

	Validity test	Divergent validity	CR>AVE	The amount of composite reliability is greater than AVE For all the factors	Approval for all the factors
			Transverse load test	Load factor of all observable variables on the corresponding latent variable is at least 0.1 higher	Approval for all the indices
			Fornell-larcker test	Square root of the AVE for each factor is more than a correlation of the factor with other reflective factors are in the model	Approval for all the factors
			Quality Test of measurement model	Coefficient of variation of shared indicators with three values including: 0.35(strong), 0.15 (average),0.02(weak)	Quality measurement of model For all the factors and variables is strong
Analysis of structural model	Factor of significance		T.value for all relationships between the independent and dependent Variables is Greater than the absolute value of 1.96	It is confirmed for all of research relations	
	The coefficient of determination R2		Value of determination coefficient: 0.67 (strong), 0.33 (average), 0.19 (weak)	Coefficient of determination is moderate to high for economic, regulatory, supervisory and technological factors and it is strong for other factors	
	Relationship of predictor Q2		The amount of Q2 with the predictive power: 0.35 (strong), 0.15 (average), 0.02 (weak)	Moderate to high predictive power is confirmed for general , proprietary, Regulatory and supervisory and economic factors and strong predictive power are confirmed for all other variables	
Analysis of the overall model	GOF		The index with three values: 0.35 (strong), 0.15 (average), 0.02 (weak)	GOF=0.68 Very good fit. The general model is confirmed	

According to the table above, indicators and factors affecting innovation management in petrochemical companies producing polyethylene products are obtained as Table 2.

Table 2. Indicators and factors affecting innovation management in petrochemical companies producing polyethylene products									
Row	Factors	R2	Dimensions	R2	Indicators	ID Code	Loading factor	R2	Ranking
1	General factors	0.934257	Economic	0.501845	Access to financial resources	AE3	0.755	0.57	Third
2					Development of downstream / upstream industries and products	AE8	0.789	0.62	Second
3					Economic Development	AE9	0.838	0.68	First
4			Organizational	0.893683	Method of leadership	BO4	0.707	0.49	Eighth
5					Innovation strategy	BO5	0.789	0.60	Third
6					Organizational Culture	BO7	0.780	0.60	Fourth
7					Specified objectives and strategies	BO8	0.767	0.57	Fifth
8					Thinking about team work	BO9	0.841	0.70	Second
9					Organizational Structure Reinforcing Innovation	BO11	0.851	0.72	First
10					Organizational Maturity	BO12	0.741	0.54	Seventh
11					Motivational Systems	BO13	0.758	0.56	Sixth
12					Regulatory	0.429460	Antitrust laws	CR3	0.805
13			Specified national industrial policies	CR4			0.855	0.72	First
14			Privatization policy	CR5			0.826	0.67	Second

15	Specific factors	0.916550	Technological and Technical	0.600180	The technological capabilities of providers	DT2	0.854	0.72	Second
16					Technology Compatibility	DT3	0.859	0.72	First
17					Development of technology	DT4	0.834	0.68	Third
18			Marketing	0.686799	Increased use of product by current customers	EM2	0.788	0.60	Third
19					Sales Support	EM3	0.839	0.68	First
20					Competitive environment of product	EM4	0.808	0.64	Second
21					Market needs	EM5	0.724	0.51	Fourth
22			System		Specialized systems for screening ideas	FS1	0.831	0.68	First
23					Access to information and knowledge systems in petrochemical field	FS2	0.743	0.54	Eighth
24					Commercialization mechanism of Innovative ideas in the market	FS3	0.770	0.59	Second
25					Existing clear procedures and mechanisms	FS4	0.755	0.56	Fifth
26					Controlling records of previous measures	FS5	0.756	0.56	Fourth
27					Company status in the value chain	FS6	0.747	0.54	Sixth
28					Knowledge management and knowledge processes	FS7	0.765	0.57	Third

29					The flexibility of structure and operational processes	FS8	0.744	0.54	Seventh
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according to the indices extracted from a literature review and conducted research as well as experts in petrochemical industry and after confirmation of the model fitting based on figure 1 and table 1, innovation management model in petrochemical companies producing polyethylene products was obtained as shown in figure 5.

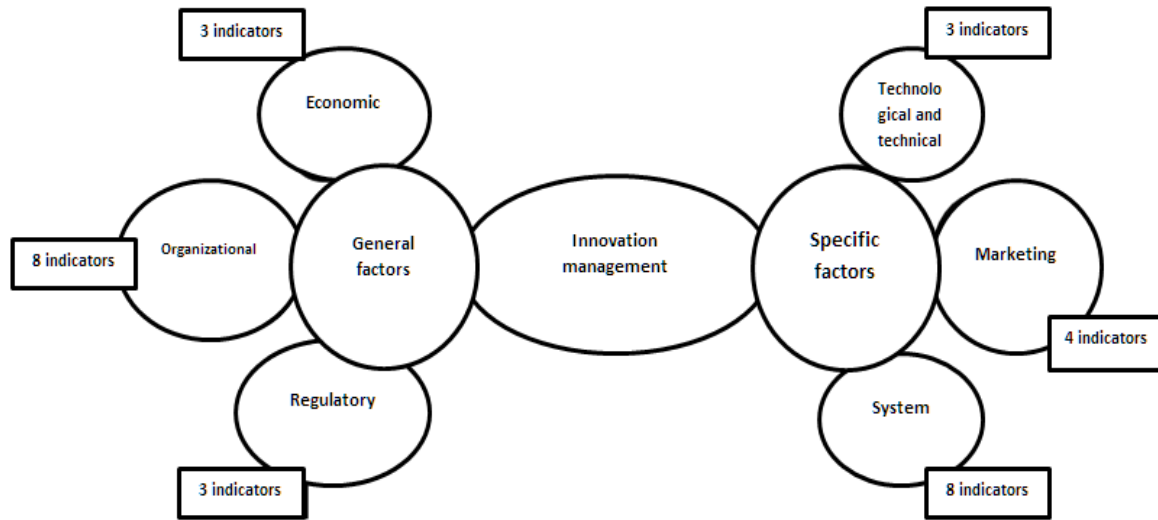


Figure 5. Model of innovation management in petrochemical companies producing polyethylene products

In this study, above-mentioned criteria as effective variables on necessity of innovation in petrochemical companies producing polyethylene products were extracted by taking advantage of previous studies related to the subject as well as using opinions of experts.

The criteria are divided in two dimensions including general and specific factors. Economic, organizational and regulatory and supervisory indicators were considered in the general dimension while technological and technical, marketing and system indicators were taken into account in specific dimension.

5. The results of the third research question

According to the output of Smart PLS software, ranking of effective factors was done according to the coefficient of determination .therefore, the rating of each factor and the dimensions affecting innovation management in the petrochemical industry is presented in table 3.

Table 3. Ranking of effective factors and dimensions on innovation management in petrochemical companies producing polyethylene products

Factor	Path coefficient	R2	Rank	Dimensions	Path coefficient	R2	Rank
General	0,967	0,930	First	Economic	0.708	0,001	Fifth
				Organizational	0.945	0,893	First
				Regulatory	0.655	0,429	Sixth
Specific	0,907	0,910	Second	Technological and technical	0.775	0,600	Forth
				Marketing	0.829	0,787	Third
				System	0.901	0,811	Second

6. Discussion and conclusion

as the major part of basic petrochemical products in Iran are intended currently for export, considering international markets for investigating economy conditions and Petrochemical development projects is essential and inevitable. This research was conducted in order to achieve appropriate solutions in order to solve the challenges and development of innovation management model in petrochemical companies which are producers of polyethylene products. In this study, two factors, 6 dimensions and 58 indices were obtained in this study in which the results of research indicated that economic, organizational, regulatory and supervisory, technological and technical marketing and systemic dimensions which were constituent dimensions of the general and specific the factors, have a significant effect on innovation management in petrochemical companies producing polyethylene products. As a result, between the two factors involved in this aspect, general factor has the maximum influence on innovation management. On the basis of the outcomes obtained of SMART PLS software output, indicators with the maximum amount of R2, have a greater share in explaining variance, and also in strengthening and predicting behavior of the related factors, thus, more attention is required for them.

According to the results presented in Table 2, 3 and Fig. 1, following results and the recommendations are obtained: Economic development (AE9) in economic factor of the indicator has the highest R2 among other indicators of this dimension. This means that economic factor has the greatest share in Explaining variance of economic factor. In this regard, it is suggested that government increases investment in petrochemical companies producing polyethylene products and also pays special attention to such companies.

The organizational structure of innovation reinforcement (BO11) in the organizational factor of indicator has the highest R2 In this context, it is recommended that structure of the petrochemical companies producing polyethylene products is revised and flexible structure with minimal bureaucracy is replaced.

Specified national industrial policies (CR4) in regulatory and supervisory factor have the greatest share in explaining this factor. It is recommended that government takes action on codification of the industrial policies which reinforces innovative products for petrochemical companies in the field of Polyethylene to strengthen this factor.

Compatibility of technology (DT3) in technological and technical factor has the highest r2 in which improvement to greater efficiency is suggested so that innovative technologies are used locally and considering the specific circumstances of the companies. Moreover, necessary Adaptability in this area is done in the field of technology transfer.

Index of sales support (EM3) in marketing factor has the highest R2. Therefore, it is recommended that process of selling support is revised and custodian unit is also strengthened by education and training in order to strengthen this indicator.

The highest amount of R2 in system factor is related to specialize screening system of ideas (FS1) .it is recommended that a system to collect and select ideas and eventually to implement selected ideas, that can lead to can lead to value takeover, is created in order to maintain and strengthen the proposed indicator.

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Identification and evaluation of factors affecting the management of innovation in Iranian pharmaceutical industry

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Providing a Model for Assessment and Analysis of Technological Capabilities in Iran Petrochemical Industries Engineering Services

Consideration and Evaluation of Knowledge Management Performance in Iranian Automotive Industry