

Analyzing and Understanding Social Marketing Activities of Turkish Banking Corporations: Comparisons and Association Rule Learning

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This study addresses the question, “What is the extent of disclosures related to marketing social change as changing behavior to promote social good and well-being, any evidence from the Turkish banking industry?” To address this question, the study analyzes the social marketing activities of 12 banking corporations listed on the Borsa Istanbul in Turkey. For this, annual reports, sustainability reports, or integrated reports of those are examined from 2017 to 2021. It is aimed to compare the social marketing activities of banks in Turkey and trends that have been observed for years and banks. It is also aimed at determining the most frequent social marketing activities. The banks are involved mostly in the themes of environmental behaviors and community involvement behaviors. To observe the relationships between social marketing activities, “Association Rule Analysis with Apriori Algorithm” is applied. The management of the banks can use the findings of Apriori Algorithm in the strategic decision-making process if they are aware of the social marketing activities that rival banks are emphasizing and the relationships between these activities.

Keywords: social marketing activities, disclosure measurement, sustainability reporting, integrated reporting, Association Rule Analysis, Apriori Algorithm

INTRODUCTION

All organizations, profit or non-profit purpose entities, can contribute directly or indirectly to societies to cope with such social problems as one of the three pillars (*people, planet, and profit*) of sustainability. For instance, the banking industry or financial institutions in Turkey and worldwide could operate to satisfy their clients and could make the company profitable for their stockholders. *Besides their main activities, are they doing something to create a better world for human beings? Or are they doing anything for social*

good or well-being? For instance, they can prepare posters or short prerecorded videos to create awareness of drunk driving issues. Signs can be visible inside or outside the branch offices, and short prerecorded video clips can be broadcasted in tv commercials or cinema theaters so that clients can see those (Pekdemir, 2023a).

During the last decade of the 20th century, sustainability, or sustainable development, emerged due to increasing pressure for more information, accountability, and transparency (Ballou et al., 2006; Hedberg & von Malmberg, 2003). Sustainability reporting (Gray, 2010) has also been called corporate social responsibility (CSR) reporting (Bebbington et al., 2008) in the literature.

Integrated reporting has been one of the ultimate developments in CSR reporting (Pistoni et al., 2018). In 2002, The King II report followed just after the Johannesburg Earth Summit (Gleeson-White, 2014) and introduced “Integrated Sustainability Reporting” (ISR) as a concept. The King II Report was incorporated into the Sarbanes-Oxley Act by the New York Stock Exchange following major accounting and auditing disasters like Enron and WorldCom (Gleeson-White, 2014). It followed in 2009 and advocated ISR as a holistic and integrated representation of the reporting entity’s financial and non-financial performance, including sustainability (Manian, 2009).

CSR is typically defined as the process through which a company balances its commitments to social, environmental, and economic imperatives (“Triple-Bottom-Line- Approach”) (Elkington, 1997) while still meeting shareholder and stakeholder expectations. Three philosophical elements form the basis of this CSR strategy's "triple bottom line" approach: people (social), planet (environment), and profit (governance).

Activities connected to CSR or sustainability have been measured and reported on a voluntary basis in various jurisdictions and countries (Cowen et al., 1987; Hackston & Milne, 1996; Robertson & Nicholson, 1996; Vountisjarvi, 2006; Clarkson et al., 2008). So far, these activities have two components social and environmental (Gray, 2006). Social activities can be extended to individuals, organizations, and society at large and can be divided into various categories. Unquestionably, there are distinct **social marketing activities** mainly realized for human beings, people, or society. Companies seeking external funds from financial and money markets should engage in social and environmental issues to get some funds from sustainable or socially responsible investors. Therefore, the most critical question that could be raised in the capitalistic environment would be, “*Who is doing what to influence behavior changer societal gain together with financial gain?*” Besides this common target, it could be argued that raising such questions below could help to better understand attitudes and behaviors of the profit-purpose business environment (Pekdemir, 2023b):

- While conducting traditional marketing activities to target financial gain, do profit-purpose entities also engage in social marketing activities?
- While trying to earn a financial gain, do profit-purpose entities try or contribute to improve public health, protect the environment, increase involvement in the community, enhance economic well-being, etc.?
- If profit-purpose entities have such social marketing activities, what audiences do they target: midstream (clients, families, health care providers, teachers, pharmacists, community leaders, etc.) or upstream ones (policymakers, prominent corporation executives, media, nonprofit organizations, celebrities, etc.)?

The study is organized as follows: first, the evolutions and background of social marketing are briefly revisited; second, the developed measurement framework (Pekdemir, 2023b) is applied to social marketing activities of Turkish banking corporations; third, year-based and bank-based comparison is made between the banks to observe the trend, and finally, the association rule learning algorithm is applied to reveal the relationships between social marketing activities of the banks.

LITERATURE REVIEW

Social marketing initiatives influence community behavior. Social marketing activities (Truong, 2014) mainly focus on influencing some priority audiences to do one of these things (Lee & Kotler, 2020) rather than making a financial gain for the business organizations:

- Accept a new behavior (e.g., saving the planet for new generations)
- Reject a potentially undesirable behavior (e.g., starting smoking or drug usage)
- Modify a current behavior (e.g., changing the diet from fast food to non-fast food)
- Abandon an old undesirable behavior (e.g., driving while drunk)
- Continue the desired behavior (e.g., continuing donating blood periodically)

The world learned from COVID-19 that nothing will be the same after it. In the future, everyone will be held to a higher standard of social responsibility than they did before the pandemic. Even organizations with a profit motive would adapt their planning, implementing, and controlling activities to this new environment. Future corporate perspectives would therefore be for a better world and a planet that is more habitable going forward (Pekdemir, 2023a).

Stakeholders of the listed companies would ask for more detailed financial and non-financial information about expected social responsibilities. The corporate governance of listed firms on the international financial markets has been significantly influenced by institutional investors (Ferreira & Matos, 2008; Aggarwal et al., 2011). According to a recent World Bank survey (2019), more than 80% of investors believe that investing in environmental, social, and governance (ESG) elements will become increasingly important. Thus, the significance of social marketing activities of profit-purpose entities for well-being, social good, and societal gain has emerged.

The study is inspired by the study of Bouten et al. (2011), who developed a content analysis framework to assess the comprehensiveness of CSR. They tested the feasibility of the framework by using the 2005 annual reports of a sample of publicly traded Belgian companies. The content analysis demonstrates a lack of comprehensive reporting. This finding adds to previous studies' findings about the completeness of CSR reporting and feeds discussion about how much CSR reporting can be used to discharge social and environmental accountability.

There has not been a specific report format developed, made public, or published for the social marketing activities of companies with a profit-making goal. However, over the past ten years, corporations have disclosed information about their CSR/ISR activities in annual reports, sustainability reports, and integrated reports. This information has therefore been included in narratives or disclosures that are crucial elements of the current environment for financial reporting on a global basis (Pekdemir, 2023b).

Kılıç et al. (2015) analyzed the nature, extent, and trend of CSR reporting in the Turkish banking industry under five sub-themes, namely, environment, energy, human resources, products and customers, and community involvement. The results of the study showed that CSR reporting of the banks improved during that period of time.

Kılıç (2016) focused on the extent to which banks report online about their CSR practices in the Turkish banking industry and examined the online CSR disclosures of 25 banks involved (listed or unlisted on stock exchanges) in Turkey by performing a content analysis of banks' online reporting of their CSR practices in four sub-dimensions, namely, environment and energy, human resources, products and customers, and community. The findings of the study revealed that the areas of products and customers that are most disclosed on bank websites are lacking in information about the environment and energy.

Pekdemir (2023a) developed a framework for measuring the financial and non-financial information about social marketing activities that might involve for-profit purpose entities and examined the social marketing activities of a private banking corporation-Yapi ve Kredi Bankasi A.S.- in Turkey as a pilot study using its year of 2019 annual report and integrated report to test the proposed social marketing index. The pilot study's application of the proposed index revealed that there is just a low amount of social marketing activities.

RESEARCH

The Data

The Turkish banking industry is one of the most regulated in the world due to its heterogeneous ownership structure, size, age, organizational form, and portfolio focus. It is part of the global financial

system and has been part of the Basel Committee on Banking Supervision (BCBS). Social marketing activities should conform to the Turkish Banking Regulation and Supervision Board and the Capitals Market Board, and statutory obligations and sanctions over banking corporations play a significant role in their social and environmental activities (Pekdemir, 2023a). Banking corporations could contribute to sustainable development and social change by facilitating green and social financial products (Scholtens, 2009).

The tested index in the pilot study to measure and analyze the social marketing activities of banking corporations in Turkey is extended to 12 banking corporations listed in Istanbul Stock Exchange (Borsa Istanbul-BIST) in this study. Annual reports, sustainability reports, or integrated reports of those are examined from 2017 to 2021. Therefore, the study includes 60 bank-year observations.

The Method

The index (coding structure) was developed in the pilot study and applied to Yapi ve Kredi Bankası for the year 2019. Since the observations are extended compared to the pilot study of one of the authors of this study (Pekdemir, 2023a & Pekdemir, 2023b), sub-themes or codes (items) revised, 5 sub-themes or codes (items) are added. Each theme or area has a variety of sub-themes or codes (items) to impact social good, well-being, and social justice, a total of 47 sub-themes or codes (items).

The index of this study (Table 1/A-B-C-D) is partially adopted from Lee and Kotler (2020) and consists of four main social marketing activities as follows:

- Health-related behaviors to impact
- Injury prevention-related behaviors to impact
- Environmental behaviors to impact
- Community involvement behaviors to impact

TABLE 1A
HRB – HEALTH-RELATED BEHAVIORS TO IMPACT

HRB1	Tobacco use
HRB2	Heavy/binge drinking
HRB3	Fetal alcohol syndrome
HRB4	Obesity
HRB5	Teen pregnancy
HRB6	HIV/AIDS
HRB7	High cholesterol
HRB8	Breastfeeding
HRB9	Cancer diseases
HRB10	Congenital disabilities
HRB11	Immunizations
HRB12	Oral health
HRB13	Diabetes
HRB14	Blood pressure
HRB15	Infectious diseases

TABLE 1B
IPRB – INJURY PREVENTION-RELATED BEHAVIORS TO IMPACT

IPRB1	Drunk driving
IPRB2	Texting or emailing while driving
IPRB3	Head injuries
IPRB4	Proper safety restraints for children in cars
IPRB5	Suicide and homicide due to traditions
IPRB6	Domestic violence
IPRB7	School violence
IPRB8	Fires
IPRB9	Falls
IPRB10	Household poisons

TABLE 1C
EB – ENVIRONMENTAL BEHAVIORS TO IMPACT

EB1	Waste reduction
EB2	Wildlife habitat protection
EB3	Forest destruction
EB4	Toxic fertilizers and pesticides
EB5	Water conservation
EB6	Air pollution
EB7	Composting garbage and yard waste
EB8	Unintentional fires
EB9	Litter
EB10	Watershed production
EB11	Recycle
EB12	Energy conservation
EB13	Climate change

TABLE 1D
CIB - COMMUNITY INVOLVEMENT BEHAVIORS TO IMPACT

CIB1	Organ and blood donation
CIB2	Donations to charitable bodies
CIB3	Support for help
CIB4	Support for education
CIB5	Funding scholarship programs or activities
CIB6	Sponsoring sporting or recreational projects
CIB7	Support for the arts and science
CIB8	Supporting the development of local industries or community programs and activities
CIB9	Donation to other bodies

A total of 47 sub-themes or codes (items) of SM information are identified and divided into four categories mentioned. A dichotomous coding technique is applied to analyze the existence or absence of items on the Turkish banking corporations' annual reports, sustainability reports, or integrated reports. Consequently, a sparse matrix is created with a score of "1" assigned if an SM item is disclosed and "0" if it is not.

First of all, it is examined whether there is a significant difference in the main types of social marketing activities. Then, it is analyzed whether the number of social marketing activities differed by years and banks. For this purpose, the Kruskal-Wallis Rank Sum Test, one of the non-parametric tests is applied. If a statistical difference is detected, the units between which this difference existed are tested with pairwise comparisons using Wilcoxon Rank Sum Test with continuity correction.

Then, association rule analysis, which is a subcategory of unsupervised machine learning methods, is applied to observe the relationships between the social marketing activities of Turkish banking corporations. It is a popular algorithm in marketing analytics which is also called “Market Basket Analysis”. “*Association Rule Analysis with Apriori Algorithm*” is applied to evaluate the social marketing activities of the banks in BIST. Apriori is an algorithm for frequent item set mining and association rule learning over relational databases.

Apriori Algorithm has three important metrics (parameters):

1. **Support:** Support is the proportion of transactions in a dataset that contains a particular itemset. In other words, it measures how frequently an itemset appears in the transactions. It is calculated as the number of transactions containing the itemset divided by the total number of transactions in the dataset. For example, if there are 60 transactions in a dataset and an itemset {A, B} appears in 12 of them, then the support of {A, B} is $12/60 = 0.2$ or 20%.
2. **Confidence:** Confidence measures the strength of the association between two itemsets A and B. It is the conditional probability of finding itemset B in a transaction given that itemset A is already present in the same transaction. It is calculated as the number of transactions containing both A and B divided by the number of transactions containing A. For example, if {A, B} appears in 15 transactions and {A} appears in 60 transactions, then the confidence of rule $A \rightarrow B$ is $15/60 = 0.25$ or 25%. This means that 25% of the transactions containing A also contains B.
3. **Lift:** Lift is the measure of how much more likely it is to find both itemsets A and B together in a transaction than if they were independent of each other. It is calculated as the ratio of the observed support of rule $A \rightarrow B$ to the expected support if A and B were independent. **Lift** can be used to determine the strength of a rule and to filter out spurious rules. A lift value greater than 1 indicates a positive correlation between the two itemsets, while a lift value less than 1 indicates a negative correlation. If the lift value is equal to 1, it means that the occurrence of A and B is independent.

Findings

As seen in Figure 1, in the Turkish banking industry, “Support for education (CIB4)” and “Air pollution (EB6)” are the most frequent (53 times) social marketing activities. “Waste reduction (EB1)”, “Water conservation (EB5)”, and “Support for the arts and science (CIB7)” are the other most frequent (respectively 51, 50, 49 times) social marketing activities. The arithmetic average of the number of social marketing activities is 9.254, and the mode is 10 among 60 bank years. The maximum number of social marketing activities in a year is 16 (Albaraka - 2017).

FIGURE 1
THE MOST PERFORMED SOCIAL MARKETING ACTIVITIES BY BANKS

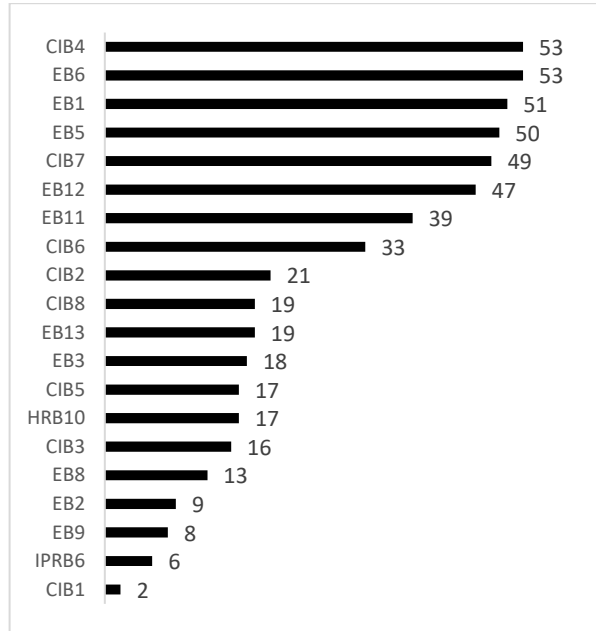
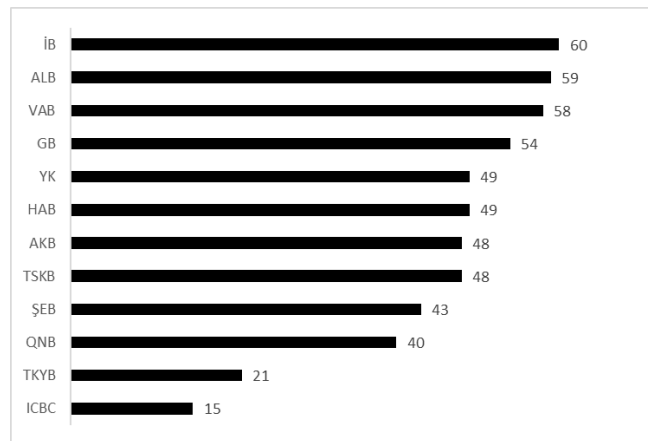


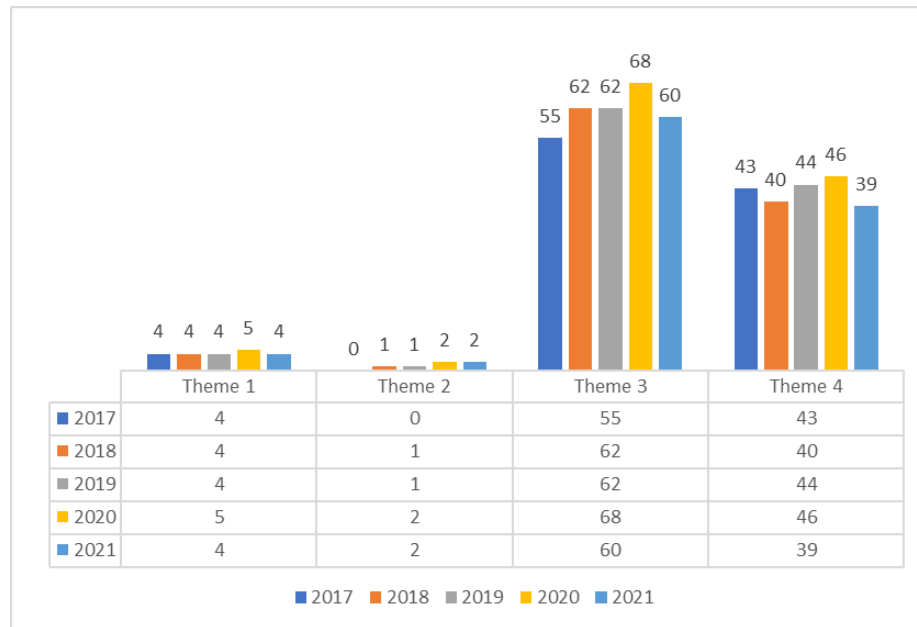
Figure 2 shows the number of social marketing activities by banks. The top three banks that carried out the most social marketing activities in total in the relevant years were Isbank, Albaraka and Vakifbank, respectively.

FIGURE 2
NUMBER OF SOCIAL MARKETING ACTIVITIES BY BANKS



The number of social marketing activities by themes is presented in Figure 3.

FIGURE 3
NUMBER OF SOCIAL MARKETING ACTIVITIES BY THEMES

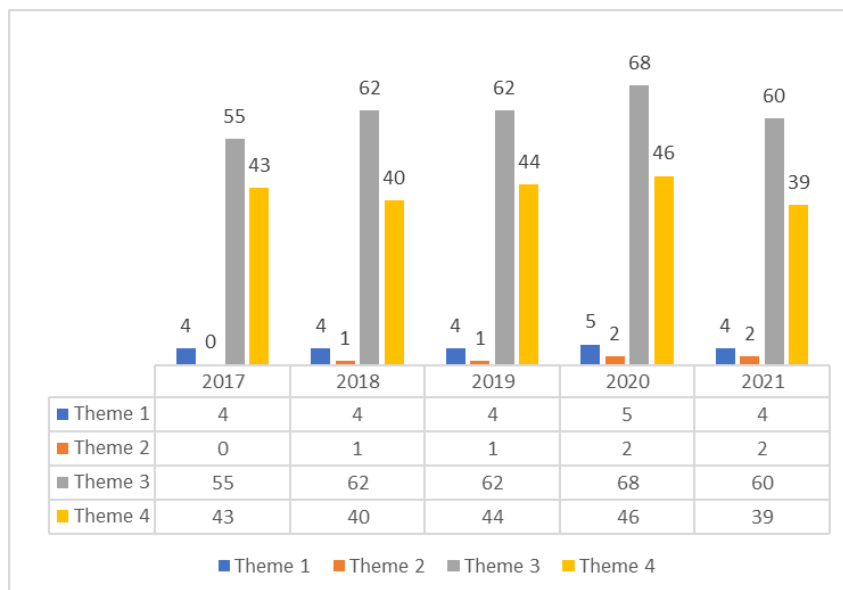


Kruskal- Wallis Rank Sum Test: $\chi^2 = 18,033$, $df = 3$, $p\text{-value} = 0,0004329$. p value less than the critical value of 0.05. Therefore, it can be interpreted that there is a significant difference between the themes.

Pairwise comparisons using the Wilcoxon rank sum test with continuity correction: There are significant differences between all groups ($p\text{-values} = 0,012 < 0,05$).

This study also examines the number of social marketing activities by years and themes as shown in Figure 4.

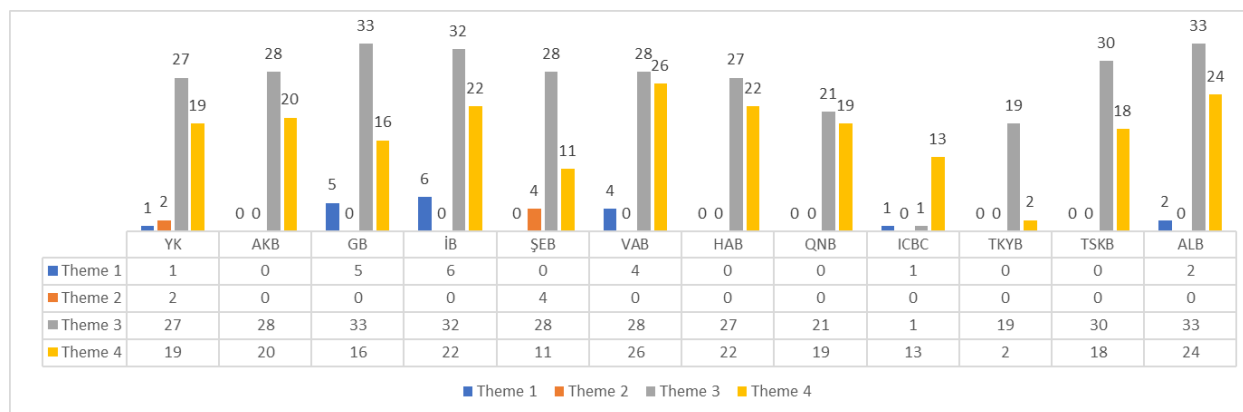
FIGURE 4
NUMBER OF SOCIAL MARKETING ACTIVITIES BY YEARS AND THEMES



Kruskal- Wallis Rank Sum Test: Kruskal-Wallis chi-squared = 0,59871, df = 4, p-value = 0,9632. p value greater than the critical value of 0.05. Therefore, it can be concluded that there is no significant difference between years.

In Figure 5, a number of social marketing activities by banks and themes is presented.

FIGURE 5
NUMBER OF SOCIAL MARKETING ACTIVITIES BY BANKS AND THEMES



Kruskal- Wallis Rank Sum Test: Kruskal-Wallis chi-squared = 3,9067, df = 11, p-value = 0,9726. p value greater than the critical value of 0.05. Therefore, it can be interpreted that there is no significant difference between banks.

“Association Rule Analysis with Apriori Algorithm” is applied to evaluate the social marketing activities of the banks.

TABLE 2
APRIORI ALGORITHM RESULTS, SORTED ASSOCIATION RULES BY LIFT FROM LARGEST TO SMALLEST (MIN SUPPORT: 0,4 AND MIN CONFIDENCE: 0,4)

		Support	Confidence	Lift
CIB7, EB11	CIB6	0.4576	0.7941	1.4198
CIB4, CIB7, EB11	CIB6	0.4576	0.7941	1.4198
CIB7, EB11, EB5	CIB6	0.4576	0.7941	1.4198
CIB7, EB1, EB11	CIB6	0.4576	0.7941	1.4198
CIB7, EB11, EB6	CIB6	0.4576	0.7941	1.4198
CIB4, CIB7, EB11, EB5	CIB6	0.4576	0.7941	1.4198
CIB4, CIB7, EB1, EB11	CIB6	0.4576	0.7941	1.4198
CIB4, CIB7, EB11, EB6	CIB6	0.4576	0.7941	1.4198
CIB7, EB1, EB11, EB5	CIB6	0.4576	0.7941	1.4198
CIB7, EB11, EB5, EB6	CIB6	0.4576	0.7941	1.4198
CIB7, EB1, EB11, EB6	CIB6	0.4576	0.7941	1.4198
CIB7, EB1, EB11, EB6	CIB6	0.4576	0.7941	1.4198
CIB4, CIB7, EB1, EB11, EB5	CIB6	0.4576	0.7941	1.4198
CIB4, CIB7, EB1, EB11, EB6	CIB6	0.4576	0.7941	1.4198
CIB4, EB1, EB11, EB5, EB6	CIB6	0.4576	0.7941	1.4198
CIB4, CIB7, EB1, EB11, EB5, EB6	CIB6	0.4576	0.7941	1.4198

		Support	Confidence	Lift
CIB6, EB5	EB11	0.4746	0.9032	1.3664
CIB6, EB1, EB5	EB11	0.4746	0.9032	1.3664
CIB6, EB5, EB6	EB11	0.4746	0.9032	1.3664
CIB6, EB1, EB5, EB6	EB11	0.4746	0.9032	1.3664

As can be seen in Table 2, the banks that perform “Support for the Arts and Science” (CIB7) and “Recycle” (EB11) social marketing activities also carry out “Sponsoring sporting or recreational projects” (CIB6) activities. The probability of this association is 79.4%. Banks that perform “Support for education” (CIB4) and “Support for the arts and science” (CIB7) social marketing activities also carry out “Sponsoring sporting or recreational projects” (CIB6) activities. The probability of this association is 79.4%. If there are “Sponsoring sporting or recreational projects” (CIB6), “Waste reduction” (EB1), “Water conservation” (EB5), and “Air pollution” (EB6) in banks’ social marketing activities portfolio, it is more likely to be in “Recycle” (EB11). The probability of this association is 90.3%.

TABLE 3
APRIORI ALGORITHM RESULTS SORTED ASSOCIATION RULES BY LIFT FROM
LARGEST TO SMALLEST (MIN SUPPORT: 0,1 AND MIN CONFIDENCE: 0,4)

		Support	Confidence	Lift
CIB5, CIB6, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, EB11, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, CIB6, EB11, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, CIB6, EB12, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, CIB6, CIB7, HRB10	EB3	0.1017	1.0000	3.2777
CIB4, CIB5, CIB6, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, CIB6, EB5, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, CIB6, EB1, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, CIB6, EB6, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, EB11, EB12, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, CIB7, EB11, HRB10	EB3	0.1017	1.0000	3.2777
CIB4, CIB5, EB11, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, EB11, EB5, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, EB1, EB11, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, EB11, EB6, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, CIB6, EB11, EB12, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, CIB6, CIB7, EB11, HRB10	EB3	0.1017	1.0000	3.2777
CIB4, CIB5, CIB6, EB11, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, CIB6, EB11, EB5, HRB10	EB3	0.1017	1.0000	3.2777
CIB5, CIB6, EB1, EB11, HRB10	EB3	0.1017	1.0000	3.2777

Table 3 shows that the banks that perform “Funding scholarship programs or activities” (CIB5) and “Sponsoring sporting or recreational projects” (CIB6) and “Congenital disabilities” (HRB10) social marketing activities also carry out “Forest destruction” (EB3) activities. The probability of this association is 100%. If there are “Funding scholarship programs or activities” (CIB5), “Recycle” (EB11), and “Congenital disabilities” (HRB10) in the portfolio, the probability of having “Forest destruction (EB3)” is certain (100%).

TABLE 4
APRIORI ALGORITHM RESULTS SORTED ASSOCIATION RULES BY LIFT FROM
SMALLEST TO LARGEST (MIN SUPPORT: 0,2 AND MIN CONFIDENCE: 0,2)

		Support	Confidence	Lift
EB3	CIB7	0.2034	0.6666	0.8027
CIB7	EB3	0.2034	0.2449	0.8027
EB3	CIB4	0.2203	0.7222	0.8027
CIB4	EB3	0.2203	0.2452	0.8027
CIB2, CIB4	EB12	0.2203	0.6500	0.8040
CIB4, CIB7	EB3	0.2034	0.2500	0.8040
CIB4, EB6	EB3	0.2034	0.2500	0.8160
EB12, EB3	CIB4	0.2034	0.7500	0.8194
EB1, EB3	CIB4	0.2034	0.7500	0.8194
EB3, EB6	CIB4	0.2034	0.7500	0.8349
CIB2, CIB4	EB6	0.2542	0.7500	0.8349
EB1, EB12, EB3	CIB4	0.2034	0.7500	0.8349
EB12, EB3, EB6	CIB4	0.2034	0.7500	0.8349
EB1, EB3, EB6	CIB4	0.2034	0.7500	0.8349
EB1, EB12, EB3, EB6	CIB4	0.2034	0.7500	0.8349
CIB2	EB12	0.2373	0.6666	0.8369
EB12	CIB2	0.2373	0.2978	0.8369
CIB7, EB6	EB3	0.2034	0.2553	0.8369
EB12, EB6	CIB2	0.2373	0.2979	0.8369
CIB2	EB6	0.2712	0.7619	0.8482

As can be seen in Table 4, the banks that perform “Forest destruction” (EB3) social marketing activity are less likely to do “Support for the arts and science” (CIB7). If the portfolio has “Support for the arts and science” (CIB7), it is less likely to be “Forest destruction” (EB3). If the portfolio has “Forest destruction” (EB3), it is less likely to be “Support for education (CIB4)”.

CONCLUSION

Recently, institutional investors have been more concerned with social justice and the well-being of humans and have increased their demands for the disclosure of environmental and social improvements. This study raises the crucial question of *who is doing what to promote behavioral changes regarding societal and financial rewards in the capitalistic environment*. Therefore, the extent of the social marketing activities of Turkish banks is investigated by analyzing annual reports, sustainability reports, or integrated reports from 2017 to 2021 of 12 banking corporations listed in BIST.

“Support for education” which is the sub-theme of community involvement behaviors to impact and “Air pollution” which is the sub-theme of environmental behavior to impact are the most preferred social marketing activities among 47 social marketing activities by banks. Turkish banks listed in BIST are involved mostly in the themes of environmental behavior to impact and community involvement behaviors to impact. There is no significant difference between themes by years. And also there is no significant difference between themes by banks.

Social marketing activities can enhance the prestige of banks in the eyes of customers, especially when the activities are related to socially responsible issues such as injury prevention, environment, community involvement, and health. Customers today are increasingly concerned about social and environmental issues, and they are looking for brands that align with their values and take action to address these issues. By engaging in social marketing activities that address these issues, banks can enhance their reputation as

socially responsible organizations and build stronger relationships with their customers. This can enhance the bank's reputation and build trust with customers, leading to increased loyalty and customer retention.

If the bank management knows which social marketing activities rival banks are focusing on and the rules of association between these activities, they can benefit from this information in strategic decision processes. Thus, banks can conduct a competitive analysis to identify gaps in their marketing strategies. Bank management can evaluate their own marketing activities against those of their competitors and identify areas where they need to improve or innovate to remain competitive. It can also help bank management identify new opportunities for growth and differentiation. By analyzing these association rules, banks can identify gaps in the market that competitors have not yet exploited and develop marketing activities or products that exploit these gaps. Bank managements that perform this type of data science analysis can compare their social marketing activities with those of their competitors and compare their performance and identify areas for improvement. Marketing teams can set targets based on competitors' performance and track progress over time. Also, knowing which social marketing activities are popular among competitors can help bank management identify potential collaboration and partnership opportunities. Bank management can reach out to competitors to explore opportunities to collaborate on marketing activities or cross-sell products that can benefit both parties. By effectively using the knowledge gained from these analysis results, a bank's management can improve its competitive position and accelerate business growth.

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