

ROLE OF ENVIRONMENTAL DISCLOSURES IN BANKING PERFORMANCE - STUDY OF LISTED COMMERCIAL BANKS OF SAUDI ARABIA

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Abstract

This research proposes to explain applied approaches existing techniques and challenges as well as proposed future agenda for development in banking performance, with respect to environmental disclosures. This study examined the connection between the performance of Saudi Arabia's publicly traded commercial banks and the disclosure of environmental assessments. The methodology of this research consisted of a semi quantitative analysis. The content analysis was used to collect information from annual reports of 10 listed commercial banks of Saudi Arabia, on Tadawul stock exchange, from 2013 to 2021. The developed index was regressed with banking performance, to check the impact of environmental disclosures on banking performance, by using Generalized Least Squares (GLS), with random-effect (RE) and fixed-effect (FE) estimators. Further, disclosure of environmental information increased dramatically from 39.23% to 71.29% between 2013 and 2021. The government and policymakers monitored environmental contribution and disclosure by the banking sector, for sustainable environment and banking performance.

Keywords: *Saudi Arabian Banks; Environment Development; Reporting Index;*

Content analysis; GLS

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1. Introduction

Global environmental challenges influence individual countries and Saudi Arabia is not exempt from them. The fast developing economy of Saudi Arabia pollutes the environment, such as water contamination, high emission of sulfur & nitrogen oxide, land degradation and desertification and many more. These problems are not entirely environmental issues (**Sarfraz et al., 2022a; Liu et al., 2022; Ivascu et al., 2021**). Domestic issues positively contribute to it, such as the growth of urban population, which leads to the high demand for water and energy. These issues increase the burden on the economy and distract the focus of economists and analysts from the environment to fundamental issues (**Mohsin et al., 2020**). Environmental deterioration can destroy the world or be utilized as a weapon. Environmental accounting and reporting is also trying to contribute to saving the world for a better tomorrow, by generating business accountability regarding environmental protection measures and reporting publically about it while making business decisions. Organizations should focus on environmental contribution and the effects of decisions on environmental health (**Das, 2016; Wong, 2011; Naseem et al., 2019**). **Nurunnabi (2016)** has explored environmental accounting as a modern accounting, that helps calculate the monetary value of the effects of corporate decisions on the environment. They must be reported in their annual reports, whether the disclosures are related to monetary or non-monetary information (**Rahman & Muttakin, 2005; Nurunnabi, 2016**). The divergent types of business are financed by banks and hence the importance of banks for an individual economy (**Masud et al., 2016; Naseem et al., 2020a**). Though the nature of the banking system is non-manufacturing and intermediary, the whole manufacturing system cannot function

without support from banks (**Belal et al., 2015; Imam, 1999, 2000; Rehman & Muttakin, 2005**).

The banking system of the Kingdom of Saudi Arabia (KSA) is based on Sharia law, which strictly follows Islamic principles and does not follow the rules of capitalism and wealth creation, as the rest of the world does. The KSA's prosperity fundamentals stem from the hydrocarbon reserve (**Orlando & Bace, 2021**). The financial system of KSA is presented in **Figure 1** and **Figure 2**. The relationship of the banking system with environmental health is dual in nature, i.e. direct and indirect. Before allocating the finance to a manufacturing business, the banks check the impact of that business on the environment and check the complete planning report, which helps to enhance the quality of the environment (**Kumar, 2018; Masud et al., 2016; Nurunnabi, 2016; Dey & Nakib, 2016**). Environmental accounting and reporting (EAR) are not observed from the perspective of the Saudi Arabian banking system. While dealing with the KSA banking system, researchers not only face the analytical issues related to environmental deterioration issues but also the religious issues too which are quite a sensitive issue. This research work will explore it without compromising on religious issues and provide a complete roadmap on attaining environmental sustainability, with the help of the banking system of Saudi Arabia.

2. Review of Literature

The banking system and financial market of KSA intersect into two parts as per government entities' responsibilities. Firstly, the Central Bank of Saudi Arabia was established in 1950, which is considered the monetary authority of Saudi Arabia. The functions of the central bank are issuing national currency,

managing and maintaining foreign currency exchange reserves, exchange rate stability, assurance of sound and foolproof financial system and operation of cross-bank electronic financial system (Azam et al., 2023; Mohsin et al., 2024). A second financial market is the Capital Market Authority of Saudi Arabia (CMA), which was established in 2015 and regulates the capital market and stock exchange. Being a government organization, CMA's reliability and legality is unquestionable (Sarfraz et al., 2023; Naseem et al., 2023a). The Saudi Investment Bank (SAIB) has started focusing on the country's future and environmental sustainability and implemented these conceptual innovations while dealing with personal banking, corporate banking, treasury and asset management and brokerage services to customer banks (Sarfraz et al., 2022b; Mohsin et al., 2021; Li et al., 2021). The conceptual base of SAIB's business growth is important for the positive growth of the economy and society, with a healthy and sustainable environment.

A dramatic change was observed after 1990-1991, when the Persian gulf war was in progress which financially cost US\$60 billion for the country. The Saudi Arabian Monetary Agency grew from SAR97 million to SAR 2.44 billion from 1990 to 2005, which attracted short-run investment and it was below 10% market value as per international standards (Naiwen et al., 2021). This decentralization of shares from institutes to individuals enhanced the Saudi Arabian exchange market's all-time high of 20,634.86 in February 2006. The Saudi Arabia Index (TSAI) captured the market with a capitalization of around USD 2.2 trillion (Tadawul, 2020). Economic growth and ecological development are strongly related, like a body and soul (Naseem et al., 2023b). The conclusive summary of the KMPG¹ survey

declared that the organization's environmental assessment reports had shown the organization's positive and environmentally friendly behavior toward the environment and the health of people and real growth of the country than profit-making (Masud et al., 2016). This strategy was first applied by the largest banks of the world (Citibank, Bank of America, JP Morgan Chase, Goldman Sachs, Toronto Dominion) in 2000, when they did not provide finance to the companies who did not follow environmentally sustainable policies (Patten, 2002; Longoni & Cagliano, 2018).

3. Statement of the Problem

Saudi Arabia has faced severe environmental issues, and this research will explore the role of banks in the protection of the environment. The global warming causes global concern and it has become more serious in desert conditions and coastal areas. The Saudi Arabia is related to these areas i.e., Dessert and Coastal. Nowadays, international investments are based on environmentally friendly practices. Hence the need to disclose environmentally sustainable efforts to stabilize the financial system and the impact of disclosures on Saudi Arabia.

4. Need of the Study

After reviewing the related literature, it was found that there is no literature about the Saudi Arabian banking system, regarding environmentally sustainable behavior and environmental assessment reporting system. This research will facilitate the decision-making of environmentalists and economists who are working for the environmental betterment of Saudi Arabia and Middle Eastern countries. Future environmental risks can be reduced by increasing the output and opportunities of the banking system, and helping to decrease the environmental burden on countries' economies.

5. Objectives of the Study

This research paper was purposely designed to explore;

1. The impact of banking practices on the environment of Saudi Arabia
2. The relationship between banking system and environment.
3. Can environmental disclosures in banks' yearly accounts help to enhance the quality of environment?
4. The suggestions and policies to improve the environmental quality, with high profit, in the banking sector.

6. Hypotheses of the Study

H₀₁ : There is no significant impact of return on assets (ROA) on the environmental sustainability of Saudi Arabian banks.

H₀₂ : There is no significant impact of the return on equity (ROE) on the environmental sustainability of Saudi Arabian banks.

H₀₃ : There is no significant impact of net interest margin (NIM) on the environmental sustainability of Saudi Arabian banks.

7. Research Methodology

7.1 Sample Selection

The study's sample comprised 10 commercial banks in Saudi Arabia, all listed on the Tadawul stock exchange (**Table 1**). The yearbooks of banks were used to identify the environmental disclosures.

7.2 Period of Study

The study covered data, spanning from 2013 to 2021 because of environmental evolution and green financing in the banking sector (**Sharif & Rashid, 2014**).

7.3 Sources of Data

The analytical data were extracted from the banks' annual books and booklets about

environmental disclosures. The data on return on assets (ROA), return on equity (ROE), and net interest margin (NIM) were collected from the balance sheets and publically available financial statements of banks.

7.4 Tools Used in the Study

This research employed analytical tools and techniques, to handle primarily collected data with binary number conversion. For further analysis, Eviews-12 was used.

8. Data Analysis and Interpretation

8.1 Measurement of Banking Performance in Saudi Arabia

The internal determinants of banking sector were primarily responsible for variation in financial performance of Return on Asset (ROA), Return on Equity (ROE) and Net Interest Margin (NIM) (**figure-1**). The existing literature also considered ROA, ROE and NIM as key performance indicators for the banking sector.

8.2 Measurement of Environment Disclosure in Saudi Arabia

The annual reports of listed commercial banks of Saudi Arabia were used, to extract data by content analysis procedure. The content analysis procedure is more accurate and inexpensive as compared to other existing methods. The un-weighted scoring method was employed to record data for Environmental Assessment Reporting Index (EARI). The dichotomous procedure was used, where the number 1, 0 were assigned for item disclosed and not disclosed in annual report respectively (Gao & Bansal, 2013). The study used 22 disclosures of environment (**Table -2**) which are marked as 1 and 0 as per the disclosing status. In the last step, the disclosed scores were added, to calculate the total disclosures of environment assessment reporting for individual sample bank.

The equation $\frac{\sum d_i}{N}$ was used to summarize the procedure as $d=1$ if the EAR factor disclosed and $d=0$, if not and N is maximum possible environmental disclosures.

$$EARI = \sum d_i^{22} / n_j$$

8.3 Yearly Environmental Disclosures for Saudi Arabian Banks in Saudi Arabia

The yearly environmental disclosures for all listed commercial banks of Saudi Arabia, over a period of 10 years under all 22 categories, are reported in **Table-2**. The increasing percentage of environmental disclosures is observed in annual reports of listed commercial banks. In 2013 and 2014, 151 environmental factors were disclosed by 10 banks, out of 220. From 2013 to 2019, banks, disclosures were fluctuating in composite environmental disclosure while the trend of environmental factor disclosing was more satisfactory, with 13.63% increase in 2021. The **figure-3** visually presents the yearly disclosed and non-disclosing factors' ratio, which clearly shows an increase in disclosed environmental determinants and decrease in non-disclosing factors.

8.4 The impact of EARI on banking performance of listed commercial banks of Saudi Arabia

This research examined the impact of Environmental Assessment Reporting Index (EARI) on banking performance of listed commercial banks of Saudi Arabia, by employing the random-effect (RE) and fixed-effect (FE) models of Generalized Least Squares (GLS). The GLS fixed-effect model controls the time variant difference between cross-sections for all the times. Due to omitted time invariant features, the estimated coefficients of fixed-effect model were free from bias. The role of the Hausman test in GLS was to take decision between random-effect and fixed-effect model.

The significance of Hausman test at χ^2 , Prob. > χ^2 , indicated the appropriateness of fixed-effect model. The main research models of EARI and banking performance are shown as follows; $\ln ROA = \beta_0 + \beta_1 \ln EARI + e_t$, $\ln ROE = \beta_0 + \beta_1 \ln EARI + e_t$ and $\ln NII = \beta_0 + \beta_1 \ln EARI + e_t$. Where, the β_0 is constant and β_1 is the coefficient of independent variable and $\ln$ is the natural logarithm. The EARI is the Environmental Assessment Reporting Index and ROA is profitability on the basis of assets. ROE is the profitability on the basis of equity. NIM is the profitability on the basis of net interest income and e_t is the disturbance or error term.

8.5 Descriptive statistics with mean, median, maximum, minimum and PP Fisher Chi-square test

Table-3 contains the results of descriptive statistics, for mean, median, maximum, minimum and PP Fisher Chi-square test. The mean value for ROA was 0.0104, which indicated the stability of return on assets in the sample period. The lowest value for ROA was -0.0553, the highest value was 0.6924 and middle-most value was 0.0087. The PP-Fisher Chi-square was used to check the stationarity of data and the significance (at level) of it at 1% level strongly. The results rejected the non-stationarity of data (Naseem et al., 2023b). ROE and NIM, under descriptive statistics, as additional determinants, reported the mean value at 0.0257 and 0.0389, median to be 0.1196 and 0.0290, maximum values to be 2.2530 and 1.9122, minimum values to be -14.7427 and -0.0164, with significant PP-Fisher Chi-square respectively. The EAR index revealed the mean value to be 3.5433, maximums as 4.5182 and median value as 3.9120.

8.6 EARI and financial performance of Banks in Saudi Arabia

The results of regression are presented in **Table-4** and they revealed the statistical

significance of bank's financial performance. The ROA and NIM reported negatively significant relation at level of 5% and 1% with EARI respectively. A positive significant relationship, at 1% level, was observed between EARI and ROE. As per assumption of Hausman test the fixed-effect (FE) model was the best fitted model for all variables.

9. Findings of the Study

The finding of this research confirmed the negative effect of NIM and ROA on EARI. The reason behind the negative relationship between the environmental assessment reporting index and banking performance was the effect of environmental sustainability practices on banking performance indicators being negative, within the initial sample period of setting the environmental code of conduct. The ROE and EARI were positively related to each other. The Return on Equity (ROE) was used to check the robustness of the analysis. It is closely related to owners of the banks. These outcomes concurred with theoretical support of stakeholder theory, which postulates that disclosing environmental information in annual reports would increase the goodwill of banks and financial performance of it. The disclosures were relatively low and tough behavior as well as unawareness of people made it tougher.

10. Suggestions

Banks are a country's financial sector, that manages a country's financial stability with sound banking operations. Banks should design and implement strategies for environmental sustainability. Banks should force the registered companies to disclose their environmentally sustainable activities and production processes. Stricter provisioning norms of banking sectors and authorities, related to environmental disclosures and quality enhancement, would help to sustain a green environment in Saudi Arabia.

11. Conclusion

This research focused on the relationship between environmental assessment reporting index and the financial performance of listed commercial banks in Saudi Arabia. The environmental factors were designed by reviewing the previous studies of developed countries. The starting period of study elucidated that the banks compositely disclosed 68% of environmental information, between 2013 and 2021. The environmental disclosing information increased, year by year, from 2013 to 2021, with a slow rate of increase. The year 2021 displayed high rate of increase or upward trend of environment disclosures' graph because of global pressure on environment sustainability. The Generalized Least Square (GLS), with Fixed-Effect (FE) revealed the negative significant relationship of environmental disclosures with ROA and NIM while there was positive significant relationship between ROE and environmental disclosures. The listed commercial banks should focus on communication channels, to convey the message of environmental sustainability in native language within the country. The adaptations of Saudi banks towards environmental disclosures and green activities, were comparatively low.

12. Limitations of the Study

This research provides deep insight into the impact of environmental disclosures on banking performance in Saudi Arabia. The selected time period, from 2013 to 2021, can be extended in future. The climate change mitigation, with adaptation of cost-effective measures, by following cost-benefit analysis in the banking sector, can be extended. The climate change mitigation measures of Saudi Arabia, urged other countries to mitigate environmental deterioration and adopt policies to achieve maximum carbon sink with minimum cost through the contribution of the banking system. This research could generate new ideas and methodological approaches like the Generalized Least Square

(GLS) with Random-Effect (RE) and Fixed-Effect (FE) for Saudi Arabia and other countries as a roadmap for upcoming research work. The different ideas and adaptation of strategies will work to reduce the environmental change impacts by the banking system of countries.

13. Scope for Further Study

In future research, the comparison of developed and developing countries can be explored, under different models as Ordinary Least Squares (OLS), Panel Corrected Standard Errors (PCSEs). The comparison between Islamic and Conventional or commercial banks can be analyzed.

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Table - 1: Commercial Banks of Saudi Arabia Listed on the Tadawul Stock Exchange

1. Saudi National Bank	2. Al Rajhi Bank
3. Riyadh Bank	4. Bank Al-Habib Limited
5. Banque Saudi Fransi	6. Saudi British Bank
7. Alinma Bank	8. Arab National Bank
9. Bank Albilad	10. QNB Group

Source: Secondary data from Tadawul Stock Exchange

Table - 2: Estimates the Yearly Environmental Disclosures for Saudi Banks

EAR	2013	2014	2015	2016	2017	2018	2019	2020	2021
E1	4	5	6	6	6	6	6	6	9
E2	9	5	7	7	7	7	8	8	9
E3	6	5	7	5	5	5	5	6	10
E4	6	6	6	8	8	8	8	9	9
E5	8	5	5	6	6	6	6	6	8
E6	9	5	5	6	6	6	6	6	7
E7	4	7	7	8	8	8	8	8	7
E8	8	7	5	7	7	7	7	8	8
E9	9	9	5	5	6	6	6	6	7
E10	9	6	6	6	6	6	6	7	8
E11	6	6	7	6	7	8	9	9	9
E12	9	9	5	7	7	7	9	9	9
E13	8	8	5	8	8	8	8	8	9
E14	7	8	7	7	7	7	7	8	9
E15	7	9	7	7	7	7	8	9	9
E16	6	7	7	7	7	7	7	7	8
E17	7	8	7	8	8	8	8	9	9
E18	6	9	7	9	9	9	9	9	10
E19	8	9	7	5	5	5	5	5	7
E20	4	5	7	5	5	5	5	5	8
E21	6	5	6	5	5	5	6	7	9
E22	5	8	5	6	6	6	6	6	7
Total	151	151	136	144	146	147	153	161	185

Source: Secondary data and computed using Eviews-12

Table-3: Descriptive Statistics of Commercial Banks in Saudi Arabia Listed on the Tadawul stock exchange

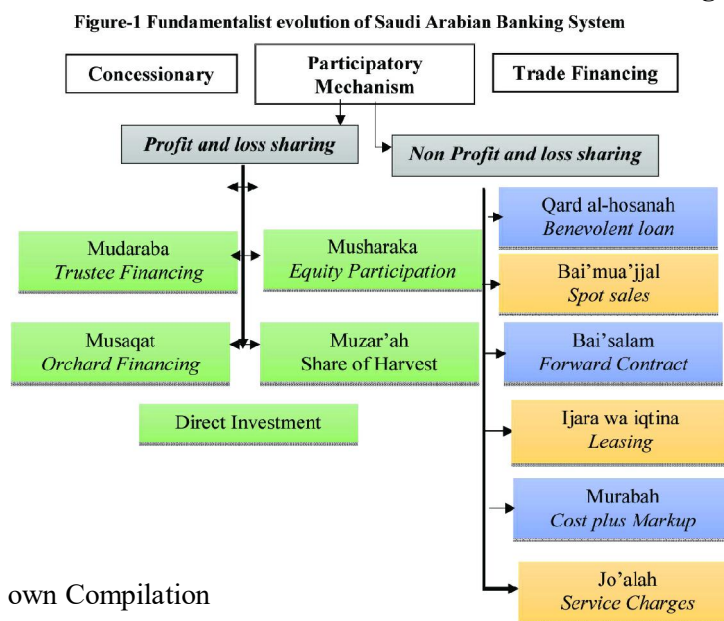
	LnROA	LnROE	LnNIM	LnEARI
Mean	0.0104	0.0257	0.0389	3.5433
Median	0.0087	0.1196	0.0290	3.9120
Maximum	0.6924	2.2530	1.9122	4.5182
Minimum	-0.0553	-14.7427	-0.0164	-2.7920
PP - Fisher	96.637*	130.339*	82.634*	82.634*
Observations	189	189	189	189

Source: Secondary data and computed using Eviews-12

Table 4: EARI and Financial Performance of Saudi Arabian Banks

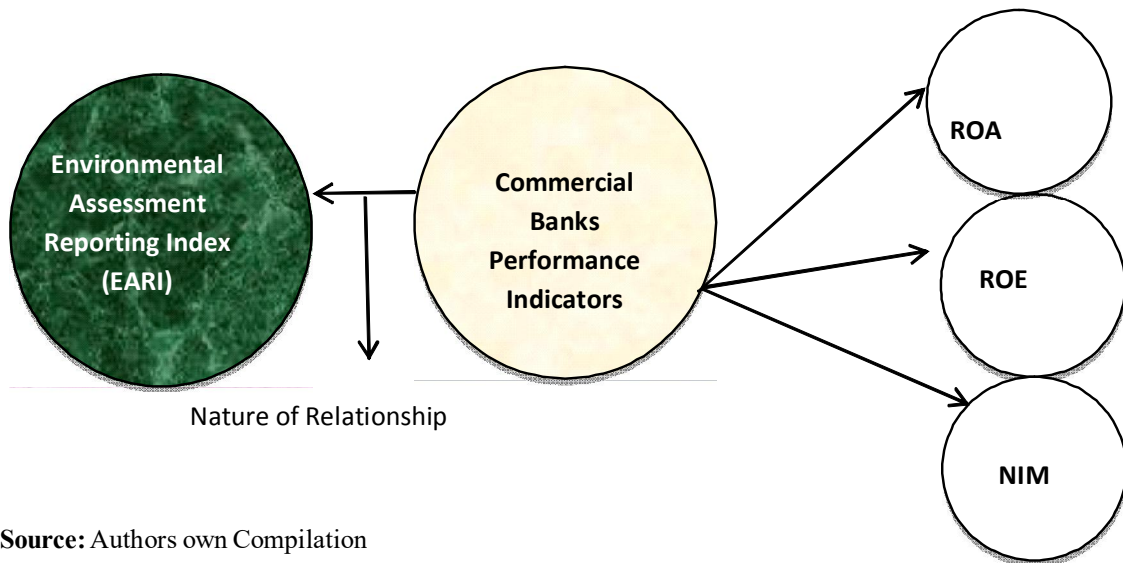
	ROA GLS Random	ROA GLS Fixed	ROE GLS Random	ROE GLS Fixed	NIM GLS Random	NIM GLS Fixed
Ln EARI	-0.0005** (0.0129)	-0.0092** (0.0004)	0.0126* (0.0053)	0.0254* (0.0081)	-0.0017* (0.0006)	-0.0030* (0.0010)
Consent	0.0320** (0.0003)	0.0546* (0.0184)	-0.5764** (0.2712)	-1.1894* (0.3944)	0.0996** (0.0327)	0.1819* (0.0498)
F-statistics	3.1559**	1.6712**	5.4822**	1.8145**	3.8083**	1.5643**
Hausman test	2.8249**	-----	4.4372**	-----	4.7278**	-----

Source: Secondary data and computed using Eviews-12

Figure-1 Fundamental evolution of Saudi Arabian Banking System

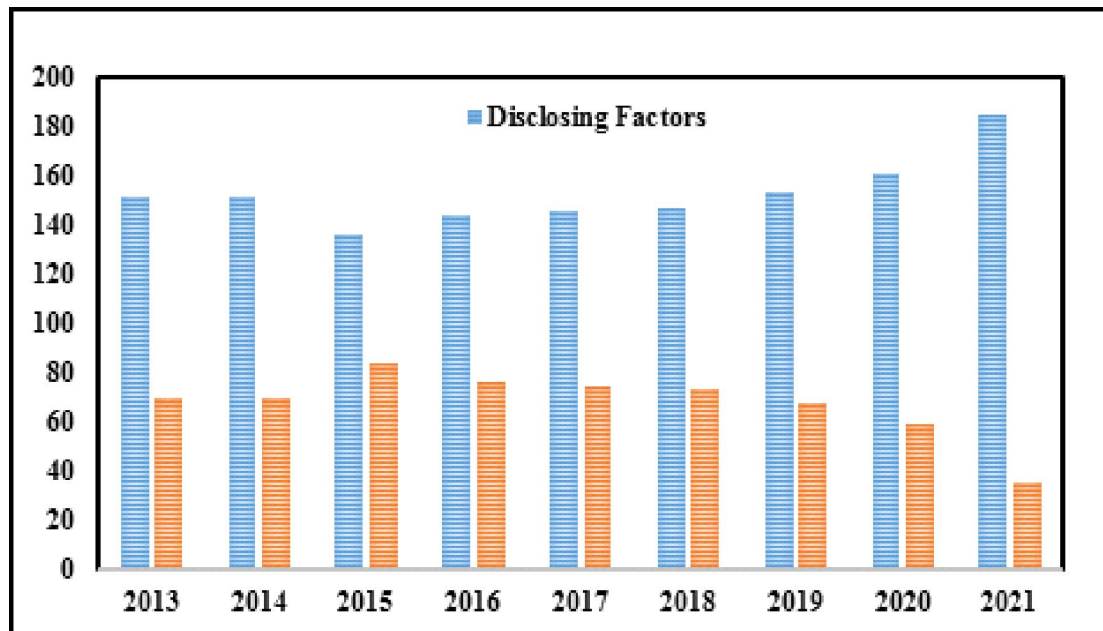
Source: Authors own Compilation

Figure-2 Conceptual framework of Environmental Disclosures in Saudi Banking Performance



Source: Authors own Compilation

Figure 3: Yearly Environmental Disclosures for Saudi Arabian Banks



Source: Secondary data and computed using Eviews-12