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Current Waste Management in Banks from 11 Asian Countries vs Sberbank ESG Reporting

J. An[a], A. Yu. Mikhaylov[b]
[a] College of Business, Hankuk University of Foreign Studies; Seoul, South Korea;
[b] Financial University, Moscow, Russia;
Financial Research Institute of Ministry of Finance of the Russian Federation, Moscow, Russia

ABSTRACT

The **relevance** of the topic lies in the fact that the level of competitiveness of a bank in waste management will have an increasing impact on its ESG ratings in the future. The **purpose** of this paper is to improve waste management in a bank (mainly faulty office equipment and paper waste). However, not all banks use active management methods in waste management, so this article offers recommendations for the successful management of key indicators. The article uses data on waste from banks in Bangladesh, China, Indonesia, Kuwait, India, Malaysia, Nepal, Pakistan, Sri Lanka, the UAE, and Vietnam. The **objectives** of the study include: identification of the essence of the competitiveness of waste management in a bank; consideration of the types of competitiveness of waste management; assessment of the impact of blockchain technology on the competitiveness of waste management; assessment of minimizing waste management costs in a bank. A **method** for waste composition and waste export based on statistical analysis and a regression model. It used data about the current waste management activities of a bank. This study uses data from an annual time series covering the period from 2013 to 2021. The **results** of the study confirm that the problem of electronic waste of banks in Asia can be solved by increasing financing and a complete analysis of bank waste. There are points of novelty in the article: (1) the essence of the competitiveness of waste management in a bank is determined, which consists in the recycling of most waste and not in their disposal; (2) the ideas of the competitiveness of waste management are considered in Sberbank; (3) the impact of blockchain technology on the competitiveness of waste management in banks is assessed; (4) an assessment of the competitiveness of waste management in a commercial bank is given. In order to better understand the factors influencing the production of e-waste in the region, the study **focuses** on the significance of addressing the rising problem of e-waste in Asia and the need for better collection and analysis of waste data in a bank. The main **conclusion** is the need to recycle waste and increase recycling costs in the future, which is the most environmentally friendly option compared to incineration.

Keywords: ESG ratings; banks; waste management; electronic waste; recycling; competitiveness; economic analysis; blockchain; financing

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ОРИГИНАЛЬНАЯ СТАТЬЯ

Текущее управление отходамив банках 11 азиатских стран и ESG-отчетность Сбербанка

Дж. Ан[a], А.Ю. Михайлов[b]
[a] Колледж бизнеса, Университет иностранных языков «Ханкук», Сеул, Южная Корея;
[b] Финансовый университет, Москва, Россия;
Научно-исследовательский финансовый институт Министерства финансов Российской Федерации, Москва, Россия

АННОТАЦИЯ

Актуальность темы заключается в возрастающей роли ESG-рейтингов кредитных организаций, на которые может оказать отрицательное влияние уровень управления отходами в банках. **Цель** исследования — разработка рекомендаций по улучшению управления отходами в кредитных организациях (в основном это неисправная офисная техника и бумажные отходы). Использованы данные по управлению отходами банков в таких странах, как Бангладеш, Китай, Индонезия, Кувейт, Индия, Малайзия, Непал, Пакистан, Шри-Ланка, ОАЭ, Вьетнам. **Задачи** исследования: выявить сущность конкурентоспособности управления отходами в банке; рассмотреть виды конкурентоспособности

управления отходами; оценить влияние технологии блокчейн на конкурентоспособность управления отходами; оценить минимизацию затрат на управление отходами в банке. Применяется **метод**, основанный на регрессионной модели и статистическом анализе композиции отходов и экспорта отходов. Используются данные годовых временных рядов, охватывающих период с 2013 по 2021 г. **Результаты** исследования подтверждают, что проблема электронных отходов кредитных организаций в Азии может быть решена за счет повышения финансирования и полного анализа данных по отходам банков. Новизна исследования состоит в следующем**:** (1) определена сущность конкурентоспособности управления отходами в банках, которая состоит во вторичной переработке большинства отходов, а не в их утилизации; (2) рассмотрены виды конкурентоспособности обращения с отходами в Сбербанке; (3) оценено влияние технологии блокчейн на конкурентоспособность управления отходами в банках; (4) дана оценка конкурентоспособности управления отходами в банках. В исследовании **подчеркивается** важность решения растущей проблемы электронных отходов в Азии и необходимость более полного сбора и анализа данных об отходах в банках для лучшего понимания факторов, определяющих образование электронных отходов в регионе. Сделан **вывод** о необходимости переработки отходов и повышения расходов на их переработку в будущем, что является наиболее экологичным вариантом по сравнению со сжиганием.
Ключевые слова: ESG-рейтинги; банки; управление отходами; электронные отходы; вторичная переработка; конкурентоспособность; экономический анализ; блокчейн; финансирование

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INTRODUCTION

With the advent of new technologies and devices, more and more electronics are produced around the world every year. The UNITAR estimates that more than 50 million tons of e-waste are generated worldwide every year, and this volume continues to grow. This is a serious problem because e-waste, or "e-waste", can contain harmful chemicals such as lead, cadmium and mercury, which pose a threat to the environment and human health [1].

With electronics becoming an increasingly integral part of our lives, it is necessary to take measures to manage and recycle e-waste. In this context, various countries are developing and implementing laws and policies for the collection, recycling and disposal of e-waste in order to minimize their negative impact on the environment and public health [2, 3].

The paper has novel points: (1) to identify the essence of competitiveness of waste management; (2) to consider the types of competitiveness of waste management in banks; (3) to evaluate the impact of blockchain technology on the competitiveness of waste management in banks; (4) Evaluate the competitiveness of waste management in banks.

The object of the paper is current waste management activities in banks. The subject of the work is the improvement of blockchain technology while increasing the competitiveness of waste management in banks.

The main research methods in the work include: comparison of indicators, data analysis, generalization, and horizontal and vertical analysis. This study uses annual time series data covering the period from 2013–2021 [4–6].

The paper proves the need to recycle such waste in banks, which is the most environmentally friendly option compared to incineration.

LITERATURE REVIEW

These indicators help banks determine the success of applying their chosen strategy in their work, determine their leading positions, identify areas for improving certain aspects of their work, and assess the bank's role in the energy system [7–10].

The main strategies used in banks include the following: integrated growth strategy; diversification strategy; risk management strategy; and asset management strategy. Thus, based on the presented subgroups of quantitative indicators that affect the work of banks, it can be noted that there are various coefficients that assess the current position of the bank [11–14].

In the competitiveness of waste management, it is customary to define the main advantage, which is the loyal provision of waste management for the client, which implies a low cost [15–19]. All the advantages of competitive waste management discussed above allow us to conclude that the bank strives to consider the financial situation of its clients, their lifestyle, and their preferences in relation to waste management, and should also be of particular value to its clients. Nevertheless, banks need to pay attention to various areas of activity, namely: marketing activities of the bank; financial activity of the bank; technologies of working in the bank; HR work in the bank. Together, managing these areas allows you to gain additional competitive advantages and be competitive in comparison with other banks. It can be noted that the

bank that has received all the opportunities to maintain its competitive position becomes absolutely competitive. In the current conditions, the competitiveness of a bank should be carried out in conjunction with improving the competitiveness of waste management, since these processes are influenced by the same factors [20, 21].

The problem of waste management in Russian banks has not received much attention due to the high cost of the most environmentally friendly solution compared to bank the cost of operations in 2012–2023. However, a number of authors' studies confirm the study's main hypotheses [20–24].

There are many factors that affect the competitiveness of waste management in Russian banks as main ESG factor [22–24].

Sberbank launched its own ESG transformation and approved the ESG strategy, which became an integral part of the company's development strategy until 2023. The committee includes top management and representatives of all functional blocks of the bank. The ESG agenda is aimed at different stakeholders: customers, employees, shareholders, investors, society and the state [20–22].

Gazprombank created the Council for the Implementation of the Principles of Sustainable Development to systematize projects in this area, which are implemented with the support of the bank, as well as to form goals and objectives in social, environmental and economic areas. In March 2021, Gazprombank adopted a Sustainable Development Policy. The document defines common approaches in three areas — economic, social and environmental, and also establishes approaches to responsible investment and financing, including setting goals and objectives in the main areas of activity [22, 23].

In 2019, Sovcombank joined the UN initiative, signed the principles of responsible banking, and chose priority goals out of 17 Sustainable Development Goals. Almost immediately, policies in the fields of sustainable development and responsible financing were introduced, and changes were made to the credit policy. For ESG loans, the bank has a reduced rate of funding. The bank is ready to count on a smaller margin, which allows us to consider ESG projects more accordingly [25, 27]. Among the priorities, the bank identifies projects related to renewable energy and zero-emission energy carbon, clean water and energy efficiency.

An ESG framework strategy has been developed by Credit Bank of Moscow (MKB), and it is based on three areas where efforts have been consolidated. The first direction is the improvement of the internal infrastructure for the development of ESG banking, that is, the development of infrastructure for green financing, the introduction of the green bank concept, an independent assessment of the ESG progress of the bank. The second direction is customer support in terms of providing and organizing green financing, special offers for social categories of citizens, support for small and medium-sized businesses, support for businesses in general within the framework of restructuring programs [20, 21].

Table 1

E-waste Generation Rate

Country	E-waste generation rate (kg/cap/day)
Bangladesh	0.15–0.56
China	0.33
Indonesia	0.44
Kuwait	1.37
India	1.38–1.49
Malaysia	5.72
Nepal	0.2–0.87
Pakistan	1.66
Sri Lanka	1.79
UAE	2.58
Vietnam	0.90

Source: Compiled by the authors.

METHODS

Taking into account forecast data, analyzed statistics and available factors, including obsolescence and obsolescence of equipment, it is necessary to perform the following actions: intra-industry diversification; digital transformation with the use of AI learners in the branches of the fuel and energy complex, which will result in a transition to a new level of automation and robotization of all processes not only in the energy sector, but also in others, respectively; reducing the level of negative impact of the fuel and energy segment of the market on living conditions and the world around us, as well as their adaptation to global warming and other changes, by diversifying available energy sources in the direction of "green energy" [17–19].

The analysis includes the following factors: waste composition and waste export. Public authorities are more vulnerable to risk when choosing a positive outcome than when choosing a negative one. It was confirmed that there is a difference in the frequency of the choice of patterns in relation to the population of the country. As a result, the work recommends government measures that affect all renewable energy producers [20, 21].

Table 2

Largest Banks in 11 Asian Countries by Assets

Rank	Bank name	Total assets, bln USD	Share of bank in total E-waste of 11 Asian countries,%	Expenses for recycling, thousands USD
1	DBS Bank	509.1	2.5	1272.75
2	OCBC Bank	402.2	2.1	844.62
3	United Overseas Bank	340.7	2.2	749.54
4	Maybank	213.2	2.0	426.4
5	CIMB	149.3	1.9	283.67
6	Bangkok Bank	130.7	1.8	235.26
7	Kasikornbank	124.3	1.8	223.74
8	Bank Mandiri	121.1	1.7	205.87
9	Bank Rakyat Indonesia	117.7	0.9	105.93
10	Public Bank Berhad	111.1	0.9	99.99
11	Krung Thai Bank	107.7	0.8	86.16
12	Siam Commercial Bank	101.4	0.8	81.12
13	Bank Central Asia	87.7	0.7	61.39
14	Bank for Investment and Development of Vietnam	77.3	0.5	38.65
15	BDO Unibank	69.5	0.4	27.8
16	RHB Bank	69.5	0.2	13.9
17	Bank Negara Indonesia	67.7	0.8	54.16
17	Vietinbank	67.2	0.7	47.04
19	Hong Leong Bank	66.7	0.5	33.35
20	Vietcombank	62.1	0.2	12.42
21	TMB Bank	53.8	0.1	5.38
22	Metropolitan Bank and Trust Company	49.1	0.1	4.91

Source: Authors based on the data [21].

The analysis also yielded additional results: the largest reduction in financing of waste production occurred in countries with a high percentage of the urban population. Sberbank as well as various restrictive strategies reduced the steady demand for renewable energy sources, led to a drop in economic growth, and caused a slowdown in the growth of COVID-19 infections in 2020.

Other scientists understand energy competition as a dynamic process of competition between energy market entities to secure strong positions in this market. Modern competitive relations in the energy services market are diverse and include the following levels:

- competitive relations between commercial banks;
- competitive relations of banks with non-credit institutions;
- competitive relations of banks with other financial intermediaries;
- competitive relations of banks with non-financial organizations.

This division can also be used for interbank competition. According to the number of subjects participating in the confrontation, interbank competition can be divided into individuals (between some banks)

Table 3

E-waste Generated, kg Per Capita

Country	2014	2015	2016	2017	2018	2019	CAGR
Malaysia	7.6	9.6	10	10.4	10.7	11.1	6.52%
Kuwait	17.2	15.9	16	16	15.9	15.8	–1.41%
UAE	17.2	13.4	14	14.4	14.7	15	–2.26%
Bangladesh	0.8	0.9	0.9	1	1.1	1.2	6.99%
China	4.4	5.9	6.2	6.5	6.9	7.2	8.55%
India	1.3	1.5	1.7	1.9	2.1	2.4	10.76%
Pakistan	1.4	1.9	1.9	2	2	2.1	6.99%
Sri Lanka	4.2	5.6	5.8	6	6.1	6.3	6.99%
Vietnam	1.3	1.9	2.1	2.3	2.5	2.7	12.95%
Indonesia	4.3	5.4	5.6	5.6	5.8	5.9	5.41%
Nepal	0.5	0.7	0.8	0.8	0.9	0.9	10.29%

Source: Compiled by the authors based on the data [21].

Table 4

Statistic Summary for E-waste Generation Per Capita for Country Groups 1–3

Group	1	2	3
Average	13.606	2.717	3.500
Standard mistake	0.163	0.178	0.201
Median	13.683	2.763	3.625
Standard deviation	0.399	0.436	0.492
Excess	0.314	1.095	3.137
Asymmetry	0.798	–0.903	–1.666
Interval	1.033	1.250	1.375
Minimum	12.967	1.975	2.575
Maximum	14	3.225	3.950
Sample variance	0.159	0.190	0.242

Source: Compiled by the authors.

and groups (between associations of private credit and financial institutions). Interbank competition can also be classified according to other criteria.

So, you can systematize interbank competition by various criteria. In fact, similar features are also used in the systematization of other types of competition. In general, the systematization of interbank competition consists of identifying the characteristics and features associated with the specifics of competition in the energy sector. It is customary to distinguish between intra-industry and inter-industry competition based on the industry affiliation of competitive entities. Intra-industry competition is competition between organizations in the same industry that produce similar products or services that meet the same customer need, but differ in cost, quality, and product range. Inter-industry competition is competition between organizations of different industries. Because energy is not a separate branch, but an area of the economy that includes a huge number of different industries,

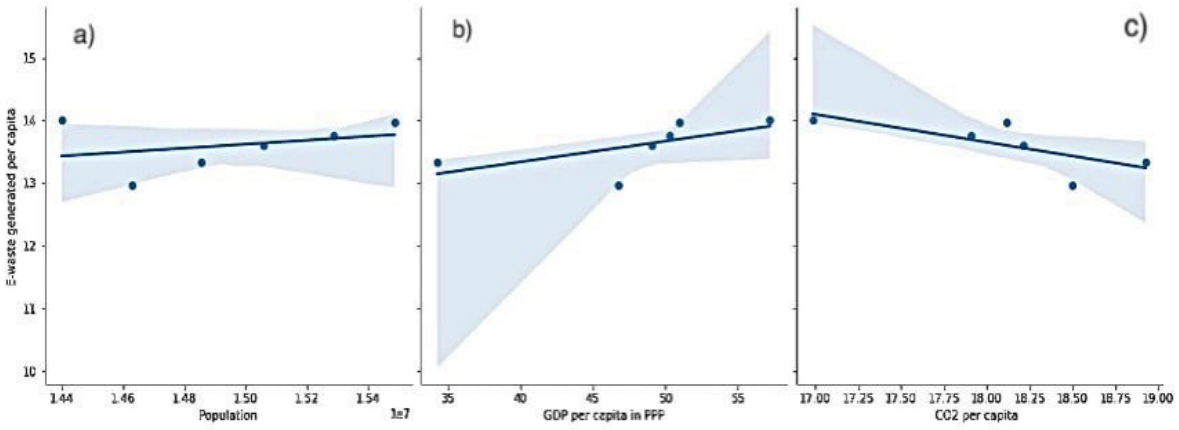

Fig. 1. **Relationship for Group 1 of Countries in 2014–2019 between (A) E-Waste Generated Per Capita and Population, kg and 10 000 People; (B) E-Waste Generated and GDP Per Capita in PPP, kg and 1 000 Current International Dollar; (C) E-Waste Generated Per Capita and CO_2 per Capita, kg and *t***

Source: Author's calculations.

this systematization also applies to banks. Thus, the concept of "interbank competition" is rather difficult and has certain characteristics. In Russian legislation, there is no specific interpretation of this concept due to the presence of quite a significant number of points of view on the definition of this term. You can systematize interbank competition by various criteria. When determining the essence of interbank competition, it is necessary to emphasize that it is a process that takes place over time and has certain characteristics that are not typical of other types of competition, which is aimed at supporting monetary stability and brings a positive effect only when a certain level is reached.

Eleven Asian countries (Bangladesh, China, Indonesia, Kuwait, India, Malaysia, Nepal, Pakistan, Sri Lanka, the UAE, and Vietnam) were chosen for the analysis, which the authors divided into three groups based on certain factors. For the reliability of the study and the results obtained, the countries were divided into three groups. The first group included Malaysia, Kuwait, the UAE, as the countries with the highest GDP per capita at PPP and the formation of waste financing. The second group consisted of Bangladesh, China, India, Pakistan, according to the prevalence of population. In the third group of countries, the authors included the remaining countries, the socio-economic indicators of which can be fairly used for country analysis. The third group includes Sri Lanka, Vietnam, Indonesia. The limitation of this study can be called the unavailability of data for Asian countries on the production of electronics for a long period of time. This fact contributed to the chosen time period of 2014–2019. Despite the lack of data, the study provides insight into the situation of e-waste management in Asian countries.

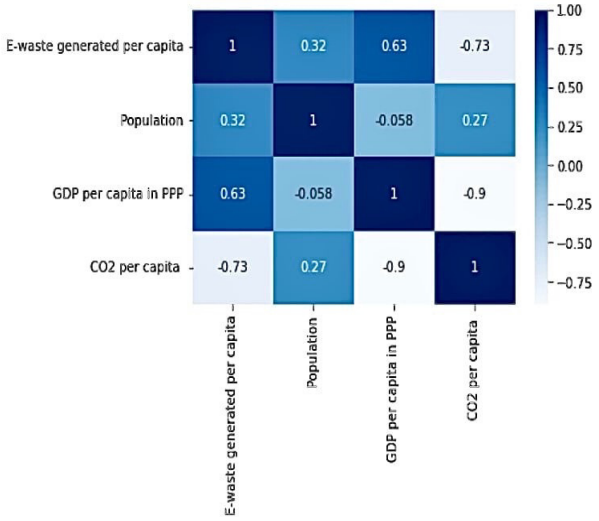

Fig. 2. **Correlation Coefficients between Indicators Such As E-Waste Generated Per Capita, Population, GDP Per Capita in PPP and CO_2 Per Capita for Group 1 of Countries in 2014–2019**

Source: Author's calculations.

The accuracy of the study is indicated by the fact that all data were taken from verified sources. To analyze the relationship of the indicators selected in the study, the authors used the method of constructing a linear regression. The study has a dependent variable Y and a set of independent variables $X_1, X_2, \ldots, X_5$. The linear regression model looks like this:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k + \varepsilon, \qquad (1)$$

where $\beta_0, \beta_1, \beta_2, \ldots, \beta_3$ — regression coefficients; ε — random error.

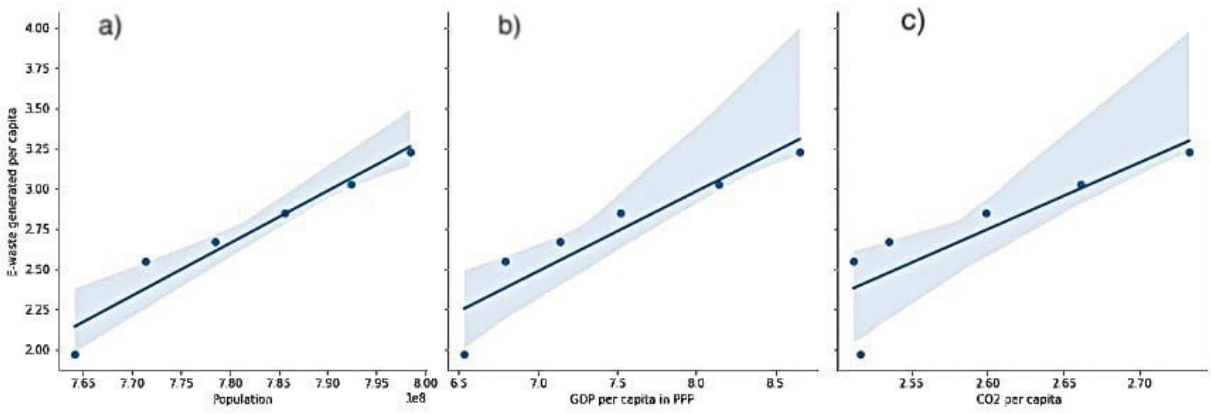

Fig. 3. **Relationship for Group 2 of Countries in 2014–2019 between (a) E-Waste Generated Per Capita and Population, kg and 10 000 People; (b) E-Waste Generated and GDP Per Capita in PPP, kg and 1 000 Current International Dollar; (c) E-Waste Generated Per Capita and CO_2 Per Capita, kg and *t***

Source: Author's calculations.

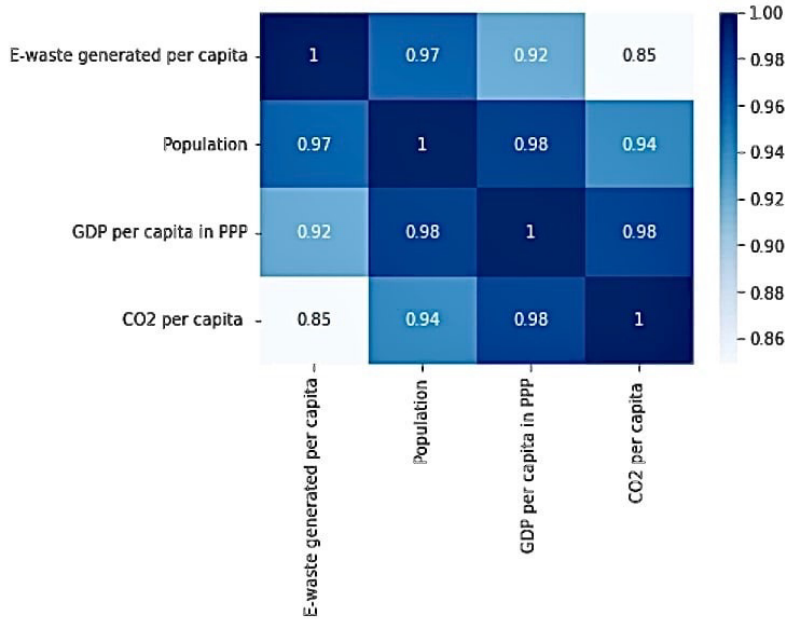

Fig. 4. **Correlation Coefficients between Indicators Such As E-Waste Generated Per Capita, Population for Group 2 of Countries in 2014–2019, GDP Per Capita in PPP and CO_2 Per Capita**

Source: Author's calculations.

Correlation is used to measure the degree and direction of a linear relationship between two variables. One of the most common correlation coefficients is the Pearson coefficient (r), which measures the linear relationship between two continuous variables.

The formula for the Pearson coefficient is:

$$r = \frac{\Sigma(X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\Sigma(X_i - \bar{X})^2}\sqrt{(Y_i - \bar{Y})^2}}, \quad (2)$$

where X_i and Y_i — values of the corresponding observations; $\bar{X}$ and $\bar{Y}$ — the mean values of variables X and Y.

The coefficient of determination shows what percentage of the variance of the dependent variable is explained by the regression model.

The formula for R-squared:

$$R^2 = \frac{SSR}{SST}, \quad (3)$$

where SSR — explained sum of squares; SST — total sum of squares.

RESULTS

In modern conditions, most banks use various criteria in their activities. Digital transformation in the energy system in modern conditions (for example, various criteria) depends on solving various tasks in a single information and logical accounting environment. The structure of the technology can be described as a continuous sequential chain of blocks built according to certain rules, containing constantly updated information (records). Each block is linked to the previous one cryptographically to ensure confidentiality, data integrity, authentication, and encryption. The encryption process is performed using the "Hash" function and is called hashing. Each subsequent block is added at the end of the chain after it is verified by all network participants. Unlike regular databases, once a block is attached, it becomes impossible to make changes to information. Only new records and new information can be added. Information is updated simultaneously on all nodes of the computer network. Blockchain is a completely new way to store and protect data. For effective implementation and application of the technology, the following conditions must be met: favorable political environment; government support and compliance with the legal framework; a well-developed business ecosystem; appropriate qualifications of technology users, i.e. theoretical knowledge and practical skills are required to work in systems using blockchain technology; technically developed environment; growing investment opportunities.

We can distinguish the following areas where blockchain technology in waste management has already become widespread: military waste industry/ cybersecurity; defense waste industry; waste in public services; waste in healthcare (Novartis); renewable energy (Shell); waste in food/agriculture (Nestle, DANONE); waste in IT (Microsoft, IBM, Intel).

Meanwhile, in Russia, the blockchain is already used by some organizations, including banks, and solves a range of different tasks. Let's consider the process of using blockchain technology to increase the competitiveness of waste management. When using this technology, the transaction is recorded twice, i.e. the double-entry method is used. Let's look at the advantages and disadvantages of using blockchain in banks while increasing the competitiveness of waste management. Let's start with the benefits. So, for example, it should be noted that this particular technology, by ensuring the protection of information from distortion, makes it possible to simplify and make relationships with customers more secure, especially if there is no trust in them. Speaking about simplifying the audit system, it should be noted that in the world arena, when discussing the prospects for implementing various criteria.

In addition, it is important to emphasize that the minimization of fraud in the energy sector is possible due to the fact that the blockchain technology provides an expansion of the ability of the supervisory authorities to monitor the activities of banks for illegal activities. For example, one hundred percent detection of violations in the field of payment evasion becomes possible (*Table 1*). *Table 2* presents the largest banks in 11 Asian countries by assets.

Thus, in order to maximize profits, waste management will hire qualified waste management personnel as long as the marginal utility of victories exceeds the marginal value of their contracts. The factors that have a direct impact on the financial results of waste management include factors at the first level.[1]

Based on the aforementioned, Kuwait has the potential to increase its renewable production. In fact, it has to meet the demands of its future plans until 2030. Solid Waste (SW) has the appropriate means and is considered to be a sustainable feedstock that could easily replace conventional fossil fuels in order to reduce environmental burdens and provide renewable energy.

Table 3 presents e-waste per capita generation data for 2014–2019 for selected Asian countries. The authors also calculated the cumulative average annual growth rate, whose value allows us to estimate the growth rate of the selected parameters. The Compound Annual Growth Rate (CAGR) for Kuwait, the UAE is negative, which indicates a decrease in e-waste generation for the period under consideration. For the other 9 countries, we can see an increase in the indicator, indicating an increase in financing of waste generation. India, Nepal, and Vietnam showed the largest increase in the average annual growth rate of e-waste. *Table 4* has descriptive statistics for the three country groups for the e-waste generation per capita indicator.[2]

An analysis of the relationship of indicators such as E-waste generated per capita, population, GDP in PPP per capita, CO_2 per capita showed quantitative results for the three groups.

Figures 1, 2 show the relationship between the indicators for the first group of countries. The graphical relationship between them is shown in *Fig. 1*. This group of countries is characterized by a positive relationship between such indicators as e-waste generated per capita and population, GDP in PPP

[1] SMB, 2022. Scrap metal buyers we buy scrap metals nationwide. URL: https://www.scrapmetalbuyers.com/current-prices (accessed on 20.06.2023).

[2] PST, 2022. Plastic trip. URL: https://www.plasticsouptrip.com/post/97791290765/what-can-the-pricesof-plastics-teach-us. (accessed on 20.06.2023).

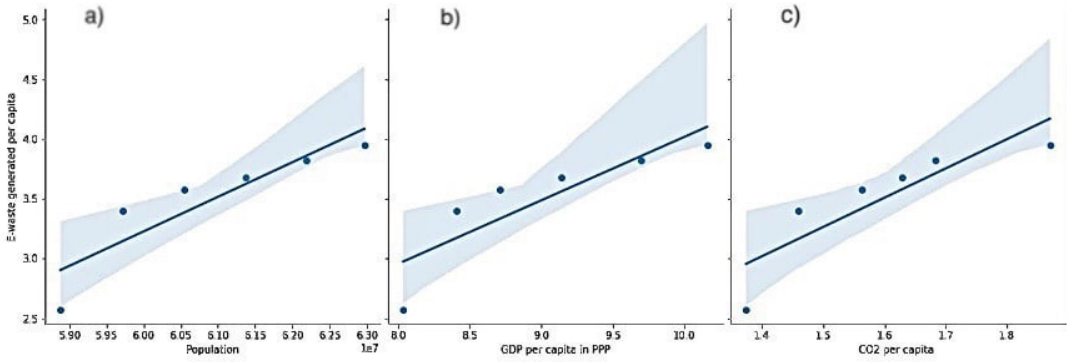

Fig. 5. **Correlation Coefficients between Indicators Such As E-Waste Generated Per Capita, Population, GDP Per Capita in PPP and CO_2 Per Capita for Group 3 of Countries in 2014–2019**

Source: Author's calculations.

Table 5

Waste Generation and Treatment Structure of Sberbank, tons

Category	Waste				Waste for disposal				Waste for recycling			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
Hazardous waste	536	73	147	57	0	0	0	6	536	73	147	57
Class I	44	18	13	5	0	0	0	0	44	18	13	6
Class II	64	21	84	40	0	0	0	0	64	21	84	40
Class III	428	34	50	12	0	0	0	6	428	34	50	11
Low-hazard waste	52.497	51.823	51.317	49.335	42.187	37.963	36.013	32.896	10.270	13.783	15.159	13.798
Class IV	32.960	36.164	35.241	36.419	27.393	24.042	25.271	25.100	5.527	12.077	9.899	10.472
Class V	19.537	15.659	16.076	12.916	14.794	13.921	10.742	7.796	4.743	1.706	5.260	3.326
TOTAL	53.033	51.896	51.464	49.392	42.187	37.963	36.013	32.902	10.806	13.856	15.306	13.855

Source: Sberbank, 2022. ESG report. URL: https://shareholder.sberbank.com/AR 22/en/docs/esg/sber-esg-data-book-ecology-en.pdf (accessed on 20.06.2023).

per capita. The inverse relationship is observed between such indicators as E-waste generated per capita and CO_2 per capita. *Figure 2* presents a heat map illustrating the correlation coefficients for the four selected indicators. The correlation coefficient is 0.63 for indicators such as e-waste generated per capita and GDP in PPP per capita, indicating a strong positive relationship between the factors. The correlations for e-waste generated per capita and CO_2 per capita are strongly negative at –0.73.

For the second group, the graphical results of the analysis are presented in *Fig. 3, 4. Figure 3* illustrates the positive relationship between all three socioeconomic indicators and e-waste generated per capita.

The correlation map in *Fig. 4* shows a strong correlation between e-waste generated per capita and population, e-waste generated per capita and GDP in PPP per capita, E-waste generated per capita and CO_2 per capita. The correlation coefficients were 0.97, 0.92, and 0.85, respectively.

Fig. 5 illustrates the positive relationship. The correlation map in *Fig. 5* shows strong correlations between E-waste generated per capita and population, E-waste generated per capita and GDP in PPP per capita, e-waste generated per capita and CO_2 per capita. The correlation coefficients were 0.9, 0.86, and 0.87, respectively.

DISCUSSION

Sberbank at the beginning of waste management

The level of customer orientation of the Russian banks, which consists of building trusting relationships between the bank and its customers

as well as with potential customers. In this article it's important to emphasize that clients must have complete access to information about all waste management and service possibilities, and VIP services are given special consideration. The level of remote customer service of the Sberbank (about 50% of Russian banking assets), which consists not only in the development of special applications for the convenience of customers, but also the availability of an official website with full information about the activities of the bank, its products and services [25–29].

This paper has recommendations for improving waste management in credit institutions (mainly faulty office equipment and paper waste). In any case, a bank that shows a higher return on investment in a group of comparable banks, which exceeds the cost of raising capital, can be considered the most competitive. Since profitability consists of interest margin, cost of risk, share of non-interest income, and operational efficiency, leadership in these indicators also confirms the bank's ability to win in competition [30–32].

In general, according to experts, the factors of competitiveness in the energy industry coincide with those used in relation to other industries. Some nuances include the fact that waste management in Russia often does not have substitutes, which allows them to control pricing to a greater extent. The total amount of capital that is immediately available to Sberbank allows it to more completely control its own risk appetite and diversify its client base, which is an important factor in the bank's fight for the customer [33–35].

It is therefore deduced that the waste accumulation in Sberbank, while posing a serious environmental threat, can also present itself as a sustainable feedstock for various opportunities in the near future [36–39]. These opportunities have their own challenges but can also be a route for altering the energy mix a country that relies solely on fossil fuels. The largest Russian bank — Sberbank — publishes an ESG report for 2020 (*Table 5*).

Analysis of the data makes it possible to establish a strong dependence between the waste management rating and the efficiency.

CONCLUSIONS

The newly announced plan in Sberbank based on official government sources, shows that incineration to produce energy is one of the main options considered viable and achievable in Sberbank within the next few years. To this end, a number of techno-economic factors will be combined to determine the internal rate of return on Sberbank based on recent results obtained in past studies and published sources. In our work, we aim to apply the standardized methodology based on ISO protocols, whereby a comparative assessment for various scenarios that will be compared based on different energy mixes obtained from different techniques will be developed.

In the future, we will proceed directly to the consideration of the concept of competitiveness of energy products. The competitiveness of energy product is a comparative analysis of several characteristics of a bank's product or service, as well as distinguishing features from additional financing of waste management provided by competitors. Overall, the findings suggest that economic growth and population growth are significant factors driving e-waste generation in Asia.

Practical significance is that policymakers in these countries should focus on promoting sustainable consumption and production practices, such as circular economy models and extended producer responsibility, to mitigate the negative environmental and health impacts of e-waste.

In conclusion, the study highlights the importance of addressing the growing e-waste problem in Asia and the need for more comprehensive data collection and analysis to better understand the factors driving e-waste generation in the region.

The main finding of paper is the need to recycle such waste, which is the most environmentally friendly option compared to incineration.

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ABOUT THE AUTHORS / ИНФОРМАЦИЯ ОБ АВТОРАХ

Jaehyung An — Cand. Sci. (Econ.), College of Business, Hankuk University of Foreign Studies, 02450, Seoul, South Korea
Джаехунг Ан — кандидат экономических наук, Колледж бизнеса, Университет иностранных языков Ханкук, Сеул, Южная Корея
https://orcid.org/0000-0001-5410-7506
jaehyung.an@yahoo.com

Alexey Yu. Mikhaylov — Cand. Sci. (Econ.), Assoc. Prof., Financial University, Moscow, Russia; Senior Researcher, Financial Research Institute of Ministry of Finance of the Russian Federation, Moscow, Russia.
Алексей Юрьевич Михайлов — кандидат экономических наук, доцент, Финансовый университет, Москва, Россия; старший научный сотрудник, Научно-исследовательский финансовый институт Министерства финансов Российской Федерации, Москва, Россия
https://orcid.org/0000-0003-2478-0307
Corresponding author / Автор для корреспонденции:
alexeyfa@ya.ru

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