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The Effect of Financing Components on the Structure of Small and Medium-Sized Enterprises in the Petrochemical Industry

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Abstract
Today, small and medium-sized enterprises account for an important part of the global economy, and due to its positive effects, many governments attempt to develop and support small and medium-sized enterprises. Thus, perceiving the factors affecting the development of these businesses is of crucial importance. The present study seeks to examine the effect of financing components on the development of *small and medium*-sized enterprises in the petrochemical industry. The present study is applied in terms of purpose and descriptive-analytical in terms of methodology. The statistical population of this study consists of the managers of *small and medium*-sized enterprises in the petrochemical industry. The questionnaires are distributed among 39 managers of the relevant field. The validity of the research instrument is calculated using the confirmatory factor analysis model and its reliability is calculated using Cronbach's alpha. Data analysis is performed using SPSS and SMART PLS software with descriptive statistics and structural equation modeling. We find that the cultural environment has a significant effect on the development of small and medium-sized enterprises in the petrochemical industry. Also, the research results indicate that the components of low power distance, individualism, low uncertainty avoidance, long-term orientation and masculinity have a positive impact on the development of small and medium –sized enterprises in the petrochemical industry. Educational and skill components can lead to the development of small and medium –sized enterprises in the petrochemical industry by facilitating business processes.

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Introduction

Nowadays, small and medium-sized enterprises account for an important part of the global economy, and due to its positive effects, many governments attempt to develop and support small and medium-sized enterprises. According to statistics in most communities, many jobs in emerging markets have been established by small and medium-sized enterprises, and this figure is estimated to be 7 out of 10 new jobs (World Bank, 2020). Also, small and medium-sized enterprises improve economic performance via job creation, wealth redistribution, poverty eradication and increase of exports (Ndobusi, 2020). Also, these businesses are considered as the main element in attaining the goal of growth and employment. Approximately 6 million small and medium-sized enterprises are active in the European Union (EU) and while employing more than 109 million people, they account for 2.3 of the European GDP (EuroStat, 2019). Accordingly, the development and establishment of small and medium-sized enterprises is regarded a key approach in creating new jobs, accelerating growth and improving the economic status of societies. This is because the structure of these societies makes it possible to adapt with large-scale developments and comprehensive changes and leads to their survival (Karimi et al., 2014). Despite the abundant reserves of oil and gas, Iran has a high capacity to develop businesses in all sectors of this field. Using this capacity to develop businesses is a good method to increase economic use and avoid crude sales and complete the oil and gas value chain. However, several factors, including educational and skill components, can influence the development of businesses related to petrochemical industries.

The importance of small and medium-sized industries in long-term economic growth and stability is dependent upon their size and structure, which allows them to be flexible and empowered to address unsuitable economic conditions. There are various small and medium industries than large industries, for this reason they need little investment costs to create new jobs (Bidokhti and Zargar, 2011). One of the important conditions for sustainable success in today's world economy is the development of these industries, as they play a vital role in stabilizing incomes, economic growth, and employment in society. Small manufacturing enterprises have considerable intangible assets but they have normally limited capital and resources to support the production and marketing. In addition, their manufacturing market is changing continuously and it is globalized, as their capability to attain and manage the rare resources for survival is inadequate. Despite this limitation, the failure of small businesses is less than before (Kim, Knotts, & Jones, 2008).

As a fundamental factor in the formation of businesses and also due to its effect on facilitating production processes, financing has been of great importance in scientific studies and various researchers, companies and institutions have focused on the relationship between financing and the development of small and medium-sized enterprises (Dimitratos et al., 2012). Debt financing is the fund that small business owners borrow and should repay with interest. Lack of proper access to the necessary financial resources is one of the limitations that make the growth and development of industrial businesses a major challenge. However, what is of paramount importance is the possibility of continuous monitoring of the business financing conditions and the access of up-to-date and suitable information (e.g. periods of prosperity and recession, sanctions, macroeconomic shocks, and social changes), which enables the adoption of necessary policies for the authorities under different circumstances of economy. (Abassinoorabadi, 2016).

As mentioned, the present study was aimed to examine the impact of effective concepts on the development of small and medium-sized businesses in the petrochemical industry. The main question of the research is: what is the impact of financing components on the development of small and medium-sized businesses in petrochemical industry?

A review of theoretical basics
Indeed, financing is one of the important principles to attract capital for the economic cycle of the company. In general, in order for a company to be able to continue its economic activity and be profitable, it should be able to enter additional capital into its production or service stage via various methods, so that the company and the investor can benefit.

Financing components
Loan support and credit guarantee
The subject of the activity of the development fund of small industries is guaranteeing a maximum of 70 % (in less developed areas up to 85 percent) of the principal and interest of the loans granted by banks and financial and credit institutions to industries and the use of funds and other financial resources in the framework of industrial policies and development programs of the country in construction, development, improvement and renovation, working capital, development of subcontracting, research and development, purchase of technology and technical knowledge and laboratory equipment and development of human resources, as well as performing other affairs to achieve the goal of the fund.

Reduce financing costs
The importance of small and medium-sized enterprises in the long-term economic growth and stability is related to their size and structure, which enables them to be flexible in certain circumstances and cope up with unfavorable economic conditions. In order to establish new jobs, small and medium-sized industries need little investment costs compared to big industries (Tommaso & Sabrina., 2000). Therefore, it can be stated that these industries play an important role in stabilizing the incomes, economic growth and employment, and the development of small and medium industries to alleviate poverty and improve the living standards of pluralistic societies is required (Karimi and Bozarjomehri (2013).

Present opportunities for joint ventures
Recent studies have demonstrated that inter-organizational relations provide opportunities for companies to access foreign knowledge and to combine the existing intellectual resources (Dyer and Singh, 1998). The financial structure of the firm is the permanent financing of the company which is shown by long-term debts and equity. The financial structure includes short-term and long-term debts and equity, thus the capital structure consists of a part of financial structure (Weston &Copeland, 1992).

Capacity building for marketing mix
Modeling of marketing mix is a technique by which the effect of marketing inputs on sales and market share is examined. Attribution modeling is a framework for investigating which customer touchpoints or marketing channels get credit for a conversion of audiences into customers. Each attribution model separately distributes conversion value among different touchpoints. In marketing mix modeling, the goal is to use the most optimal mix of the four marketing mix criteria (people, place, price, and promotion) to achieve the company's goal. By analyzing all the data of the factors that cause the success of marketing channels and using regression analysis, marketing mix modeling determines the most optimal

mix for the company. Considering the functional nature of the small and medium-sized enterprises, the important point in their marketing activities is the un-planned measures and this causes their failure under the current turbulent environments (Golabi et al., 2003).

Development of small and mediums-sized businesses

Economic development is a very important decision, namely for small and medium-sized enterprises that have a low financial base, local concentration and limited geographic domain. One of the basic issues regarding small and medium-sized businesses is the difference between the public and private sectors, control and evaluation of business growth in the country.

Although small and medium-sized businesses are considered as real and acceptable drivers of economic development, due to a number of problems and challenges facing this important sub-sector of the economy, the growth and development of small and medium-sized businesses in some countries has been slow or even stopped in some cases. Some of the highlighted problems in the studies include: poor infrastructure facilities, budget and financing challenges, insufficient managerial and entrepreneurial skills, limited capacity for research and development as well as innovations, limited demand for their products and services, heavy tax burden and dominant actions of governmental employees and agents. Other items include problems related to compliance with regulatory requirements in special areas of small and medium-sized business activity. The problems of inadequate capital and the lack of easy access to bank credits, corrupt bureaucratic bottlenecks and lack of transparency caused by government regulations and regulatory institutions, and the government's lack of interest or focus in addressing the specific

factors accounting for the abnormal performance of this section is one of the problems in these economic sectors (Onugu, 2005).

Small and medium businesses refer to companies that have certain financial assets and employees. In different countries, the maximum number of employees and the assets based on which small and medium-sized businesses are defined are different. For example, in the EU, companies with less than 250 employees and an annual turnover of less than 50 million euros are considered as small and medium-sized businesses (Zeng et al., 2011). In Iran, according to the classification of central bank regarding the industrial units, the companies with less than 10 employees are considered "very small", 10 to 49 employees are "small", and 50 to 99 employees are "medium" and above 100 people are called "big" (Ahmedpour Daryani and Karimi, 2020). Based on the financing instructions for small and medium-sized enterprises in 2018, economic enterprises with the number employees, less than 50 during Last year and between 50 and 100, were defined small and medium-sized enterprises, respectively (Hosseini et al., 2019).

The research empirical background

The concept of cultural components and its impact on the development of small and medium businesses have been studied in some studies in the fields of economics, management and sociology, and the analysis of these studies indicates that, the relationship between the above concepts is examined together in this study.

Moradi et al. (2020) presented a financing model for small and medium-sized enterprises in the supply chain and indicated that the proposed financing method is superior to the traditional loan-based financing method in terms of making profit and achieving optimal liquidity.

Moghsem et al.(2018) in the examination of the development of small and medium-sized manufacturing businesses based on the effect of performance and innovation in technology, demonstrated that innovations in technology, including entrepreneurial capability, technological infrastructure and culture and organizational climate have a positive impact on the product performance, sales performance and innovation performance of manufacturing companies (Moqsem, Yasser, Saeedi, Parviz, Didekhani, Hossein, & Mehrabian, Ahmad, 2019).

Karimi and Bozarjomehri (2013) examined the analysis of financing barriers to small and medium-sized enterprises. In this research, financing obstacles for small and medium-sized enterprises were identified using the Q methodology (combination of two qualitative and quantitative methods). After reviewing the research literature and performing interviews with 12 CEOs of the companies, 64 barriers for *small and medium*-sized enterprises were identified. These barriers were rated by 84 participants, including financial managers, supply managers and CEOs of companies. Finally, by using Q factor analysis, the different views (subjective patterns) of the participants were identified regarding financing barriers, and accordingly, five subjective patterns were identified that explained about 79.09% of the total variance. In respondents' subjective patterns, lack of competitive market conditions between companies, not providing necessary training in the field of entrepreneurship and business, not having the necessary collateral to receive bank loans, existing restrictions in attracting foreign capital and insufficient government support for *small and medium*-sized enterprises, respectively were recognized as the most important financing barriers.

In a study on the identification and ranking of factors affecting the development of *small and medium*-sized enterprises in border areas, Shah Beigi (2019) used the Delphi method and the opinions of experts in the industrial towns of Sistan and Baluchistan province. After identifying the causes and effective factors, 12 important factors were identified; these factors were categorized in four more general categories, government policy and laws, technology, product or service features, and the financial sector, and were ranked using the fuzzy hierarchical analysis method (Shahbeigi, Malihe, 2019).

In a research, Akhawan (2018) investigated the failure factors of new entrepreneurs in *small and medium*-sized enterprises. This qualitative research was conducted based on the research method of narrative and discourse analysis, using the open interviews with 8 new entrepreneurs who failed in their businesses. The main factors of failure of new entrepreneurs were identified and introduced in 4 categories and in order of priority: internal problems (poor knowledge, experience and entrepreneurial skills and measures of the owner/entrepreneur), governance problems (government and rules), financial problems (financing and banking system) and finally environmental problems (unsuitable business environment). Based on the comparison with other researches, the most basic finding of this research is the identification of the role of governance issues and problems (Akhavan, Mohammadreza, 2018).

In a study, Kato & Charoenrat (2018) examined the business continuity management of *small and medium*-sized enterprises. The data were collected from 136 SMEs in Thailand using a questionnaire targeting top management. While this study shows a significant degree of disaster experienced by Thai SMEs, it showed less readiness for business continuity, including the lack of

development of a written business continuity plan (BCP). Although knowledge of BCM and training needs among SMEs are different, the results indicate that perceived disaster readiness, business continuity knowledge and skills are positively correlated with business size scale, operation period and disaster experience. Thus, the study highlighted the importance of extending support to small businesses, especially businesses in disaster-prone areas. Equally important, both public and private sectors can play a crucial role in promoting BCM practices among SMEs (Kato & Charoenrat, March 2018).

Plentnev & Barkhatov (2016) in a study " the business success of small and medium-sized enterprises in Russia and social responsibility of managers", examined the success criteria used by managers of Russian small and medium-sized enterprises based on a survey conducted among the managers of 212 small and medium-sized enterprises in the period of September-November, 2014, and explained the correlation between the trade success of small and medium-sized enterprises and the level of social responsibility of their managers. To estimate the social responsibility, the authors used the average salary values and the ratio of average executives and their managers. Thus, a non-linear relationship was established between the business success of small and medium-sized enterprises and the social responsibility of the manager (Plentnev & Barkhatov, June 2016).

In a study done by Aigboduwa et al., (2013), the promotion of small businesses in the oil and gas industry in Nigeria was examined and stated that operations in the oil and gas industry in Nigeria are mainly classified into upstream and downstream sectors. The upstream sector compromises operations in exploration and production, including seismic survey, wells site preparation, drilling, pipelines and pipeline networks, manifolds, flow stations and compressor stations, storage tanks and export terminals. The downstream sector includes activities for refining crude oil products, including kerosene (DPK), petrol (PMS), Diesel (AGO), domestic gas, etc., distribution and marketing of these products to final consumers. Unfortunately, small and medium sized enterprises have not been sufficiently incorporated in the industry over the years. It is because of the low level of local facilities and the lack of necessary skills of local specialists, technical expertise, human resources and production capacity and the ability to compete well. Thus, a major part of the income is abroad is dedicated to the production of equipment. Therefore, job opportunities are provided for citizens of other countries. It is reported that the oil and gas sector in Nigeria spends 12 billion dollars annually in the form different types of joint ventures and profit division agreements with other countries (Aigboduwa & Oisamoje, 2013).

In the study of Reynolds et al., (2010) (Reynolds, P.D, Hay, M, & Camp, S.M, 2010) and the studies of Lindstrand et al., (2011) (Lindstrand, A, Melén, S, & Nordman, E, R, 2011), it is emphasized that financial mechanisms play the most important role in the growth and development of small and medium –sized businesses. Today, the economy of developed countries is based on small and medium-sized enterprises, and normally entrepreneurs establish these companies, who often do not have the required funds to develop their plans and ideas.

Accordingly, research hypotheses are presented in 4 hypotheses:
1) The component of facility support and credit guarantee has a significant effect on the development of small and mediums-sized businesses in the petrochemical industry.
2) Reducing the costs of paying production inputs has a significant effect on the

development of small and medium businesses in the petrochemical industry.
3) Providing opportunities for joint investment has a significant effect on the development of small and medium-sized businesses in the petrochemical industry.
4) Capacity building for the marketing mix has a significant effect on the development of small and medium businesses in the petrochemical industry.

Research Methods

This research is practical in terms of purpose and descriptive-analytical in terms of method, and a questionnaire was used to obtain data. The statistical population of this research consists of the managers of small and medium-sized businesses in the petrochemical industry. The questionnaires of this research were distributed among 39 managers of this field. Also, in order to measure the variables of the research, the questionnaires of environmental components and the development of small and medium-sized businesses were applied. In this study, the structural equation modeling was used. Also, due to the small size of the statistical population, SMART PLS software was used for data analysis. This software is not sensitive to the sample size and is suitable for data analysis in research with a very small statistical population (Wold, 1989). The validity of the research is examined using confirmatory factor analysis.

Results and Discussion

The frequency distribution of the respondents according to the demographic variables of gender, education level and age is presented in Table 1.

As shown in Table 1, 82% of the respondents are male and 18% are female. Most of the respondents (46.2%) have a master's degree and mostly (41.1%) are between 40 and 50 years old. Table 2 shows the descriptive indices of the research variables, including the mean and standard deviation, along with the results of the *Kolmogorov-Smirnov* test to check the normality of the distribution of the variables. Considering that the significance level of the Kolmogorov-Smironov Z statistic for three of the variables is less than 0.05, it is state that the null hypothesis is rejected and H1 is supported at the error level of 5%. In other words, the distribution of these three variables is not normal.

In the followings, considering the non-normality of the distribution of some variables and the small sample size, structural equation modeling is used in *WarpPLS* software to fit the model and test the research hypotheses. In order to fit the research model, the fit indices of the structural equation model were used, so the indices are estimated as follows:

Table 1. Frequency distribution of respondents based on demographic variables

Gender	Man	Woman	Total	-	-
F	32	7	39	-	-
F%	82	18	100	-	-
Education	Diploma and associate	BA	MA	Ph.D.	Total
F	4	9	18	8	39
F percentage	10.3	23.1	46.2	20.4	100
Age (year)	Below 30 years	30 - 40	40 - 50	Above 50 years	Total
F	2	10	16	11	39
F percentage	5.1	25.6	41.1	28.2	100

Table 2. The mean and standard deviation of the research variables and the normality of their distribution

Variable	Mean	SD	Z statistics *Kolmogorov-Smirnov* test	Significance level
Loan support and credit guarantee	4.28	0.85	0.248	0.001
Reduce financing costs	2.12	0.75	0.132	0.084
Providing joint venture platform	1.82	0.59	0.133	0.080
Capacity building for marketing mix	4.31	0.89	0.222	0.001
Development of businesses	4.32	0.91	0.226	0.001

Structural model evaluation

WarpPLS software provides four indicators for model fit, including: Average Path Coefficient (APC), average R-Squared (ARS), average adjusted R-squared (AARS) and average Block VIF (AVIF). The values of these indicators are shown in Table 3.

As shown in Table 3, the significance level for the average path coefficient (APC), average R-Squared (ARS), average adjusted R-squared (AARS) is equal to 0.0001 and is smaller than 0.001. Also, the Average Block VIF (AVIF) is equal to 1.18 and is smaller than 3.3, which indicates the goodness of fit of the model.

Table 3. Appropriateness indices of the research model

Criterion	Calculated value	Significance level	Acceptable value	Result
Average Path Coefficient (APC)	0.27	0.001	0.001 < Significance level	Supported
Average R-Squared (ARS)	0.92	0.0001	0.001 <Significance level	Supported
[1] Average adjusted R-squared (AARS)	0.91	0.0001	0.001 <Significance level	Supported
Average Block VIF (AVIF)	2.65	-	Less than 3.3	Supported

Evaluate the predictive power of the model

To evaluate the predictive power of the model, the coefficient of determination (R^2) and the coefficient of prediction (Q^2) are used. The calculated values for these two criteria are illustrated in Table 4.

Table 4. Evaluation of the predictive power of the research model

Variable	Businesses development
Coefficient of determination	0.92
Predictive coefficient	0.87

As shown in Table 4, both coefficients are acceptable, so the mentioned model has the necessary capacity and predictive power. Thus, it can be said that the research model is well fitted, so it is supported. Indeed, the given indicators evaluate the quality of the conceptual model as suitable.

Therefore, after verification of the model, the results of the structural analysis can be used to test the hypotheses and interpret them.

Interpretation of the main research hypotheses

Figure 1 shows the test results of the research hypotheses and the structural relations between the variables of the research model. The criterion for supporting or rejecting research hypotheses is the level of significance and t statistics. If the significance level of a relation is less than 0.05, or the t-statistic is outside the range (1.96, -1.96), that relation is supported at the 5% error level.

First research hypothesis:

The first hypothesis examines the effect of loan support and credit guarantee on the development of small and medium-sized

businesses in the petrochemical industry. As shown in Figure 1 and Table 5, the path coefficient of this relationship is equal to 0.39 and its t-statistic is equal to 2.85, which is outside the range (1.96, -1.96). Also, its significance level is equal to 0.004 and is smaller than 0.05. Therefore, it can be stated that loan support and credit guarantee have a significant impact on the development of small and medium-sized businesses in the petrochemical industry. Thus, the first hypothesis is supported at the 5% error level.

tab
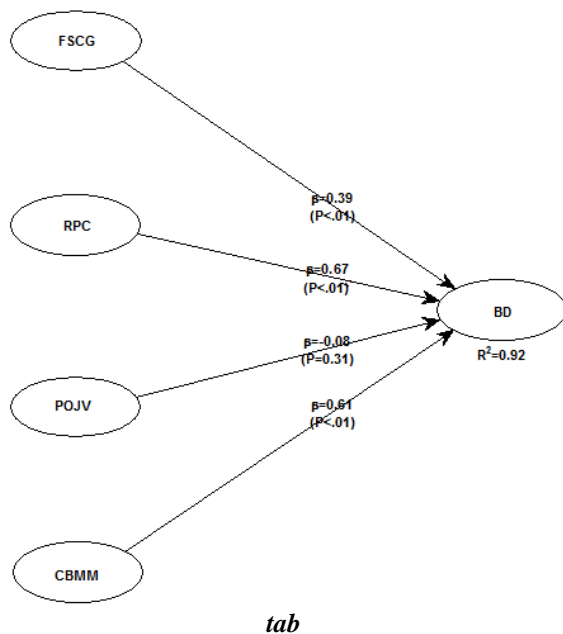
Second research hypothesis
The second hypothesis examines the impact of reducing production input costs on the development of small and medium-sized businesses in the petrochemical industry. As shown in Figure 1 and Table

5, the path coefficient of this relationship is equal to 0.67 and the t-statistic is equal to 6.83, which is outside the range (1.96, -1.96). Also, its significance level is equal to 0.001 and is smaller than 0.05. Hence, it can be stated that reducing the costs of providing production inputs has a significant impact on the development of small and medium-sized businesses in the petrochemical industry. As a result, the second hypothesis is supported at the 5% error level.

Third research hypothesis
The third hypothesis investigates the effect of reducing production input costs on the development of small and medium-sized businesses in the petrochemical industry. As shown in Figure 1 and Table 5, the path coefficient of this relationship is equal to 0.08 and the t-statistic is equal to -0.49, which is in the range (1.96, -1.96). Also, its significance level is equal to 0.314 and is greater than 0.05. Therefore, the null hypothesis is not rejected. In other words, based on the findings of this research, providing joint investment platform does not have a significant effect on the development of small and medium –sized businesses in the petrochemical industry. As a result, the third hypothesis of the research is rejected at the error level of 5%.

Fourth research hypothesis
The fourth hypothesis examines the impact of capacity building for marketing mix on the development of small and medium-

Table 5. The result of examining the relationship between financing components and business development

	Path coefficient	T-statistics	Significance level
Loan support and credit guarantee ← Businesses development	0.39	2.85	0.004
Reduce the costs of production inputs providing ← Businesses development	0.67	6.83	0.001
Providing the platform of joint venture ←Businesses development	0.08	-0.49	0.314
Capacity building for marketing mix ← Businesses development	0.61	4.94	0.001

sized businesses in the petrochemical industry. As shown in Figure 1 and Table 5, the path coefficient of this relationship is equal to 0.61 and the t-statistic is equal to 4.94, which is outside the range (1.96, -1.96). Also, its significance level is equal to 0.001 and is smaller than 0.05. Hence, it can be said that capacity building for marketing mix has a significant impact on the development of small and medium-sized businesses in the petrochemical industry. As a result, the fourth hypothesis is supported at the 5% error level.

Conclusion

As mentioned, the present study was aimed to analyze the effect of financing components on the development of small businesses in Iran's petrochemical industries. According to the theoretical model of the research, the first hypothesis of the research is evaluated and supported, this result is consistent with the findings of Moradi et al. (2020), Moghsem et al., (2019), Kato & Charoenrat (2018) and Plentnev & Barkhatov (2016) . Based on the investigated theoretical basics, controlling financing factors by small and medium-sized business managers in petrochemical industries is very difficult and in some cases impossible, however, these businesses can manage and control the effects of financing factors and create opportunities for the development of their businesses during environmental changes through supportive measures and policies as well as adopting flexible management methods. Also, based on the support of the second hypothesis of the research, it can be stated that the component of reducing production input costs has a significant impact on the development of small and medium-sized businesses in the petrochemical industry. Thus, it can be said that decreasing the costs of providing production inputs is one of the main factors influencing the development of small and medium-sized businesses in the petrochemical industry. This finding is

consistent with the results of the study by Reynolds et al., (2010) and Aigboduwa et al., (2013). According to the public choice theory, the outcome of the increase in laws is the establishment of groups with political power and additional and complex laws and regulations can increase the inefficiency of institutions supporting small and medium-sized businesses in Petrochemical industry by creating the phenomenon of bribery.

Also, given the support of the third hypothesis of the research, it can be stated that the component of providing joint investment platform has a significant effect on the development of small and medium-sized businesses in the petrochemical industry. Accordingly, some factors such as inflation, access to cheap financial resources, as well as the macroeconomic situation can facilitate or weaken the development of small and medium-sized businesses in the petrochemical industry. Namely, in the current conditions of Iran's economy, the inflationary stagnation governance has created significant and negative impacts on the performance of production units, which requires further investigation in future. The results of testing and supporting the fourth hypothesis of the research indicate that capacity building for marketing mix has a significant effect on the development of small and medium-sized businesses in the petrochemical industry. This result is consistent with the research findings of Karimi and Bozarjomehri (2013), Moqsem et al., (2019), Shahbeiki (2019), Akhavan (2019), Plentnev & Barkhatov (2016) and Reynolds et al. (2010). Therefore, capacity building for marketing mix can lead to the development of small and medium-sized businesses in the petrochemical industry while facilitating business processes. Also, based on the findings of the hypothesis test, research recommendations are presented:

Policy-making organizations and institutions in supporting small and medium-sized enterprises in the

petrochemical industry should focus on the factors of the external environment that affect the development of this type of business in adopting support strategies.

It is recommended that capacity building for the marketing mix and its components should be a priority for policies for the development of small and medium-sized businesses in Iran's petrochemical industry.

It is recommended to consider the technological environment and the factors influencing it as a key issue in supporting the development of small and medium-sized businesses in the petrochemical industry. Also, there are limitations in the process of performing the present research, the important and effective items are mentioned as follows:

Lack of theoretical and specialized references in the field of small and medium-sized businesses in the petrochemical field.

Few studies on the effect of financing factors on the development of small and medium-sized businesses in the petrochemical field.

The difficulty of investigating an integrated analysis of the subject because of the variety of activities and small and medium-sized businesses in the petrochemicals.

Restricting communication and access to the statistical population due to the spread of the Corona virus.

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