efforts to overcome past issues of parts shortages and incomplete vehicles.

6. **Complete Incomplete Cars:** Positively impacted by "Investing in the Supply Chain," completing incomplete cars directly increases the "Production Rate." This also negatively impacts "Chances of getting a car," suggesting that as more incomplete cars are completed and available, the difficulty in obtaining a car (due to scarcity) decreases.
7. **Chances of Getting a Car:** This variable is negatively influenced by "Complete Incomplete Cars." A higher availability of complete cars reduces the "Chances of getting a car" (i.e., makes it easier to get one due to less scarcity or lottery systems). This in turn positively impacts "General Satisfaction."
8. **General Satisfaction:** Directly influenced positively by a decrease in the "Chances of getting a car" (meaning easier access to vehicles). "General Satisfaction" also positively contributes to "Developing Transparent Automotive Supply Systems." This suggests that a more satisfied populace might push for or enable better systemic reforms.
9. **Developing Transparent Automotive Supply Systems:** Positively influenced by "General Satisfaction." Transparent systems enhance "Intermediate Demand" by building trust and efficiency. This also positively influences "Investing in the Supply Chain," indicating that a more transparent system encourages further investment.
10. **Intermediate Demand:** Enhanced by "Developing Transparent Automotive Supply Systems." This variable, in turn, positively influences "Investing in the Supply Chain," signifying that healthy demand drives further investment in the automotive ecosystem.
11. **Technology Development:** Driven by "International Competitiveness." As technology advances, it also contributes to "International Competitiveness," forming a reinforcing loop for innovation. Furthermore, "Technology Development" is shown to contribute to "General Satisfaction" (likely through improved vehicle quality and features) and to "Earning Foreign Currency" (through more competitive products).
12. **International Competitiveness:** Positively influenced by "Technology Development." Increased competitiveness is a desired outcome, but its direct impact on "Production Rate" is not explicitly shown, though it would likely be an implicit positive link.
13. **Increase in Exports:** Directly influenced by "Production Rate." A higher volume of exports leads to "Earning Foreign Currency."

14. **Earning Foreign Currency:** Positively impacted by "Increase in Exports" and "Technology Development." Earning foreign currency enhances "Financial Ability," forming another crucial reinforcing loop that can fuel further growth.

12. Identified Feedback Loops:

The diagram highlights several key feedback loops:

- **Reinforcing Loop (R1): Financial Ability → Production Rate → Income of Car Manufacturers → Financial Ability:** This is a core growth engine. As financial ability improves, production increases, leading to higher manufacturer income, which further boosts financial ability, creating a cycle of growth.
- **Reinforcing Loop (R2): Technology Development → International Competitiveness → Technology Development:** This loop suggests that advancements in technology lead to greater international competitiveness, which in turn incentivizes and enables further technological development.
- **Reinforcing Loop (R3): Production Rate → Increase in Exports → Earning Foreign Currency → Financial Ability → Production Rate:** This loop indicates that higher production fuels exports, generating foreign currency, which enhances financial ability and further boosts production.
- **Balancing Loop (B1): Complete Incomplete Cars → Chances of getting a car (-) → General Satisfaction → Developing Transparent Automotive Supply Systems → Investing in the supply chain → Complete Incomplete Cars:** This is a balancing loop that aims to stabilize the system by addressing the issue of incomplete cars. As more incomplete cars are completed, the "Chances of getting a car" improve (become easier), leading to higher "General Satisfaction," which drives "Developing Transparent Automotive Supply Systems." This transparency encourages "Investing in the Supply Chain," which in turn enables the completion of more incomplete cars.

13. Insights and Implications:

The CLD suggests that the 13th government's strategy for boosting car production heavily relies on:

1. **Direct Government Support:** Providing financial and policy backing to bolster manufacturers' capabilities.

2. **Addressing Supply Chain Bottlenecks:** A key focus on completing incomplete vehicles through targeted investment in the supply chain is critical for increasing output and satisfying demand.
3. **Enhancing Consumer Satisfaction and Transparency:** Recognizing that consumer experience and trust (through transparent supply systems) are vital for sustained demand and industry health.
4. **Promoting Exports and Technological Advancement:** Seeing these as long-term drivers for foreign currency earnings and improved financial health, ultimately fueling further production growth and competitiveness.

14. Reasons for Automobile Production Growth under the 13th Government

1. **Implementation of Resistance Economy Policies:** The 13th government practically implemented resistance economy policies in the automotive industry. Its most important components include:
   - Increasing localization and reducing dependence on imports.
   - Supporting knowledge-based companies and technological institutions.
   - Utilizing the capacity of domestic specialized forces.

2. **Cooperation with Friendly Countries:** Iran was led towards developing industrial cooperation with non-Western countries. The 13th government leveraged this opportunity and signed contracts with China, Russia, Venezuela, and Belarus, which included:
   - Assembly of joint products.
   - Export of vehicles and parts.
   - Provision of necessary parts to improve production.

3. **Reconstruction of Production Lines and Productivity Improvement:** By securing liquidity, removing production obstacles, and updating equipment, the production capacity of major car manufacturers like Iran Khodro and Saipa increased. The share of incomplete production and “cars on the factory floor” also significantly decreased.

4. **Phasing out Old Vehicles and Offering New Products:** Vehicles such as Pride, Tiba, Peugeot 405, Peugeot 206, and Peugeot Pars were discontinued, and new products like Rira, Tara, Shahin, Sahand, and

Atlas were introduced, which comply with safety and emission standards.

15. Economic and Social Impacts of Automobile Production Growth

With the return of a new round of sanctions in 2018, Iran's automotive industry once again faced a very major crisis, similar to that in 2012. This was to such an extent that all foreign parties and partners of Iranian car manufacturers rapidly exited Iran, ending their cooperation with Iranian partners. The situation progressed to a point where car production in Iran reached half of its good years, leading to the shutdown of many car and auto parts production lines. The closure of production lines, the inability to meet existing market demand, and a shortage of liquidity led to numerous public gatherings and protests by people and those who had lost their investments concerning the automotive industry.

Job Creation: According to a report by the Ministry of Industry, Mine, and Trade (وزارت صمت), over 350,000 people were directly and indirectly employed in the automotive supply chain in 2023.

With the 13th government coming to power, and by adopting a strategy of maximizing the capacity of production lines and replacing Chinese partners for car manufacturers, over two years we witnessed a significant portion of the demand in the thirsty car market being met. Also, in the commercial vehicle sector, where the country was facing a crisis, we saw an increase in the production of car manufacturing companies. Companies that in 2019 had 7 trillion Tomans in accumulated losses following the production of two thousand vehicles, celebrated the production of eighteen thousand commercial vehicles in 2023, having overcome the recession and accumulated losses of previous years, and achieving profitability by year-end.

Economic Growth and Industrial Growth: According to data from the Statistical Center of Iran, the country's economic growth was -1.9% in 2020, which increased to 4.3% in 2021, 5.5% in 2022, and according to the preliminary report by the Central Bank, to about 5.7% in 2023. During the same period, the industrial sector's growth also increased from -0.3% in 2020 to over 6% in 2023.

This increasing trend, especially in the industrial sector, has occurred due to significant growth in areas such as automotive manufacturing, chemical industries, basic metals, and food industries. In the automotive industry, the 13th government's supportive measures, increased production volume, export growth, and localization of parts have played a prominent role in this growth.

According to the Deputy Governor for Economic Affairs of the Central Bank, the industrial sector's share in the country's economic growth in 2023 was over 30%, which indicates the pivotal position of this sector in revitalizing the country's economy.

Sources: Statistical Center of Iran (Quarterly Economic Growth Reports 2020-2023), Central Bank of the Islamic Republic of Iran (Macroeconomic Developments Report 2023).

Despite the advancements, challenges such as mandatory pricing, lack of electric vehicle infrastructure, and limited financial resources remain. By continuing the implementation of the resistance economy and resolving these challenges, Iran's automotive industry can return to the top 15 global producers.

16. Conclusion and Recommendations: The Resurgence of Iran's Automotive Industry

The analysis of recent trends in Iran's automotive sector reveals a significant turnaround, particularly under the policies enacted by the 13th government. Following a period of decline marked by the re-imposition of international sanctions and subsequent withdrawal of foreign partnerships, the industry has demonstrated a notable recovery and growth trajectory. This resurgence is attributed to a multi-pronged strategy encompassing the implementation of resistance economy policies, strategic collaborations with non-Western nations, revitalization of production infrastructure, and modernization of product lines.

The adoption of "resistance economy" principles, emphasizing domestic production and technological self-reliance, has been instrumental in mitigating the impact of international sanctions. The forging of partnerships with countries such as China, Russia, Venezuela, and Belarus has facilitated the diversification of supply chains and access to essential resources and technologies. Simultaneously, targeted investments in upgrading production facilities and streamlining operational inefficiencies have resulted in increased output and a reduction in the backlog of incomplete vehicles. Furthermore, the replacement of outdated models with newer, more compliant vehicles reflects a commitment to improving product quality and meeting evolving consumer demands.

The positive economic and social ramifications of this growth are evident in increased employment figures, a substantial contribution to national economic growth, and the revitalization of related industrial sectors. The automotive industry's resurgence has not only addressed

pent-up market demand but has also played a crucial role in offsetting the negative impacts of sanctions on the broader economy.

However, despite these achievements, several challenges persist that warrant attention to ensure the long-term sustainability and competitiveness of the Iranian automotive industry. These challenges include:

1. **Price Controls:** Government-mandated price controls may stifle innovation and limit the profitability of manufacturers, potentially hindering future investment and growth.
2. **Electric Vehicle Infrastructure:** The nascent stage of electric vehicle infrastructure development poses a significant obstacle to the adoption of cleaner, more sustainable transportation technologies.
3. **Financial Constraints:** Limited access to financial resources may impede necessary investments in research and development, technological upgrades, and expansion into new markets.

17. Recommendations:

To consolidate the gains achieved and propel the Iranian automotive industry towards greater global competitiveness, the following recommendations are proposed:

1. **Liberalize Pricing Mechanisms:** Gradually transition towards market-based pricing mechanisms to incentivize innovation, improve product quality, and attract both domestic and foreign investment.
2. **Invest in EV Infrastructure:** Prioritize the development of a comprehensive electric vehicle charging infrastructure to support the adoption of electric vehicles and align with global trends towards sustainable transportation.
3. **Enhance Financial Access:** Facilitate access to affordable financing options for automotive manufacturers and suppliers to enable investments in research and development, technological upgrades, and export promotion activities.
4. **Strengthen R&D and Innovation Ecosystem:** Foster collaboration between industry, academia, and research institutions to drive innovation and develop indigenous technologies that enhance the competitiveness of Iranian automotive products.
5. **Promote Export Diversification:** Expand export markets beyond traditional partners and explore opportunities in emerging

economies to reduce reliance on specific regions and mitigate geopolitical risks.

6. **Address Supply Chain Vulnerabilities:** Strengthen domestic supply chains, promote localization of critical components, and diversify sourcing strategies to enhance resilience against external shocks and disruptions.

By proactively addressing these challenges and implementing the proposed recommendations, Iran's automotive industry can solidify its position as a key driver of economic growth and technological advancement, contributing to the nation's broader development goals. Further research and analysis are warranted to assess the effectiveness of ongoing policies and identify emerging opportunities for sustainable growth and innovation in the sector.

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Investigation and Evaluation of Islamic Financing Instruments for Knowledge-Based Enterprises; Evidence from Iran Capital Market

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Abstract

Subject: One of the key infrastructures for the growth and development of Knowledge-Based Enterprises (KBEs) is providing financial facilities This study investigates the KBEs financing through Islamic financial instruments.

Methodology: In terms of data collection, it takes a descriptive-survey approach. Data required are collected using a structured questionnaire. The statistical population includes KBEs active in Tehran and simple random sampling method was applied to reach final community. The statistical sample consists of 80 specialists and experts in the financial field in knowledge-based companies, and a questionnaire was used to collect data. Experts' opinions were used to check validity and Cronbach's alpha was used for reliability test, which confirmed the validity and reliability of the tool.

The Structural Equation Modeling (SEM) method was used to analyze the data.

Originality: So far, many researches and studies have been done regarding the growth and development of knowledge-based companies; However, in none of them has attention been paid to the financing of these companies from the capital market. For the first time, this research aims to present the capacities of the capital market for financing knowledge-based companies.

Result: The results of this research indicate that innovative financing instruments such as sukuk, mortgage bonds, and project fund instruments, saving certificate instruments, deposit certificate instruments and bonds play a positive role on the financial provision of KBEs.

Keywords: Sukuk, mortgage bonds, project fund instruments, savings certificates, deposit certificates, bonds, financing instruments.

Introduction

KBE is a relatively new concept that has been widely used in scientific and technical contexts with several terms and definitions such as newly established technology-based company, knowledge-based company, and advanced technology-based company (Tabatabaian et al., 2019). KBEs are private or cooperative companies or institutions that aim to synergize science and wealth, develop a knowledge-based economy, realize scientific and economic goals (including the expansion and application of inventions and innovations) and commercialize the results of research and development (including design and the production of goods and services). KBE is formed in the field of leading technologies and with a lot of added value, especially in soft arenas.

Financing is the process of acquiring and providing financial resources and funds needed to continue the company's activities and to create and launch development and cash-generating projects of economic units (such as KBE). In fact, financing is the provision of capital needed by businesses, consumers and investors in order to achieve their goals. Its purpose is investment, profitability, risk mitigating and meeting the economic and social needs of business (Azizi, 2016).

This research has an important role in the development and strengthening of Iranian KBEs and going concern; because it tries to take a small step towards solving one of the most important anxieties of these companies, i.e. providing financial resources. We aim to introduce and evaluate innovative financing instruments in light of capital market for KBE managers.

Islamic finance combines all aspects of finance that do not conflict with Sharia law. Usually, conventional finance and banking is fundamentally based on collecting deposits from the population and giving loans to people. Despite the global financial crisis, the Islamic financial system is developing at rates that are not equal to 15 to 20 percent. Currently, more than 500 financial institutions operate based on Islamic principles, and the total assets under management of Islamic financial principles on a global scale have exceeded one trillion dollars. Some economists associate the dynamic growth of the Islamic financial system with cash flows to Arab countries as a result of high oil prices (Noorlan, 2019). In general, various methods have been proposed at the national and international level in connection with the classification of financing sources. For example, the division of financial resources is based on following criteria and indicators (OECD, 2015, 2016, and 2018):

- Internal and external resources,

- Official and informal sources, and
- Financing based on growth stages.

Golalizadeh (2023) has presented solutions to reduce the financing challenges of knowledge-based companies in Iran. Analysis of the opinion of the experts revealed that solving the financial problem of knowledge-based companies in Iran depends on the optimal role of knowledge-based ecosystem actors, which has been identified as three organizing and 18 basic themes. Golalizadeh, et.al. (2021) introduced 26 challenges around of financing KBEs in Iran. Motallebi et al. (2021) have investigated and ranked the ability of Islamic financial institutions to respond to the financing needs of KBEs. The findings have shown that the adaptability of facility contracts according to the growth stages of KBEs, real participation in profit and loss, not obtaining excessive profits, etc. are among the most important components of financing needs in KBEs.

Agoraki (2023) examined corporate sustainability, financing performance, and regulatory dynamics. The results showed that companies with lower reputational risk have reduced information asymmetry, are less financially constrained and have better financing performance. Lee (2023) investigated the legitimacy of green companies and their financing performance. The results showed that companies with low green performance are more likely to greenwash than companies with high green performance, although green companies do not affect financing performance. Nguyen (2022) investigated the impact of fintech development on financial stability in an emerging market. The results of this study showed that fintech development has negatively affected financial stability and market discipline can reduce this effect. However, further heterogeneity analysis showed that the negative impact of fintech development on financial stability is stronger when the degree of financial stability is low and the role of market discipline becomes more important in such conditions.

1. Literature Riview

Today, KBEs are considered a vital factor for the economic development of the country and in fact the engine of growth and development (Fakhari, 2015). These companies, which are the main source of innovation, have many problems in financing and raising capital. Despite the importance of KBEs in sustainable development, they face challenges. Scientific evidence and existing facts show that access to financial resources is one of the most important issues that hinders the comprehensive growth of these types of companies in the global economy (Baker et al., 2020).

Various studies have been conducted regarding the financing methods of knowledge-based companies, many of which have used the life cycle of companies as the basis for analyzing and identifying appropriate instruments (Golalizadeh, 2015). In addition to the development stage, the effectiveness of different financing tools can be related to other things such as the size of the innovative company and the amount of capital needed. The results of scientific-technical studies and surveys around the world indicate that technology-based companies lead to entrepreneurial mobility and wealth creation (Sejodi, 2020).

United Nations Millennium Development Funding plays an important role in supporting technology-based start-ups at various stages of innovation and can help increase income and reduce poverty. Financing mechanisms, due to the role of policy making and management, play an undeniable role in the success of these companies and their performance. Funding of knowledge-based companies is accompanied by many challenges due to non-compliance with the common patterns of financing in the banking system and the uncertainty in the future investment situation (Khayatian, 2014). The results of scientific and technical studies and reports at the national and international level also confirm that the issues related to the provision of financial resources, attracting investors and access to the required capital at different stages of the life cycle, especially in the early stages of growth, are among the most important challenges of establishing and continuing the activities of KBEs.

Developing countries are facing the problem of financing to implement and expand their economic activities, especially to finance the establishment of new enterprises that are considered knowledge-based and can create high added value. For the financing of these companies, different solutions have been provided so far, one of these methods is financing by venture capital funds. In Iran, venture investment is mostly governmental and so far it has not been properly organized and paid attention to, which may be due to the small share of research in the annual budget, the lack of risk-taking culture in the country, the specific expectations of investors, the lack of attractiveness of long-term investment, the low resources of these funds and the copying of most of the domestic plans from abroad. The present research aims to investigate the financing of KBEs, through Islamic financial instruments. Managers KBEs are mostly young people and university graduates, who face difficulties in providing reliable collateral to banks to finance the company's activities through bank facilities, and in addition, even if they have access to these facilities, they cannot withstand severe economic

fluctuations on their own. Therefore, in case of problems and uncoordinated economic developments, they may be shut down with the same speed and ease which come into existence (Golalizadeh, 2020).

In Iran, the upstream documents of the country, including the policies announced in Article44 of the Constitution Law, the fourth, fifth and sixth development plans, as well as the country's twenty-year vision document, all consider the field of knowledge-based economy as one of the most important and influential areas in the country. Development programs of the country have prioritized this sector; but the realization of these goals is gained through creation and development of KBEs (Kashian, 2018). Therefore, the government and public institutions try to provide the necessary platform for the creation and development of new, start-up and entrepreneurial technology-based companies by providing technical, financial and legal infrastructures. One of the key infrastructures and requirements for the growth and development of these companies is providing financial facilities, facilitating the financing process and ensuring their access to financial resources sufficiently and efficiently with favorable conditions and at the right time in different stages of growth, especially in the initial stages of their growth and development (Golalizadeh et al., 2017). Therefore, in this study, the financing of knowledge-based companies by means of Islamic financial instruments has been discussed.

2. Methodology

The current research is applied from the point of view of the goal and based on the data collection, it is a survey research. From the nature wivewpoint; it is considered a descriptive research. In this study, the financing of active KBEs by means of Islamic financial instruments in Tehran has been investigated from December 2022 till June 2023. The sampling method used was simple random sampling. In this research, the size of the community is estimated to be around 100 people, and using Cochran's formula, a sample size of approximately 80 active KBEs in Tehran was selected. To determine the validity of the content of the questionnaire, the Lawshec coefficient was used. First, the questions of the questionnaire were prepared and given to the relevant specialists, experts and professors. After reviewing and giving opinions of experts and professors, as well as the case of CVR editing the questions, the final questionnaire was compiled. In addition, the reliability of the questionnaire was also investigated. In this research, Cronbach's alpha coefficient was used to measure the reliability. The statistical techniques used in this research are descriptive and inferential statistics using SPSS

software. In the field of descriptive characteristics, statistical techniques such as frequency distribution table and bar chart, average, mean, median, standard deviation and variance were used and structural equations were used to test the hypotheses. Mean and frequency were used to describe the data and considering the non-normality of the data distribution, structural equations were applied using Smart PLS software.

3. Result & Discussion

The description of the demographic characteristics of the sample members is given in Table 1.

Table 1: gender, age, education and work exprience of sample members

Variable	description	frequency	% of frequency
Gender	Male	70	87.5
	Female	10	12.5
	Total	80	100
Age	<25	0	0
	26-30	12	15
	31-35	14	17.5
	36-40	23	28.7
	41-45	17	21.2
	>46	14	17.6
	Total	80	100
Education	Diploma	0	0
	Associate	0	0
	Bachelor	14	17.5
	Master and above	66	82.5
	Total	80	100
Work experience	<5	7	8.7
	6-10	25	31.2
	11-15	24	30
	16-20	14	17.5
	>21	10	12.6
	Total	80	100

Table 2 lists the descriptive statistics of the research variables. The results of Table 2 showed that the average of the variables of human resources, perceived quality and key indicators of the reconstruction process tend to have negative opinions and the variable of internal complexity in reproduction operations was lied to positive ones.

Table 2: Descriptive statistics of research variables

Variable	Mean	Median	Std. dev.	Min.	Max.
Sukuk	2.907	2.8	0.916	1	5
Mortgage bonds	3.28	3.3	0.941	1.2	5
Project fund	3.065	3	0.790	1	4.8
Savings certificates	3.245	3	0.794	1.8	5
Certificate of Deposit	3.965	4	0.699	1.6	5
Bonds	3.255	3.2	0.816	1	5
KBE financing	3.597	3.6	0.767	1.2	5

The variance inflation test to check multiple non-collinearity of the research variables is shown in Table 3. Table 3 shows that all three independent variables have a variance inflation rate lower than 5. As a result, multiple collinearity between independent variables is not observed.

Table 3: Variance inflation test to check multiple non-collinearity of the research variables

Independent Variables	VIF	Dependent variable
Sukuk	1.473	KBE financing
Mortgage bonds	2.656	KBE financing
Project fund	1.875	KBE financing
Savings certificates	2.720	KBE financing
Certificate of Deposit	2.720	KBE financing
Bonds	1.651	KBE financing

In this research, partial least square modeling (PLS-SEM) method was used for data processing. Table 4 shows the values of the standardized factor loads and the validity and reliability indices of the structures. The results of Table 4 show that the selected indicators for measuring the model structures have had the necessary accuracy because most of the factor loadings are more than 0.7. Some items of the variables had low factor loadings and were removed from the model. The number of these items for the variables of human resources, perceived quality, reconstruction process and internal complexity are five, one, five and three items, respectively. Cronbach's alpha value was calculated for each of the structures, and the calculated values are more than 0.7, which indicates the appropriate reliability of the structures. The value of Average Variances

Extracted (AVE) indices for all constructs is more than 0.5, which means that the variables have internal validity. The composite reliability index is more than 0.7, which shows the internal consistency of the reflective measurement models of the research; therefore, each of the constructs of the model has good validity and reliability to measure the research variables.

Table 4: Values of standardized factor loadings and validity and reliability indices of structures

Variable	Question	Factor loading	reliability	Composit reliability	AVE
Sukuk	q2	0.612	0.838	0.858	0.615
	q3	0.540			
	q4	0.936			
	q5	0.958			
Mortgage bonds	q6	0.779	0.915	0.933	0.736
	q7	0.909			
	q8	0.877			
	q9	0.891			
	q10	0.828			
Project fund	q11	0.624	0.867	0.914	0.780
	q12	0.706			
	q14	0.741			
	q15	0.933			
Savings certificates	q16	0.903	0.802	0.842	0.577
	q17	0.929			
	q18	0.814			
Certificate of Deposit	q21	0.826	0.795	0.861	0.559
	q22	0.716			
	q23	0.747			
	q24	0.867			
	q25	0.541			
Bonds	q27	0.848	0.759	0.857	0.669
	q28	0.688			
	q30	0.905			
KBE financing	q31	0.926	0.905	0.933	0.778
	q32	0.917			
	q34	0.843			
	q35	0.838			

The coefficient of determination index (R2) was used to check the quality of the model. The results showed that the coefficient of

determination predicts 46.6% of the changes in the financial provision of KBE by the variables of sukuk, mortgage bonds, project fund, savings certificates, deposit certificates and bonds. Table 5 shows the overall model fit results. Three values of 0.01, 0.25 and 0.36 have been introduced as weak, medium and strong values for the GOF criterion. Therefore, the GOF value obtained in this study is equal to 0.417, which indicates an appropriate criterion.

Table 5: Results of overall model fit

Structures	Community	R squared
Sukuk	0.657	-
Mortgage bonds	0.622	-
Project fund	0.550	-
Savings certificates	0.822	-
Certificate of Deposit	0.522	-
Bonds	0.752	-
KBE financing	0.421	0.466

Figure 1 shows the output of the original PLS model in normal mode.

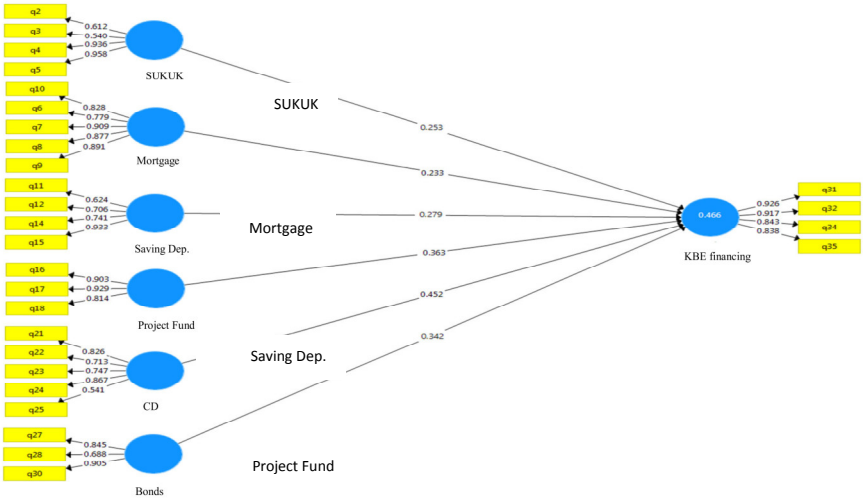

Figure 1: The output of PLS model in normal mode

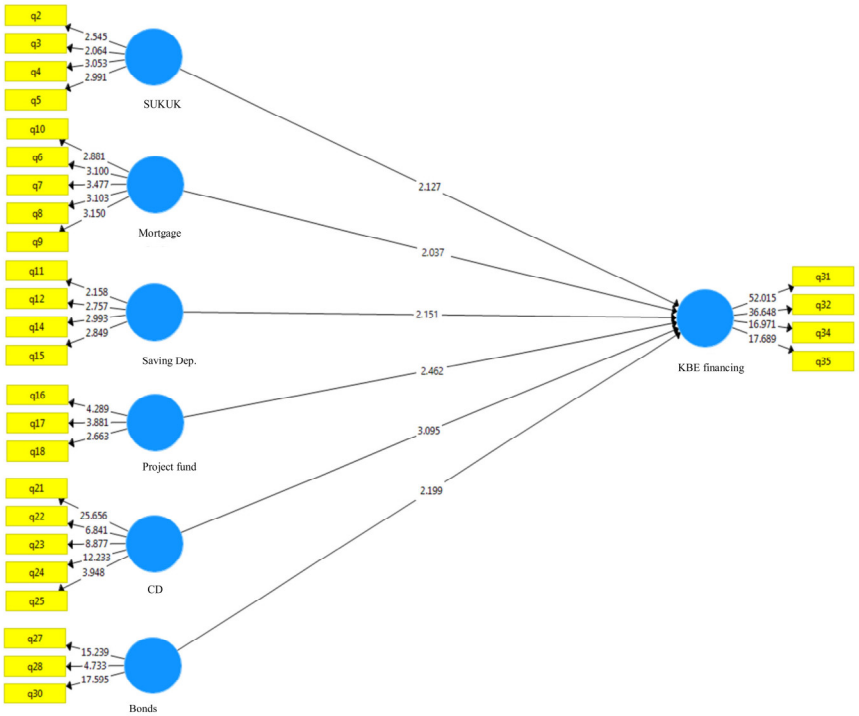

Figure 2: The Output of PLS model in standard mode

Figures 1 and 2 show the fitted model in terms of standard coefficients and significance level. The path coefficient of human resources on the perceived quality of the core is equal to 0.253. The path coefficient of mortgage bonds, project fund instruments, savings certificate instruments, deposit certificate instruments and bonds as one of the new instruments of financial provision is equal to 0.233, 0.363, 0.279, 0.452 and 0.342, respectively. The value of t statistic is 2.127, 2.037, 2.462, 2.151, 3.095 and 2.199 respectively, which is more than 1.96; therefore, the coefficient of the above path is significant at the confidence level of 95%. Therefore, it can be concluded that sukuk, mortgage bonds, project fund instruments, savings certificate instruments, deposit certificate instruments, and bonds as one of the new financial instruments have a positive role in the financial provision of KBEs (Table 6).

Table 6: Research hypotheses

Hypothesis	t-test	Sig.	Path coefs.	Results
Sukuk, as one of the innovative financing instruments, plays an important role in financing of KBEs	2.127	0.022	0.253	Confirm
Mortgage bond as one of the innovative financing instruments, plays an important role in financing of KBEs	2.037	0.044	0.232	Confirm
Project fund as one of the innovative financing instruments, plays an important role in financing of KBEs	2.462	0.363	0.011	Confirm
Savings certificate as one of the innovative financing instruments, plays an important role in financing of KBEs	2.151	0.023	0.279	Confirm
Certificate of Deposit as one of the innovative financing instruments, plays an important role in financing of KBEs	3.095	0.000	0.452	Confirm
Bond as one of the innovative financing instruments, plays an important role in financing of KBEs	2.199	0.024	0.342	Confirm

4. Discussion

This research bridges a critical gap in the literature by empirically investigating the role of Islamic capital market instruments in financing Iran's Knowledge-Based Enterprises (KBEs). While prior studies (e.g., Golalizadeh et al., 2021; Motallebi et al., 2021) identified financing challenges and emphasized the potential of Islamic financial institutions, this study is the first to quantitatively validate the efficacy of specific capital market instruments for KBEs, thereby extending the discourse beyond theoretical propositions.

4-1. Alignment with Literature

Our findings resonate with existing research on KBEs' financing constraints. Like (Golalizadeh et al. 2021), who identified 26 financing challenges (e.g., lack of collateral, short-term investment horizons), we confirm that KBEs struggle with traditional banking models due to intangible assets and vulnerability to economic fluctuations. Similarly, (Motallebi et al. 2021) highlighted the need for Sharia-compliant