Digital Financial Inclusion: An Umbrella for Environmental Sustainability

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ABSTRACT

Introduction: Natural resources are provided by god and cannot be generated again once exhausted. Climatic conditions of the world are the worst because of the overutilization of natural resources. To overcome this mammoth problem researchers are trying to resolve this problem. One of the solutions for environmental sustainability is the use of digital technology. Present papers, researchers tried to identify the perception of respondents on digital finance for achieving environmental sustainability in terms of various demographic factors. Environment sustainability means the use of pollution-free and eco-friendly products and services so that our environment gets protected and safe for the current and future generation.

Purpose: The present study was conducted to understand customers' acceptance level of digital finance for environmental sustainability in terms of various demographic factors.

For demographic study age, gender and income parameters were used and to understand the impact of digital financial inclusion paperless work, fewer trips to banks and sharing information through online mode, low carbon footprints, reduction in vehicular pollution and less paper use (natural resource) carbon emission were used.

Methodology: The questionnaire was distributed among 100 respondents of the Indore. Out of which 90 people responded. A simple random sampling method was used for the study. The current research employed statistical tools like t-test, ANOVA for demographic study.

Results: The results of the study revealed that demographic factors like gender, age and income of respondents have a significant difference in accepting digital finance for environmental sustainability. Finally, the study concluded that all the seven variables help in achieving environmental sustainability.

Keywords: Digital Financial Inclusion, Environmental Sustainability, Financial Inclusion, Eco-Friendly Products, Environmental Pollution etc.

1. INTRODUCTION

We have grown up in the lap of nature. Nature always helps us in making our life easy. But we are always trying to make undue excessive use of nature in response to such blessings. As a result of which nature also takes revenge for such harmful causes in the form of floods, droughts, storms, earthquakes, global warming and melting ice. Due to such a disastrous phenomenon, many people around the world create awareness among people and motivate them to think about protecting nature. They provide information related to the people about global warming and its after-effects and encourage them to work on the possible solution to make the earth a safe liveable place by adopting eco-friendly products and policies. In today's scenario, the world is facing a big challenge of economic sustainability thus researchers across the globe come forward to make a sustainable environment and formulate such policies to keep the earth a clean and safe planet. To achieve environmental sustainability, digital finance plays a significant role as it is based on the concept 3D of dematerialization, demobilisation and decarbonisation.

Environmental Sustainability: The concept of environmental sustainability started in 1969 with the establishment of the National Environmental Policy Act (NEPA, 2014) in the United States whose purpose is to promote the general welfare, to maintain productive harmony between man and nature and to fulfil the economic and social welfare of the present and future generations.

Banks and financial institutions are the main agents which provide sources of finance to all. By adopting digital technology and providing it to the weaker section of society at an affordable cost and creating awareness among them by using some seminars, workshops, or videos will significantly contribute to environmental sustainability.

Digital Finance: Digital finance means the availability of all financial products and services in an electronic form. Due to this advantage, it plays a crucial role in the creation of a sustainable environment. Excessive use of natural resources was the main drawback of traditional branch banking that gets resolved through digital finance. Digital mode promotes less paperwork thus unnecessary cutting of trees can be avoided which can save our environment. Digital finance plays an intermediary role between the environmental and economic development of the nation.

1. **Paperless work:** Digital finance helps in maintaining a digital database of various records. Now there is no need to maintain paper-based documents and files. In the case of paper-based work, it might be possible that the record can be destroyed or as time passes it will not be available in the same condition as were before because of the tear and wear of the paper. Digital technology provides ease in handling records. Now one can maintain his or her record for a lifetime without the fear of such kinds of difficulties. In this way, our nature gets protected for future generations.

2. **Less pollution:** Less pollution: Digital finance provides us many features like any time anywhere banking. As within the case of the conventional banking industry, everyone has to visit a bank for any minor operations like issuing a cheque book or for issuing an ATM card etc. Now, this can be done by using some steps at their own place with no one going to visit bank branches again and again. As a result of which an unnecessary wastage of the time and cost, gets reduced which ultimately reduces pollution on the road.

3. **Less carbon emission:** An online digital base involves less paperwork because of which the carbon emission gets minimized which is indirectly helpful in achieving environmental sustainability.

4. **Low carbon footprint:** Digital finance is now providing a wide range of options like digital QR code scan, digital passbook, trade book etc. in that it helps in achieving environmental sustainability. Due to introduction of QR code in near future use of plastic cards gets reduced that consume heavy PVC in their manufacturing and carbon footprints in their manufacturing thus helps in achievement of environmental sustainability.

5. **Fuel consumption:** As digital finance provides anytime, anywhere banking facility means one can operate his account from anywhere. As a result, unnecessary travelling is not required which indirectly reduces fuel consumption and helps in achieving environmental sustainability.

6. **Online information sharing:** Digital finance allows us to share information online in this way time, cost, the environment can be protected. For example, in the past people needed a physical passbook, physical bills etc. and physical distribution of the same which not only increases wastage of natural resources but also add cost thus digital finance is one of the best solutions for the benefit of society and environment both.

7. **CSR**: Corporate social responsibility is continuing commitment. Banks and other corporate bodies are now working on the concept of green banking. They are working on the procedures, policies and eco-friendly products that are beneficial for the protection of the environment.

2. REVIEW OF LITERATURE

Ghosh, S. K., Ghosh, P. K., & Chowdhury, S. (**2018**): The present study was about essential Central Bank's Regulatory Policy to Strengthen Green Banking Practice and Reporting in Asian Countries during this study researchers tried to research green banking initiatives within the Indian sub-continent and to reveal the means through regulatory policy strengthening mandatory Green Banking practice and reporting during a country. This study was descriptive in nature. Data is collected from modern online and traditional physical sources for the study. After critical appraisal of collected data researchers found that Bangladesh had included green banking in their operations and policy formulation but in India, practices were less while Pakistan was found at a really early phase of policy formulation and implementation.

Bai, Y. (2011). The current study examined the banking sector of China for green finance. In this study, they wanted to know the role and regulations of Chinese banks towards green banking and the extent of green financing. Apart from this progress and challenges were also discussed. The qualitative analysis method was used for the study. Three methods for the study were literature review, interview and stakeholder analysis. Results of the study showed that China was at the initial

phase of green financing and only some small size Chinese banks were using these practices and it was also unclear whether they were following these principles seriously or not.

Chaurasia, A. K. (2014). The paper examined the green banking activities of Indian banks. This paper studied the advantages, barriers and strategies for green banking adopted by various banks. The results of the study revealed that the bank didn't make many efforts in this direction. Banks must adopt green banking for economic sustainability.

Dass, R., & Pal, S. (2011): The current paper was trying to explore the factors that contribute to the adoption of mobile financial services among rural under-banked. In this paper, researchers tried to identify promoters and barriers for the acceptance of mobile financial services among them. The research was based on an exploratory qualitative study. For the study, extensive reviews were conducted to compare the results of the present study with existing studies. Outcomes of the study revealed that demand for banking and financial services and through the present channel amount of hardship faced in availing these services were key drivers in the adoption of digital financial services while lack of trust, lack of readiness to adopt new technology were key barriers to adopt digital financial products and services.

Karjaluoto, H., Riquelme, H. E., & Rios, R. E. (2010). The paper examined the effect of various factors on the adoption of mobile banking in Singapore. Here gender acts as a moderating variable. A purposive sampling technique was used for the study where the sample size was reflected by 600 present users of electronic banking. Relative advantage, perceived risk, perceived usefulness and social norms factors were used for the present study. The results of the study found that usefulness, risk and social norms were the most influential factors. Further, the study also revealed that ease to use and social norms have a strong impression on females than males while relative advantage has a stronger effect on the perception of usefulness among male respondents.

Chen, Z., Hossen, M. M., Muzafary, S. S., & Begum, M. (2018). The paper supported the concept of green banking for environmental sustainability-present status and future agenda: experience from Bangladesh. The study tried to throw light on green banking practice, progress, and different green initiatives taken by the Bangladeshi banks for environmental sustainability. Content analysis and

quarterly review of bank reports were performed by researchers to understand the performance of banks towards environmental sustainability. The study concluded that banks were doing well in achieving greater environmental sustainability. But as developing country banks were facing certain challenges like weak infrastructure, low level of awareness among people. This study also suggested banks should allocate some allow environmental sustainability and continuously review it to see the performance.

Gupta, J. (2015). The study was conducted to know the role of green banking in environment sustainability-A study of selected commercial banks in Himachal Pradesh. The present study was conducted to know the importance of green banking in achieving environmental sustainability. It is the responsibility of each and every sector to protect our environment. The banking sector is now taking a step in the same direction and adopted the concept of green banking. In the given study researchers examined various initiatives of the banks by performing SWOC analysis. The finding of the study revealed that cost efficiency, any time anywhere, low carbon footprints were main strengths while geographical barriers, lack of knowledge, security issues, not equal adoption by all banks were some of the weaknesses. Opportunities were computer literacy, already having ATMs, and mobile banking penetration, now at last study concluded that training of banks employees, high cost of technology and techniques of recycling and reusing, time to accustom with same were main challenges as per the current study.

Literature gap: Very scanty literature was available to check the effect of demographic factors and digital financial inclusion parameters effects on environmental sustainability. Therefore, the given study examined customers' acceptance level and whether digital finance helps in achieving environmental sustainability or not.

Identification of variables: Demographic variables like gender, age and income were considered to know the perception of individuals towards digital financial inclusion for environmental sustainability.

Paperless work, fuel consumption, less pollution, low carbon footprints, low carbon emission, online information sharing and CSR parameters were used to check the impact of digital financial inclusion on environmental sustainability.

3. RESEARCH OBJECTIVES:

1. To understand customers' acceptance level of digital finance for environmental sustainability in terms of various demographic factors.

2. To analyse the effect of digital financial inclusion on environmental sustainability.

Hypothesis

The research study incorporated the following hypothesis.

H_1: There is no significant difference in the acceptance level of digital finance for environmental sustainability in terms of various demographic factors.

H_2: There is no significant impact of digital financial inclusion on achievement of environmental sustainability.

4. RESEARCH METHODOLOGY:

The research methodology is a technique through which researchers are trying to identify the problems and give a solution to the problem. In the research methodology, the target population is defined. The sample size is also described as per the validity and reliability of data. Research design represents the foundation of research on which the whole purpose of research revolved.

Research Design: According to Berg (1989) "a research design is a strategy on how the research study will be administered." "It also characterizes the factors that are significant as they can be utilized to identify noteworthy problematic issues, and the techniques available to solve them" (Perry 2001). There are three key forms of research, explicitly, exploratory, descriptive, and explanatory. In this research work, an exploratory research design has been used.

The Population and Sample: The study is based on Indore region.

Target Population: People basically living in lower middle class or lower income and old aged people were considered in the study.

Sample design: We took data specially from the underserved and unserved section of society living in the Indore area.

Sample Size:100

Sampling Tech: Purposive Sampling

Type of Research: Primary researchers

Data collection technique: A Structured questionnaire

Questionnaire design

The questionnaire has incorporated 14 questions in all, which has been divided into two sections.

1. Personal information

2. Multiple choice Questions

Section	Variable has been considered	Questions included in per section	Measurement
Personal information	Demographic factors • Gender • Age • Education • Marital Status • Occupation • Monthly Income	Q. 1 to Q. 6	Nominal
Scaling questions (Strongly Agree to Strongly Disagree)	Environmental Sustainability • Paperless Work • Reduce Fuel consumption (Natural Resource) • Less Pollution • Low carbon footprints • Low carbon Emission • Online information sharing • CSR	Q. 7 to Q.14	Likert Scale

5. DATA ANALYSIS:

The information that was collected through questionnaires were processed and analysed to know the how the of digital financial services helps in achieving the environmental sustainability. The raw data from 100 respondents were reviewed to detect any kind of errors detection and elimination of it. The data from 90 respondents were used for the study. The data was now scrutinized and coded in the MS- excel. The coded information has been executed for structured analysis in SPSS.

Demographic Study:

Gender and environmental sustainability through adoption of digital financial inclusion.

T- test was performed to know the impact of gender on adoption of digital finance for environmental sustainability.

Table I: Impact of gender on acceptance of digital financial inclusion for environmental sustainability

Environmental sustainability construct	Gender	Mean	Significance
Paperless Work	Male Female	4.13 1.66	**0.00**
Less Pollution	Male Female	4.02 1.66	**0.02**
Less fuel consumption	Male Female	4.00 1.64	**0.02**
Low carbon Emission	Male Female	3.97 1.62	**0.00**
Less carbon footprint	Male Female	3.94 1.64	**0.02**
Online information sharing	Male Female	4.09 1.66	**0.03**
CSR	Male Female	3.98 1.66	**0.02**

The above table no. I show the overall acceptance level of respondents. It shows that the acceptance level of male and female significantly differ in all these cases as the p-value is less than 0.05. The study declared that there is a significant difference in opinions of females and males in considering digital financial inclusion helps in achieving environmental sustainability. The acceptance level of males is better than females.

Age and digital financial inclusion for environmental sustainability

ANOVA test was conducted to know the age-wise acceptance of the level of digital financial inclusion for environmental sustainability. The table below shows the overall acceptance of the level of digital financial inclusion for the environmental sustainability of various respondents based on various age groups. The result has of the study represented that only paperless work and corporate social responsibility a significant difference in environmental sustainability as their p-value is lower than 0.05. Respondents who belong to the 26-35 represented more acceptance than others.

Table II: Impact of age on acceptance of digital financial inclusion for environmental sustainability

Environmental sustainability construct	Age group	Mean	Significance
Paperless Work	15-25 26-35 36-45	3.80 4.60 4.33	**0.003**
Less fuel consumption	15-25 26-35 36-45	4.20 4.24 3.96	.226
Low pollution	15-25 26-35 36-45	3.80 3.85 4.00	.147
Low carbon Emission	15-25 26-35 36-45	4.00 3.88 3.92	.401
Less carbon footprints	15-25 26-35 36-45	3.60 3.98 4.00	0.409
Online information sharing	15-25 26-35 36-45	4.40 4.02 4.00	0.222
CSR	15-25 26-35 36-45	4.20 5.00 4.00	**0.031**

Income and environmental sustainability:

Table III: Impact of income on environmental sustainability

Environmental sustainability construct	Income	Mean	Significance
Paperless Work	Up to 20000 200001-40000 40001-60000 60001-80000 Above 80000	3.10 4.40 4.04 4.08 4.59	0.105
Less fuel consumption	Up to 20000 200001-40000 40001-60000 60001-80000 Above 80000	2.40 4.00 4.07 4.23 4.53	.005
Low pollution	Up to 20000 200001-40000 40001-60000 60001-80000 Above 80000	2.40 4.40 3.93 4.00 4.41	**.000**

	Up to 20000	2.10	**.002**
Low carbon Emission	200001-40000	4.60	
	40001-60000	4.04	
	60001-80000	3.92	
	Above 80000	4.06	
Less carbon footprints	Up to 20000	2.60	**0.002**
	200001-40000	3.60	
	40001-60000	3.93	
	60001-80000	4.23	
	Above 80000	3.95	
Online information sharing	Up to 20000	2.60	**0.000**
	200001-40000	3.80	
	40001-60000	4.21	
	60001-80000	4.00	
	Above 80000	4.12	
CSR	Up to 20000	2.20	0.081
	200001-40000	3.00	
	40001-60000	4.04	
	60001-80000	3.92	
	Above 80000	4.12	

ANOVA test was conducted to know the significant difference among respondents in terms of income. From the above table, it is found that low pollution, less carbon emission, fewer carbon footprints and online information database parameters were not having significant difference as their p-value is less than 0.05 means, in this case, we have to accept the null hypothesis in these cases while null hypothesis was rejected in rest of cases.

Multiple Regression Analysis: If we want to analyse the impact of more than one exogenous variable on an endogenous variable, we can use multiple regression analysis.

In the present study we are trying to analyse how digital financial inclusion affects environmental sustainability following parameters were considered

Impact of digital financial inclusion on environmental sustainability.
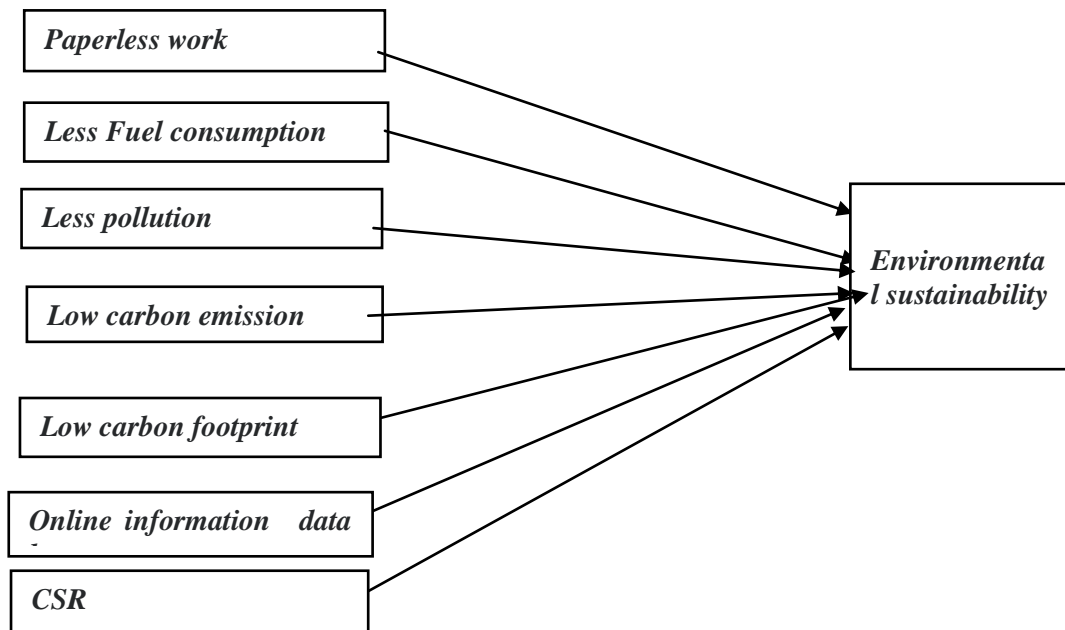
Independent variables Dependent variable

Table IV: Model summary table

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.830[a]	.688	.661	.55442
a. Predictors: (Constant), CSR, paperless work, less-fuel, low carbon footprint, online information sharing, less carbonemission, less pollution				
b. Dependent Variable: ES				

The fourth table for the study is the model summary table. The value of the R the multiple regression coefficient value is 0.830 which shows a positive degree of estimation. R square column represents the coefficient of the determination which is the proportion of the variance in the response variable that can be explained by the explanatory variables. From the table, above is clear that the value of square is .688 that our independent variables explain 68.8% variability of our dependent variable.

Table V: ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	54.307	7	7.758	25.239	.000[b]
	Residual	24.591	80	.307		
	Total	78.898	87			
a. Dependent Variable: ES						
b. Predictors: (Constant), CSR, paperless work, less fuel, low carbon footprint, online information sharing, less carbon emission, less pollution						

Now we took the ANOVA table. From the given, it was found the p-value is 0.000 means the model is highly significant. We can conclude that all seven independent variables contribute to the achievement of environmental sustainability. But what about their individual contribution to the prediction of environmental sustainability. For which we canuse a coefficient table.

Table VI: Coefficient

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.718	.380		1.889	.063	-.039	1.475
	paperlesswork	.914	.092	.883	9.977	.000	.732	1.097
	fuelconsumption	-.108	.121	-.094	-.889	.377	-.349	.133
	lesspollution	.057	.111	.057	.511	.611	-.164	.278
	lowcarbonfootprint	-.099	.116	-.088	-.854	.396	-.331	.132
	lesscarbonemission	-.001	.129	.000	-.004	.996	-.257	.256
	onlineinformationsharing	.152	.124	.117	1.229	.004	-.094	.398
	CSR	-.133	.103	-.116	-1.289	.002	-.338	.072
a. Outcome Variable: ES								

Following regression equation can be drawn from the given table.

$Y=0.718+0.914X_1+0.57X_2+0.152X_3.$ In the given equation X_1 represents log of

paperless work, X_2 represents log of less pollution and X_3 represents log of online information sharing and the outcome y represents environmental sustainability.

- Paperless work regression coefficient is positive .883 means paperless work uniquely helps in the achievement of environmental sustainability and the relationship is statically significant (sig =0.000) means hypothesis one is accepted.

- Fuel consumption is the second parameter in which the regression coefficient is negative -.108 means fuel consumption negatively contributes to achieving environmental sustainability and the relationship is not statistically significant.

- In the third case regression coefficient is positive .057 means less pollution is positively contributing to the achievement of environmental sustainability. In the given case as the p-value is greater than 0.05 means the test is not statistically significant.

- In the fourth case regression coefficient is negative means carbon footprint is inversely related with environmental sustainability and the test is not statistically significant.

- In the 5th case carbon emission is poorly related with environmental sustainability. In the present case the beta coefficient was found to be negative. Here also the test is not statistically significant as the p-value is more than 0.05.

- In the 6th case online information sharing positively associated with the achievement of environmental sustainability. As the beta value was positive and the p-value is lower than 0.05 means the test is statistically significant.

- In the 7th case corporate social responsibility is slightly associated with the achievement of environmental sustainability because the regression coefficient is negative. In the given case as the p-value is under 0.05 means the test is statistically significant.

Most of the tests were not statistically significant because most of the weaker section and old age people were not aware of digital finance and environmental sustainability. From the above study it is clear that paperless work, less pollution and online information availability were positively contributing towards achievement of environmental sustainability.

6. FINDINGS OF THE STUDY:

The research was based on two parameters: demographic and environmental sustainability parameters. As per demographic study there is significant difference in respondent's opinion regarding acceptance of digital finance for environmental sustainability. Males have better acceptance levels than females.

Age is the second demographic parameter on the study that revealed there is no significant difference in respondent's acceptance level in all cases except paperless work and CSR. As per study people belonging to the 26-35 age group have more acceptance than rest.

Income is the third parameter that was used in the study that represented that it has a significant difference in all cases except paperless work, less fuel consumption and CSR. Middle- and high-income groups have more acceptance rather than lower income segments because of low levels of literacy and awareness.

All the seven digital financial inclusion parameters help in achieving environmental sustainability. Paperless work, less pollution and an online information database were the main factor that contributes in achieving environmental sustainability.

7. CONCLUSION:

The objective of the study is to understand the effect of digital financial inclusion on environmental sustainability. The demographic profile of the respondents revealed there is a significant difference in a respondent's opinion for considering digital finance for environmental sustainability regarding gender, age and income. Results concluded that the male population was more concerned with environmental sustainability. Also, most young people were having a positive opinion for considering digital financial inclusion for environmental sustainability. But in the case of an old age person a low level of acceptance was observed because they were not properly aware and had fear of using technology. Lower-income also having not much knowledge about the technology and environment, so, they were more relying on the traditional banking system. Finally, most of the parameters were helpful in achieving environmental sustainability. They feel that technology not only save their time and cost but also protect the environment. Paperless work was the most important parameter for

achieving environmental sustainability. The second most important factor is less pollution. Online information sharing is the third factor that contributes significantly to the achievement of environmental sustainability. Thus, both demographic and digital financial factors significantly contribute to the achievement of environmental sustainability. The researchers suggested that government and banks need to create more awareness and training programs, especially the old ages, female and low-income group people, so that, they can also participate in the achievement of environmental and economic sustainability.

Managerial implication: The study is beneficial for policymakers and bank employees who are planning to design eco-friendly products for the under-served or unnerved sections of society. It helps in the cost-effective management of banks and citizens.

8. LIMITATION:

1) The geographical location for the study was the Indore district of MP only. It might be possible the people living in some different places might have a different impact. It means we cannot propose a generalized statement based on this study.

2) Our study is based on primary data only. To get more reliable information further research needs to consider both primary and secondary sources of data.

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