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Customers' Perception on Green Banking Practices in Commercial Banks of Kathmandu, Nepal

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Abstract

Background: In recent years, the concept of green banking has gained increasing attention as banks attempt to reduce environmental impact through digital banking services, paperless transactions, green loans, and energy-efficient operations. In developing countries like Nepal, the adoption of green banking practices is still emerging, particularly in urban areas such as Kathmandu Valley where commercial banks play a significant role in promoting sustainable financial practices.

Purpose: Green banking is becoming increasingly popular among banks and financial organizations due to increased public interest in environmental issues. This study aims to examine the perspectives of customers of commercial banks in Kathmandu valley.

Design/methodology /approach: This study used an explanatory research approach to evaluate the factors that influence customers' perception of green banking products as well as analyze its determinants. The study applies both descriptive and inferential analysis. Under descriptive, awareness level is determined and for inferential analysis ordered logistic model was used. The study area was Kathmandu valley and sample population was banking customers.

Findings: The study shows that customers are moderately aware of green banking. Key determinants of perception include training, social responsibility, resource waste reduction, environmental regulation, bank policies, green money market, power equipment, and solar energy. Preferred strategies are ethical banking, green loans, green saving accounts, online banking, and solar energy use.

Conclusion: This study concludes that banking customers are moderately aware of green banking services which hints that there are more green banking products can be developed and introduced to consumers. Various studies on customer perception and green banking practices have been conducted, according to author's knowledge. As a matter of fact, there is no conflict of knowledge and the work is original.

Key words: Customer perception, green banking, environment, Kathmandu valley, ordinary logit model

1. Introduction

Public concern about environmental concerns has grown as a result of the energy crisis, climate change, and other major environmental challenges (Singh, 2021; Gabric, 2023). Rapid economic expansion in emerging nations has resulted in excessive resource usage and worsened the ecological situation (Muhammad et al., 2021). Financial assistance for economic reform. The industrial system must be updated and modified, as well as the way of development (Lins & Oliveira 2020). The preservation of the environment must also get immediate attention (Semenova , 2021; Wang & Azam, 2024). One of the financial sector's divisions that may make a substantial contribution to sustainable development is banking (Weber, 2021). By implementing assessment standards that take sustainability-related factors into account, it can promote ethical social and environmental behavior (Wallnoefer & Riefler, (2022). The banking industry may support sustainable development by working with customers to make transitions as well as by changing its own business strategy and product offering. These concepts range from versions that focus on only one dimension of sustainability such as green banking, green finance, or ethical banking to more comprehensive ones such as sustainable banking, or sustainable finance (Boafa et al., 2025). By providing green financing and launching green costs in the community's various sectors, green banking practices help to improve the economic and environmental performance of the area (Zhang et al., 2022). The notion of a green bank was originally suggested in the United States in 2008 to aid in the development of sustainable energy. Green banks have been established on the federal, state, and municipal levels in the United States (Park & Kim, 2020). Green banking also plays a significant role in boosting any organization's financial performance by reducing expenses. A major global challenge, particularly in poorer nations, is green banking. Given that people nowadays are preoccupied with profitability and environmental financial performance, green banking is tied to financial efficiency (Aslam & Jawaid, 2023).

Green banking operations are expanding across the world, with many nations and financial organizations realizing the need of promoting sustainable development and environmental protection (Berchin et al., 2021). Similarly, green banking practices are still in their infancy in impoverished countries, but there is a growing recognition of the need for sustainable finance, and an increasing number of programs are being launched to promote it. However, there is still a long way to go, and more has to be done to integrate green money into the financial sectors of poor countries (Taera & Lakner, 2025). Green banking practices in SAARC countries are still in their initial stages of development, although there is a growing regional push to encourage sustainable finance. SAARC states may promote economic growth and development while also protecting the environment and mitigating the effects of climate change by stressing sustainable financing (Ionescu, 2021). In recent years, Nepal has achieved significant progress in fostering sustainable finance and green banking practices. The publishing of green banking standards, the launch of green financial products, and the development of a green banking committee are all key steps toward mainstreaming sustainable finance in the country. Nepal can assist sustainable development and mitigate the effects of climate change through green banking practices (Bhandari et al., 2024).

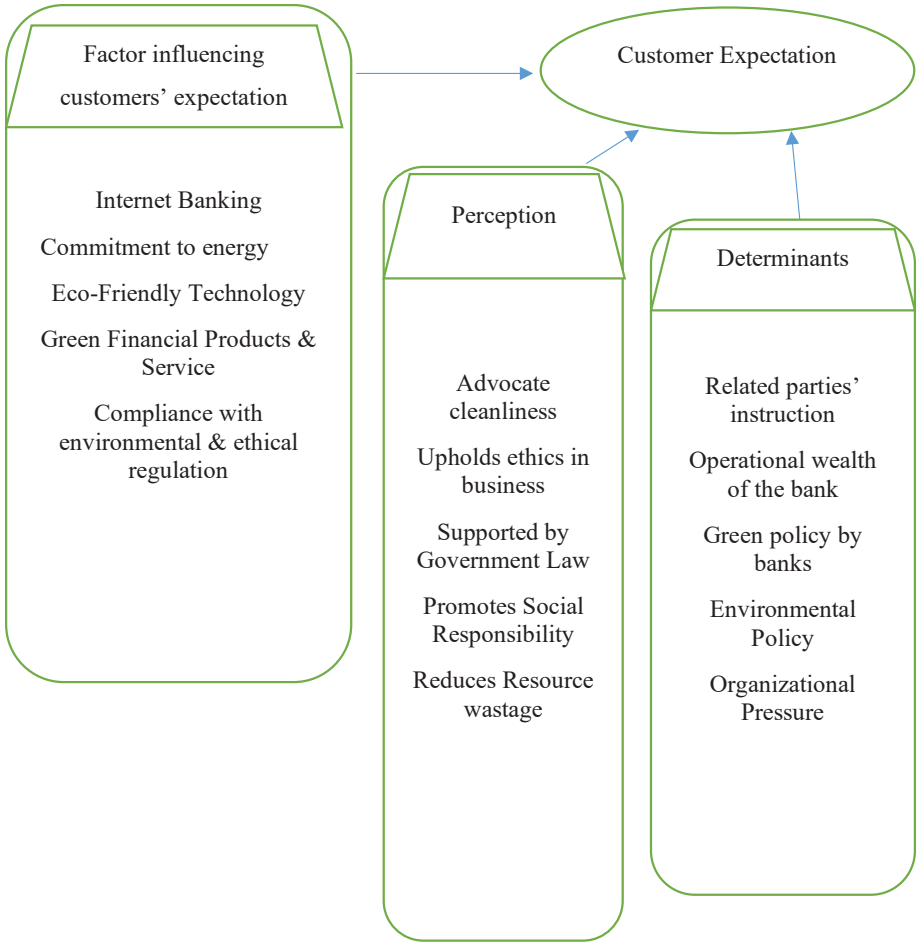
The study aims to examine how customers of commercial banks in Kathmandu Valley perceive green banking practices by identifying the factors that influence their perception and suggesting managerial solutions. Specifically, the study aims to assess the general awareness of green banking among commercial bank customers in Kathmandu Valley, investigate the key determinants affecting their perception of green banking, and evaluate appropriate managerial strategies to enhance customers' intention toward adopting green banking practices in the region.

2. Theoretical Framework and Hypothesis

Theoretical framework, a set of concepts and premises, developed out of one or more theories, is a logically developed and interconnected set of concepts that a researcher develops to frame a study (Varpio et al., 2020). For this study various theories were reviewed, Typology of banking and sustainable development talks about the sustainable banking that works based in four paradigm Defensive banking, preventative

banking, aggressive banking, and sustainable banking Mendez and Houghton, (2020). which results in stakeholder expectations and environmental changes. The Equator principles talk about the voluntary standards agreed by the financial institution Taylor and Christou (2022) which is also studied in this research. The 3P (people, planet, and profits) which talks about corporations should consider not just the traditional financial profit and loss component but also the social and environmental dimensions (Omazić, 2023). Theory of planned behavior predicts behavior through interpreting intentions which is also deal with this study through customer perception (Ahmmadi et al., 2021).

Figure 1: Conceptual Framework



Source: Adopted and modified from Devkota et al. (2022)

Logit Model

The logit model, also known as logistic regression, that used when the dependent variable is binary in nature, The model ensures that predicted probabilities remain between 0 and 1 and is more appropriate than ordinary least squares (OLS) regression when dealing with branching outcomes (Harris, 2021). Suppose the likelihood of being at an awareness level was described by ordered logit model as:

$$Pr(Y = C/Xi) = F(Xi\beta) \quad (1)$$

Where Y is the output obtained for the level of awareness, which is coded as 0 = less aware, 1 = moderately aware, and 2 = Highly aware; standard logistic cumulative function is denoted by F, and the set of

independent variables is referred to as X. 16 independent variables were used to estimate the ordered logistic model with the help of the following formula for this study:

$$P(Yi > j) = \frac{\exp(Xi\beta - Kj)}{1+[\exp(Xi\beta - Kj)]}, \quad j = 1, 2, \ldots \ldots \ldots, M-1, \text{ which implies}$$

$$P(Yi = 1) = 1 - \frac{\exp(Xi\beta - K1)}{1+[\exp(Xi\beta - K1)]}$$

$$(2)\ P(Yi = j) = \frac{\exp(Xi\beta - Kj - 1)}{1+[\exp(Xi\beta - Kj - 1)]} - \frac{\exp(Xi\beta - Kj)}{1+[\exp(Xi\beta - Kj)]}, \quad j = 1, 2, \ldots \ldots \ldots, M-1, \text{ implying}$$

$$P(Yi = M) =$$

(3) In the case of M=2, these equations simplify to:

$$P(Y = 0) = \frac{1}{1+\exp(Zi - Ki)}$$

$$(4)\ P(Y = 1) = \frac{1}{1+\exp(Zi - K2)} - \frac{1}{1+\exp(Zi - K1)}$$

(5) Using the value of Z and the presumed logistic distribution of the disturbance term, the ordered logistic model can be used to determine the chance that the unknown variable Y* lies within the different cutoff limits. The purpose of our research is to examine consumers' perceptions of green banking practices. The actual definition of equation I, as seen above, can be found in equation 6, which is written as:

Where,

Y = Awareness level (i= 0, 1, 2)

X = Independent variables (Independent variables are explained in detail in table 3)

ε = Error terms

Table1: Variable Definition Table

Indicator	Value	Expected Sign	Description
Age	years	+ -	Age of Customers
Education	1=formal, 0=otherwise	+ -	Year of formal education
Gender	1=male, 0=othe wise	+ -	Gender of Customers
Customer_Experience	years	+ -	Total customers experience year
Awareness			
Received_any_training	1=yes, 0=otherwise	+ -	Whether you've had any training in green banking
Perception			
GB_promo_SR	1=yes, 0=otherwise	+ -	Whether green banking encourages social responsibility
GB_advocates_ clean	1=yes, 0=otherwise	+ -	Whether green banking promotes hygiene
GB_reduce_resource_ wastage	1=yes, 0=otherwise	+ -	Whether green banking lessens the waste of resources

GB_support_ govt	1=yes, 0=otherwise	+ -	Whether government regulation encourages green banking
GB_upholds_ethics_ business	1=yes, 0=otherwise	+ -	Whether green banking respects business ethics
Determinants			
Corporate_ pressure	1=yes, 0=otherwise	+ -	organizational pressure influences green banking
Environmental_policy	1=yes, 0=otherwise	+ -	Environmental Policy determines the use of green banking
operational_wealth_bank	1=yes, 0=otherwise	+ -	Green banking is based on a bank's operational wealth
green_policy_bank	1=yes, 0=otherwise	+ -	Green banking is based on bank green policies.
related_party_ instruction	1=yes, 0=otherwise	+ -	Green banking is decided by related parties' orders.
Importance			
Save_ paper	1=yes, 0=otherwise	+ -	Whether preserving paper is crucial for green banking
Use_ solar_ energy	1=yes, 0=otherwise	+ -	Whether using solar energy is crucial for green banking
Power_save_equip	1=yes, 0=otherwise	+ -	Whether or not power-saving technology is crucial for green banking
Effectiveness level			
Green_ mortgage	1=yes, 0=otherwise	+ -	Whether green mortgages are successful
Green_ loan	1=yes, 0=otherwise	+ -	Whether green loans are successful
Green _credit _card	1=yes, 0=otherwise	+ -	Effectiveness of the green credit card
Green _saving_ acc	1=yes, 0=otherwise	+ -	Whether or not a green savings account is successful
Green_ checking _acc	1=yes, 0=otherwise	+ -	Whether a green checking account is successful
Green _money_ market _acc	1=yes, 0=otherwise	+ -	If a green money market account is successful
Remote_ deposit	1=yes, 0=otherwise	+ -	Whether remote deposit uses green products
Mobile_ banking	1=yes, 0=otherwise	+ -	Whether or not mobile banking is internet banking
Online_ banking	1=yes, 0=otherwise	+ -	Whether online banking is indeed online banking
Ethical_ banking	1=yes, 0=otherwise	+ -	Whether ethical banking works

3. Research Methods

Study Area and Population

This study was conducted in Kathmandu Valley, which consists of three districts-Kathmandu, Bhaktapur, and Lalitpur-out of Nepal's 77 districts. The Valley lies between 27°31'55 to 27°48'56 North latitude and 85°11'11 to 85°31'52 East longitude (Sharma et al., 2023). It is one of the fastest-growing cities in South Asia, with a population of 2,996,341 in 2021, nearly 4.8 times higher than in 1971 (Shrestha et al., 2022). The study area was selected because most residents' deposit money in banks, yet not all customers can access branch offices, making e-banking an emerging issue in Nepal's banking sector. Kathmandu Valley is significant due to its large population, higher literacy rate, and better access to smartphones and internet services, which are important for studying ICT access and climate change awareness in financial sectors. According to the Economic Survey 2020/21, 13.267 million people in Nepal use mobile banking, while 1.131 million use internet banking services.

Sampling Techniques and Sample Size

This survey used non-probability sampling. Purposive sampling, used in non-probability sampling, includes hand-selecting subjects based on predetermined criteria in order to choose the consumers (Aalam et al., 2025; Hassan, 2025). The sample size was calculated using the formula below (Charan et al., 2021).$n_0 = z^2pq/e^2$, Where, n_0= sample size required for study, Standard tabulated value for 5% level of significance (z) = 1.96, p= Prevalence of customer awareness on green banking practices 50 % = 0.5 (More et al., 2012) So, P= 0.5, q= 1-p, = 0.5, Allowable error that can be tolerated (e) = 5% , Total population for the study n0 = z2pq/l2 = (1.96)2×0.5×0.5/ (0.05) = 384.16, Non-response error 5%, i.e 384.16*5/100 = 19.20. Thus, sample size taken for study was (384.16 + 19.20) = 403.36 (≈403).

Research Instruments, Data Collection and Analysis

A structured questionnaire was used to collect primary quantitative data through surveys of bank customers (Tiwari et al., 2025). The questionnaire was developed and administered using KOBO Toolbox to ensure accuracy and originality of data. Data entry and tabulation were done in Excel, while re-coding, addition, and variable calculations were performed using STATA. Three methods were applied for data analysis: descriptive, general awareness, and inferential analysis. Descriptive analysis presented results through tables, charts, and figures in four sections: respondents' characteristics, customer perception, factors influencing perception toward green banking adoption, and managerial implications with recommendations (Jain et al., 2025). General awareness was analyzed by examining customers' understanding, opinions, and implementation of green banking practices. Inferential analysis included post-estimation, correlation, regression, and ordered logit models.

4. Results

Socio- Demographic Analysis

Table 2: Socio- Demographic Analysis

Title	Category	Numbers	Percentage
Gender	Male	222	55.09
	Female	181	44.91
Age	18-20 years	40	9.93
	20-30 years	158	39.21
	30-40 years	159	39.45
	40-50 years	45	11.17
	50 and above	1	0.25

Education	+2 Undergraduate Graduate	109 258 6	27.05 64.02 8.93
Location	Kathmandu Lalitpur Bhaktapur	152 151 100	37.72 37.47 24.81

In this survey, total participants were 403. Among those 403 55.09% were male, 44.91% were female. Among those respondents 9.93% of people are between 18-20 years age group. 20-30 years age group are 39.21%, 39.45% were between 30-40 years. Between 40-50 age group participants were 11.17% and above 50 were 0.25%, where, bachelor's degree holder were 64.02%, 8.93% were graduate and rest 27.05% were intermediate level. Majority of people were from Kathmandu which was 37.72% and rest 37.47% from lalitpur and 24.81% from bhaktapur. The study findings are largely based on young, educated, and urban bank customers of Kathmandu Valley.

General Awareness of Green Banking

This section covers customers' general knowledge of green banking in Kathmandu Valley. About 84.37% of respondents reported being knowledgeable about green banking, associating it with sustainable environmental banking, social responsibility banking, ethical banking, and sharing-based banking. Similarly, 77.42% were aware of their bank's green practices, with 45.16% being highly aware. Regarding its importance, 62.03% considered green banking important. Almost all respondents reported not receiving green banking training, with most unclear and only a few confirming that their bank provided such training, which is rarely offered to customers. All respondents expressed readiness to implement green banking, with most stating they were extremely likely to adopt it. Additionally, 62.03% believed their bank was knowledgeable about green banking, while 0.99% objected, citing missing aspects such as paperless banking, mass transportation systems, green buildings, lending to environmentally friendly projects, environmental consciousness, conservation, and sustainable development.

Table 3: General Awareness of Green Banking

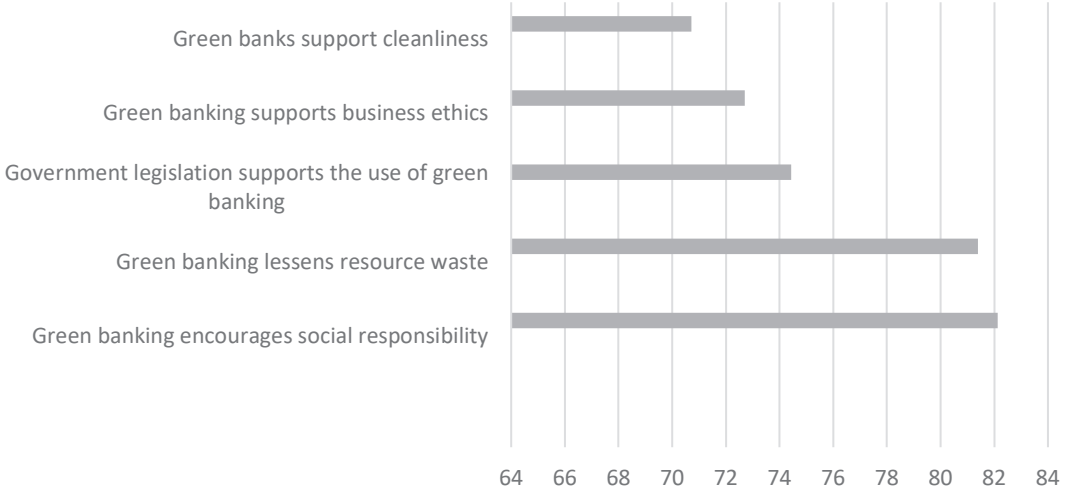
Particular	**Yes**		**No**	
	No.	**%**	**No.**	**%**
Do you know about green banking?	340	84.37	63	15.63
Are you aware of the green banking practice by your bank?	312	77.42	91	22.58
Does your bank provide consumers training on green banking?	13	3.23	390	96.77
Are you certain that you are prepared for green banking?	403	100	0	0
Has your bank developed a firm understanding of green banking?	250	62.03	153	37.97
Do you believe that consumers receive any notable benefits from green banking?	401	99.5	2	0.5
Do you believe that green banking offers major advantages over other types of banking?	402	99.75	1	0.25
Do you believe that using green banking is cost-effective?	402	99.75	1	0.25
Do you believe that implementing green banking will provide any issues or difficulties?	237	58.81	166	41.19
Aside from difficulties and complications, are there any technological issues with starting green banking?	262	65.01	141	34.99
In a similar vein, are there any administrative issues with starting green banking?	208	51.61	195	48.39

Source: Field Study

Determinants of Customers Perception on Green Banking

This section deals with the determinants of customers' perception on green banking. When questioned on their views on green banking, they expressed green banking encourages social responsibility, lessens resource waste, government legislation supports business ethics, and green banks support cleanliness. After questioning "At what degree is the practice of green banking successful in the current context?" is posed. 75.68% of respondents gave extremely effective responses. Respondents were questioned about the driving forces behind the adoption of environmentally friendly banking practices, for which they replied with bank's environmental policies, corporate pressure, related parties' directives, bank's operational wealth, and environmental regulations.

Figure 2: Thoughts on Green Banking



Source: Field Study

A ranking system identified the five most common green banking practices among commercial banks in Kathmandu Valley. For the first choice, 51.36% selected ethical banking. The second choice was green loan (26.8%), followed by green saving account (17.62%) as the third choice, online banking (25.06%) as the fourth, and use of solar energy (41.19%) as the final choice. Most respondents stated that banks could adopt additional strategies beyond those listed. "Green products and services" were chosen by 75%, followed by green investment (70.47%), green human resource management (68.98%), risk management (50.62%), and green business strategies (48.39%). Moreover, 98.51% agreed that these tactics help promote green banking. Suggested promotional methods included introducing eco-friendly goods and services (86.85%), reducing paper use (85.61%), investing in green marketing (73.7%), promoting tree planting (60.55%), and proper recycling of garbage (57.07%). Most respondents believed that current technology is adequate to encourage green banking, while those who answered "No" suggested robotic process automation, cyber security, and API platforms. Additionally, 99.01% believed green banking is necessary for future environmental protection and sustainable growth, and 98.51% agreed that green finance is highly important in addressing climate change.

Inferential Analysis

a) Pre Estimation

Pre-estimation refers to the steps taken before running a statistical model to ensure that the data is suitable for analysis (Pickup & Kellstedt, 2023). It includes checking data accuracy, handling missing values, coding variables properly, and testing assumptions like normality or multicollinearity. As part of the

estimation procedure, specification error is run. These steps help ensure that the final model produces valid and reliable results. A specification error test checks whether a regression model is correctly formulated, meaning no important variables are omitted and no unnecessary variables are included.

Specification Error Test

Table 5: Specification Error Test

. linktest
Iteration 0: log likelihood = -145.99421
Iteration 1: log likelihood = -93.273074
Iteration 2: log likelihood = -89.760811
Iteration 3: log likelihood = -89.616733
Iteration 4: log likelihood = -89.594345
Iteration 5: log likelihood = -89.594037
Iteration 6: log likelihood = -89.594037

Ordered logistic regression Number of obs = 403

LR $chi^2(2)$ = 112.80

Prob > chi^2 = 0.0000

Log likelihood = -89.594037 Pseudo R^2 = 0.3863

Customer Perception	Coef.	Std. Err.	z	P>|z|	CI Lower	CI Upper
_hat	1.342986	0.483461	2.78	0.005	0.39542	2.290551
_hatsq	-0.0436	0.057401	-0.76	0.447	-0.15611	0.0689
/cut1	-2.29319	1.12774			-4.50352	-0.08286
/cut2	3.815474	0.977589			1.899435	5.731513

Source: Field Study

b) Post Estimation

Post-estimation refers to the tests and evaluations done after running a model to check whether the results are reliable and the model fits the data properly.

Multicollinearity

When explanatory variables have both linear and non-linear correlations, this is referred to as multicollinearity (Ayinde et al., 2021). Correlation is the relationship between the independent variables in a regression model (Selvamuthu & Das, 2024). Regression model for this study multicollinearity is tested using the variance inflating factor (VIF). There is multicollinearity if VIF is higher than 10.

Table 6: Multi- collinearity

Variable	VIF	SQRT VIF	Tolerance	R-Squared
Customer_Perception	1.33	1.15	0.7545	0.2455
Gender	1.15	1.07	0.8733	0.1267
Age	1.39	1.18	0.7201	0.2799
customer_Experience	2.01	1.42	0.4964	0.5036
highest_education	1.66	1.29	0.6024	0.3976
opinion_GB	1.29	1.14	0.7743	0.2257

training_inGB	1.06	1.03	0.9446	0.0554
GB_encouragessocialresponsibilit	1.25	1.12	0.8013	0.1987
GB_supportcleanliness	1.37	1.17	0.7276	0.2724
GB_lessensresourcewaste	1.25	1.12	0.7982	0.2018
Corporatepressure_influenceGB	1.34	1.16	0.7468	0.2532
Environmentalregulation_influenc	1.52	1.23	0.6562	0.3438
Bankenvironpolicies_influenceGB	1.09	1.05	0.9152	0.0848
bankimpleGPrac_GreenMortgage	1.29	1.14	0.7748	0.2252
bankimpleGPrac_GreenMoneyMarketA	1.55	1.25	0.6443	0.3557
bankimpleGPrac_PowerSupplyEquip	1.51	1.23	0.6641	0.3359
bankimpleGPrac_UseSolarEnergy	1.13	1.06	0.8845	0.1155
Mean VIF	1.36			

Heteroscedasticity

Heteroscedasticity arises when there is a significant variation in the sizes of the observations (Bucevska, 2025). c (Forthmann et al., 2020). To put it differently, heteroscedasticity refers to data that has unequal variation across predictor variables (William, 2024). This occurs when the variance of the error terms for the variety of data differs. If the heteroscedasticity is not recognized, the results of the regression analysis will be lost. To completely comprehend our data collection, the study employ the heteroscedasticity test. Prob > Chi^2 needs to be more than 0.05 in order to match the model (Ohaegbulem & Iheaka, 2024).

Table 7: Heteroscedasticity test

Breusch-Pagan / Cook - Weisberg test for heteroskedasticity

Ho: Constant variance
Variables: fitted values of Customer_Perception

$chi^2(1)$ = 4.91
Prob > chi^2 = 0.0267

Final Result Estimation

Under this estimation, we perform ordinary logistic regression after using robust standard error. We also find the odds ratio, marginal effect and logit co-efficient so as to calculate the final results.

Summary Statistics

Quick summaries of data are provided by summary statistics, which are especially helpful when comparing one project to another or before and after (O'Kane et al., 2021). In order to provide as much information as possible in a concise manner, summary statistics characterize the data. In addition, the minimum and maximum numbers, as well as the mean, standard deviation, and information about the collected data, are shown.

Table 8: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Customer_P~n	403	1.409	0.5407	0	2
Gender	403	0.5509	0.498	0	1
Age	403	0.5087	0.5005	0	1
Customer_Experience	403	3.8263	0.9746	1	7
Highest_Education	403	0.7295	0.4448	0	1

Opinion_GB	403	0.7717	0.4203	0	1
training_i~B	403	0.0025	0.0498	0	1
GB_encoura~t	403	0.8213	0.3835	0	1
GB_support~s	403	0.7072	0.4556	0	1
GB_lessens~e	403	0.8139	0.3897	0	1
Corporatep~B	403	0.8288	0.3772	0	1
Environmen~c	403	0.6799	0.4671	0	1
Bankenviro~B	403	0.8313	0.375	0	1
bankimpleG~e	403	0.6873	0.4642	0	1
bankimpleG~A	403	0.4591	0.4989	0	1
bankimpleG~p	403	0.4864	0.5004	0	1
bankimpleG~y	403	0.7097	0.4545	0	1

Source: Field Study

A total of 403 respondents participated in the survey, and twenty-seven independent variables were used in the analysis. Among socio-demographic variables, customer experience had the highest mean (3.826303) and standard deviation (.9746044), with a minimum value of 1 and maximum of 7. The dependent variable, customer perception, had a mean of 1.40897 and standard deviation of .5406655, ranging from 0 to 2. Gender showed a mean of .5508685 and standard deviation of .4980239 (0-1), while age had a mean of .5086849 and standard deviation of .500546 (0-1). Highest education had a mean of .7295285 and standard deviation of .4447555.

Regarding determinants of green banking, opinion on green banking had a mean of .7717122 and standard deviation of .4202508. Training in green banking had a mean of .0024814 and standard deviation of .0498135. Green banking encourages social responsibility showed a mean of .82134 and standard deviation of .3835436, while support cleanliness had a mean of .707196 and standard deviation of .4556149. Green banking lessens resource waste had a mean of .8138958 and standard deviation of .3896745. Corporate pressure influence had a mean of .8287841 and standard deviation of .3771657, and environmental regulation influence had a mean of .6799007 and standard deviation of .4670943. Banking environmental policy showed a mean of .8312655 and standard deviation of .3749828. Green mortgage had a mean of .6873449 and standard deviation of .464151, green money market .516129 and .4989403, power supply equipment .4863524 and .500435, and solar energy .7096774 and .4544754. All these variables ranged from 0 to 1.

Logistics Regression Analysis

A regression model for an ordinal response variable is called ordered logistic regression (Williams & Quiroz, 2020). The model is based on the cumulative probabilities of the response variable, where the logit of each cumulative probability is assumed to be a linear function of the covariates with constant regression coefficients across response categories (Brobbey et al., 2022). The table's ordered logistic regression illustrates the significance of the relationship between the dependent variable-consumer perception and the independent variables-age, gender, level of education, customer experience, general awareness of green banking, determinants of customer's perception on green banking, factors and managerial solutions. There are coefficients, standard errors, z-statistics, corresponding p-values, and the 95% confidence intervals for the coefficients in the table in Annex II. There is a total of seven relevant factors from Annex II, including training in GB, GB support for ethics, GB support for business cleanliness, safe network facility, strong IT department, ethical banking, and solar energy use. This demonstrates that the view that consumers have of green banking practices is influenced by these important aspects.

The ordered logistic model may be examined using three processes, namely, Probability ratio, Coefficient, Marginal impact. The value of LR chi^2 (2) is 117.00, as shown in the table in the Annex. The value of pseudo R^2 is also 0.1855. The log likelihood value is -256.93956 in a similar manner. Our model is fit, and can proceed, because _hat is equal to 0.005 and _hatsq is equal to 0.447.

Table 9: Ordered Logistics Regression

Variables	**(1) logit coeff**	**(2) odds ratio**	**(3) marginal effect**
Gender	0.00209	1.002	0.00209
	(0.00542)	(0.00543)	(0.00542)
Age	-0.000112	1.000	-0.000112
	(0.00681)	(0.00681)	(0.00681)
Customer_Experience	-0.00883	0.991	-0.00883
	(0.00558)	(0.00553)	(0.00558)
highest_education	-0.00905	0.991	-0.00905
	(0.00880)	(0.00872)	(0.00880)
opinion_GB	0.00917	1.009	0.00917
	(0.00766)	(0.00773)	(0.00766)
training_inGB	-0.336***	0.715***	-0.336***
	(0.107)	(0.0762)	(0.107)
GB_encouragessocialresponsibilit	0.0241**	1.024**	0.0241**
	(0.0116)	(0.0119)	(0.0116)
GB_supportcleanliness	0.00739	1.007	0.00739
	(0.00775)	(0.00781)	(0.00775)
GB_lessensresourcewaste	0.0182*	1.018*	0.0182*
	(0.00988)	(0.0101)	(0.00988)
Corporatepressure_influenceGB	0.00866	1.009	0.00866
	(0.00946)	(0.00954)	(0.00946)
Environmentalregulation_influenc	0.0222**	1.022**	0.0222**
	(0.0105)	(0.0108)	(0.0105)
Bankenvironpolicies_influenceGB	0.0158*	1.016*	0.0158*
	(0.00845)	(0.00859)	(0.00845)
bankimpleGPrac_GreenMortgage	0.000755	1.001	0.000755
	(0.00713)	(0.00713)	(0.00713)
bankimpleGPrac_GreenMoneyMarketA	0.0119*	1.012*	0.0119*
	(0.00702)	(0.00711)	(0.00702)
bankimpleGPrac_PowerSupplyEquip	0.0107*	1.011*	0.0107*
	(0.00581)	(0.00587)	(0.00581)
bankimpleGPrac_UseSolarEnergy	-0.0224**	0.978**	-0.0224**
	(0.00888)	(0.00869)	(0.00888)
Observations	40	403	403

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The ordered logistic model shows that customer perception of green banking is influenced by training in GB, social responsibility, lessening resource waste, environmental regulation influence, bank environmental policies, green money market, power supply equipment, and use of solar energy. Training in GB is significant at 10%; GB encourages social responsibility, environmental regulation influence, and use of solar energy are significant at 5%; while lessen resource waste, bank environmental policies, green money market, and power supply equipment are significant at 1%. Social responsibility, lessen resource waste, environmental regulation influence, bank environmental policies, green money market, and power supply equipment are positively significant, increasing customer awareness, whereas training in GB and use of solar energy is negatively significant, decreasing customer awareness.

The odds ratio indicates the effect of predictors on the likelihood of customer perception. A rise in training increases perception by 0.715 times; encouraging social responsibility increases it by 1.024 times; reducing resource waste by 1.018 times; environmental regulation influence by 1.022 times; green money market by 1.012 times; power supply equipment by 1.011 times; and solar energy by 0.978 times. Marginal effects show that a one-day increase in training decreases perception by 0.336 units, while a one-unit increase in lessening resource waste, environmental regulation influence, bank environmental policies, green money market, and power supply equipment increases perception by 0.0182, 0.0222, 0.0158, 0.0119, and 0.0107 units respectively. However, a one-unit increase in solar energy use decreases perception by 0.0224 units.

5. Discussion

This study provides insights into customer perception of green banking practices in commercial banks of Kathmandu Valley, focusing on socio-demographic factors, general awareness, perception drivers, and bank strategies. The findings indicate that males slightly outnumber females in adopting green banking services, suggesting gender differences in banking behavior, possibly linked to financial literacy or decision-making roles within households. Age-wise, customers between 30–40 years demonstrate higher engagement with green banking, reflecting greater financial stability, environmental awareness, and openness to technology-driven banking solutions. The predominance of educated, urban respondents, mainly bachelor's degree holders from Kathmandu, aligns with prior studies indicating that higher education and urban residence increase awareness and adoption of innovative banking practices.

General awareness of green banking is relatively high, with over 84% of respondents familiar with its principles, including sustainability, ethical practices, and social responsibility. Despite this awareness, formal training is largely absent, highlighting a gap where banks could improve customer understanding and engagement. The high willingness of respondents to adopt green banking reflects a positive attitude toward environmentally sustainable financial services, consistent with the growing global emphasis on green finance. Determinants of customer perception reveal significant patterns. Training in green banking, although minimal, negatively influences perception in this study, suggesting that sporadic or inadequate training may confuse or overwhelm customers. In contrast, factors such as encouragement of social responsibility, reduction of resource waste, compliance with environmental regulations, and implementation of bank environmental policies positively shape perception. This indicates that customers value practical and visible green initiatives over formal training, aligning with the idea that tangible actions enhance credibility and trust. Additionally, the presence of green financial products, such as green money market accounts, and infrastructure support like power supply equipment and solar energy adoption, further strengthens favorable perception and customer loyalty. Interestingly, the use of solar energy shows a small negative effect, which may reflect implementation challenges or limited visibility of its benefits to customers.

The study underscores that customer perception is influenced more by visible, actionable environmental practices than by mere awareness or training. Banks that integrate ethical policies, optimize resource use, and provide green financial products are likely to enhance customer engagement. The findings suggest that strengthening environmental policies, expanding green product offerings, and effectively communicating these initiatives can improve adoption and support sustainable banking practices in Nepal. Future research

may explore longitudinal effects of green banking campaigns or the role of digital platforms in promoting sustainable financial behavior.

6. Conclusion

The purpose of this study is to examine customers' knowledge and perception of green banking practices in commercial banks of Kathmandu Valley, identify the factors influencing their perception, and provide managerial recommendations. A conceptual framework was developed based on literature, theories, concepts, and legislation, incorporating customer expectations, determinants of green banking, and influencing factors. Questionnaires were designed accordingly, and data were analyzed using descriptive analysis, awareness index, and inferential statistics. Descriptive results show that males and customers aged 30–40 use green banking more frequently, and most respondents are aware of their banks' green practices and consider green banking important. Respondents believe green banking promotes social responsibility, reduces resource waste, supports corporate ethics through government laws, and promotes cleanliness. Key drivers of adoption include bank environmental policies, corporate pressure, connected parties' mandates, bank operating wealth, and environmental regulations. The five most prevalent practices identified are ethical banking, green loan, green saving account, internet banking, and solar energy use. Inferential analysis reveals significant relationships between training in GB, social responsibility, lessening resource waste, environmental regulation influence, bank environmental policies, green money market, power supply equipment, solar energy use, and customer perception.

The study implies that customers are moderately aware of green banking practices; therefore, banks and financial institutions should develop awareness programs and focus on significant variables and managerial strategies to strengthen environmentally harmless and beneficial green strategies. However, the study is limited to customers of commercial banks in Kathmandu Valley and excludes B and C class banks and other regions due to time and resource constraints. Future research can integrate both bankers and customers, use the present findings as reference data, identify new research gaps, and collect more detailed information to enhance effectiveness.

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