

1 **Causal-Comparative Analysis of Factors Affecting Psychological Capital of Knowledge-**  
2 **Based Companies: The Mediating Role of Entrepreneurial Orientation and Social Capital**

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5  
6 **Abstract**

7 Nowadays, entrepreneurship and knowledge-based companies are highly considered. This study  
8 aimed to investigate the factors affecting Psychological Capital (PsyCap) in two groups of  
9 agricultural and non-agricultural knowledge-based companies from Science and Technology Park  
10 (STP) of Fars Province, Iran. The population included the companies located in the STP incubators  
11 in Fars province. The data were collected from 238 participants (100 from agricultural companies  
12 and 138 from non-agricultural companies) as a sample through a questionnaire. The difference  
13 between agricultural and non-agricultural companies was remarkable in the effect of services  
14 provided by the incubators on the other variables. For the agricultural companies, the services  
15 provided by the park had no significant effect on entrepreneurial orientation, social capital, and  
16 product development process, but indicating a direct significant effect on PsyCap. Regarding the  
17 non-agricultural companies, the services provided by the park had a significant effect on  
18 entrepreneurial orientation, social capital, and product development process but had no direct  
19 effect on PsyCap. Due to the objectives of incubators` establishment as well as the cost and  
20 investment in this regard, the lack of appropriate efficiency is completely obvious in these centers,  
21 especially about agricultural companies which can be effective in providing food security using  
22 new technologies. Regarding the effect of services and facilities provided by STPs on the  
23 performance of companies at incubators, it is suggested that such services and facilities become  
24 more specialized and reinforced. In addition, it is emphasized to consider the necessity of  
25 educational and operational strategies in order to strengthen the entrepreneurial orientation, social  
26 capital, and PsyCap among the members.

27 **Keywords:** Resilience, Self-efficacy, Optimism, Hope, Social Capital, Entrepreneurial  
28 Orientation, Product Development Process.

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33 **Introduction**

34 In recent years, governments are trying to resolve economic issues such as job development,  
35 reducing unemployment, economic growth, increasing competition and improvement of the  
36 country's income by supporting small and medium-sized enterprises (SMEs). Incubators can be a  
37 facilitator and sponsor as a government support tool for these SMEs, especially in the start-up of  
38 these businesses. Actually, small companies play an essential role in employment as well as the  
39 economy improvement. However, their survival as new-born companies is often difficult and full  
40 of challenges, thus, many new companies are unfortunately unable to survive in their first years,  
41 which can be referred to as critical years, for various reasons. One can mention not having enough  
42 capital and experience and not being able to compete with other newly established or old  
43 companies. What should be done for these companies? An obvious solution is to create a  
44 supportive environment for young enterprises (Bollingtoft, 2012). Creating and development of  
45 incubators would be considered as one of these supportive programs.

46 Today, entrepreneurial ecosystems are highly regarded and numerous studies (Torun *et al.*, 2018;  
47 Covin *et al.*, 2020) are available on this subject. Governments are invested for the growth and  
48 development of the STPs and incubators (Rezaei-Moghaddam *et al.*, 2023). The National Business  
49 Incubator Association (NBIA) defines business incubators as "nurtures the start-up companies and  
50 helps them survive during the start-up period when they are vulnerable." Such centers provide  
51 appropriate business support services and resources for new companies. The most significant  
52 objectives of incubators are creating jobs, strengthening the entrepreneurial atmosphere,  
53 maintaining jobs in society, creating growth in local industry, and diversifying local economies"  
54 (Kemp, 2013). Incubators are considered as a part of entrepreneurial ecosystems. The activity of  
55 incubators has different generations. Accordingly, the services and facilities provided to  
56 companies are different. The first generation is related to the years before 1980 and focused mainly  
57 on providing an administrative atmosphere and some common facilities. The second generation is  
58 related to 1980-1990 which expanded into consulting services, network access, and sometimes  
59 investment. The main focus is on start-ups in the information technology sector and advanced  
60 technologies with the onset of the third generation in the late 1990s and mostly after 2000 (Torun  
61 *et al.*, 2018). Therefore, the main purpose of current research was to study the effects of different  
62 services and facilitates of science parks through incubators creation for innovative young SMEs in  
63 their first years of establishment. The other research questions were to understand that placing

64 SMEs at incubators could be helpful for improving the individual characteristics of company  
65 members such as entrepreneurial orientation (creativity, innovation, risk-taking and competition  
66 spirits) as well as other sociological factors like social capital (better networking and team  
67 working) and psychological capital (optimistic and hopeful entrepreneurs with resilient  
68 businesses) or not?

69 The services and facilities provided by STPs would be effective on the psychological capital of  
70 companies` members. Therefore, it would be important to study the effects of these services on  
71 entrepreneurs` PsyCap working in the knowledge-based companies settled at the park`s incubators.

72 PsyCap is highly critical for the success of entrepreneurs since entrepreneurs always encounter a  
73 lack of financial, human, and social capital. As a result, entrepreneurs should trust themselves in  
74 this regard (Elsafty *et al.*, 2020). The services provided to companies in incubators potentially  
75 increase the synergy of psychological factors and PsyCap of companies, affecting the performance  
76 of entrepreneurs in business incubators. Incubators can increase the PsyCap of innovators and  
77 entrepreneurs and enhance the self-confidence and optimism of innovators. The individuals  
78 working in incubators continue entrepreneurship by improving self-efficacy, which has a positive  
79 effect on the innovation performance of technology start-up companies (Wang *et al.*, 2020).

80 Entrepreneurial orientation (EO) is considered as another psychological factor which was affected  
81 from services and facilities of parks. In other words, providing and facilitating various services  
82 with higher quality for start-up companies at park`s incubators would be effective on the  
83 entrepreneurs` incentives and improve their personal characteristics as well. Entrepreneurial  
84 orientation is regarded to cope with environmental challenges stimulating entrepreneurial behavior  
85 and creating flexibility and adaptability for businesses. The significance of EO is hidden in its  
86 potential to help the senior management in the company to define the organizational goal, maintain  
87 the company vision, and develop a strategy to achieve a competitive advantage over competitors  
88 (Covin *et al.*, 2020). It is considered as the orientation of senior managers or company owners to  
89 entrepreneurial efforts. Some studies indicated a positive relationship between EO and overall  
90 company performance (Rezaei and Ortt, 2018). Working at incubators can promote innovation,  
91 risk-taking and entrepreneurial spirit.

92 Social capital (SC) can be significant in the entrepreneurship of companies located in incubators.  
93 It considers the consequences of human socialization and their relationships with individual and  
94 social structures as well as the resources which are available to individuals and groups through

95 membership in social networks (Carrillo Álvarez and Riera Román, 2017). SC refers to the  
96 characteristics of social organizations such as networks, norms, and trust which facilitate action  
97 and cooperation for mutual benefit and improves, creates significant value, and increases  
98 performance when the companies in the incubator create strong network interactions (Hughes *et*  
99 *al.*, 2007). In a trustworthy environment, the companies located in the incubator tend to help each  
100 other because of the low risk of opportunistic behavior. Establishing a relationship with customers  
101 and friends enables the entrepreneur to have access to key strategic business information. Thus,  
102 facilitating the profitability of businesses and supporting networks result in improving growth and  
103 survival for new companies (Elsafy *et al.*, 2020).

104 Product development process (PDP) is one of the essential processes for the success, survival, and  
105 renewal of organizations, particularly for the companies in fast or competitive markets. Product  
106 development is considered as a set of activities which starts by identifying and understanding the  
107 opportunities on the market and ends by producing, selling, and delivering a product  
108 (Theodorakopoulos *et al.*, 2014). The PD process is critical for producing the products which  
109 satisfy customer needs and differentiate the company from competitors. An incubator facilitates  
110 the development and commercialization of new products and new business models by improving  
111 some opportunities to access resources.

112 The early models and theories of behavior analysis emphasized on the important variables of  
113 attitude, intention and subjective and social norms as explanations of behavior (Ajzen, 1991). The  
114 evolution trend of these models in TPB model showed that other important elements, especially  
115 the perceived control of behavior, also play an undeniable role in the occurrence of the considered  
116 behavior. Inspired by these models, the conceptual framework was designed for the analysis of  
117 PsyCap of knowledge-based companies (Figure 1). So that, SFSTP represents the perceived  
118 control of behavior and EO expresses the tendency and intention for entrepreneurial activities in  
119 companies` members. Considering that entrepreneurs in companies are engaged in PDP both  
120 individually or in the form of collective activities of the company, the social capital variable was  
121 clearly included in the model as an explanation of reference groups` viewpoints (subjective and  
122 social norms) affecting entrepreneurs. Therefore, all these variables were analyzed on the  
123 dependent variable of PsyCap in theoretical model. On the other hand, Entrepreneurial Event  
124 Model (EEM) (Shapero and Sokol, 1982), similar to TPB, offers three affecting factors to predict  
125 entrepreneurial behavior which consists of perceived desirability, perceived feasibility and

126 propensity to act that refers to services and facilities of STPs (SFSTP). Based on these two models,  
 127 TPB and EEM, it can be seen that the influencing factors of entrepreneurial behavior comprise  
 128 three components of attitude, social, and psychological dimensions which equivalent to  
 129 entrepreneurial orientation, social capital and psychological capital, respectively. Previous studies,  
 130 highlighted the role of these three factors (EO, SC and PsyCap) as strong predictor of successful  
 131 entrepreneurship (Linan and Santos, 2007; Do and Dadvari, 2017; Jin, 2017). These indicate,  
 132 theoretically and empirically, that PsyCap is positively associated with increased performance  
 133 (SFSTP) and positive attitudes (EO). PsyCap is also part of the study of motivation theory, which  
 134 assess optimistic variables, hope, self-efficacy and resilience. Referring to the two theories of TPB  
 135 and EEM, it appears that attitude (EO), social and psychological dimensions (SC and PsyCap), are  
 136 vital in order to improve entrepreneurship behavior. So, it makes sense that EO and social capital  
 137 are considered to be mediate effect SFSTP to PsyCap and entrepreneurial behavior (Esfandabadi  
 138 *et al.*, 2018; Mahfud *et al.*, 2020). This study evaluates the effect of each service variable provided  
 139 in the park, social capital, EO, and PDP on the PsyCap of companies located in STP Incubators in  
 140 two areas of agricultural and non-agricultural knowledge-based companies (Figure 1).

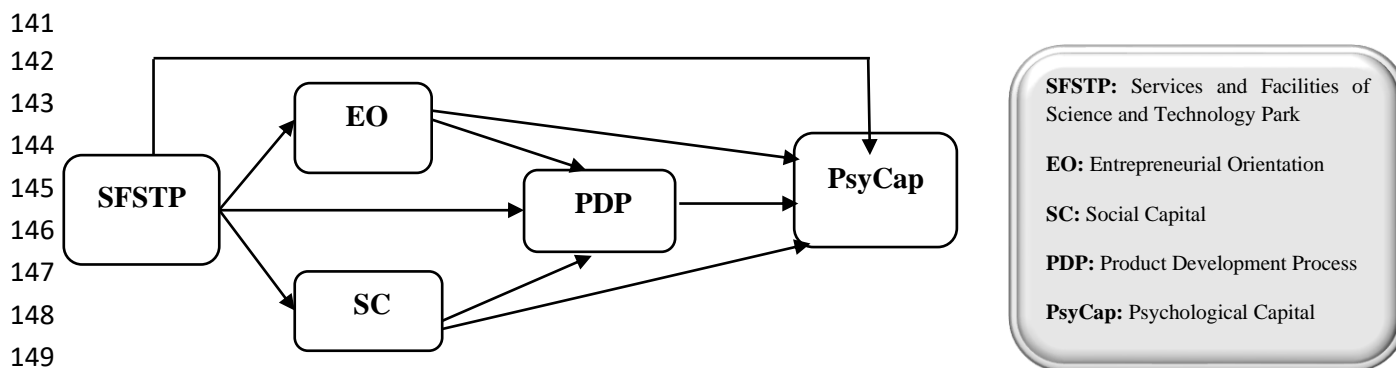


Figure 1. Theoretical framework of study.

## Research Method

152 This study was conducted using survey. The study population included the members of  
 153 knowledge-based companies located in STP Incubators in Fars province, Iran. According to the  
 154 statistics of the STP Deputy Office, there were 2,502 members from 331 companies. The sample  
 155 was selected through multi-stage stratified random sampling method based on the sampling  
 156 formula (Fowler, 2009). First, 79 companies (Equation 1) were randomly selected and then, 238  
 157 members (Equation 2) of the managers and members of the companies were estimated as the  
 158 samples. Third, these 238 members were selected from both types of companies active in the

159 agricultural field (100 members) and companies active in non-agricultural fields (138 members)  
160 were randomly selected and studied according to the size of each class.

$$161 \quad n = \frac{N\delta^2}{(N-1)D + \delta^2} \quad \text{(Equation 1)}$$

$$162 \quad n = \frac{(331)(25.6)}{(330) + (25.6)} = 79$$

$$163 \quad D = \frac{B^2}{4} = 0.25$$

164  $N$  = Total companies of Fars STP

165  $n$  = Sample size

166  $\delta^2$  = Sample variance (*Based on pilot study*)

167  $B$  = Probable error (*Assumed 1 in this study*)

$$168 \quad n = \frac{N\delta^2}{(N-1)D + \delta^2} \quad \text{(Equation 2)}$$

$$169 \quad n = \frac{(2502)(65.9)}{(2501) + (65.9)} = 238$$

170  $N$  = Total employees of the companies of Fars STP

171 Data collection was conducted through a questionnaire from the members of companies located in  
172 STP incubators in 2022. The face validity was confirmed by a group of professors at the School  
173 of Agriculture in Shiraz University, Iran. For testing the reliability of the questionnaire, the pilot  
174 study was carried out by collecting 30 questionnaires out of the main sample (companies located  
175 in the STP in Kerman province). Cronbach's alpha for all variables is higher than 0.9 and the  
176 measurement tool has high reliability. After confirming the questionnaire, the data were collected  
177 and analysed by SPSS16 and SmartPLS2. Descriptive statistics and structural equation model  
178 (SEM) were used for data analysis. Here are the conceptual and operational definitions of the  
179 variables as well as the research hypotheses:

180 **Psychological Capital:** PsyCap is defined as a multi-dimensional factor which refers to the  
181 positive psychological state of a person's growth and is known for optimism, resilience, self-  
182 efficacy and hope (Nkeshimana, 2018). In other words, PsyCap is characterized by self-confidence  
183 (*self-efficacy*) to conduct the required activities to succeed in challenging tasks, positive reference  
184 (*optimism*) about success in the present and future, perseverance in reaching goals and changes in

187 paths towards goals (*hope*) for success, sustainability when the company faces problems and  
188 adversities, and backwardness and even beyond that (*resilience*) to achieve success (Ramsden,  
189 2019).

190 This variable was measured as a set of 18 questions: (a) *Self-efficacy* with four items of "(1)  
191 carrying out duties in collective activities, (2) participating and commenting in critical debates, (3)  
192 determining life goals, (4) facing people to discuss around issues and problems"; (b) *Optimism*  
193 with four questions about "(1) try to show better performance in difficulties, (2) look at positive  
194 aspects, (3) optimistic to the future work, (4) achieving what is expected and desirable"; (c) *Hope*  
195 through five items of "(1) pursuing the business goals, (2) several ways for every problem, (3) be  
196 the most successful person at work, (4) finding many ways to achieve work goals, (5) coping with  
197 the work goals"; and (d) *Resilience* with five questions including "(1) having the ability to solve  
198 the work's problems and obstacles and continue, (2) managing various problems, (3) having the  
199 ability to do all activities alone at special circumstances, (4) overcoming work's problems due to  
200 previous experiences, (5) reduce the vulnerability by diversifying duties and responsibilities"  
201 (Baluku *et al.*, 2016; Luthans and Youssef-Morgan, 2017). The questions were designed with a  
202 Likert scale including never (0), rarely (1), relatively (2), somewhat (3), and completely (4).

203 **Hypothesis 1 (H<sub>1</sub>):** *The members of agricultural and non-agricultural knowledge-based*  
204 *companies are different in terms of the total amount of PsyCap and its four dimensions.*

205 **Social Capital:** It refers to the characteristics of collective action enabling people to cooperate and  
206 act more effectively with each other to achieve common goals. Various aspects of social capital  
207 with an organizational approach are considered in three dimensions. (a) *Structural:* The general  
208 pattern of contacts between individuals, including network relationships between individuals,  
209 network configuration, and appropriate organization; (b) *Communication:* The type of personal  
210 relationships that individuals have with each other based on their interactions, the most significant  
211 aspects of which are trust, commitment and mutual understanding; (c) *Cognitive:* The sources  
212 which provide interpretations and common meaning systems among groups. Cooperation and  
213 common values are the most critical aspects of the cognitive dimension (Hughes *et al.*, 2007;  
214 Fandiño *et al.*, 2015). Social capital was measured with 27 questions ranged from completely  
215 disagree (1), disagree (2), not agree nor disagree (3), agree (4), and completely agree (5).

216 **Hypothesis 2 (H<sub>2</sub>):** *The members of agricultural and non-agricultural knowledge-based*  
217 *companies are different due to the social capital.*

218 **Hypothesis 3 (H<sub>3</sub>):** *Social capital has a positive and direct effect on PsyCap of agricultural and*  
219 *non-agricultural knowledge-based companies.*

220 **Entrepreneurial Orientation:** This variable is defined by five dimensions of (a) **Innovation:** The  
221 desire to introduce new and emerging things through experimentation and creative processes for  
222 developing new products, services, and new processes; (b) **Pioneering:** As one of the  
223 characteristics of a market leader who has the foresight ability for using opportunities in predicting  
224 future market demands; (c) **Aggressive competition:** Means numerous efforts to surpass industrial  
225 competitors which is characterized by an aggressive situation or reaction to improve a position or  
226 overcome a threat in a competitive market; (d) **Risk-taking:** Means making decisions and  
227 taking action without awareness on the possible results; and (e) **Independence:** Independent action  
228 by an individual or team to present a business concept or vision until the work is completed (Satar  
229 and Natasha, 2019; Covin *et al.*, 2020). This variable was measured with a set of 33 questions  
230 (nine items for innovation, five questions for pioneering, seven items for aggressive competition,  
231 eight ones for risk-taking, and four items for independence) ranged from completely disagree (1),  
232 disagree (2), not agree neither disagree (3), agree (4), and completely agree (5).

233 **Hypothesis 4 (H<sub>4</sub>):** *The members of agricultural and non-agricultural knowledge-based*  
234 *companies are different due to their entrepreneurial orientation.*

235 **Hypothesis 5 (H<sub>5</sub>):** *Entrepreneurial orientation has a positive and direct effect on PsyCap of*  
236 *agricultural and non-agricultural knowledge-based companies.*

237 **Services and facilities of STP:** All of the services and facilities provided by STP to the companies  
238 located in the park incubators. Such services include physical services (office and laboratory  
239 spaces, etc.), financial facilities (loan payment, assistance in access to loan from banks, investors,  
240 etc.), communication (relationship with internal and external customer networks, relationship with  
241 academic centers, creating network activities between companies inside and outside the incubator),  
242 information (training programs such as business training, insurance, tax, trade and marketing),  
243 human (introducing the workforce, identifying the management team and advisory boards and  
244 trainers), legal (familiarity with laws and regulations, consulting legal issues and intellectual  
245 property) and organizational (helping international trade, technology commercialization, etc.)  
246 (Pauwels *et al.*, 2016). This variable was measured with 36 questions in the form of a Likert scale  
247 as follows: Never (0), rarely (1), sometimes (2), often (3), and always (4).



248 **Hypothesis 6 (H<sub>6</sub>):** *The members of agricultural and non-agricultural knowledge-based*  
 249 *companies are different in terms of the services and facilities that have been benefitted from STP.*

250 **Hypothesis 7 (H<sub>7</sub>):** *Services and facilities provided by STP has a positive and direct effect on*  
 251 *PsyCap of agricultural and non-agricultural knowledge-based companies.*

252 **Product Development Process:** It normally follows a process in which a company pictures a new  
 253 product idea and then studies, plans, designs, prototypes, and tests it before introducing to market.  
 254 The PD process is required for creating the products which meet customer needs and differentiate  
 255 the company from competitors (Kazimierska and Grębosz-Krawczyk, 2017; Sharma, 2019). This  
 256 variable was measured with 12 questions ranged from never (0), rarely (1), sometimes (2), often  
 257 (3), and always (4).

258 **Hypothesis 8 (H<sub>8</sub>):** *The members of agricultural and non-agricultural knowledge-based*  
 259 *companies are different due to the process of product development.*

260 **Hypothesis 9 (H<sub>9</sub>):** *Product development process has a positive and direct effect on PsyCap of*  
 261 *agricultural and non-agricultural knowledge-based companies.*

262

## 263 Results and discussion

264 Agricultural and non-agricultural companies had no significance differences in terms of STPs, EO,  
 265 social capital and PD process (Table 1). Thus, due to the t-tests results,  $H_2$ ,  $H_4$ ,  $H_6$  and  $H_8$  of study  
 266 were rejected.

267

268 **Table 1.** T-test results of variables among agricultural and non-agricultural companies.

| Variable      | Agricultural companies |       | Non-agricultural companies |       | T value | Sig.  |
|---------------|------------------------|-------|----------------------------|-------|---------|-------|
|               | mean                   | SD    | mean                       | SD    |         |       |
| SFSTP         | 66.78                  | 28.56 | 62.35                      | 28.45 | 1.18    | 0.238 |
| EO            | 127.94                 | 18.55 | 127.36                     | 1.14  | 0.247   | 0.805 |
| SC            | 108.89                 | 16.88 | 110.17                     | 15.34 | -0.61   | 0.543 |
| PDP           | 31.99                  | 6.54  | 31.22                      | 7.08  | 0.776   | 0.439 |
| PsyCap        | 55.62                  | 9.45  | 53.84                      | 9.02  | 1.47    | 0.143 |
| Self-efficacy | 13.27                  | 2.18  | 12.62                      | 2.58  | 2.055   | 0.041 |
| Hope          | 15.12                  | 3.36  | 14.8                       | 3.08  | 0.744   | 0.457 |
| Resilience    | 14.79                  | 3.09  | 14.74                      | 2.98  | 0.131   | 0.896 |
| Optimism      | 12.43                  | 2.52  | 11.67                      | 2.49  | 2.302   | 0.022 |

269

270 **Scale:** (SFSTP: 0-144); (EO: 1-165); (SC: 1-135); (PDP: 0-48); (PsyCap: 0-72); (Self-efficacy: 0-16); (Hope: 0-20); (Resilience:  
 271 0-20); (Optimism: 0-16).

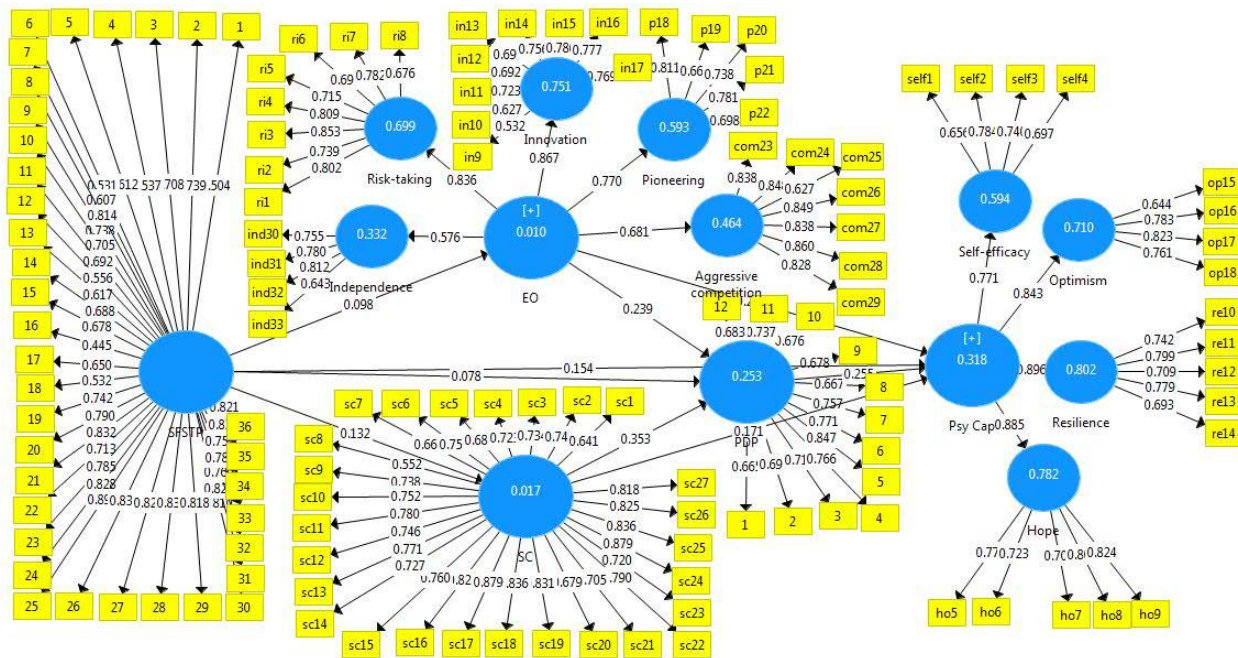
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273 Further, no significant difference was found between agricultural and non-agricultural companies  
 274 in terms of PsyCap (Table 1). Regarding optimism (sig.=0.022) and self-efficacy (sig.=0.041)

275 indicating a significant difference. Since the mean of agricultural companies in both dimensions is  
 276 more than non-agricultural companies, agricultural companies located in STPs have more self-  
 277 confidence in making efforts to succeed in challenging activities (self-efficacy). In addition, these  
 278 companies have a more positive attitude towards success in the present and future (optimism).  
 279 Thus,  $H_1$  of study was rejected which means the agricultural and non-agricultural companies were  
 280 not different in term of total PsyCap, but these companies showed differences due to the self-  
 281 efficacy and optimism dimensions (Table 1).

282  
 283 **First group: Agricultural knowledge-based companies**

284 In this group, 100 individuals were interviewed from the managers and personnel of agricultural  
 285 knowledge-based companies which 61% of them were men and 39% were women. The mean of  
 286 respondents' age of agriculture group were 35 years and their educational level's mean were 18.66  
 287 years. Their mean of working background was 84.14 months (around 7 years) and the mean of  
 288 their settling in the incubators of STP was 35.42 months (about 3 years). First, the conceptual  
 289 model was examined for agricultural companies (Figure 2).



290  
 291 **Figure 2.** Agricultural knowledge-based companies' model.

292  
 293 **Factor loadings:** To evaluate the model reliability, the factor loadings of the items related to each  
 294 variable were studied. If the value is equal to or more than 0.4, the reliability is acceptable. As it  
 295 is shown in Figure 2, the factor loadings of all the items are higher than 0.4 (Davari and Rezagadeh,

296 2017), indicating one of the reasons for the reliability of the measurement model. The range of  
 297 factor loadings of the variables were computed as below:

298 SFSTP: 0.44 to 0.89

299 PDP: 0.66 to 0.85

300 EO: 0.53 to 0.86

301 PsyCap: 0.64 to 0.82

302 SC: 0.56 to 0.88

303 **Cronbach's alpha and composite reliability:** All Cronbach's alphas are higher than 0.7 which is a  
 304 good value, indicating the item reliability of the measurement model. The value of the composite  
 305 reliability coefficients was more than 0.7, showing good composite reliability (Table 2).

306 **Convergent validity:** According to Table 2, the AVE value for all variables is more than or equal  
 307 to 0.5, indicating the convergent validity of the model and the fit of the measurement model.

308 **Divergent validity:** Fornell and Larcker matrix method is used to evaluate the divergent validity.  
 309 In this method, the correlation of a factor with its indicators is compared with the correlation of  
 310 that factor with other variables. Table 3 shows that the AVE root value of all first-order variables  
 311 is more than the correlation value between them, indicating the appropriate divergent validity and  
 312 the optimal fit of the measurement model.

313 **Table 2.** Results of some indices of agricultural companies.

| Variable               | Cronbach's alpha | Composite reliability | AVE  | R <sup>2</sup> | Q <sup>2</sup> | Communality |
|------------------------|------------------|-----------------------|------|----------------|----------------|-------------|
| PsyCap                 | 0.91             | 0.91                  | 0.57 | 0.32           | 0.12           | 0.41        |
| Self-efficacy          | 0.69             | 0.81                  | 0.52 | 0.59           | 0.25           | 0.52        |
| Hope                   | 0.82             | 0.87                  | 0.58 | 0.78           | 0.45           | 0.58        |
| Resilience             | 0.79             | 0.86                  | 0.55 | 0.80           | 0.37           | 0.56        |
| Optimism               | 0.74             | 0.84                  | 0.57 | 0.71           | 0.40           | 0.57        |
| EO                     | 0.94             | 0.87                  | 0.52 | 0.01           | 0.003          | 0.34        |
| Independence           | 0.74             | 0.84                  | 0.56 | 0.33           | 0.18           | 0.56        |
| Innovation             | 0.87             | 0.90                  | 0.50 | 0.75           | 0.37           | 0.50        |
| Risk-taking            | 0.89             | 0.92                  | 0.58 | 0.69           | 0.40           | 0.58        |
| Aggressive competition | 0.91             | 0.93                  | 0.66 | 0.46           | 0.30           | 0.66        |
| Pioneering             | 0.79             | 0.86                  | 0.54 | 0.59           | 0.32           | 0.55        |
| SC                     | 0.97             | 0.97                  | 0.58 | 0.017          | 0.008          | 0.57        |
| SFSTP                  | 0.97             | 0.97                  | 0.53 | -              | -              | 0.53        |
| PDP                    | 0.92             | 0.93                  | 0.52 | 0.25           | 0.12           | 0.52        |

314 **Structural equation model:** To fit the structural model, the significance coefficients, R<sup>2</sup>, and Q<sup>2</sup>  
 315 are used. The second criterion for evaluating the fit of the structural model is the R<sup>2</sup> coefficients  
 316 related to the latent endogenous variables of the model, showing the effect of an exogenous  
 317

318 variable on an endogenous variable. Three amounts of 0.19, 0.33 and 0.67 have been assumed for  
 319  $R^2$  as weak, moderate and strong, respectively (Davari and Rezazadeh, 2017). Table 2 presents the  
 320  $R^2$  value of all endogenous variables from the first order to the second order. Furthermore,  $Q^2$   
 321 shows the predictability of the model regarding endogenous factors.  $Q^2$  should be higher than zero.  
 322 As for the intensity of the predictive power of the model regarding the endogenous variables, three  
 323 values have been determined: 0.02, 0.15, and 0.35 (Davari and Rezazadeh, 2017).  
 324 Significant coefficients are among the items which are studied for fitting the structural model  
 325 (Table 3). If t is more than 1.96, it is significant at the 5% level, but if t is more than 2.58, it is  
 326 significant at the 1% level. Table 4 shows the t value, the effects of park services on entrepreneurial  
 327 orientation (0.95), social capital (1.42) and product development process (1) are less than 1.96 and  
 328 are not significant. In other words, the services provided by the incubators and STP have no direct  
 329 effect on EO, social capital, and PDP. Further, the effect of social capital on PsyCap (1.66) is lower  
 330 than 1.96 and insignificant. Thus, the social capital of companies has no direct effect on the PsyCap  
 331 of agricultural companies.

332  
 333 **Table 3.** Divergent validity matrix of the variables for agricultural companies.

| Variables              | Independence | PDP  | SFSTP | Self-efficacy | Optimism | Innovation | Hope | Pioneering | Aggressive Competition | Risk-taking | SC   | Resilience |
|------------------------|--------------|------|-------|---------------|----------|------------|------|------------|------------------------|-------------|------|------------|
| Independence           | 0.75         |      |       |               |          |            |      |            |                        |             |      |            |
| PDP                    | 0.32         | 0.72 |       |               |          |            |      |            |                        |             |      |            |
| SFSTP                  | 0.19         | 0.15 | 0.73  |               |          |            |      |            |                        |             |      |            |
| Self-efficacy          | 0.25         | 0.29 | 0.15  | 0.72          |          |            |      |            |                        |             |      |            |
| Optimism               | 0.27         | 0.39 | 0.21  | 0.53          | 0.75     |            |      |            |                        |             |      |            |
| Innovation             | 0.35         | 0.30 | -0.01 | 0.23          | 0.32     | 0.71       |      |            |                        |             |      |            |
| Hope                   | 0.30         | 0.40 | 0.21  | 0.58          | 0.67     | 0.35       | 0.76 |            |                        |             |      |            |
| Pioneering             | 0.40         | 0.24 | 0.30  | 0.17          | 0.27     | 0.69       | 0.28 | 0.73       |                        |             |      |            |
| Aggressive Competition | 0.40         | 0.20 | 0.21  | 0.05          | 0.19     | 0.37       | 0.25 | 0.43       | 0.81                   |             |      |            |
| Risk-taking            | 0.40         | 0.31 | 0.03  | 0.16          | 0.34     | 0.69       | 0.25 | 0.48       | 0.41                   | 0.76        |      |            |
| SC                     | 0.04         | 0.44 | 0.13  | 0.36          | 0.38     | 0.26       | 0.27 | 0.16       | 0.26                   | 0.35        | 0.76 |            |
| Resilience             | 0.41         | 0.40 | 0.23  | 0.63          | 0.68     | 0.32       | 0.69 | 0.27       | 0.29                   | 0.27        | 0.31 | 0.74       |

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**Table 4.** Internal relationship in causal model of agricultural companies.

| Internal relationship       | Standard Error | T-Value | P-Value |
|-----------------------------|----------------|---------|---------|
| PsyCap → Resilience         | 0.018          | 48.05   | 0.0001  |
| PsyCap → Hope               | 0.028          | 32.98   | 0.0001  |
| EO → Innovation             | 0.024          | 35.28   | 0.0001  |
| PsyCap → Optimism           | 0.037          | 22.75   | 0.0001  |
| EO → Risk-taking            | 0.029          | 28.6    | 0.0001  |
| PsyCap → Self-efficacy      | 0.04           | 17.58   | 0.0001  |
| EO → Pioneering             | 0.047          | 16.35   | 0.0001  |
| EO → Aggressive competition | 0.064          | 10.65   | 0.0001  |
| EO → Independence           | 0.086          | 6.66    | 0.0001  |
| SC → PDP                    | 0.08           | 4.08    | 0.0001  |
| PDP → PsyCap                | 0.108          | 2.34    | 0.021   |
| EO → PsyCap                 | 0.081          | 3.08    | 0.003   |
| EO → PDP                    | 0.086          | 2.79    | 0.006   |
| SC → PsyCap                 | 0.102          | 1.66    | 0.132   |
| SFSTP → PsyCap              | 0.07           | 2.06    | 0.030   |
| SFSTP → PDP                 | 0.078          | 1.00    | 0.505   |
| SFSTP → EO                  | 0.103          | 0.95    | 0.547   |
| SFSTP → SC                  | 0.092          | 1.42    | 0.293   |

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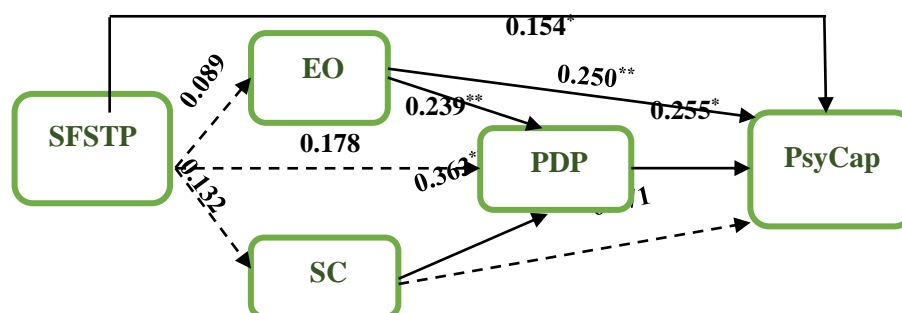
341

342 **Table 5** and **Figure 3** show the direct and indirect effects of independent and mediating variables  
343 on PsyCap in agricultural companies. The services provided by the park have a direct and  
344 significant effect (0.154) on PsyCap. ( $H_7$  was approved). The more the number of services and  
345 facilities of the STP, the more improved four dimensions of PsyCap of the active members in the  
346 companies such as optimism, self-efficacy, hope and resilience. Providing facilities to companies  
347 strengthens their spirit and hope for the continuity of their business activities. Moreover, the  
348 support from the park is considered as confidence for the entrepreneurs of the incubator to be  
349 resilient in crises. EO had a direct and significant effect (0.25) on PsyCap. ( $H_5$  was approved). In  
350 other words, the more the EO of company members, the stronger their PsyCap. The EO had a  
351 significant indirect effect on PsyCap through affecting the PDP. When the entrepreneurs active in  
352 incubators have higher dimensions of EO such as the innovativeness, pioneering, independence,  
353 and competitiveness, they can produce better products and technologies, leading to the  
354 improvement of the PsyCap dimensions such as hope, optimism, and resilience of the members  
355 towards the continuity of their business activities in the future. The effective role of EO dimensions  
356 in entrepreneurial activities was emphasized by [Kashef Ganjdaredar et al. \(2022\)](#).  
357 SC had a significant indirect effect on PsyCap by affecting the PDP. So,  $H_3$  was rejected, because  
358 SC did not have direct effect on PsyCap but had some effects indirectly through PDP. Improving  
359 the interactions and team contributions of entrepreneurs' results in increasing quality of the process

360 of product development, services provided by companies as well as the PsyCap of the members.  
 361 The PDP has a direct and significant effect (0.255) on PsyCap. ( $H_8$  was approved). In other words,  
 362 the four dimensions of PsyCap for the members will be increased when the companies become  
 363 more successful in presenting their products.  
 364  
 365

**Table 5.** The effects of variables on PsyCap of agricultural companies.

| Variable | Direct effect | Indirect effect | Total effect | Sig.  |
|----------|---------------|-----------------|--------------|-------|
| SFSTP    | 0.154         | 0.050           | 0.204        | 0.030 |
| SC       | 0.171         | 0.092           | 0.263        | 0.132 |
| EO       | 0.250         | 0.06            | 0.310        | 0.003 |
| PDP      | 0.255         | -               | 0.255        | 0.021 |



**Figure 3.** Causal model of factors affecting PsyCap of agricultural companies.

376  
 377 According to the model fit of causal model of agricultural companies, the fit measures were  
 378 computed as below: SRMR was 0.80, D-G was 0.487, NFI was 0.94 that all of the measures were  
 379 acceptable in compare with the suggested amounts. The GoF criterion is used for fitting the overall  
 380 model. The fitting of the overall model can be controlled using this criterion after studying the  
 381 fitting of the measurement and structural analysis of the model. This index is measured as the  
 382 squared product of the mean coefficient of determination of the endogenous (latent) variables by  
 383 the average shared values of the variables. Based on the values of 0.1, 0.25, and 0.36 which are  
 384 considered weak, average, and strong values for GoF, the number 0.51 shows the overall strong  
 385 fit of the model.

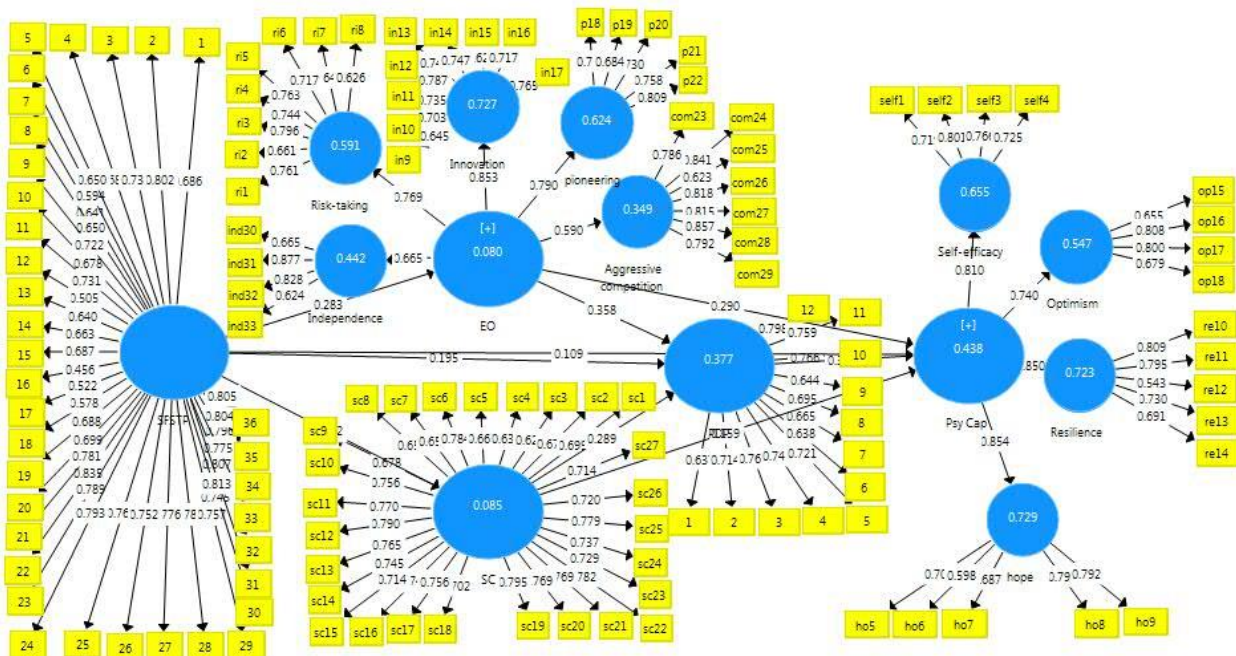
$$\text{GoF} = \sqrt{\text{communalities} \times \overline{R^2}} = 0.51$$

$$\overline{R^2} = 0.48$$

$$\text{communalities} = 0.558$$

391 **Second group: Non-agricultural knowledge-based companies**

392 As for the description of the second group, 138 individuals were studied from the managers and  
 393 other members of non-agricultural knowledge-based companies that 96 individuals (69.6%) of  
 394 them were men and 42 ones (30.4%) were women. The mean of their age was equal 33.12 years  
 395 and their educational level's mean were 17.28 years. The mean of non-agricultural group's  
 396 working background was 79.45 months (around 6.5 years) and the mean of their settling in the  
 397 incubators of STP was 36.87 months (about 3 years).



398 **Figure 4.** Non-agricultural knowledge-based companies' model.

399 **Factor loadings:** As shown in Figure 4, the factor loadings of all variables are higher than 0.4  
 400 which is considered as one of the reasons for reliability. The range of factor loadings of the  
 401 variables were computed as below:  
 402

- 404 SFSTP: 0.45 to 0.83
- 405 PDP: 0.64 to 0.80
- 406 EO: 0.62 to 0.88
- 407 PsyCap: 0.54 to 0.81
- 408 SC: 0.62 to 0.79

409 **Cronbach's alpha and composite reliability:** All Cronbach's alphas are more than 0.7, which is a  
 410 good value and shows the appropriate fit of the measurement models. The value of the composite  
 411 reliability coefficients is more than 0.7, showing the favourable composite reliability (Table 6).  
 412

413 *Fitting the structural equation model:* After evaluating the measurement models for fitting the  
 414 structural model,  $R^2$  and  $Q^2$  were studied, the values of which are presented in Table 8, indicates a  
 415 good fit of the structural model.

416 **Table 6.** Results of some indices of non- agricultural companies.

| Variable               | Cronbach's alpha | Composite reliability | AVE  | $R^2$ | $Q^2$ | Communality |
|------------------------|------------------|-----------------------|------|-------|-------|-------------|
| PsyCap                 | 0.89             | 0.89                  | 0.81 | 0.44  | 0.15  | 0.35        |
| Self-efficacy          | 0.74             | 0.84                  | 0.51 | 0.65  | 0.30  | 0.57        |
| Hope                   | 0.76             | 0.84                  | 0.51 | 0.73  | 0.37  | 0.51        |
| Resilience             | 0.76             | 0.84                  | 0.52 | 0.72  | 0.30  | 0.52        |
| Optimism               | 0.72             | 0.83                  | 0.54 | 0.55  | 0.31  | 0.54        |
| EO                     | 0.93             | 0.85                  | 0.54 | 0.08  | 0.02  | 0.30        |
| Independence           | 0.74             | 0.84                  | 0.57 | 0.44  | 0.25  | 0.57        |
| Innovation             | 0.88             | 0.90                  | 0.52 | 0.73  | 0.37  | 0.52        |
| Risk-taking            | 0.86             | 0.89                  | 0.51 | 0.59  | 0.30  | 0.51        |
| Aggressive competition | 0.90             | 0.92                  | 0.63 | 0.35  | 0.21  | 0.63        |
| Pioneering             | 0.80             | 0.86                  | 0.56 | 0.62  | 0.36  | 0.56        |
| SC                     | 0.96             | 0.97                  | 0.53 | 0.08  | 0.04  | 0.53        |
| SFSTP                  | 0.97             | 0.97                  | 0.51 | -     | -     | 0.51        |
| PDP                    | 0.91             | 0.92                  | 0.51 | 0.38  | 0.18  | 0.51        |

417  
 418 *Divergent validity:* The AVE root value of all first-order variables is higher than the correlation  
 419 value between them, indicating the appropriate divergent validity and the optimal fit of the  
 420 measurement model (Table 7). Table 8 indicates internal relationship in causal model of non-  
 421 agricultural companies.

422  
 423 **Table 7.** Divergent validity matrix of the variables for non-agricultural companies.

| Variables              | Independence | PDP  | SFSTP | Self-efficacy | Optimism | Innovation | Hope | Pioneering | Aggressive Competition | Risk-taking | SC   | Resilience |
|------------------------|--------------|------|-------|---------------|----------|------------|------|------------|------------------------|-------------|------|------------|
| Independence           | 0.75         |      |       |               |          |            |      |            |                        |             |      |            |
| PDP                    | 0.35         | 0.71 |       |               |          |            |      |            |                        |             |      |            |
| SFSTP                  | 0.31         | 0.38 | 0.71  |               |          |            |      |            |                        |             |      |            |
| Self-efficacy          | 0.26         | 0.49 | 0.26  | 0.71          |          |            |      |            |                        |             |      |            |
| Optimism               | 0.26         | 0.41 | 0.29  | 0.45          | 0.73     |            |      |            |                        |             |      |            |
| Innovation             | 0.57         | 0.45 | 0.27  | 0.38          | 0.29     | 0.72       |      |            |                        |             |      |            |
| Hope                   | 0.32         | 0.44 | 0.32  | 0.54          | 0.60     | 0.29       | 0.71 |            |                        |             |      |            |
| Pioneering             | 0.44         | 0.46 | 0.19  | 0.42          | 0.39     | 0.66       | 0.45 | 0.75       |                        |             |      |            |
| Aggressive Competition | 0.27         | 0.25 | 0.90  | 0.02          | 0.18     | 0.27       | 0.20 | 0.31       | 0.79                   |             |      |            |
| Risk-taking            | 0.36         | 0.29 | 0.19  | 0.26          | 0.25     | 0.49       | 0.35 | 0.49       | 0.43                   | 0.71        |      |            |
| SC                     | 0.13         | 0.44 | 0.29  | 0.43          | 0.33     | 0.25       | 0.27 | 0.33       | 0.08                   | 0.18        | 0.73 |            |
| Resilience             | 0.43         | 0.51 | 0.29  | 0.66          | 0.45     | 0.47       | 0.60 | 0.45       | 0.18                   | 0.32        | 0.32 | 0.72       |



424 Table 9 and Figure 5 present the path coefficients of the causal model variables related to the non-  
425 agricultural companies. The services provided by the park had no direct effect on PsyCap ( $H_7$  was  
426 rejected), but had an indirect effect on PsyCap through affecting the mediating variables of EO  
427 and PDP. In other words, a variety of facilities and services provided by the park has made the  
428 entrepreneurs of incubators to produce better technological products with their innovation,  
429 competitiveness and higher risk. Finally, such an effect leads to companies with better PsyCap  
430 such as self-efficacy, higher optimism and hope, and resilience in difficult situations. The members  
431 of non-agricultural companies have succeeded in developing a higher quality product by having  
432 the facilities of the park and establishing stronger social networks with specialized consultants and  
433 other business owners in the market, leading to the strengthening of the four dimensions of PsyCap.  
434 EO has a direct and significant effect (0.290) on PsyCap. Thus,  $H_5$  was approved. In this regard,  
435 PsyCap improves when the dimensions of EO such as innovation, pioneering, independence and  
436 competition are strengthened more among the members. EO has an indirect effect on PsyCap  
437 through the PDP. Innovative entrepreneurs with a higher spirit of competition, produce more  
438 technological and innovative products and the prosperity of their business result in the self-efficacy  
439 of members and improve their optimism, hope and resilience while facing challenges.

440 As observed in Figure 5, SC has no significant effect on PsyCap directly ( $H_3$  was rejected), but  
441 has an indirect effect on this variable through the moderating variable of the PDP. Improving the  
442 dimensions of SC such as social cohesion, social trust, and social participation of active  
443 entrepreneurs in incubators results in strengthening the development process for their products and  
444 improving their PsyCap level. Eventually, the PDP has a direct, significant and relatively strong  
445 effect (0.320) on PsyCap ( $H_8$  was approved). This result is also confirmed in the study of [Kashef](#)  
446 [Ganjaredar et al. \(2022\)](#). Companies with a stronger R&D would have more purposeful and  
447 detailed plans for their product development. Thus, they will have members with high self-efficacy  
448 and are more optimistic about the continuity of their future business activities and have more  
449 resistance while facing professional ups and downs.

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455 **Table 8.** Internal relationship in causal model of non-agricultural companies.

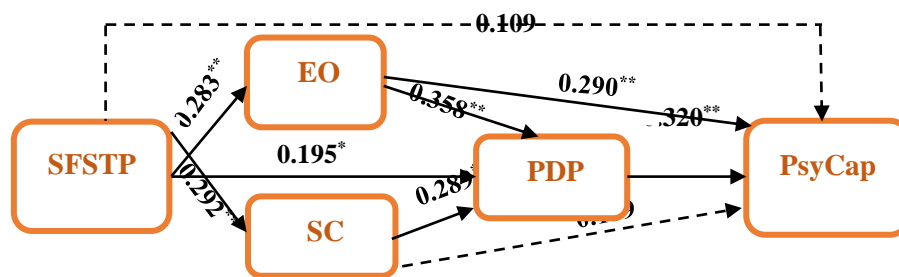
| Internal relationship       | Standard Error | T-Value | P-Value |
|-----------------------------|----------------|---------|---------|
| PsyCap → Resilience         | 0.026          | 32.53   | 0.0001  |
| PsyCap → Hope               | 0.025          | 36.66   | 0.0001  |
| EO → Innovation             | 0.038          | 22.30   | 0.0001  |
| PsyCap → Optimism           | 0.049          | 14.96   | 0.0001  |
| EO → Risk-taking            | 0.046          | 16.55   | 0.0001  |
| PsyCap → Self-efficacy      | 0.029          | 28.18   | 0.0001  |
| EO → Pioneering             | 0.036          | 21.57   | 0.0001  |
| EO → Aggressive competition | 0.089          | 6.58    | 0.0001  |
| EO → Independence           | 0.530          | 12.51   | 0.0001  |
| SC → PDP                    | 0.079          | 3.39    | 0.0001  |
| PDP → PsyCap                | 0.102          | 3.10    | 0.001   |
| EO → PsyCap                 | 0.098          | 2.95    | 0.002   |
| EO → PDP                    | 0.085          | 4.51    | 0.0001  |
| SC → PsyCap                 | 0.081          | 1.95    | 0.075   |
| SFSTP → PsyCap              | 0.064          | 1.68    | 0.111   |
| SFSTP → PDP                 | 0.087          | 2.24    | 0.031   |
| SFSTP → EO                  | 0.090          | 3.08    | 0.001   |
| SFSTP → SC                  | 0.078          | 3.73    | 0.0001  |

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**Table 9-** The effects of variables on PsyCap of non-agricultural companies.

| Variable | Direct effect | Indirect effect | Total effect | Sig.  |
|----------|---------------|-----------------|--------------|-------|
| SFSTP    | 0.109         | 0.199           | 0.389        | 0.111 |
| SC       | 0.159         | 0.09            | 0.249        | 0.075 |
| EO       | 0.290         | 0.110           | 0.400        | 0.002 |
| PDP      | 0.320         | -               | 0.320        | 0.001 |

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469 **Figure 5.** Causal model of factors affecting PsyCap of non-agricultural companies.

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Due to the model fit of causal model, the fit measures were computed as below: SRMR was 0.78, D-G was 0.567, NFI was 0.97 that all of the measures were acceptable in compare with the suggested amounts. Then, the GoF criterion was calculated to fit the general model in case of non-agricultural companies. The obtained number of 0.51 indicates the strong fit of the model.

$$475 \quad \text{GoF} = \sqrt{\overline{\text{communalities}} \times \overline{R^2}} = 0.51$$

$$476 \quad \overline{R^2} = 0.489$$

$$477 \quad \overline{\text{communalities}} = 0.54$$

478

## 479 **Conclusions**

480 Evaluating the knowledge-based companies in the field of agriculture and non-agriculture located  
481 in STP incubators indicates the difference in the effect of provided services in these two groups.

482 The services provided to agricultural companies have no effect on the entrepreneurial orientation,  
483 product development process and social capital of these companies, which indicates the  
484 inefficiency of incubators and STPs in providing a space for networking and constructive  
485 communication to enhance entrepreneurial orientation, social capital, and product development  
486 process directly. Regarding the PsyCap, services only have a direct effect on the PsyCap of  
487 companies. On the other hand, there is no significant relationship between social capital and  
488 PsyCap in agricultural companies. Meanwhile, the situation is highly different for non-agricultural  
489 companies. The provided services for the active non-agricultural companies have a direct effect  
490 on entrepreneurial orientation, product development process, and social capital. However, such  
491 services have an indirect significant effect on the PsyCap of non-agricultural companies through  
492 the product development process, social capital and entrepreneurial orientation. In non-agricultural  
493 companies, the services provided in incubators and parks have no direct effect on PsyCap unlike  
494 agricultural companies. Due to the homogeneity of services provided between two groups of  
495 agricultural and non-agricultural companies, the services provided to agricultural companies or the  
496 strategy of providing such services is not appropriate for agricultural activities because of the  
497 difference in the nature of activities by agricultural companies and non-agricultural companies in  
498 the function and activities of product development process.

499 Since agricultural activities need a wider physical space, the construction of incubators and  
500 specialized STPs in the field of agriculture can be beneficial. After having an appropriate space  
501 for agricultural activities, evaluating the services required by companies based on their needs is  
502 another activity which can be fulfilled in line with the objectives of establishing incubators and  
503 STPs which is helping knowledge-based companies. The production of agricultural products and  
504 the development process of such products do not merely need the services which are currently  
505 provided to companies with many limitations. Agricultural companies require various

506 management and planning for support than non-agricultural companies due to being involved with  
507 different factors such as weather, drought, pests, diseases, as well as expected and unexpected  
508 factors in agriculture. Establishing a strong internal and external information and communication  
509 network between companies located in parks incubators with the institutions outside the parks can  
510 be effective in the improvement of social capital of companies and their entrepreneurial  
511 orientation. Such an increase in social capital and entrepreneurial orientation with its effect on  
512 product development process and economic consequences resulting from product development  
513 process has an effect on the PsyCap of companies and increases the performance and continuity  
514 of activities in the companies by increasing hope, resilience, self-efficacy and optimism.

515 Currently, all companies, both agricultural and non-agricultural, receive almost the same services,  
516 while the support needs of companies are different based on their field of activity, and the services  
517 provided to companies in incubators should be based on the needs of settled companies, so that  
518 resources are not wasted. The conditions of agricultural activities are different from companies  
519 that are active in non-agricultural fields. For example, agricultural activities require a lot of space.  
520 It may not be possible to provide this space completely, but in the case of other services, it can be  
521 planned in the right way so that these facilities are properly provided to the mentioned companies.  
522 In this regard, some instances are such as support for the preparation and supply of inputs, or legal  
523 and scientific consultation regarding the company's goals and products. Therefore, according to  
524 the findings of the causal model, the implications of the study are that any effort to improve the  
525 social capital of the companies, along with providing the necessary facilities to increase the  
526 motivation and entrepreneurial orientation of their members, as well as strengthening the product  
527 development process of these companies and finally supporting marketing and market making for  
528 their products will improve the psychological capital of entrepreneurs. Considering the  
529 significance of agricultural activities from different aspects such as food security and employment,  
530 it is highly recommended that knowledge-based companies in this field receive special attention  
531 since these companies can improve the agriculture sector and the life quality of the stakeholders  
532 through applying the latest knowledge in agricultural science.

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536 **Limitations**

- 537 ➤ Coinciding the data collection of study with the COVID-19 pandemic was the main  
538 limitation of current study. Closure of many offices of companies, shifting of personnel  
539 and lack of full-time attendance of employees had caused hard access to the samples.
- 540 ➤ Visiting some companies settled at the incubators in other counties of Fars province was  
541 costly and time-consuming.
- 542 ➤ Measuring some indices of study was challenging due to the interdisciplinary nature of the  
543 research subject. The scale measurement of PsyCap, SC and EO was extracted from the  
544 standard scales of other disciplines that needed to localize and adapted with the cultural  
545 context of research cases in Iran.

546  
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629 تحلیل علی-مقایسه ای عوامل مؤثر بر سرمایه روانشناختی شرکت های دانش بنیان: نقش میانجی  
630 گرایش کارآفرینانه و سرمایه اجتماعی

631

632 سوزان زندآذر، کوروش رضایی مقدم، و مهسا فاطمی

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634 **چکیده**

635 امروزه توجه ویژه ای به کارآفرینی و شرکت های دانش بنیان می شود. در این پژوهش به شناسایی عوامل مؤثر بر سرمایه  
636 روان شناختی در بین دو گروه شرکت های دانش بنیان کشاورزی و غیرکشاورزی از پارک علم و فناوری فارس در ایران،  
637 پرداخته شد. جامعه آماری، شرکت های مستقر در مراکز رشد و مؤسسات پارک علم و فناوری استان فارس بود که داده ها از  
638 طریق پرسشنامه از 238 نفر (100 نفر از شرکت های کشاورزی و 138 نفر از شرکت های غیرکشاورزی) به عنوان نمونه  
639 آماری اخذ گردید. طبق یافته ها، اختلاف بین دو گروه شرکت های کشاورزی و غیرکشاورزی در تأثیری که خدمات ارائه شده  
640 توسط مراکز بر سایر متغیرهای پژوهش می گذارند، محسوس بود. خدمات ارائه شده در پارک، تأثیر معنی داری بر گرایش  
641 کارآفرینانه، سرمایه اجتماعی و فرآیند توسعه محصول در شرکت های کشاورزی نداشت، اما بر سرمایه روان شناختی به  
642 صورت مستقیم، تأثیر معنی داری را نشان داد. در مورد شرکت های فعال در حوزه غیرکشاورزی، خدمات ارائه شده در پارک  
643 اثر مثبت و معنی داری بر گرایش کارآفرینانه، سرمایه روان شناختی و فرآیند توسعه محصول داشت، اما تأثیر مستقیمی بر  
644 سرمایه روان شناختی نشان داده نشد. با توجه به اهداف تأسیس مراکز رشد و هزینه و سرمایه گذاری که در این خصوص  
645 صورت گرفته است، عدم بهرموری کامل از این مراکز، خصوصاً در رابطه با شرکت های کشاورزی که می توانند با  
646 بکارگیری فناوری های نوین در تأمین امنیت غذایی مثمثر واقع شوند، کاملاً محسوس است. با توجه به تأثیرگذاری خدمات و  
647 امکانات ارائه شده از سوی پارک های علم و فناوری بر کارکرد شرکت های مستقر در مراکز رشد، پیشنهاد می شود تا این نوع  
648 خدمات و امکانات، تخصصی تر شده و تقویت گردد. همچنین، لزوم اقدامات آموزشی و عملیاتی برای تقویت گرایش  
649 کارآفرینانه، سرمایه اجتماعی و سرمایه روان شناختی اعضا نیز مورد تأکید است