years	23	23%
41-50 years	11	11%
51-60 years	8	8%

Respondents are divided into five education levels which are Primary School, Junior High School, Senior High School, Diploma/Bachelor, and Master or higher. From the aforementioned education levels, the respondents are only from three education levels. Those are 53% of respondent at Senior High School level, 41% at diploma and bachelor level, and 6% at master or higher level (Table IV).

TABLE IV
RESPONDENT BACKGROUND BASED ON EDUCATION LEVEL

Education Level	Frequency	Percentage
Primary School	0	0%
Junior High School	0	0%
Senior High School	53	53%
Diploma / Bachelor	41	41%
Master or higher	6	6%

Table V shows the variety of occupation backgrounds. There are 35% of respondents from students, 20% of respondents from government employees, 28% of respondent from private employees, and 17% of respondents from entrepreneurs.

TABLE V
RESPONDENT BACKGROUND BASED ON OCCUPATION

Education Level	Frequency	Percentage
Student	35	35%
Government Employee	20	20%
Private Employee	28	28%
Entrepreneur	17	17%
Others	0	0%

B. Knowledge Level

The result shows the knowledge level of the customers that are at the average level; with the percentage is 48.90%. The knowledge level for each category is 53.04% of Green Banking in General, 49.25% of Green Lending Policy, and 46.77% of e-Banking services (Table. VI). All categories are at the average level.

TABLE VI
CUSTOMERS KNOWLEDGE LEVEL TOWARDS EACH CATEGORY

Categories	Total Score	Knowledge Level	Criteria
Green Banking in General	1273	53.04%	Average
Green Lending Policy	394	49.25%	Average
e-Banking Services	2245	46.77%	Average

The most widely used e-Banking service is ATM. Based on the result, 99% of customers use this service. Unfortunately, less than half of the customers use the other e-Banking services. There are only 42% of the customers using SMS Banking, 35% using Mobile Banking, and 31% using Internet Banking. In point of fact, e-Money and e-Billing are used by less than 10% of customers. (Table VII).

TABLE VII
E-BANKING SERVICES USED BY CUSTOMERS

e-Banking Services	N	%
SMS Banking	42	42%
Mobile Banking	35	35%
Internet Banking	31	31%
ATM	99	99%
e-Money	7	7%
e-Billing	3	3%

Table VIII shows ATM Service is the only e-Banking services with the good level of knowledge, with the percentage reaches 73.25%. Meanwhile, SMS Banking (46.88%), Mobile Banking (45.50%), and Internet Banking (46.13%) are classified to the average level. E-Money (34.38%) and e-Billing (34.50%) are at the lower level of knowledge or poor level.

TABLE VIII
CUSTOMER KNOWLEDGE LEVEL TOWARDS EACH E-BANKING SERVICE

e-Banking Services	Total Score	Knowledge Level	Criteria
SMS Banking	375	46.88%	Average
Mobile Banking	364	45.50%	Average
Internet Banking	369	46.13%	Average
ATM	586	73.25%	Good
e-Money	275	34.38%	Poor
e-Billing	276	34.50%	Poor

C. Awareness Level

In overall, customer awareness level is at the good level; with the percentage is 74.76%. The customer awareness level towards each category is 75.33% of Green Banking in General, 74.40% of Green Lending Policy, and 74.72% of e-Banking services (Table IX). All categories are at the good level.

TABLE IX
CUSTOMER AWARENESS LEVEL TOWARDS EACH CATEGORY

Categories	Total Score	Awareness Level	Criteria
Green Banking in General	1130	75.33%	Good
Green Lending Policy	1116	74.40%	Good
e-Banking Services	6725	74.72%	Good

E-banking service with the highest awareness level is Internet Banking, with the percentage reaches 77.80%. The second is Mobile Banking and the third is SMS Banking, with the percentages for each are 77.60% and 77.27%. ATM, e-Money, and e-Billing are at slightly lower level, respectively the percentages are 73.80%, 71.60%, and 70.27%. All of e-Banking services are at the good level of awareness (Table X).

TABLE X
CUSTOMER AWARENESS TOWARDS EACH E-BANKING SERVICE

e-Banking Services	Total Score	Awareness Level	Criteria
SMS Banking	1159	77.27%	Good
Mobile Banking	1164	77.60%	Good
Internet Banking	1167	77.80%	Good
ATM	1107	73.80%	Good
e-Money	1074	71.60%	Good
e-Billing	1054	70.27%	Good

D. Cause Identification

Based on the cause identification, the lack of customer knowledge towards green banking can be caused by the bank, itself, and the customers, themselves. The causes are categorized into three categories which are manpower, methods, as well as machine and equipment. The causes from the category of manpower are the customer low interest in reading, the customer less concern on the environmental issues, and the customer needs which have been already fulfilled by the banking services used. The causes from the category of methods are the lack of dissemination, the less appropriate dissemination method, and the incomplete and unorganized the information (Fig.1).

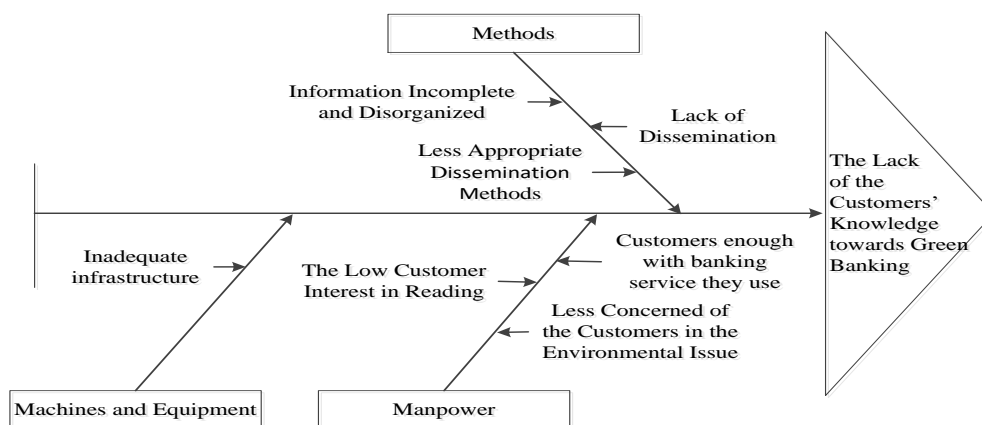


Fig.1 Fishbone Diagram of the Lack of Customer Knowledge Towards Green Banking

IV. DISCUSSION

There are three topics discussed in this study. Those are the customer knowledge level, the customer awareness level, and the correlation between customer knowledge and awareness level.

A. Customer Knowledge Level

Knowledge part is divided into three categories, i.e. Green Banking in General, Green Lending Policy, and e-Banking services. Based on the result, the customer knowledge level towards all of categories is at the average level. The category with highest level of customer knowledge is Green Banking in General; with the percentage is 53.04%. This category is consisted of six statements about green banking concept and green banking implementation. The next is the category of Green Lending Policy with the percentage reaching 49.25%. This category is consisted is two statements about green lending implementation and green lending concept.

Based on the result of Kendall Tau b Test, the customer knowledge level on the statements in the category of Green Banking in General and Green Lending Policy has a reverse correlation with the age background of the customers. The older customers have lower knowledge level. It is probably due to the concept of green banking and green lending policy usually found in journals and articles that is more often read by younger people. Meanwhile, the older people are usually less active in reading due to the function of the sense of sight that has been reduced.

The lack of customer knowledge level towards green banking and green lending policy can be caused by the lack of dissemination. Based on the brainstorming, the banks admit that the concept of green banking and green lending policy has never been introduced to the customer previously. This concept should be disseminated widely to the customers so they can support and participate in this program. The dissemination method will determine the successfulness of the delivery of information. The dissemination through printed media; such as journals and articles, and written information on the website will be less effective to the characteristics of Indonesian people who are less active in reading. It requires the methods that lead directly to the customers without requiring them to do more activities in getting the information.

The most appropriate methods are providing the ads in the public television and in the banking hall television, and conducting seminar or talk show. The dissemination through public television will be effective to the characteristic of Indonesian people who are less active in getting the information because the information presented in the form of video is without requiring the customers to actively read. It also considers the appropriateness for the older customers who usually spend their time at home and mostly watch television. The dissemination through television at the banking hall will also be effective for the customers who get tired of waiting. The video designed in the form of animation contains of the banks adverse impacts in environmental damage, the concept of green banking, and the concept of green lending policy. The video will be displayed repeatedly. Thus, the information will be ingrained in the brain of customers. Besides, seminar or talk show will also accommodate customers who have an interest to know green banking in more detail and deeper. At a seminar or talk show, the information is presented in detail and thoroughly by the information provider without requiring the activeness of the participants. In addition, participants can ask a few questions about the information that overwhelms them which has not been conveyed by information providers.

The customer knowledge level towards the category of e-Banking services is also at the average level; with the percentage is 46.77%. Each e-Banking service is consisted of two statements about the features and media access. Based on the result, ATM is

the most known e-Banking service. The knowledge level is at the good level, with the percentage reaching 73.25%. The high knowledge level due to the ATM is the most widely used services, in which 99% of bank customers have used this service to perform their daily banking transactions. Unfortunately, ATM is the only e-Banking services with the level of knowledge at the good level. SMS Banking, Mobile Banking, and Internet Banking are at the average level. Meanwhile, e-Money and e-Billing are at the poor level. This is related to the number of customers using those e-Banking services, in which there are approximately 30% to 45% of customers using SMS Banking, Mobile Banking, and Internet Banking, while less than 10% of customers using e-Money and e-Billing. Based on the cause identification, the lack of customer knowledge towards e-Banking services due to the customer low interest in reading, the customer less concern on the environmental issues, the customers needs which have been already fulfilled by the banking services used, the lack of dissemination, the less appropriate dissemination methods, the incomplete and unorganized information, and the inadequate infrastructure are identified.

Based on the brainstorming, some of disseminations of e-Banking services have been performed by the banks, such as providing the explanations and offers directly by the customer service, providing ads in the public television as well as in the banking hall television, on banners, billboards, and brochures, and also on the official website. However, the bank emphasizes the dissemination for some e-Banking services only. For example, Bank B just disseminates ATM, SMS Banking, Mobile Banking, and Internet Banking services. Meanwhile, e-Money and e-Billing has not been intensively disseminated to the customers. Bank should disseminate the e-Banking services more intensively, not only for several services but also for all services provided by the banks. The selection of appropriate dissemination methods will determine the successfulness of the delivery of information. The other causes of lack of customer knowledge towards green banking are the customer low interest in reading. This causes the dissemination through writing information which will be less effective. It requires the dissemination method that leads directly to the customers without requiring the customer activeness in seeking information. The appropriate dissemination methods are like the ads in public and banking hall television, and on the homepage of the official website in the form of pictures or video. The ads in the public television can be designed in the form of animation video which only contains the invitation to use e-Banking services by presenting the convenience and the environmental message carried by each service. Meanwhile, the ads in the banking hall television is designed with the more complete information, such as the brief explanations, features, how to register and how to use, cost, as well as the term and conditions. The video is displayed alternately and repeatedly. Thus, the information can be ingrained in the brain of the customers. The ads on the homepage of the official website also should be contained of the invitation to use e-Banking services only. Therefore, in order to meet the customer information needs about the entire e-Banking services, it requires a special menu that contains all information about the e-Banking services. A link of the menu can be displayed on the picture or at the end of the video of e-Banking services ads in order to facilitate the customers to find the detailed information about e-Banking.

B. Customer Awareness Level

Awareness part is also divided into three categories. Those are Green Banking in General, Green Lending Policy, and e-Banking Services. All of the categories are at the good level of awareness. The customer knowledge level towards Green Banking in General is 75.33%. This category is consisted of three statements about the

banks adverse impacts on the environment, the bank role in the environment improvement, and the green banking contribution in the environment improvement. The result shows the customer knowledge on the statement of green banking which is at the excellent level. Meanwhile, the customer knowledge on the statement of the bank role in the environment improvement and the banks adverse impacts on the environment are at a slightly lower level not at the good level. It seems that some customers are less amenable that the bank has an adverse impact on the environment. They assume the bank system only produces very little impact when compared to any other business activities, whereas it shows the indirect impact through the loans provided to the industry that is not environmentally responsible and causes huge impact.

The category of Green Lending Policy is consisted of three statements about the contribution of green lending policy in the environment improvement. This category is the lowest level of awareness, with the percentage reaching 74.40%. The customer awareness on the statement of the green lending policy contribution in the environment improvement is the highest level of awareness in this category; with the percentage is 75.80%. The second is the statement of the green lending which can help the government to increase the number of projects environmentally; with the percentage is 74.20%. The last is the statement of the green lending which can help government to increase the number of the industry environmentally, with the percentage reaching 73.20%.

Green lending policy is one of the important green banking programs. Customers are supposed to be aware of the contribution of the green lending policy in the environment improvement, especially customers with occupation backgrounds as private employees and entrepreneurs who are directly related to this program. However, based on the result, the customers with the occupation backgrounds as private employees and entrepreneurs do not have a higher awareness level when compared to customers with other occupation backgrounds.

The category of e-Banking services is also consisted of three statements. Those are the statements of e-Banking services which can reduce the use of paper, the air pollution, the use of fuels. In overall, the customer awareness level towards e-Banking services reaches 74.72%. E-Banking service with the highest awareness level is Internet Banking; with the percentage is 77.80%. This percentage is only slightly different to the customer awareness level towards SMS Banking and Mobile Banking, with the percentages reaching 77.27% and 77.60%.

The customer awareness level towards ATM, e-Money, and e-Billing services are quite lower when compared with the three e-Banking services described earlier. The low level of customer awareness towards ATM service can be caused by some customers that are less amenable that the ATM can reduce the use of paper, the air pollution, and the use of fossil fuels. In fact, the ATM service is still using the paper, but the paper used when conducting the transactions via ATM is less than the transactions at the teller bank. In ATM service, paper is only used to print out the transaction receipt, while in at the teller bank more paper is used for the transaction request, transactions receipt for customers, and transactions receipt for the bank. In addition, ATM provides the option whether to print out the transaction receipt or not. Therefore, customers may choose the option to reduce the environment adverse impacts.

The customers are less amenable that the use of ATM service can reduce the air pollution. By using vehicles to get to the ATM machines instead of walking is one of the actions to reduce the air pollution. The number of ATM machines available is more than the number of bank branches. It makes the distance to conduct the banking transactions is shorter. Therefore, by using the ATM can reduce the air pollution and the use of fossil fuels, although the

contributions are still lower than the other e-Banking services.

The low customer awareness level towards e-Money and e-Billing also occurs because there are still many customers who are not familiar with these services. Based on the brainstorming, the banks do not disseminate these services intensively. It is caused of inadequate infrastructures. Merchant e-Money which is available in Padang is still highly limited. Therefore, the banks consider the dissemination of e-Money to customers in Padang will be less useful.

C. Correlation between Customer Knowledge and Awareness Level

Based on the result, the level of customer knowledge towards green banking is still at the average level. However, the customers are already aware that this program contributes to the environment improvement. The lack of knowledge makes the customers cannot support this program properly, even though they are aware that this program is good for environment. This is shown by the small number of customers using the e-Banking services, in which there are less than 50% of the customers using e-Banking services, except the ATM service. If the customers are informed about this program, they will be able to give their role as stakeholders in the implementation of green banking by using e-Banking services that contributes to the environment improvement, for instance.

The lack of customer knowledge towards green banking can be caused by the lack of dissemination. This has been recognized by the banks that they have never done the dissemination of green banking before. While the dissemination of e-Banking services deems to be lacking and the dissemination methods consider less appropriate to the characteristics of the customers. This requires the banks to be more aggressive in disseminating the green banking, both the concepts and products. Thus, the customers can support the program by participating in all programs, such as by using e-Banking services.

ACKNOWLEDGMENT

Authors thank to the Head and all of Staff of Bank A and Bank B Padang, Indonesia for the opportunity and assistance in data collection. Authors also thank to the customers Bank A and Bank B Padang, Indonesia for the participations in filling out the questionnaires.

REFERENCES

- [1] Ayu, A.N.F. (2013). *The Analysis of Green Banking Implementation on PT. Bank X (Persero) Tbk.* 1 (1), 1-6. www.digilib.its.ac.id, 2.13.2016.
- [2] Lemeshow, S., Hosmer, D.W., Klar, J., and Lwanga, S.K. (1990). *Adequacy of Sample Size in Health Studies*. New York: John Wiley and Sons.
- [3] Panjaitan, L.T. (2015). *The Eco-Friendly Banking*. Jakarta: Penebar Plus.
- [4] Rahman, S.M.M. and Barua, S. (2016). *The Design and Adoption of Green Banking Framework for Environment Protection: Lessons from Bangladesh*. 2 (1), 1-19. *Australian Journal of Sustainable Business and Society*.
- [5] Sharma, N., Sarika, and Gopal, R. (2014). *A Study on Customer's Awareness on Green Banking Initiatives in Selected Public and Private Sector Banks with Special Reference to Mumbai*. *IOSR Journal of Economics and Finance (IOSR-JEF)*. 28-35. www.iosrjournals.org, 2.14.2016.