



Identifying and analyzing the importance-performance of factors affecting the development of green financing based on the role of the banking industry in Iran for the transition to a circular economy

Abbas Rahimi

PhD student of Financial Engineering, Department of Accounting and Management, Roudehen Branch, Islamic Azad University, Roudehen, Iran.
arahimi_2010@yahoo.com

Narges Yazdanian

Assistant Professor, Department of Accounting and Management, Roudehen Branch, Islamic Azad University, Roudehen, Iran.
nargesyazdanian@gmail.com

Seyyed Alireza Mirarab Beygi

Assistant Professor, Department of Accounting and Management, Roudehen Branch, Islamic Azad University, Roudehen, Iran.
mirarab_alireza@yahoo.com

Kiumars Arya

Assistant Professor, Department of Accounting and Management, Roudehen Branch, Islamic Azad University, Roudehen, Iran.
kiumarsarya86@gmail.com

Submit: 05/01/2023 Accept: 14/01/2023

ABSTRACT

The purpose of this research is to identify and analyze the importance-performance of factors affecting the development of green financing based on the role of the banking industry in Iran for the transition to a circular economy. The current research has been conducted using the mixed exploratory research method in two parts: qualitative (theme analysis) and quantitative (importance-performance analysis). In the qualitative part, by using the non-random judgmental method, the opinions of 14 managers and experts of the banking industry as well as university professors were used. Also, in order to determine the random sample size in the quantitative part of the research to complete the questionnaires, the power analysis method presented by Cohen (1992) was used. Based on this, the required sample size was determined to be at least 113. According to the research findings in the qualitative part, during the data first stage, 52 cases of evidence identified from the text of the interviews were labeled in the form of 26 primary codes. Next, the primary codes were categorized into five sub-themes and then a main theme. The results of the importance-performance analysis also showed that financial factors as well as infrastructure and technology have a higher than average importance in providing green financing based on the role of Iran's banking industry for the transition to a circular economy, and their performance is also higher than average, and this is due to The meaning of the special status of these variables. Because the processes of this sector are considered as a more competitive advantage.

Keywords:

green financing, banking industry, circular economy

1. Introduction

The circular economy (CE) is an industrial system that reduces and reuses production resources, taking into account the environmental, economic and social impacts (Purchase et al., 2022). It is a sustainable alternative to manufacturers who extract raw materials from nature and throw away waste (Gento et al., 2022). In the literature, MacArthur (2013a) shows that the circular economy is a step in the right direction towards minimizing material waste, reducing environmental degradation and mitigating climate change. Hartley et al. (2020) suggest development resulting from circular procurement policy, tax exemption for circular products, liberalization of waste trade and awareness campaigns. In terms of measuring the circular economy, Kristensen & Mosgaard (2020), stated that there is no acceptable way to measure the circular economy at both the micro and macro levels, and most of the indicators used to measure the circular economy focus on economic aspects and less attention is paid to the environmental and social aspects of the circular economy. Dewick et al. (2020) also seek effective oversight of the circular economy to prevent the circular economy from becoming another ineffective and compromised sustainability concept. They warn that such oversight should be done before major industry players begin to implement international investment standards and launch innovative financial instruments. In contrast to the literature on the subject, the current research examines a different topic in this research, which is "green financing in the circular economy". The current research argues that while the topic of green financing is very important in the circular economy, it is important to understand how banks can actively participate in this matter.

The development of circular economy requires investment and financing (Thiemann and others, 2021). There is a lot of evidence that green financing policies and models have a positive impact on the circular economy; because this type of financing is an intermediary between environmental protection institutions and financial and financing institutions. In other words, it is believed that the allocation of budget and resources as well as the lack of capital in the context of the circular economy can be compensated with green financing and also improve the productivity, efficiency and effectiveness of business activities (Yaoteng & Xin, 2021). However, currently

the development of the circular economy is still in its infancy, and the financial support for the development of the circular economy is still very weak. This is mainly due to the inadequacy of macroeconomic control and financial investment policies, the incomplete structure of the financial system and the incomplete reform of financial institutions, the low ratio of financing and the insufficient innovation of financing instruments, which have limited the financing channels for the development of the circular economy (Yuan and others, 2020). In addition, the weak financial environment and the absence of risk compensation mechanisms have led to the difficulty of forming a financial support and guarantee system for the development of the circular economy (Chua et al., 2020).

In spite of all the mentioned cases, financing in the circular economy requires spending a lot of resources and funds, and considering that supporting the circular economy requires extensive investment and the return period of such investments is considered long-term. Banks are considered the most important driver in the financing of the circular economy. In other words, since banks are considered an integral part of commercial and economic activities, they can influence the circular economy through financing methods (Ozili & Opene, 2021). In order to protect the environment, while financing a new project or investing in existing companies, banks should also pay special attention to environmental issues arising from the implementation of projects (Sheikh and Saeidi, 2020a). Accordingly, the circular economy promoters also demand the active participation of banks and financial institutions to finance activities in the circular economy, as a way to show their support and commitment to achieving the goals of sustainable development (McArthur, 2013). It is also important to understand that banks are profit-seeking entities that work to generate profits for shareholders and stakeholders. They make investment and lending decisions based on detailed cost-benefit and risk analyzes (Ivashina & Scharfstein, 2010). If there is a profitable perspective in this sector of the economy, financial institutions will invest in any sector of the economy, including the circular economy (Ozili & Opene, 2021), but the question is how and with what components. Should green financing be developed for the transition from traditional economy to circular economy, based on the role of the banking industry?

And the factors involved should be done with what priority and delay? Studies show that this has been largely ignored in past researches.

According to the topic plan and the research gap presented above, the current research aims to analyze the opinions of experts and take into account the real considerations in Iran, to identify and analyze the importance-performance of factors affecting the development of green financing based on the role of industry. Iran's banking has done to transition to a circular economy. In the following, the theoretical foundations and background of related researches will be mentioned first. Then, the research method, including the type of research, the society and the method of selecting the participants in the research are stated and at the end, after presenting the research findings, research suggestions are presented.

2- The theoretical framework of the research

A linear economy; It is an economic system, which promotes the use of raw materials for production and consumption, and the resulting waste is discarded, disposed of, or destroyed (Lag-Brotons et al., 2020). A linear economy can be described as an economic system compatible with consumption (Goyal et al., 2018). On the other hand, the circular economy has been proposed since 2010 as a new concept with the aim of creating an effective and efficient economic system that is suitable for sustainable development (Schroeder et al., 2019). In the literature, the circular economy is defined as a system in which goods that are at the end of their service life become resources for others, and by doing so, closes the loop in the industrial ecosystem and minimizes waste. Morsetto (2020), the circular economy as an economic model with the aim of efficient use of resources by minimizing waste, preserving long-term value, reducing primary resources and closed loops of products, product parts and materials within the boundaries of environmental protection and defines socio-economic benefits. In simpler terms, it is an economic system that promotes productivity through the elimination of waste and the consistent use of resources. The main idea of the circular economy is to close the entire loop in the production cycle and maximize the recycling and reuse of materials throughout its life cycle (Singh and Ordenez, 2016).

The circular economy plays a unique role in directing funds, allocating resources and optimizing the industrial structure. Therefore, it is necessary to make full use of finance to promote the development of a circular economy (Loehrer and Tsai, 2020). Financing, as the core and blood of the modern economy, is an important financial support for the development of the circular economy. In the meantime, banks can create an investment and financing environment in the form of a green financial support system for institutions related to the circular economy (Ozili and Opene, 2021) and at the same time, deep social context and practical importance. It is important to accelerate the creation of a resource-saving society, improve the quality and benefits of economic growth, and promote sustainable development in the national economy (Dafnos, 2020). Therefore, the development of the circular economy depends on supporting a well-developed and healthy green financial system. Without the driver of financial industry services, there will be no rapid development and industrialization of circular economy technologies, as well as rapid construction and easy commissioning of circular economy projects. Therefore, the establishment and continuous development of an effective green financial support system is necessary for the development of a circular economy.

Many countries are considering the circular economy model. For example, the European Union published a statement on December 17, 2012. The statement states that in a world with increasing pressure on resources and the environment, the EU has no choice but to go for a resource efficient and ultimately circular economy. In France, the circular economy concept was created with the founding of a circular economy institute in February 2013, funded by members of paper recycling, the French postal service, and the union of cement workers. In the case of Denmark, having an economy based on polluting fossil fuels such as coal forces them to adjust their energy strategy guidelines towards becoming fossil fuel-free (100% green energy consumption). Some Danish companies have taken the circular economy path. Baisikeli, for example, is a bicycle sales company whose business model is to use old bicycles as raw materials and reuse them in new bicycles (Pires and Martinho, 2019). This is while Iran has not yet formulated the relevant policies, systems, laws and regulations to guide the development of green

financing for the transition and support the circular economy. Iran's financial system is still dominated by traditional credit financing and securities financing is still in the stage of growth and development, and financial support departments such as professional investment institutions and banks are not yet developed for green financing from the circular economy. According to the researcher, the country's banks still cannot play a full role in supporting their financial role in promoting the development of green financing for the transition to a circular economy.

Currently, various approaches are available to support this and have been reviewed and presented in previous researches (such as: Afridi et al., 2021; Ozili and Opene, 2021; Sheikh and Saeedi, 2020). However, according to the literature review, the existing approaches have shown their shortcomings. For example, the level of their discussion is general and lacks details or addressing a specific part. Also, most of them lack a rational, targeted and programmable mechanism to support the transition to a circular economy. Also, what factors and actions and how and with what importance-performance can lead to effective actions, have been largely ignored in current research. Therefore, the current research will examine the opinions and views with the aim of providing a green financing development model based on the role of Iran's banking industry for the transition to a circular economy.

3- Research background

In this part of the research, some researches related to the research topic are summarized and mentioned: Zhang et al. (2022), in a research titled "Do green banking activities improve the environmental performance of banks? The mediating effect of green financing" to identify the effect of green banking activities on green financing and performance environmental banks paid. Experimental results showed that green banking activities have a significant positive effect on banks' environmental performance and green financing sources, and green financing sources significantly affect banks' environmental performance. In addition, it was observed that green financing mediates the relationship between green banking activities and banks' environmental performance. In this study, customers' insufficient awareness of green banking, high investment costs, technical barriers, lack of capable and competent

employees in the evaluation of green credits/loans, and problems and complexity in the evaluation of green projects, as the main challenges affecting the development Green banking was identified. Also, this study also showed that increasing the competitiveness of banks, reducing long-term costs and expenses, providing online banking facilities, improving the goodwill of customers and reducing the carbon footprint are the key benefits of green banking development, because it helps to achieve the goals slow.

Bose et al. (2021), in a research titled "Does Green Banking Performance Pay Off? Evidence from a Unique Regulatory Environment in Bangladesh" investigated the green performance of banks and improving their financial performance. The results showed that the performance of green banking is positively related to the financial performance of the bank. Further analysis shows that cost efficiency mainly drives this relationship. However, banks' political connections negatively affect this relationship by balancing the non-financial benefits of green banking.

Hajjaran et al. (2021), in a research entitled "Identification of innovative green banking components based on bioethics to obtain a sustainable competitive advantage" investigated this issue in the country's banking industry. The results of the research have shown that the most important influential components in innovative green banking based on bioethics to gain a sustainable competitive advantage include quality, product innovation, demand conditions, environmental innovation and customer integration in the green innovation process.

Zhu et al. (2020), in a research titled "Effect of Green Financing on Economic Development and Environmental Quality" investigated the effect of green financing on economic development and environmental quality based on provincial panel data in China. In this research, in the first step, global principal component analysis was adopted to develop the green financing development index. Then, in the second step, a model of the effect of green financing on economic development is built, which shows that the development of green financing plays a role in promoting economic development. In the next step, the emission of industrial smoke, dust, industrial solid waste and carbon dioxide were used to represent environmental variables, and a model of the effect of

green financing on environmental quality was proposed; this model shows that green financing has a positive effect on improving the environment.

Hafezi and Seyyedi (2018), in a research entitled "Identification and prioritization of factors affecting the performance of green banking", identified and prioritized the factors affecting the performance of green banking in Iran's Qavamin Bank. The results showed that the factors affecting the performance of green banking in this research are: organizational policy, organizational culture, daily operations, employees and customers.

Considering that in the research conducted in this field, only some of the effective components in the development of green financing based on the role of the Iranian banking industry for the transition to the circular economy have been addressed, and also different priorities for examining these factors in each point of the world is considered according to the prevailing conditions of that country and also due to the lack of research and the necessity of conducting research with a multi-dimensional view around this field in Iran, the present research aims to identify and analyze the importance-performance of factors Effective on the development of green financing based on the role of Iran's banking industry for the transition to a circular economy, it will answer the following main questions:

- What are the factors affecting the development of green financing based on the role of Iran's banking industry for the transition to a circular economy?
- To what extent is the importance-performance of factors affecting the development of green financing based on the role of Iran's banking industry for the transition to a circular economy?

4- Research method

The current research is practical in terms of purpose; In terms of the inference method, it is descriptive and in terms of the nature of the data, it is mixed exploratory. Considering that in the exploratory mixed research method, qualitative research methods are used first and then quantitative research methods are used, the steps of the current research were carried out in the following way:

Qualitative section: In this section, the theme analysis method was used to collect data and information for the analysis of the qualitative section. Necessary measures were taken for a qualitative interview with a group of 14 managers and experts of the banking industry as well as university professors who had sufficient knowledge of the subject. These people are experts in the field related to the research topic. The method of selecting the participants in the current research is the judgment method (review by the members of the research team). Based on this, the selection criteria of experts in this research are:

- Having a related job position or at least five years of experience in research-related fields
- Having a book, thesis or at least two valid scientific articles in the field of green financing, banking industry and circular economy, or having a university education related to research fields.

In the qualitative phase of the research, data collection continued until the theoretical saturation of the categories, and more clearly, until it was no longer possible to obtain new data. After the implementation of the interviews, primary and secondary coding was done in Atlas.T software.

Quantitative part: according to the purpose and nature of the research subject, the most appropriate method in the quantitative stage for the current research was the descriptive-survey research method, and therefore, to obtain the views of experts on the importance-performance analysis of factors affecting the development of green financing based on The role of Iran's banking industry was used in this way to transition to a circular economy. To determine the size of the random sample in the quantitative part of the research, the power analysis method presented by Cohen (1992) is used. Calculating the sample size with Cohen's formula is a correct and scientific solution for estimating a sufficient number of samples in solving statistical problems and structural models (Westland, 2010). For this purpose, the online software designed for this purpose was used and the following items were determined as inputs:

Table 1- Determining the sample size of structural equations by power analysis method

Predicted effect size	0/0
Desired statistical power level	0/8
The number of hidden variables in the structural equation model	0
The number of obvious variables in the structural equation model	26
probability level (P-value)	0/0.0
Minimum sample size for effect detection	103
Minimum sample size for model structure	113
Recommended minimum sample size	113

Based on this, the required sample size for the structural equation method was determined at a confidence level of 95% and considering 26 obvious variables and five hidden variables equal to at least 113 (table 1). Also, in this part of the research, a researcher-made questionnaire tool was used to collect quantitative data, the questionnaire was designed based on the dimensions and components extracted from the theme analysis process. To analyze quantitative data, the importance-performance analysis method, which is a procedure in Smart PLS software, was used. The key feature of the PLS-SEM approach is the extraction of latent variable values. Significance-performance analysis is useful in extending the findings of the basic PLS-SEM results using latent

variables. This development is based on partial least squares estimates of the path model relationships and adds another dimension to the analysis that considers the mean values of the latent variables. In other words, for a given endogenous latent variable that represents a key target construct, IPMA analyzes the effects of the entire structural model (importance) and the average values of the latent variables to identify areas of importance for improving managerial performance (or a specific focus of the model). Specifically, the results of this analysis enable the identification of determinants with relatively high importance and relatively low performance. Four quadrants can be distinguished:

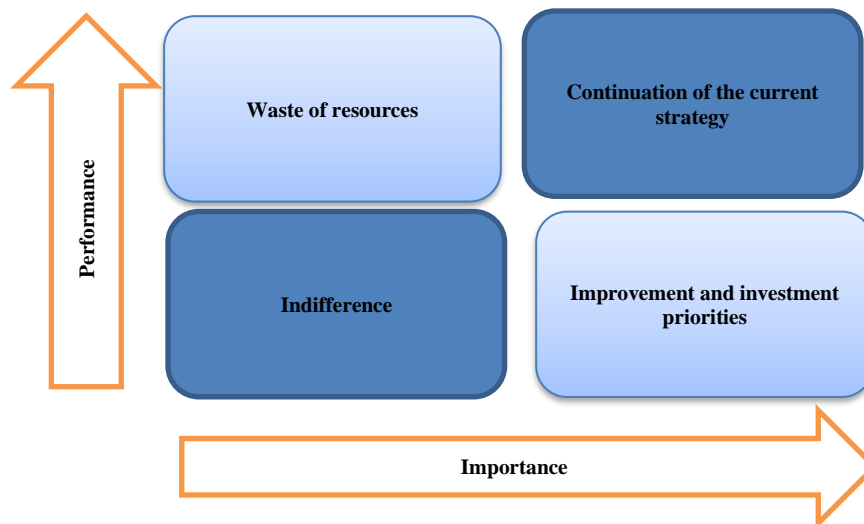


Figure 1- Importance-performance analysis matrix

- The first quarter (continuation of the current strategy): This quarter is considered as the main strength of the organization, which should be continued. The importance of the

process is very high and the performance of the process is strong, so the processes of this sector are considered as competitive advantages, maintenance and more attention.

- Second quarter (waste of resources): In this quarter, the criteria are of low importance, but the company's performance in this sector is high. In this section, resources are actually wasted. In other words, the resources allocated to these features are more than necessary and should be spent elsewhere. This model is known as the quadratic model. It is an area where the importance of the process is low but the performance of the process is very strong, therefore, the processes of this department cause waste in the organization and should be eliminated in some way or they should be used properly.
- The third quadrant (indifference): In this quadrant, the specified factors have low importance in terms of importance. Also, the organization is weak in those criteria. On the other hand, since they are not very important, the organization should not focus much in this sector and waste its resources in this sector. Only limited resources should be used in this section.
- Fourth quarter (improvement and investment priorities): In this area, the importance of the process is very high, but the performance of the process is weak, so the processes of this sector are vulnerable and should be prioritized for improvement. Perceived characteristics are important for people, but the organization's performance level in those characteristics is low. In fact, this quadrant shows the weakness

of the organization or company. The basic point is that the inability to identify the characteristics in this quadrant causes low customer satisfaction. In fact, the effort to improve should be given the highest priority because the main weakness is in this area.

5- Findings

As mentioned in the methodology section of the research, after a comprehensive review of the theoretical and empirical bases, from the semi-structured interview and theme analysis approach, to identify the factors affecting the development of green financing based on the role of the Iranian banking industry for the transition to a circular economy, in the section Qualitative research was used. Therefore, after implementing the interviews, the coding of the interviews was done. Coding in the first stage is considered primary coding due to its generality and openness. In the next stage of this type of coding, secondary and main coding was done, in which the primary codes were converted into a conceptual code due to the large number of similar classes or the main and secondary codes. Based on this and during the data familiarization stage, 52 cases of speech evidence identified from the text of the interviews were labeled in the form of 26 primary codes. Next, the primary codes were categorized into five sub-themes and then a main theme.

A summary of the findings was presented to the interviewees and the analyzes were approved by them. All the respondents declared that they had a proper understanding of its components. In the following, the results of this part of the research are stated in Table 2:

Table 2-Analysis of interviews

main theme	Sub-theme	primary code	Verbal evidence (the number in parentheses indicates the code of the interviewee)
		Reduction of initial costs	- The need to develop technology and skilled labor can make green financing for the transition to a circular economy face prohibitive implementation costs, so these costs should be reduced (1). - An arrangement should be adopted to reduce the costs of transition to the circular economy (4)
		Lack of trust in investment	- The use of digital financial technology reduces the cost of financing (10) - The high initial costs of converting to a circular economy and the uncertainty about the results may cause banks to distrust the financial returns of green financing (1). - Currency problems and technology transfer caused by the embargo make the investor doubtful (13)
		Removing	- Budget restrictions and the lack of bank budgets can limit the financing

main theme	Sub-theme	primary code	Verbal evidence (the number in parentheses indicates the code of the interviewee)
The development of green financing based on the role of Iran's banking industry for the transition to a circular economy	Financial	financing restrictions	of the bank for the transition to the circular economy, so these obstacles must be fundamentally removed (3)
		Lack of short-term financial planning	- The lack of immediate financial results discourages banks focused on short-term returns (4). - The discussion of the circular economy is a long-term process and sometimes several years. Therefore, it is usually a long-term policy (6).
		Failure to accept financial risk	- Banks usually stay away from innovative projects due to high financial risk (1). - Green financing for the circular economy has its own risks due to many aspects, which not every investment accepts (7).
		Development of guidelines on circular finance	- Banks can work with other industry partners to develop a common set of guidelines on circular finance (5). - The development of a common set of guidelines on circular finance will ensure that banks and other financial institutions follow an integrated approach to financing the circular economy (11). - The development of guidelines in circular finance will guide the allocation of capital to circular businesses by banks and other members of the financial community (14).
		Adaptation of existing financial models or new financial models for the circular economy	- Banks should improve existing financial models, or develop new pricing models, which integrate environmental and social costs and benefits (2). - Instead of writing the value of the assets to zero, the continuation of the value of the assets to the second-hand markets should be recognized in the balance sheet (2).
		Providing lines of credit to circular businesses	- Banks can provide medium and long-term direct loans for small and large circular economy projects (2). - Large commercial banks of the country, such as National Bank and Sepeh Bank, etc., can provide financing through credit lines to local branches and other intermediaries to enable them to extend credit to start-up companies and circular economy entrepreneurs. 9)
	Management	Lack of financial management knowledge about circular economy	- Many banks ignore financing opportunities in this regard due to lack of financial knowledge about the circular economy (3).
		Serious efforts to incorporate digital technology into green financing management processes	- Digitization of models and knowledge about digital technology such as Internet of Things, Block chain, etc. can lead to the weakening of green financing processes in support of the circular economy (8)
		Creating decentralized hierarchical structures	Decentralized financial hierarchical structures in the country's banks should be established to allow decision-making at the operational level to finance the circular economy (1).
		Training experienced bank managers willing to interact financially with the circular economy	- Banks do not find experienced leaders who are willing to interact financially with the circular economy, because the concept of circular economy is new, so it is necessary to train managers with this characteristic (4).
			Skilled workforce training
	Development of information technology		- Insisting on the use of modern information technology infrastructures can ease the problems of implementing green financing and exploiting circular economy projects (13).

main theme	Sub-theme	primary code	Verbal evidence (the number in parentheses indicates the code of the interviewee)
	Infrastructure	infrastructure	
		Increasing basic investment in fintech infrastructure	- Increasing basic investment by the bank and facilitating access to other actors in the form of financial technology can develop the implementation of circular economy (6). - It is necessary to make progress in the financial fields related to the circular economy of investment and create a platform (10)
		Lack of green financing culture infrastructure	- The lack of green financing culture related to the circular economy can lead to the lack of sustainable behaviors in the transition to the circular economy (13). Culturally, green financing is not established and there is definitely a need for more culturalization over time (14).
		Promoting and managing the culture of reducing waste and reusing materials at all levels of society	The senior management of banks should ensure that bank employees at all levels understand the value of waste (7). - The culture of reducing waste and reuse of materials should be established in the bank employees themselves. This ensures that waste is minimized not only in the workplace but also beyond the workplace (7).
		Lack of monitoring and control systems	- The lack of proper supervision and even the imposition of excessive laws can bypass the lofty goals of the circular economy (1). - It is not controlled that financing is done in a green way and with circular economy goals (9)
		Lack of acceptance market for circular economy projects	- Due to the lack of acceptance market, it is difficult for banks and of course for investors to justify the financing of circular economy projects (5). - Cheap energy sources in the country have caused little attention to the circular economy (10) - Among market participants, there is no desire to provide financing for circular economy projects (11)
	Networking	Lack of cooperation between the bank and the circular economy	- The lack of coordination between the bank and circular economy goals may cause poor integration during the circular economy financing cycle (4). - Due to the lack of a single policy, the cooperation of the country's banks in providing green finance for the circular economy is facing several fundamental weaknesses (8).
		Creating a common understanding of banks on the circular economy	Having a common understanding of the circular economy will help banks to identify, select and finance projects based on new circular business models (10). - The common understanding of the phenomenon of the circular economy will encourage financial institutions to participate in the financing of the circular economy (13).
	Technology	Integrating financial technologies with the circular economy	- Due to the use of different financial technologies in banks, their standardization, interoperability and adaptation to circular economy projects is a way to finance green financing of these projects (5). Financial technologies used in the banking and industrial systems are different (11) Financial technologies used in different sectors are not synergistic and are basically created with different goals (12).
		Lack of data analysis skills	Lack of experience and skilled labor in the field of circular economy and green financing may cause many problems in data collection (2). - Experts in the field of big data analysis are hardly stressed (6) In addition to knowledge, skill and experience in working with big data, it is necessary to perform better and faster analyzes, which unfortunately is very weak (12).
		Weakness in data sharing	- Data sharing in the discussion of green financing faces problems due to issues such as information sensitivity, intellectual property, lack of data integrity, and lack of standards for data interoperability (2). - Island data in different industries and sectors should be connected to achieve better processing capability (11)
		Weakness of	- Cyber-attacks can damage hardware and software and even make banks

main theme	Sub-theme	primary code	Verbal evidence (the number in parentheses indicates the code of the interviewee)
		existing software in cyber security	vulnerable to attacks (10) Due to the lack of powerful software, cyber-attacks may also cause the leakage of software information and endanger the privacy of users (14).
		Increasing storage and processing capacity	Increasing the basic capacity of data processing in banks can support the development of technology for more practical applications such as block chain (3). - We need a rich data center in this field (5) - Due to the multidisciplinary nature of the circular economy, there is no existing data in the country that can be used to trace and analyze from the origin to the destination as well as the return of consumer goods (9).

Next, Importance-Performance Analysis (IPMA), each of the main dimensions is discussed. This analysis is a useful analysis approach in PLS-SEM that extends the results of path coefficient estimation (significance) by adding a dimension. In fact, it considers the average values of the latent variable scores (performance). More precisely, the analysis of the importance of the performance in contrast to the total unstandardized effects (importance) in the structure and the average value of the scores of the underlying variable on a scale of 0 to 100 is in a graphical representation. As a result, the map identifies the importance of the performance of factors with relatively high importance and relatively low performance. These are high-priority major improvement areas, which in turn increase the efficiency of the selected target construct in the PLS path model.

Importance here means the total effect coefficient including the direct and indirect effects of one variable on another variable in the path model, which can be considered as the ability to explain or predict one variable for another variable. For example, if neuroticism has a high total effect coefficient in

predicting investment intention, for example 0.7, it means its importance in this analysis. But the meaning of the function of the current situation is the explanatory or predictor variable. For example, you may come to the conclusion that the neurosis of the employees is in a good state in the organization. In this case, the performance gets a high score. In the performance importance matrix analysis, the horizontal axis represents the importance and the vertical axis represents the performance. Based on those variables that have high importance and low performance, they provide the best conditions for intervention.

Functional significance analysis focuses on a key target construct of interest in the PLS path model. Therefore, the first step in creating a performance importance map is the need to select the target structure of interest, which in this research, the intention to invest in stocks was chosen as the target structure. Based on this and in the following, the measurement model with performance importance analysis (IPMA) is fitted and presented (Figure 2).

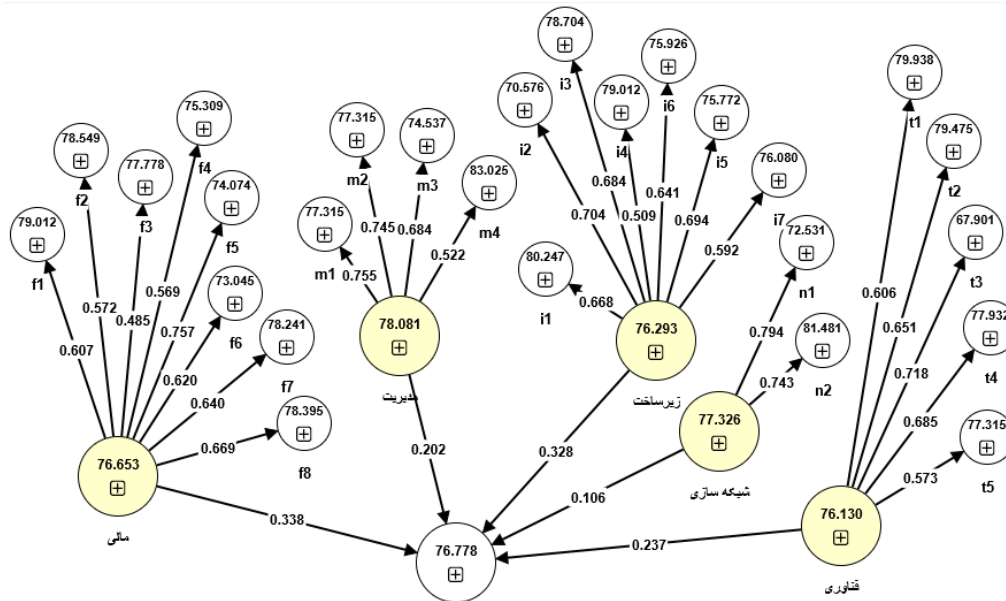


Figure 2. Measurement model with performance importance analysis (IPMA)

Therefore, the results of the importance-performance of predictive constructs of the intention to invest in stocks are presented in Table 3.

The scatterplot of the information map shown in Table 3 allows an importance-performance map to be drawn for the research model. The x-axis represents the importance of infrastructure, networking, technology, finance and management to explain the objective structure of green financing based on the role of Iran's banking industry for the transition to a circular economy, while the y-axis represents the performance of infrastructure, networking, technology, finance and management. It shows the management in terms of their own

rescaled variable scores. For better orientation, two additional lines are used in the importance-performance map: average importance (i.e. a vertical line) and average performance (i.e. a horizontal line) as shown in Figure 3. According to the results of infrastructure, networking, technology, finance and management, they have an average importance of 0.242 and an average performance of 76.897. These two additional lines divide the importance-performance map into four sections where the importance and performance values are roughly above average.

Table 3. The results of the importance-performance of predictor structures of the intention to invest in stocks

	importance	performance
Infrastructure	0/328	76/293
Networking	0/106	77/326
Technology	0/237	76/13
Financial	0/338	76/653
Management	0/202	78/081

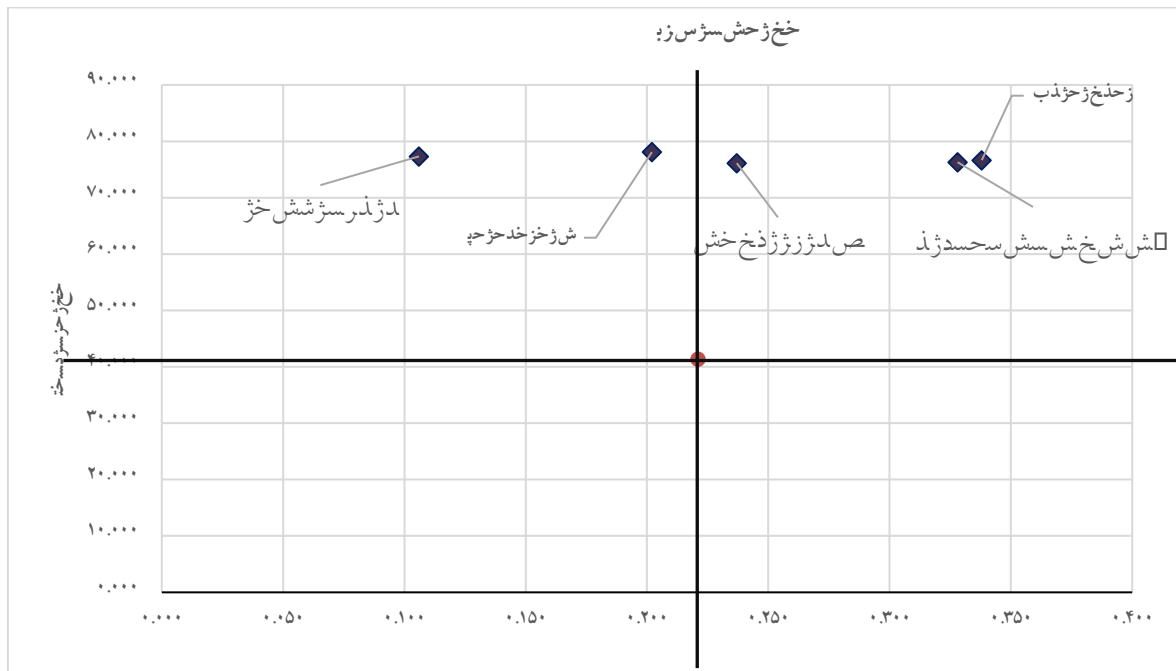


Figure 3. Importance-performance map

The way to analyze the importance-performance map for the variables is as follows:

- A) Priority is given to the variables that are located in the right and lower regions (variables were not placed in this section). In fact, the variables that are the most important, but because they have achieved below-average performance, should be given special attention.
- B) The next priority is with the variables that are in the right and upper region (financial, infrastructure and technology variables). These variables have above average importance and above average performance. In fact, financial, infrastructure and technology variables have a higher than average importance in providing green financing based on the role of Iran's banking industry for the transition to a circular economy, and their performance is also higher than average, and this means the special status of these variables. Because the processes of this sector are considered as a more competitive advantage.
- C) The third priority is with the variable of management and networking, which is located on the left and bottom side (that is, the importance is lower than the average level and

the performance is lower than the average level). In fact, it means that they are considered more than their importance. In fact, it means that they are given more attention than their importance and the processes of this department cause waste in the organization and they should be used more appropriately.

- D) And finally, the fourth priority is with the variables that are located in the left and lower region (no variable was placed in this section) that is, the importance is lower than the average and the performance is higher than the average).

In this way, the importance-performance map is a guide for prioritizing activities that are of high importance for aspects of the selected goal subset but also require performance improvement.

6- Discussion and conclusion

The current research considered the identification and analysis of the importance-performance of factors affecting the development of green financing based on the role of the Iranian banking industry for the transition to a circular economy. Based on this, in order to collect data and information, interviews were used and theme analysis method was used for analysis.

Therefore, with the aim of collecting qualitative data, after reviewing the literature related to the research topic, a framework was developed for asking questions of interviews with experts. Next, 14 managers and experts of the banking industry as well as university professors were selected through the purposeful (judgmental) sampling method. In the second phase, the conducted interviews were coded using Clark and Brown's six-step inductive theme analysis method. Based on this and during the data familiarization stage, 52 cases of speech evidence identified from the text of the interviews were labeled in the form of 26 primary codes. Next, the primary codes were categorized into five sub-themes and then a main theme.

In general, the results of this research help to expand the theoretical and empirical foundations of this field by examining the obstacles and solutions facing the development of green financing based on the role of Iran's banking industry for the transition to a circular economy. Through an in-depth qualitative investigation, the main obstacles and solutions were identified and then allocated in different stages of organizational change. Public policy makers, banks, financial institutions and activists in the field of financing and circular economy, as well as academics and all those interested in the field of research, are among the beneficiaries of this research. In addition, the current research showed that banks play an important role in stimulating the transition to a circular economy through green financing. In addition, the current research showed that banks play an important role in stimulating the transition to a circular economy through green financing. However, based on the previous literature, it can also be used in two main issues. First, economic policies can strengthen banks' financing lines for this transformation (Friant et al., 2021). These measures can overcome obstacles such as lack of trust in investment, lack of short-term financial planning, lack of monitoring and control systems, lack of acceptance market for circular economy projects, integration of financial technologies with circular economy, development of information technology infrastructure, increase of basic investment in fintech infrastructure. , making serious efforts to include digital technology in the management processes of green financing, creating decentralized hierarchical structures, removing the limitations of green financing, developing guidelines in circular finance, adapting existing financial models or new financial models for

the circular economy, providing credit lines to businesses and circular jobs, as well as help create a common understanding of the banks of the circular economy. Second, educational policies for human resource development can help to develop green financing based on the role of Iran's banking industry for the transition to a circular economy (Yaoteng and Xin, 2021; Qu et al., 2022). These measures can help to overcome obstacles such as lack of data analysis skills, training of skilled workforce, training of experienced bank managers willing to interact financially with circular economy, lack of financial management knowledge about circular economy, lack of infrastructure of green financing culture. . Finally, according to the findings of the research, banks are suggested to cooperate with other industrial partners to develop a common set of guidelines in circular finance. This ensures that banks and other financial institutions follow an integrated approach to circular economy financing. This will guide the allocation of capital to circular businesses by banks and other members of the financial community. Also, because aligning green financing with circular economy capabilities is an opportunity for innovation and value creation. Therefore, in order to achieve these benefits, bank managers are suggested to carry out a compatible implementation project considering the current and desired situation. The design process of the current research model can be useful for diagnosing the current situation and how to achieve the desired future situation.

Numerous research on GF has been done since the concept's inception. Some investigations addressed the effect of GF on economic outcomes, whereas others utilized replacement factors. According to one of the researchers, investors have become more environmentally concerned, and as a result, they will not invest in a company that does not respect pollution rules (Zhang et al., 2019). The GF is a strategic tactic to include the financial industry in the transition to resource-efficient and low-carboneconomies and climate change adaptation (Naqvi et al., 2021; Wang et al., 2019). It also contributes to the achievement of the green development strategy. The previous study has highlighted several benefits of GF, including the following: it encourages technological diffusion for eco-efficient infrastructure, aids in the creation of competitive advantage, provides corporate value, and improves economic prospects (Muganyi, et al., 2021;

Soundarrajan & Vivek,2016; Wang et al.,2019; Zhang et al.,2019).

According to previous research, the goal of GF is to enhance the organizational capability to create sustainable commodities (Tanveer et al.,2021) in a way that reduces environmental pollution, utilizes green technology and knowledge, and extends energy and resources (Khan et al.,2021; Lingyan et al.,2021; Mumtaz & Smith,2019; Saeed Meo & Karim,2021; Yarovaya et al.,2021). The extent of literature recognized the benefits of GF for gaining green and SP and consumption, there-fore improving CE (Tseng et al.,2020). GF policies and regulations are based on stringent environmental protection legislation, which frequently results in a win-win situation for both suppliers and manufacturers (Muganyi et al.,2021). (Jin & Han,2018) discovered that GF had a favorable influence on SP as GF facilitates a green economy.

To create a sustainable product, raw resources should be obtained in a green and sustainable manner; GF assists in acquiring green raw materials, which are critical in attaining green growth and CE objectives. For example, heavy vehicle sector remanufacturing is the chosen choice for SP to reap the benefits of CE (Bag et al.,2020; Ling et al.,2021). Developments in disassembly time and cost reductions during remanufacturing will alter the practicality of prolonging product life and improving CE and economic sustainability. Such assistance is frequently provided in government policies that promote CE projects (Yadav et al.,2020). Furthermore, the effectiveness of GF initiatives is dependent on the degree of economic development in the majority of rising economies, including China. GF activities have a more significant impact on developed regions (Cui et al.,2020). Within the CE, GF is critical for sustainable and clean manufacturing. Governments may accomplish their sustainable development goals by enhancing the integrity of GF systems (Jin & Han,2018; Naqvi et al.,2021).GF must coordinate among stakeholders to increase efficacy and ensure continuity, which is not always the case. According to the literature mentioned above, worldwide researchers focus on how GF might assist in achieving SP and CE (Jinru, et al. 2022).

Resources

- 1) Afridi, Fakhr E Alam; Jan, Shahid; Ayaz, Bushra; & Irfan, Muhammad. (2021). Green finance incentives: An empirical study of the Pakistan banking sector. *Amazonia Investiga*, 10(41), 169-176.
- 2) Bag, S., Wood, L. C., Mangla, S. K., & Luthra, S. (2020). Procurement 4.0 and its implications on business process performance in a circular economy. *Resources, Conservation & Recycling*, 152, 104502.
- 3) Bose, Sudipta; Khan, Habib Zaman; & Monem, Reza M. (2021). Does green banking performance pay off? Evidence from a unique regulatory setting in Bangladesh. *Corporate Governance: An International Review*, 29(2), 162-187.
- 4) Chua, Gabriel Yong Ping; Er, Hui Jun; Liaw, Shao Yi; & He, Tai-Sen. (2020). Pitch Right: The Effect of Vocal Pitch on Risk Aversion. *Economics Bulletin*, 40(4), 3131-3139.
- 5) Cui, H., Wang, R., & Wang, H. (2020). An evolutionary analysis of green finance sustainability based on multi-agent game. *Journal of Cleaner Production*, 269, 121799.
- 6) Cohen, Jacob. (1992). A power primer. *Psychological bulletin*, 112(1), 155.
- 7) Dafnos, Tia. (2020). Energy futures and present threats: critical infrastructure resilience, accumulation, and dispossession. *Studies in Political Economy*, 101(2), 114-134.
- 8) Dewick, Paul; Bengtsson, Magnus; Cohen, Maurie J; Sarkis, Joseph; & Schröder, Patrick. (2020). Circular economy finance: Clear winner or risky proposition? *Journal of Industrial Ecology*, 24(6), 1192-1200.
- 9) Friant, Martin Calisto; Vermeulen, Walter JV; & Salomone, Roberta. (2021). Analysing European Union circular economy policies: words versus actions. *Sustainable Production and Consumption*, 27, 337-353.
- 10) Gento, Angel M; Pimentel, Carina; & Pascual, Jose A. (2022). Teaching Circular Economy and Lean Management in a Learning Factory. In *Training Engineering Students for Modern Technological Advancement* (pp. 183-201). IGI Global.
- 11) Goyal, Sandeep; Esposito, Mark; & Kapoor, Amit. (2018). Circular economy business models in developing economies: lessons from India on

- reduce, recycle, and reuse paradigms. *Thunderbird International Business Review*, 60(5), 729-740.
- 12) Hafezi, Saeed; and Seyyedi, Mirhossein. (2018). Identifying and prioritizing factors affecting green banking performance using FAHP technique. Paper presented at the 4th National Humanities Conference.
 - 13) Hajjarian, Fatima; Divandari, Ali; Fadaei, Davood; & Radfar, Reza. (2021). Identifying the components of innovative green banking based on bioethics to gain a sustainable competitive advantage. *Ethics in Science and Technology*, 58(16), 36-42.
 - 14) Hartley, Kris; van Santen, Ralf; & Kirchherr, Julian. (2020). Policies for transitioning towards a circular economy: Expectations from the European Union (EU). *Resources, Conservation and Recycling*, 155, 104634.
 - 15) Ivashina, Victoria; & Scharfstein, David. (2010). Bank lending during the financial crisis of 2008. *Journal of Financial Economics*, 97(3), 319-338.
 - 16) Jin, J., & Han, L. (2018). Assessment of Chinese green funds: Performance and industry allocation. *Journal of Cleaner Production*, 171, 1084–1093.
 - 17) Jinru, L., Changbiao, Z., Ahmad, B., Irfan, M., & Nazir, R. (2022). How do green financing and green logistics affect the circular economy in the pandemic situation: key mediating role of sustainable production. *Economic Research-Ekonomska Istraživanja*, 35(1), 3836-3856.
 - 18) Khan, I., Hou, F., Irfan, M., Zakari, A., & Phong, H. (2021). Does energy trilemma a driver of economic growth? The roles of energy use, population growth, and financial development. *Renewable and Sustainable Energy Reviews*, 146, 111157.
 - 19) Kristensen, Heidi Simone; & Mosgaard, Mette Alberg. (2020). A review of micro level indicators for a circular economy—moving away from the three dimensions of sustainability? *Journal of Cleaner Production*, 243, 118531.
 - 20) Lag-Brotons, Alfonso J; Velenturf, Anne PM; Crane, Richard; Head, Ian M; Purnell, Phil; & Semple, Kirk T. (2020). Resource recovery from waste. *Frontiers in Environmental Science*, 8, 35.
 - 21) Ling, G., Razzaq, A., Guo, Y., Fatima, T., & Shahzad, F. (2021). Asymmetric and time-varying linkages between carbon emissions, globalization, natural resources and financial development in China. *Environment, Development and Sustainability*, 1–29.
 - 22) Lingyan, M., Zhao, Z., Malik, H. A., Razzaq, A., An, H., & Hassan, M. (2021). Asymmetric impact of fiscal decentralization and environmental innovation on carbon emissions: Evidence from highly decentralized countries. *Energy & Environment*, 0958305X2110184.
 - 23) Loehrer, Andrew P; & Tsai, Thomas C. (2020). Perpetuation of inequity: disproportionate penalties to minority-serving and safety-net hospitals under another Medicare value-based payment model. *Annals of surgery*, 271(6), 994-995.
 - 24) MacArthur, Ellen. (2013). towards the circular economy. *Journal of Industrial Ecology*, 2, 23-44.
 - 25) Morseletto, Piero. (2020). Targets for a circular economy. *Resources, Conservation and Recycling*, 153, 104553.
 - 26) Muganyi, T., Yan, L., & Sun, H. p. (2021). Green finance, fintech and environmental protection: Evidence from China. *Environmental Science and Ecotechnology*, 7, 100107.
 - 27) Mumtaz, M. Z., & Smith, Z. A. (2019). Green finance for sustainable development in Pakistan. *IPRI Journal*, 19(2), 1–34.
 - 28) Naqvi, B., Mirza, N., Rizvi, S. K. A., Porada-Rochon, M., & Itani, R. (2021). Is there a greenfund premium? Evidence from twenty seven emerging markets. *Global Finance Journal*, 50, 100656.
 - 29) Qu, D; Shevchenko, T; Xia, Y; & Yan, X. (2022). Education and instruction for circular economy: A review on drivers and barriers in circular economy implementation in China. *International Journal of Instruction*, 15(3), 1-22.
 - 30) Ozili, Peterson K; & Opene, Francis. (2021). the role of banks in the circular economy. *Available at SSRN*.
 - 31) Pires, Ana; & Martinho, Graça. (2019). Waste hierarchy index for circular economy in waste management. *Waste Management*, 95, 298-305.
 - 32) Purchase, Callun Keith; Al Zulaq, Dhafer Manna; O'Brien, Bio Talakatoa; Kowalewski, Matthew Joseph; Berenjjan, Aydin; Tarighaleslami, Amir Hossein; & Seifan, Mostafa. (2022). Circular Economy of Construction and Demolition Waste:

- A Literature Review on Lessons, Challenges, and Benefits. *Materials*, 15(1), 76.
- 33) Saeed Meo, M., & Karim, M. Z. A. (2021). The role of green finance in reducing CO2 emissions: An empirical analysis. *Borsa Istanbul Review*.
- 34) Schroeder, Patrick; Anggraeni, Kartika; & Weber, Uwe. (2019). The relevance of circular economy practices to the sustainable development goals. *Journal of Industrial Ecology*, 23(1), 77-95.
- 35) Sheikh, Abbas Ali; and Saidi, Parviz. (2020). Identifying and leveling the factors affecting the green financing of companies through Iran's banking industry (using foundational data theory and interpretive structural modeling). Paper presented at the 5th National Conference on Economics, Management and Accounting.
- 36) Soundarrajan, P., & Vivek, N. (2016). Green finance for sustainable green economic growth in India. *Agricultural Economics (Zemедельска Економика)*, 62(1), 35-44.
- 37) Singh, Jagdeep; & Ordonez, Isabel. (2016). Resource recovery from post-consumer waste: important lessons for the upcoming circular economy. *Journal of Cleaner Production*, 134, 342-353.
- 38) Tanveer, A., Zeng, S., & Irfan, M. (2021). Do perceived risk, perception of self-efficacy, and openness to technology matter for solar PV adoption? An application of the extended theory of planned behavior. *Energies*, 14(16), 5008.
- 39) Thiemann, Matthias; Melches, Carolina Raquel; & Ibrocevic, Edin. (2021). Measuring and mitigating systemic risks: how the forging of new alliances between central bank and academic economists legitimize the transnational macroprudential agenda. *Review of international political economy*, 28(6), 1433-1458.
- 40) Tseng, M., Chiu, A. S. F., Liu, G., & Jantaralolica, T. (2020). Circular economy enables sustainable consumption and production in multi-level supply chain system. *Resources, Conservation & Recycling*, 154, 104601.
- Wang, K., Tsai, S., Du, X., & Bi, D. (2019). Internet finance, green finance, and sustainability. *Sustainability (Switzerland)*, 11(3856), 1-6.
- 41) Westland, J Christopher. (2010). Lower bounds on sample size in structural equation modeling. *Electronic commerce research and applications*, 9(6), 476-487.
- 42) Yadav, G., Luthra, S., Kumar, S., Kumar, S., & Rai, D. P. (2020). A framework to overcome sustainable supply chain challenges through solution measures of industry 4.0 and circular economy: An automotive case. *Journal of Cleaner Production*, 254, 120112.
- 43) Yaoteng, Zhao; & Xin, Li. (2021). Research on green innovation countermeasures of supporting the circular economy to green finance under big data. *Journal of Enterprise Information Management, ahead-of-print*. <https://doi.org/10.1108/JEIM-01-2021-0039>.
- 44) Yarovaya, L., Mirza, N., Abaidi, J., & Hasnaoui, A. (2021). Human capital efficiency and equity funds' performance during the COVID-19 pandemic. *International Review of Economics & Finance*, 71(June 2020), 584-591
- 45) Yuan, Sha; Zhang, Yu; Tang, Jie; Hall, Wendy; & Cabotà, Juan Bautista. (2020). Expert finding in community question answering: a review. *Artificial Intelligence Review*, 53(2), 843-874.
- 46) Zhang, Xin; Wang, Zhihui; Zhong, Xiaobing; Yang, Shouzhi; & Siddik, Abu Bakkar. (2022). Do Green Banking Activities Improve the Banks' Environmental Performance? The Mediating Effect of Green Financing. *Sustainability*, 14(2), 989.
- 47) Zhang, D., Zhang, Z., & Managi, S. (2019). A bibliometric analysis on green finance: Current status, development, and future directions. *Finance Research Letters*, 29, 425-430.
- 48) Zhang, W., Zhang, M., Zhang, W., Zhou, Q., & Zhang, X. (2020). What influences the effectiveness of green logistics policies? A grounded theory analysis. *Science of the Total Environment*, 714, 136731.