

# Studying the mediating role of new financial technologies and business intelligence in the relationship between knowledge management and sustainable performance

Mahsa VAFAEINEJAD

Department of Accounting, Karaj Branch, Islamic Azad University, Karaj, Iran  
vafaeinejadmahsa73@gmail.com

**Abstract:** The purpose of the present study was to investigate the relationship between the use of knowledge management and the sustainable performance of companies listed on the Tehran Stock Exchange, considering the mediating role of modern financial technologies and business intelligence. The statistical sample of the present study was made up of 441 senior managers of the studied companies with at least 5 years of work experience. A questionnaire was used to collect data, and its validity and reliability were confirmed. After collecting the data, the structural equation modelling method was used in SmartPLS software. The results of the research hypotheses test showed that knowledge management has a positive effect on sustainable performance and directly predicts 0.748 of the changes related to sustainable performance. Also, the analysis of the results showed that knowledge management through modern financial technologies and business intelligence has a positive effect on the sustainable performance of companies admitted to the stock exchange. Based on this, it can be said that the implementation of knowledge management dimensions along with the use of modern financial technologies and business intelligence such as blockchain technology can help the studied companies in achieving sustainable performance.

**Keywords:** Knowledge Management, New Financial Technologies, Business Intelligence, Sustainable Performance, Tehran Stock Exchange.

## 1. Introduction

The success of an organization is the degree of achievement of pre-planned goals and the stability of the organization, the ability to maintain or develop performance in the long term, and the result of continued satisfaction of the organization's stakeholders over time. The scope of the discussion of sustainability is broad at different levels, including macroeconomics, industry and organization (Nemati & Khodabakhshi, 2023). Nowadays, the sustainability paradigm has replaced success in the management literature of organizations to a great extent, and almost most organizations define sustainable success in one way or another in their value system (Marcelino-Sádaba et al., 2015). On the other hand, today knowledge is considered as the only reliable source of sustainable competitive advantage for organizations. Organizations have realized that their knowledge about how to do things and provide services is considered an important asset that should be managed like any other valuable asset of the organization. In other words, organizational knowledge is a valuable resource and a tool for producing products and providing innovative services to gain and maintain a sustainable competitive advantage (Alfawaire & Atan, 2021). Rapid changes in today's world have made organizations face various challenges, but in this way, the organizations that are successful are those that use the created opportunities to their advantage with the help of management tools and new technologies. Knowledge management is one of these tools, so in this regard, knowledge is considered the most important source for making managerial decisions and achieving a competitive advantage for organizations that implement multiple projects (Hongal & Kinange, 2020). Knowledge management helps the organization find, select, organize and disseminate important and useful information (Shujahat et al., 2018). Knowledge management is necessary to perform activities such as problem-solving, dynamic learning and decision-making and can improve performance. It improves the organizational and especially the financial performance of the organization by enabling the organization to perform smarter and provides the foundations for the organization to achieve sustainable performance (Yolles, 2009). New technologies are tools and solutions that organizations use to deal with these pressures and threats. This means that new technologies can only carry out business operations, tasks of work groups cooperation and effective business decisions. It does not give away, it actually changes the way business competes (Rusly et al., 2014). It is believed that high

productivity and efficiency in organizations require investment in IT components such as the Internet, administrative automation and new technologies (Coltman et al., 2015). Many companies have started using knowledge management to survive and operate in this field. In very simple terms, knowledge management is the management of the knowledge available to the employees and stakeholders of the company, many companies being able to use knowledge management and along with modern financial and non-financial technologies, in addition to surviving in today's economic environment, they have also gained sustainable competitive advantages. To earn (Sultan, 2013). Today, as a result of the application of advanced technology in all fields, including financial and information systems, the need to have appropriate and timely information to plan and make short-term and long-term decisions has become particularly important. Therefore, the use of the financial management system in companies in a way that can meet the management needs along with the new transformations in the field of short-term and long-term planning, has become a necessity and is possible with new technologies (Zhao, Tsai & Wang, 2019). In the last two decades, due to the increasing importance and widespread use of modern technology, the business of capital market companies' market has taken a new shape and become an integral part of capital market companies, and these companies, in order to in order to innovate and revise their business model, are increasing cooperation and interaction with innovative businesses and knowledge-based companies (Romănova & Kudinska, 2017). Companies active in the capital markets are among the organizations that, by using knowledge management and modern financial technologies, can make the decision-making process easy for managers by collecting and refining data from daily financial transactions and analyzing and retrieving information. And make them efficient, so that even by using these components, they can draw the future perspective by creating a correct understanding of the company's situation and help managers in providing a long-term and strategic perspective (Zhao et al., 2019). Business intelligence refers to a type of business management that is used to describe applications and technology in the field of collecting, presenting, accessing, and analyzing data and information to help financial and non-financial institutions make optimal business decisions. It works. The purpose of business intelligence is to facilitate decision-making and decision-making based on organizational facts (Venkateswara Rao et al., 2023). The current situation of the companies admitted to the stock exchange shows that due to the large volume of data resulting from the daily operation of operational systems, the experts of these financial institutions are faced with problems such as how to collect, maintain, analyze and use it effectively. It was found that to solve this problem, it seems necessary to use business intelligence in the context of knowledge management. Studies show that operationalizing new technologies, business intelligence and benefiting from knowledge management creates many benefits, including improving financial performance and achieving sustainable organizational performance for companies admitted to the stock exchange. Therefore, considering the importance of using knowledge management, modern financial technologies and business intelligence in companies active in the capital market of Iran, more specifically, companies listed on the Tehran Stock Exchange, this study seeks to answer this question. Does the current nation of knowledge management, along with operationalizing and using the applications of modern financial technologies and business intelligence, have an effect on the sustainable performance of companies admitted to the Tehran Stock Exchange? In other words, the operationalization of new financial and business information technologies and the extent to which knowledge management applications are used can provide the conditions for sustainable organizational performance.

## **2. Theoretical foundations of research**

### **2.1. Knowledge management and sustainable performance**

Knowledge management is the process of discovering, acquiring, developing and creating, sharing, maintaining, evaluating and using the right knowledge at the right time by the right person in the organization by creating a link between human resources, information and communication technology and creating a suitable structure for Organizational goals are achieved (Abbas et al., 2020). Research conducted in successful organizations has shown that productivity, profitability, cost reduction and, finally, quality are not desirable for those companies that have more capital, machinery and manpower. But successful organizations are the ones that have more knowledgeable human resources and use them to overcome the competitive and changing environment (Abbas & Kumari,

2021). Therefore, the management of organizations should find the possibility of making more rational decisions on important issues and improving knowledge-based functions by relying on knowledge management (Martins et al., 2019). Knowledge management is considered a more important category than knowledge itself, and creating an environment for sharing, transferring and comparing knowledge among the organization's members is one of the primary goals that seem necessary because knowledge management can widen the performance characteristics (Bazrkar & Hajimohammadi, 2021). Improving the organization is obtained by enabling companies to perform more intelligently and empowering the organization in the path of achieving sustainable performance. Accordingly, the first research hypothesis is proposed as follows:

**H1:** knowledge management has a positive and significant effect on the sustainable performance of companies admitted to the Tehran Stock Exchange.

## 2.2. Knowledge management and new financial technologies

Studies show that new technologies, including information and communication technologies, play an important role in the flow of knowledge (acquiring and storing/organizing, sharing, applying and creating knowledge), hence benefiting from new technologies in Organizations can lead to the successful implementation of knowledge management (Chang et al., 2020). The interaction between the organization's technologies, techniques and people can have a direct effect on the distribution of knowledge. Managers of knowledge-based organizations use information technology as a driving force and effective factor in the progress and success of knowledge management and overcoming challenges (Haddadi Harandi et al., 2019). Knowledge management, which is the process of generating wealth and value using intellectual and knowledge-based assets, requires a system that can support this process (Castaneda et al., 2018). Since knowledge management processes have a holistic view, some activities which can be seen in the process of knowledge management, do not exist in the process of information management. Based on this, it can be said that knowledge management deals with communicating, gaining experience from the surrounding world, and gathering knowledge, and it can affect the success of new technologies in various fields. Among the new financial technologies to be effective (Oliva & Kotab, 2019). Accordingly, the second research hypothesis is proposed as follows:

**H2:** knowledge management has a positive and significant effect on the modern financial technologies of companies accepted in the Tehran Stock Exchange.

## 2.3. Knowledge management and business intelligence

In recent years, business intelligence has been the largest area of information technology investment in organizations, and is known as the highest technology priority (Song et al., 2022). Business intelligence is an artificial intelligence system, and as a knowledge management tool, creates and uses what is very vital for today's organizations (Nazari et al., 2022). Today, many efforts are made regarding the implementation of business intelligence in various companies, including companies active in the capital market (Ekionea et al., 2021). Knowledge management capabilities are divided into process capabilities and infrastructure capabilities. Studies show that strengthening these capabilities has positive effects on the effectiveness of business intelligence, and this confirms the impact of knowledge management on the use of business intelligence. Accordingly, the third hypothesis of the research is proposed as follows:

**H3:** knowledge management has a positive and significant effect on the business intelligence of companies admitted to the Tehran Stock Exchange.

## 2.4. New financial technologies and sustainable performance

In recent years, due to the rapid growth of new technologies in various organizations and the impact of using these technologies on individual and organizational productivity, the use of new financial technology such as blockchain, has increased greatly (Di Vaio & Varriale, 2020). The application of new financial technologies in various companies active in the capital market has had significant effects on the performance of these companies (Moro-Visconti et al., 2020). Many pieces of evidence show that the use of new financial technologies such as blockchain and cloud computing has positive effects on reducing the financial risks of these companies, and from this, it can be concluded that the

use of new technologies can improve performance as well as performance. To be stable and efficient. Accordingly, the fourth hypothesis of the research is proposed as follows:

**H4:** New financial technologies have a positive and significant effect on the sustainable performance of companies listed on the Tehran Stock Exchange.

## 2.5. Business intelligence and sustainable performance

Several definitions of business intelligence were presented in the years 2000 to 2001, all of which emphasized that business intelligence is a set of abilities, technologies, tools and solutions that allow managers to examine past, present and future conditions. Brings and helps to better understand the business environment. This technology uses large amounts of information to identify and develop new opportunities. Today, company's active in the capital market can take steps towards profitability and sustainable development by using business intelligence technology to evaluate risk management, and check customer credit status and customer profitability (Ahmad, 2015). Business intelligence is implemented based on a simple goal, which is improving efficiency by creating a suitable platform for decision-making in the organization. (Tavera Romero et al., 2021). The review of many studies shows that business intelligence systems improve the performance of organizations through the correct and advanced use of information related to competitors, customers, suppliers and business operations within organizations (Ping et al., 2018). Accordingly, the fifth hypothesis of the research is proposed as follows:

**H5:** Business intelligence has a positive and significant effect on the sustainable performance of companies admitted to the Tehran Stock Exchange.

## 2.6. Mediating role of new financial technologies

Knowledge management ensures long-term advantages for organizations and societies and their utilization of human, intellectual and information capital (Di Vaio & Varriale, 2020). The main issue that financial institutions and companies active in the capital market are facing is encouraging and increasing clients' willingness to use financial technologies to facilitate and accelerate investment-related activities and to increase efficiency by increasing transparency and reducing perceived client risk. (Suryono et al., 2020). In today's organizations, to be able to manage knowledge in their organization and improve their performance through knowledge management, it is necessary to create networks to transfer and distribute knowledge in the organization, the results of the survey showing that modern financial technologies can be a suitable platform for knowledge transfer (Don-Serge, 2019). Effective knowledge transfer leads to the improvement of capabilities, acceleration of the localization of management and survival in tough competition to achieve a high level of economic efficiency (Wang et al., 2021). Organizations produce valuable capital as knowledge through the use of new technologies, and this valuable capital enables the long-term competitiveness and superiority of the organization (Laily & Ernawati, 2020). Accordingly, the sixth research hypothesis is proposed as follows:

**H6:** Knowledge management through modern financial technologies has a positive and significant effect on the sustainable performance of companies admitted to the Tehran Stock Exchange.

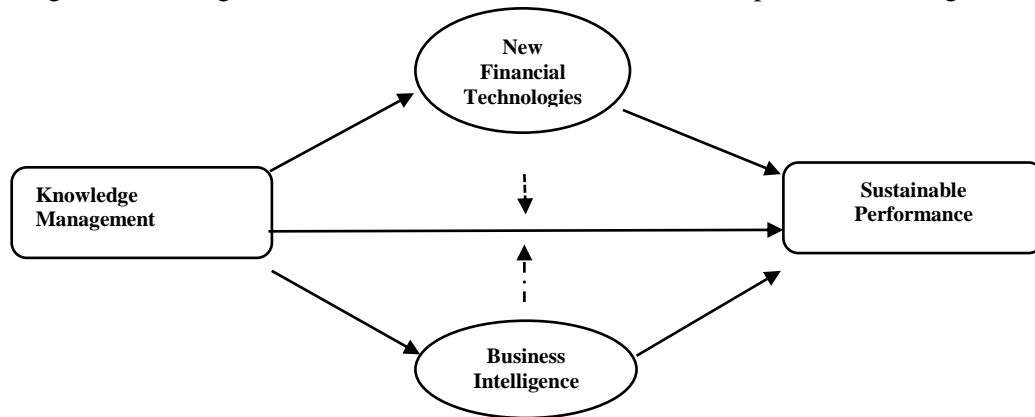
## 2.7. Mediating role of business intelligence

Business intelligence is one of the undeniable requirements for most organizations so that they can increase their capabilities by acquiring and analyzing information, as well as increasing knowledge and creating awareness (Ain et al., 2019). The use of business intelligence tools makes organizations analyze information about their surroundings faster and more accurately and store the results in a useful way, and make them available to decision-makers at appropriate times (Conboy et al., 2020). Today, with the growth of new technologies and the attention of organizations to the category of knowledge management, attention to business intelligence has gained more momentum (Ranjan & Foropon, 2021). The results of many researches show that the use of business intelligence along with strategic management can lead to the improvement of the operations of companies and organizations in various fields (Božič & Dimovski, 2019). Accordingly, the seventh hypothesis of the research is proposed as follows:

**H7:** Knowledge management through business intelligence has a positive and significant effect on the sustainable performance of companies listed on the Tehran Stock Exchange.

### 2.8. Conceptual model

According to the investigated variables in the current research, a concept is shown in Figure 1.



**Figure 1.** Conceptual Model

### 3. Methodology

Considering that the present study examines the relationship between knowledge management and sustainable performance of companies listed on the Tehran Stock Exchange regarding the mediating role of modern financial technologies and business intelligence, in terms of the purpose of an applied research and in terms of the method it is a descriptive-survey study. The statistical population of this research was made up of the senior managers of the companies admitted to the Tehran Stock Exchange. The preliminary estimate showed that the total number of members of the statistical population is equal to 441 people. After identifying these people, the questionnaire was distributed among them electronically, and after six weeks of the development of the questionnaire, 406 completed questionnaires were collected. In the research questionnaire, in addition to the items related to the investigated variables, demographic questions related to the three characteristics of gender, education level and the amount of related work experience were also raised. The results of the analysis of the collected data in relation to the demographic characteristics are presented in Table 1.

**Table1.** Sample characteristics

Classification		Frequency (people)	Composition ratio (%)
Gender	Male	358	88%
	Female	48	12%
Level of Education	Bachelor	120	29%
	Masters	215	53%
	Ph.D.	71	18%
Work experience	5 to 10 years	86	21%
	10 to 15 years	145	36%
	15 to 20 years	120	29%
	Over 20 years	55	14%
Total number of respondents		406	100%

In this study, a questionnaire was used to collect research data. All questions in the questionnaire were evaluated based on the five-point Likert scale, with the values of this scale ranging from 1 (very weak) to 5 (very strong). Based on the conceptual model of the research which shows that the model has an independent variable i.e. knowledge management, to measure this variable from 11 items taken from the questionnaire used in the research of Masa'deh et al., (2019) was adopted. To collect

data in relation to the mediating variables of the research, which are the two variables of modern financial technologies and business intelligence. 6 items used in the research of Elmorshidy (2018) were used for the variable of modern financial technologies and 7 items used in the research of Ahmadi et al., (2021) were used for the variable of business intelligence. 6 items used in the research of Alraja et al., (2022) were adopted. In this research, to check the validity of the questionnaire more precisely, the content validity ratio was used. Considering that the opinions of 30 experts were used to check this ratio, the acceptable value of this ratio was determined to be 0.33, based on the minimum value of the CVR index. The results of the investigation of this ratio in relation to 30 items of the research questionnaire showed that the obtained values are all higher than the standard value of 0.33. As a result, it can be said that the content validity of the questionnaire items is confirmed. In this study, Cronbach's alpha test was used to measure the reliability of the variables. The results of this test showed that the values obtained for the variables of knowledge management, sustainable performance, modern financial technologies and business intelligence were 0.89, 0.83, 0.90 and 0.81, and according to the criterion value of 0.7, it can be said that the reliability of the research variables is confirmed. In this study, two approaches (descriptive statistics and inferential statistics) were used to analyze and review the collected data. The main method for conducting the research was the structural equation modelling method, and each one of the research hypotheses was tested through path analysis. The software used in this research was SPSS 22 and Smart PLS 3. In situations where the purpose of the study is the analysis of cause-disability relationships and prediction, the PLS path modelling method is preferred to variance-based techniques such as Lisrel (Hair et al., 2014). PLS modelling is widely used in various fields including management sciences. Lisrel's approach focuses on covariance profiling and PLS modeling focuses on variance maximization. PLS is a variance-based approach that requires fewer conditions compared to similar techniques of structural equations such as Lisrel and AMOS (Liljander et al., 2009).

## 4. Findings

### 4.1. Descriptive statistics results

#### 4.1.1. Descriptive statistics of research variables

In the descriptive statistics section, the components of each of the research structures were analyzed by mean, standard deviation, skewness and kurtosis indicators, the results of this study are shown in Table 2.

**Table 2.** Statistical description of research variables

Component	Average	Standard deviation	Skewness	Kurtosis
Knowledge management	4.245	0.432	-1.365	.0315
Sustainable performance	4.160	0.447	-1.287	0.397
New financial technologies	3.987	0.511	-1.116	.0388
Business Intelligence	4.896	0.555	-1.678	0.442

According to the results obtained from the values of skewness and kurtosis, considering that these values are in the range of -2 to +2, it can be concluded that the collected data related to the studied components follow a normal distribution.

### 4.2. Inferential statistics results

#### 4.2.1. KMO test

In this research, before using the structural equation modelling method in SmartPLS software, KMO and Bartlett tests were used to ensure the adequacy of the sample size. In order to conduct a factor analysis, first of all, it should be ensured that the available data can be used for analysis or not. This test is used for this purpose. If the value obtained for the KMO index is higher than 0.7 and close to 1, the desired data (sample size) is suitable for factor analysis, otherwise (less than 0.7), the results of factor analysis for the data in question in addition, if the significance level of Bartlett's test is less than

5%, it indicates that factor analysis is suitable for identifying the factor model. The results of this test are presented in Table 3, which shows that the sample size and the relationship between the variables are in good relationship.

**Table 3.** Results of KMO and Bartlett's test

KMO	0.978
Bartlett's test	8841/2354
df	400
Significance level	0.000

#### 4.2.2. Structural equation modelling

##### A. Measurement model fit

According to the PLS-SEM algorithm, the measurement models were evaluated in the first step. The evaluation results of the reliability criteria (Cronbach's alpha and composite reliability), convergent validity and the results of measuring the factor loadings of the research variables are in Table 4. It shows that the obtained values for factor loadings are higher than 0.5, Cronbach's alpha is higher than 0.7, and the combined reliability is higher than the set criterion of 0.7. Also, the result obtained from the convergent validity criterion shows that the convergent validity values of all research constructs are higher than the criterion value of 0.5. The heterotrait-monotrait Ratio index or HTMT was used to measure the validity of research constructs. The HTMT index has replaced the old Fornell-Larker method. According to Henseler et al. (2015), the permissible limit of this criterion is 0.9. If the value of this criterion is less than 0.9, the divergent validity is acceptable. The test results of the proposed indicators are presented in Tables 4 and 5.

**Table 4.** Measurement model fitting results

Component	Items	Factor loading	Alpha > 0.7	CR > 0.7	AVE > 0.5
Knowledge management	The Company I work for has clear rules for formatting And categorizing its knowledge.	0.644	0.887	0.906	0.569
	The Company I work for uses technology that allows us To collaborate with others inside the department.	0.589			
	The Company I work for uses technology that allows us in multiple locations to learn as a group from a single source or at a single point in time.	0.712			
	The Company I work for uses technology that allows it to retrieve and use knowledge about its services and processes.	0.644			
	The structure of the Company I work for facilitates the transfer of new knowledge across structural boundaries.	0.724			
	The structure of the Company I work for encourages us to go where we need knowledge for errors/mistakes.	0.736			
	The structure of the Company I work	0.693			

	for facilitates the Transfer of new knowledge across structural boundaries.				
	My colleagues at the Company I work for are readily accessible.	0.722			
	My colleagues at the Company I work for understand the importance of knowledge to corporate success	0.717			
	My colleagues at the Company I work for are encouraged to explore and experiment.	0.653			
	My colleagues at the Company I work for are encouraged to ask others for assistance when needed.	0.683			
Sustainable performance	In our company, reducing energy consumption costs is very important.	0.765	0.844	0.885	0.563
	In our company, reducing waste disposal fees is very important.	0.793			
	In our company, anIncrement in the firm's profit rate is very important	0.706			
	In our company, Improvement in the firm's reputation is very important.	0.680			
	In our company, the Usage of environmentally responsive material is very important.	0.810			
	In our company, Improving the firm's market situation is very important.	0.739			
New financial technologies	Senior managers of our company support the implementation of new technologies.	0.646	0.846	0.888	0.570
	The Company I work for regularly monitors the implementation of new financial technologies.	0.749			
	The Company I work for uses new financial technologies to increase profitability.	0.742			
	The Company I work for uses new financial technologies to increase customer satisfaction.	0.793			
	The Company I work for has invested in the implementation of new financial technologies.	0.763			
	The Company I work for is trying to combine old and new financial technologies.	0.802			
	The management dashboards at the company I work for include metrics, key performance indicators (KPIs) and alerts.	0.653			



Business Intelligence	The company I work for is concerned with the impact of enterprise information in response to business events and dynamic business planning.	0.775	0.840	0.880	0.512
	The company I work for is very important in incorporating information into every decision-making process in the form of corporate policy.	0.796			
	The company I work for is very important in the participation of information provided by the organization in decision-making, regardless of the type of decision.	0.739			
	My company is very important for complete data integrity, real reporting and analysis.	0.685			
	The alignment of information with the goals of the organization is very important and vital for our corporate managers.	0.660			
	The value of organizational information for identifying ongoing improvement processes is very important and vital for our corporate managers.	0.687			

**Table 5.** Discriminant validity test (HTMT results)

Component	Knowledge management	Sustainable performance	New financial technologies	Business Intelligence
Knowledge management				
Sustainable performance	0.779			
New financial technologies	0.620	0.669		
Business Intelligence	0.803	0.783	0.688	

After obtaining the results of the factor loadings, Cronbach's alpha, composite reliability and convergent validity and analyzing the software outputs, and since the values of each of the mentioned criteria for each of the current variables have been defined as more than the quorum and threshold, then the reliability and convergent validity of the research model were confirmed.

#### *B. Structural model evaluation*

The structural model evaluation consisted of the following steps: assessment of the structural relationship in the model for multicollinearity assessment, hypotheses testing, regression,  $f^2$  effect size and  $Q^2$  predictive relevance (Hair et al., 2019). The measure for multicollinearity assessment was the variance inflation factor (VIF) for which the threshold value is less than 3. Table 6 indicates that all exogenous constructs have VIF values less than 3, thus indicating no multicollinearity issue in the structural model. In this study, in addition to  $f^2$  and  $Q^2$  criteria, t-values and  $R^2$  criteria were also used. The results of calculating these criteria are shown in Table 6 and Figures 2 and 3. Smart PLS software calculates the coefficients of t-values using the bootstrapping command to determine the t value of each path, the paths that have t values greater than 1.96 have a significant relationship at the 95%

level.  $R^2$  coefficients are related to the dependent variables of the model, which shows the effect of an independent variable on a dependent variable. According to the study of Hair (2014), this index is compared with three values of 0.19 weak, 0.33 medium and 0.67 strong.

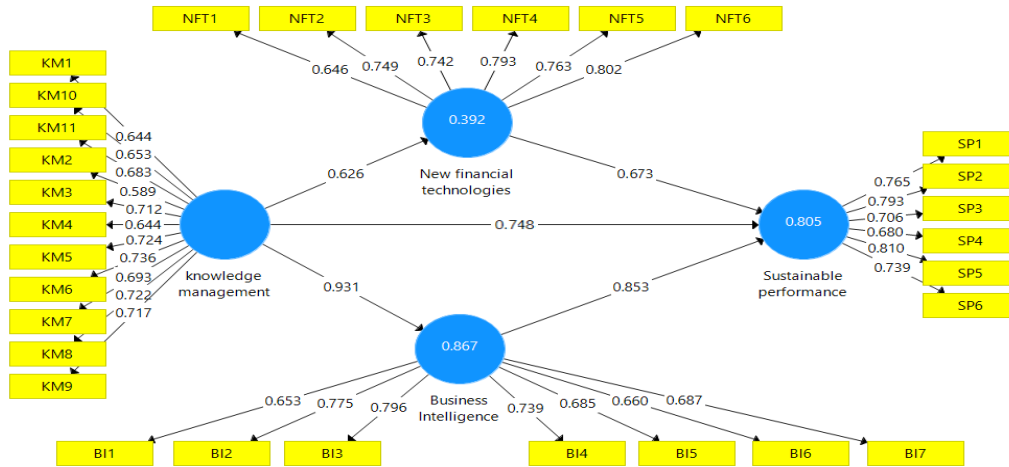


Figure 2.  $R^2$

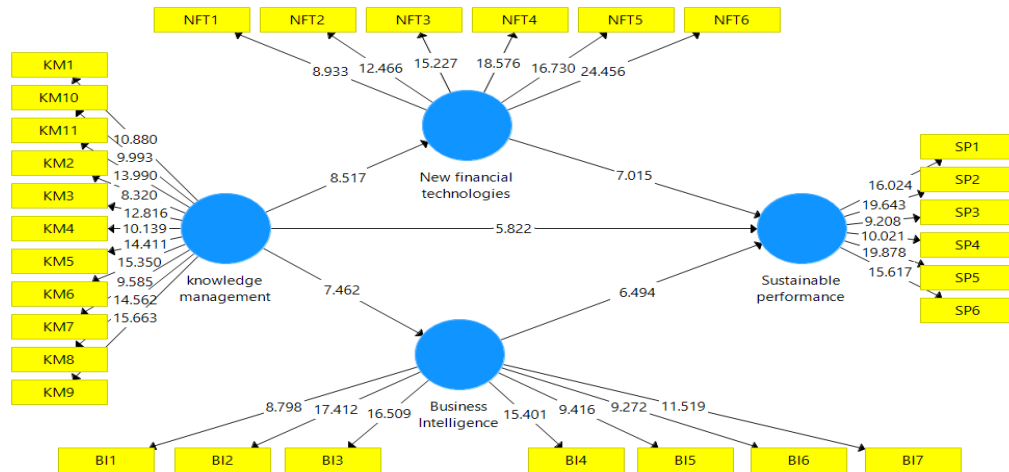


Figure 3. T-values

Table 6. Structural model evaluation results

Relationship	$R^2$	t-values	p-values	VIF	$F^2$	$Q^2$
KM → SP	0.805	5.822	0.000	1.227	0.420	0.428
KM → NFT	0.392	8.517	0.000	1.000	0.644	0.431
KM → BI	0.867	7.462	0.000	1.111	0.983	0.315
NFT → SP	0.805	7.015	0.000	1.657	0.430	0.199

The results of Table 6 show that the model has an acceptable fit. According to the results obtained from the evaluation of measurement and structural models, the results of the research hypothesis test will be examined.

Table 7. Hypothesis test results

Hypothesis	Relationship	Path	t-statistics	p-values	Result
H1	KM → SP	0.748	5.822	0.000	support
H2	KM → NFT	0.626	8.517	0.000	support
H3	KM → BI	0.931	7.462	0.000	support

H4	NFT → SP	0.673	7.015	0.000	support
H5	BI → SP	0.853	5.822	0.000	support
H6	KM → NFT → SP	0.422	6.063	0.000	support
H7	KM → BI → SP	0.794	6.371	0.000	support

The results of Table 7 show that all t-statistics values are greater than 1.96 and all p-values are less than 0.05, so it can be concluded that all the tested hypotheses are confirmed.

## 5. Conclusion

Today, companies cannot win in the field of competition and bring customers with them only through operational or financial superiority. In today's world, something more is needed to make companies perform sustainably. For an organization to be sustainable, it must meet the needs of the present without compromising the ability of future generations to meet their needs. The studies of the last few decades have shown that the ways of doing business are changing rapidly. And these changes are due to the progress in the field of information technology. Knowing and using modern financial technologies along with other components, such as business intelligence in the context of knowledge management, can help today's companies and organizations achieve sustainability in three economic, social and environmental dimensions. Knowledge management is a structured approach that establishes methods for identifying, evaluating and organizing, storing and applying knowledge to meet the needs and goals of the organization (Mahdi & Nassar, 2021). Therefore, it can be said that dynamic and active knowledge implementation and management are effective for increasing organizational performance and finally achieving sustainable performance (Lam et al., 2021). In addition to knowledge management, the use of new financial technologies can help various companies, especially companies that operate in financial and investment markets, in the direction of improving performance and sustainable development. The review of previous studies and research shows that, in addition to benefiting from knowledge management, companies in the process of developing and increasing their capabilities have important and influential factors such as transparency, ease of use, perceived profitability, and low perceived risk due to Mandy obtains money from new financial technologies, they have an essential need (Ghasemaghahi, 2019). With the expansion of the use of capital market services on the Internet, customers will be forced to receive a lot of information related to their financial interactions through databases such as websites. Therefore, the use of new financial technology tools along with business intelligence can help companies active in the capital markets to improve financial performance and increase profitability (Wu et al., 2023). The current research aims to investigate the role of knowledge management and the use of modern financial technologies, along with the use of business intelligence tools, on the sustainable performance of companies listed on the Tehran Stock Exchange. Based on this, to fulfil the purpose of the research and answer the main question of this study, seven hypotheses were defined and tested. In the following, the results of these hypotheses will be examined.

### 5.1. Analysis of research hypothesis test results

In the first hypothesis of this study, the relationship between knowledge management and the sustainable performance of companies admitted to the Tehran Stock Exchange was investigated. The results of this test showed that knowledge management directly predicts 0.748 of changes related to sustainable performance. This result shows that knowledge management is recognized as an important tool for maintaining competitive advantage, improving performance and achieving sustainable performance, and it can be expected that the proper implementation of knowledge management can have a positive effect on sustainable performance. Based on this, it can be concluded that the components of knowledge use, knowledge acquisition and knowledge integration have a positive effect on the financial performance of companies, which means that the better the status of knowledge management in the organization, the studied organization in terms of performance in the field Various financial and non-financial things will have a better situation. The results of the investigations show that the results obtained from the hypothesis test of the first hypothesis of the research were consistent with the results obtained in the research Martins et al., (2019)

and Abbas & Kumari, (2021). In the second hypothesis of this study, the relationship between knowledge management and modern financial technologies of companies admitted to the Tehran Stock Exchange was investigated. The results of this test showed that knowledge management directly predicts 0.626 of changes related to new financial technologies. Based on this, it can be concluded that the components of knowledge use, knowledge acquisition and knowledge integration have a positive effect on the effectiveness and efficiency of these technologies in the studied companies. The results of the investigations show that the results obtained from the second hypothesis test of the research are consistent with the results obtained from the studies of Chang et al., (2020) and Al-Dmour et al., (2021). In the third hypothesis of this study, the relationship between knowledge management and business intelligence of companies admitted to the Tehran Stock Exchange was investigated. The results of this test showed that knowledge management directly predicts 0.931 of the changes related to business intelligence. The result of the test of this hypothesis shows that the development of business intelligence and the emphasis on the use of business intelligence tools such as management dashboards are positively affected by the actions and components of knowledge management and as a result have a positive impact on the performance of the organization. The results of the investigations show that the results obtained from the third hypothesis test were consistent with the results obtained from the studies of Ekionea et al. (2021) and Song et al., (2022). In the fourth hypothesis of this study, the relationship between modern financial technologies and the sustainable performance of companies admitted to the Tehran Stock Exchange was investigated. The results of this test showed that new financial technologies directly predict 0.673 of changes related to sustainable performance. This result shows that the use of modern financial technologies such as artificial intelligence and blockchain enables companies active in the capital market to act more accurately in the quantification of descriptive and descriptive concepts, and by knowing the various risks of the financial markets, the managers of this company to be able to make appropriate decisions in the way of performance improvement. The results of the investigations show that the results obtained from the test of the fourth hypothesis of the research were consistent with the results obtained from the studies Di Vaio & Varriale, (2020) and Moro-Visconti et al., (2020). In the fifth hypothesis of this study, the relationship between business intelligence and the sustainable performance of companies admitted to the Tehran Stock Exchange was examined. The results of this test showed that business intelligence directly predicts 0.853 of changes related to sustainable performance. This result shows that the company's activities in the Tehran Stock Exchange can benefit from many benefits such as the identification of intelligent information needed by the organization, the flexibility of reports, and the ability to customize financial and non-financial systems by streamlining business intelligence at the company level. And take a step towards achieving sustainable performance. Investigations show that the results obtained from the fifth hypothesis test of the research were consistent with the results obtained from the studies of Tavera Romero et al., (2021) and Ping et al., (2018). In the sixth and seventh hypotheses of this study, the mediating role of modern financial technologies and business intelligence in the relationship between knowledge management and sustainable performance of the studied companies was investigated. The results showed that knowledge management through financial technologies indirectly predicts 0.422 and through business intelligence 0.794 of changes related to sustainable performance. Based on this, it can be concluded that the companies active in the Tehran Stock Exchange can create the necessary platforms for the effective use of knowledge management with the aim of achieving sustainable performance by using new technologies and business intelligence.

## 5.2. Implementation suggestions

The review of many studies shows that when knowledge management is designed and implemented with intelligence and planning, it can improve the organization's ability to achieve strategic goals, improve efficiency and effectiveness, and achieve continuous improvement of organizational performance. On the other hand, the implementation of knowledge management in the context of new technologies, including new financial technologies, along with business intelligence, can help organizations and companies active in the capital markets to move faster in the direction of development and profitable growth. According to the results of the research, it is suggested that the managers and decision-makers of the companies admitted to the Tehran Stock Exchange, increase efficiency and achieve the sustainable performance of the organization, implement knowledge

management according to the two components of speed in innovation. Service and service innovation quality should be prioritized. It is also suggested that to effectively use the knowledge of the organization by the employees and in the path of organizational sustainability, the managers of the studied companies should provide the necessary infrastructure to use new technologies and business intelligence such as blockchain cloud computing technology, smart contracts, artificial intelligence and the Internet of Things. Provide in the organization to achieve sustainable profitability and thus sustainable performance by saving the cost and time of providing services to customers.

### 5.3. Limitations and Suggestions for the Future

Since the present study was an exploratory one, the findings of the research are limited to the size of the statistical population under study, i.e. the companies admitted to the Tehran Stock Exchange, and if the size and location of the statistical population change, the results may change, as well as the presence of different opinions. Regarding the items of the questionnaire among the members of the statistical sample, it can influence the results of the research to some extent. The studied community in the current research was the companies active in the capital market and, especially, the Tehran Stock Exchange, therefore the results obtained are specific to these companies and cannot be generalized to all organizations and companies. Based on this, it is suggested that researchers in future research examine the topic of the present study in other financial and non-financial companies and organizations. Also, considering that in this study, the effect of implementing knowledge management, modern financial technologies and business intelligence on sustainable performance was investigated. It is suggested that researchers investigate the effect of other effective components and variables, including green information technology and green innovation, on sustainable performance in future research.

## REFERENCES

- Abbas, J. & Kumari, K. (2023) Examining the relationship between total quality management and knowledge management and their impact on organizational performance: a dimensional analysis, *Journal of Economic and Administrative Sciences*. 39(2), 426-451. doi: 10.1108/JEAS-03-2021-0046.
- Abbas, J., Zhang, Q., Hussain, I., Akram, S., Afaq, A. & Shad, M. A. (2020) Sustainable innovation in small medium enterprises: the impact of knowledge management on organizational innovation through a mediation analysis by using SEM approach. *Sustainability*. 12(6), 2407.
- Ahmad, A. (2015) Business Intelligence for Sustainable Competitive Advantage. In: *Sustaining Competitive Advantage Via Business Intelligence, Knowledge Management, and System Dynamics, Advances in Business Marketing and Purchasing*. 22A. Emerald Group Publishing Limited, Bingley, pp. 3-220. doi: 10.1108/S1069-096420150000022014.
- Ahmadi, H., Valipour, H. & Jamali, G. (2021) Relationship between Business Intelligence Components and Financial Reporting Quality in Firms. *Journal of Optimization in Industrial Engineering*. 14(2), 155-167. doi: 10.22094/joie.2020.575354.1585.
- Al-Dmour, R., Al-Dmour, A., Rababeh, N. & Hani Al-Dmour, H. (2021) The influence of knowledge management processes on FinTech innovation: Lebanon evidence. *International Journal of Knowledge and Learning. Inderscience Enterprises Ltd*. 14(1), 63-85.
- Alfawaire, F. & Atan, T. (2021) The effect of strategic human resource and knowledge management on sustainable competitive advantages at Jordanian universities: The mediating role of organizational innovation. *Sustainability*. 13(15), 8445.
- Alraja, M.N., Imran, R., Khashab, B.M. & Shah, M. (2022) Technological Innovation, Sustainable Green Practices and SMEs Sustainable Performance in Times of Crisis (COVID-19 pandemic). *Information Systems Frontiers*. 24,1081-1105. doi: 10.1007/s10796-022-10250-z.
- Ain, N., Vaia, G., DeLone, W. H. & Waheed, M. (2019) Two decades of research on business intelligence system adoption, utilization and success – A systematic literature review. *Decision Support Systems*. 125, 113113.

- Bazrkar, A. & Hajimohammadi, M. (2021) The investigation of the mediating role of innovation and organizational intelligence on the relationship between knowledge management and financial performance of the organizations active in the e-banking industry. *Independent Journal of Management & Production*. 12(1), 054-079.
- Božič, K. & Dimovski, V. (2019) Business intelligence and analytics use, innovation ambidexterity, and firm performance: A dynamic capabilities perspective. *The Journal of Strategic Information Systems*. 28(4), 101578.
- Castaneda, D.I., Manrique, L.F. & Cuellar, S. (2018) Is organizational learning being absorbed by knowledge management? A systematic review. *Journal of Knowledge Management*. 22(2), 299-325. doi: 10.1108/JKM-01-2017-0041.
- Chang, V., Baudier, P., Zhang, H., Xu, Q., Zhang, J. & Arami, M. (2020) How Blockchain can impact financial services—The expert interviewees' overview, challenges and recommendations. *Technological forecasting and social change*. 158, 120166.
- Coltman, T., Dolnicar, S., Sharma, R. (2015) Do satisfied tourists really intend to come back? Three concerns with empirical studies of the link between satisfaction and behavioural intention. *Journal of Travel Research*. 52(2), 152-178.
- Conboy, K., Mikalef, P., Dennehy, D. & Krogstie, J. (2020) Using business analytics to enhance dynamic capabilities in operations research: A case analysis and research agenda. *European Journal of Operational Research*. 281(3), 656-672.
- Don-Serge, H.M.O. (2019) The Role of Knowledge Creation, Sharing and Utilization to the Resource based View of Competitive Advantage, Global Journals. *Global Journal of Management and Business Research: A Administration and Management*. 19(9), 1–30.
- Di Vaio, A. & Varriale, L. (2020) Blockchain technology in supply chain management for sustainable performance: Evidence from the airport industry. *International Journal of Information Management*. 52, 102014.
- Ekionea, J.P.B., Nsenga, P.Y. & Fillion, G. (2021) The Contribution of Business Intelligence to the Agility and Organizational Performance of Small and Medium-Sized Enterprises. *Management Review: An International Journal*. 16(2), 4-38.
- Elmorshidy, A. (2018) The impact of knowledge management systems on innovation: an empirical investigation in Kuwait. *VINE Journal of Information and Knowledge Management Systems*. 48(3), 388–403.
- Ghasemaghaei, M. (2019) Does data analytics use improve firm decision-making quality? The role of knowledge sharing and data analytics competency. *Decision Support Systems*. 120, 14-24.
- Haddadi Harandi, A.A., Bokharai Nia, M. & Valmohammadi, C. (2019) The impact of social technologies on knowledge management processes: The moderator effect of e-literacy. *Kybernetes*. 48(8), 1731-1756. doi:10.1108/K-11-2017-0413.
- Hair, J.F., Hult, G.T.M., Ringle, C. & Sarstedt, M. (2014) A primer on partial least squares structural equation modeling (PLS-SEM): Sage Publications. *Sage publications*. [Accessed 30 June 2021].
- Hair, J.F., Risher, J.J., Sarstedt, M. & Ringle, C.M. (2019) When to use and how to report the results of PLS-SEM. *European Business Review*. 31(1), 2-24. doi: 10.1108/EBR-11-2018-0203.
- Henseler, J., Ringle, C.M. & Sarstedt, M. (2015) A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*. 43(1), 115-135. doi: 10.1007/s11747-014-0403-8.
- Hongal, P. & Kinange, U. (2020) A study on talent management and its impact on organization performance - an empirical review. *International Journal of Engineering and Management Research*. 10.
- Laily, N. & Ernawati, D.P. (2020) The effect of knowledge sharing and innovation behavior on the performance of batik entrepreneurs. *Journal Management*. 24(2), 194-209.

- Lam, L., Nguyen, P., Le, N. & Tran, K. (2021) The relation among organizational culture, knowledge management, and innovation capability: Its implication for open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*. 7(1), 66.
- Liljander, V., Polsa, P. & van Riel, A. (2009) Modelling consumer responses to an apparel store brand: Store image as a risk reducer. *Journal of Retailing and Consumer Services*. 16, 281–290.
- Mahdi, O. R. & Nassar, I. A. (2021) The business model of sustainable competitive advantage through strategic leadership capabilities and knowledge management processes to overcome covid-19 pandemic. *Sustainability*. 13(17), 9891.
- Masa'deh, R., Almajali, D.A., Alrowwad, A. & Obeidat, B. (2019) The role of knowledge management infrastructure in enhancing job satisfaction: A developing country perspective. *Interdisciplinary Journal of Information, Knowledge, and Management*. 14, 1-25. doi: 10.28945/4169
- Marcelino-Sádaba, S., González-Jaen, L.F., & Pérez-Ezcurdia, A. (2015) Using project management as a way to sustainability. From a comprehensive review to a framework definition. *Journal of cleaner production*. 99, 1-16.
- Martins, V.W.B., Rampasso, I.S., Anholon, R., Quelhas, O.L.G. & Leal Filho, W. (2019) Knowledge management in the context of sustainability: Literature review and opportunities for future research. *Journal of cleaner production*. 229, 489-500.
- Moro-Visconti, R., Cruz Rambaud, S. & López Pascual, J. (2020) Sustainability in FinTechs: An explanation through business model scalability and market valuation. *Sustainability*. 12(24), 10316.
- Nazari, F., Taghavi, S.S., Valizadeh, E., Soleymani, M., Farahani, D.S. & Bagheri, R. (2022) An Investigation on the Impact of Business Intelligence over the Performance of Startup Companies according to Innovation and Knowledge Management as Mediators. *Mathematical Problems in Engineering*. 2, 1-12. doi: 10.1155/2022/3834696.
- Nemati, M., & Khodabakhshi, M. (2023). Investigating the impact of the organization's reputation in cyberspace and the participation of stakeholders on the sustainability of organizations (case study: small Internet companies). *Marketing Science and Technology Journal*, 2(1), 119-134.
- Oliva, F.L. & Kotabe, M. (2019) Barriers, practices, methods and knowledge management tools in startups. *Journal of Knowledge Management*. 23(9), 1838-1856. doi: 10.1108/JKM-06-2018-0361.
- Ping, T.A., Chinn, C.V., Yin, L.Y., & Muthuveloo, R. (2018) The impact of information technology capability, business intelligence use and collaboration capability on organizational performance among public listed companies in Malaysia. *Global Business and Management Research*. 10(1), 293-312.
- Ranjan, J. & Foropon, C. (2021) Big data analytics in building the competitive intelligence of organizations. *International Journal of Information Management*. 56, 102231.
- Románova, I., & Kudinska, M. (2017). Banking and Fintech: a challenge or opportunity? *Contemporary Issues in Finance: Current Challenges from Across Europe*. 98, 21–35.
- Rusly, F., Sun, P.Y., & Corner, J.L. (2014) The impact of change readiness on the knowledge-sharing process for professional service firms. *Journal of Knowledge Management*. 18, 687–709.
- Shujahat, M., Ali, B., Nawaz, F., Durst, S. & Kianto, A. (2018) Translating the impact of knowledge management into knowledge-based innovation: the neglected and mediating role of knowledge-worker satisfaction. *Human Factors and Ergonomics in Manufacturing & Service Industries*. 28(4), 200-212.
- Suryono, R.R., Budi, I., & Purwandari, B. (2020) Challenges and trends of financial technology (Fintech): a systematic literature review. *Information*. 11(12), 590.
- Song, Y., Arnott, D., & Gao, S. (2022) Graduate students as surrogates for managers in business intelligence and analytics research: A preliminary study. *Journal of Decision Systems*. 31(3), 280-304.
- Sultan, N. (2013) Knowledge management in the age of cloud computing and Web 2.0: Experiencing the power of disruptive innovations. *International Journal of Information Management*. 33, 160–165.

Tavera Romero, C.A., Ortiz, J.H., Khalaf, O.I. & Ríos Prado, A. (2021) Business intelligence: business evolution after industry 4.0. *Sustainability*. 13(18), 10026.

Venkateswara Rao, M., Vellela, S., Reddy, B., Vullam, N., Khader Basha Sk, K. B. & Roja, D. (2023) Credit Investigation and Comprehensive Risk Management System based Big Data Analytics in Commercial Banking. In: *9th International Conference on Advanced Computing and Communication Systems (ICACCS), 17-18 March 2023*. IEEE. pp. 2387-2391.

Wang, Q. E., Zhao, L., Chang-Richards, A., Zhang, Y. & Li, H. (2021) Understanding the impact of social capital on the innovation performance of construction enterprises: Based on the mediating effect of knowledge transfer. *Sustainability*. 13(9), 5099. doi.org/10.3390/su13095099.

Wu, Q., Yan, D. & Umair, M. (2023) Assessing the role of competitive intelligence and practices of dynamic capabilities in business accommodation of SMEs. *Economic Analysis and Policy*. 77, 1103-1114.

Yolles, M. (2009) Competitive advantage and its conceptual development: An exploration. *Business Information Review*. 26(2), 93-111.

Zhao, Q., Tsai, P.-H., Wang, J.-L. (2019) Improving Financial Service Innovation Strategies for Enhancing China's Banking Industry Competitive Advantage during the Fintech Revolution: A Hybrid MCDM Model. *Sustainability*. 11(5), 1419.



**Mahsa VAFAEINEJAD** - Graduated in management accounting from Islamic Azad University, Karaj branch. Consultant and researcher in the field of financial knowledge management and financial technologies in management and accounting.