http://dx.doi.org/10.1590/1678-4162-13131

Arq. Bras. Med. Vet. Zootec., v.76, n.2, p.235-248, 2024

Evaluation of the entrepreneurial potential of the clinical veterinarians using the Turkish version of the entrepreneurial potential assessment inventory (EPAI-TR)

[*Avaliação do potencial empreendedor dos veterinários clínicos usando a versão turca do inventário de avaliação do potencial empreendedor (EPAI-TR)*]

C. *Sipahi*[1], A.C. *Akin*[1], B. *Mat*[2], M.B. *Çevrimli*[2], M.S. *Arikan*[3], M.A. *Tekindal*[4]

[1]Department of Animal Health Economics and Management, Faculty of Veterinary Medicine, Mehmet Akif Ersoy University, 15030, Burdur, Türkiye
[2]Department of Animal Health Economics and Management, Faculty of Veterinary Medicine, Selçuk University, 42130, Konya, Türkiye
[3]Department of Animal Health Economics and Management, Faculty of Veterinary Medicine, Fırat University, 23119, Elazıg, Türkiye
[4]Department of Biostatistics, Faculty of Medicine, İzmir Katip Çelebi University, 35620, İzmir, Türkiye

ABSTRACT

The present study aimed to determine the unique values of the entrepreneurial potential of clinical veterinarians and to evaluate this potential by using a reliable and valid measurement tool. The study material was the data obtained from a survey conducted between May 2020 and April 2021 that included 343 veterinarians who were actively working in a veterinarian clinic/outpatient clinic. The Turkish version of the Entrepreneurial Potential Assessment Inventory was used to collect the data. On the basis of the results of the explanatory factor analysis, confirmatory factor analysis, and improvement (modification) indices calculated from the survey data, a 7-factor structure was obtained. According to the results of the entrepreneurial potential scale for clinical veterinarians, the following sub-dimensions of the scale were listed according to their contribution to the total variance explained: “effective communicative leadership,” “strategic resource development,” “self-efficacy,” “innovative creativity,” “resilience-strength,” “motivation for economic freedom,” and “risk-taking propensity.” This ranking reveals a tendency to possess these characteristics in Türkiye for entrepreneurship potential regardless of the profession. In light of the obtained data, it is recommended to provide clinical veterinarians with training on the topics of forming social networks, taking responsibility, and developing emotional intelligence, which is not included in the scale, as well as to instigate the desire to become independent and economically motivated to improve their entrepreneurial potential.

Keywords: entrepreneurial potential, EPAI-TR, veterinary clinic enterprise

RESUMO

O presente estudo teve como objetivo determinar os valores exclusivos do potencial empreendedor dos veterinários clínicos e avaliar esse potencial usando uma ferramenta de medição confiável e válida. O material do estudo foram os dados obtidos em uma pesquisa realizada entre maio de 2020 e abril de 2021, que incluiu 343 veterinários que trabalhavam ativamente em uma clínica veterinária/ambulatório. A versão turca do Inventário de Avaliação do Potencial Empreendedor foi usada para coletar os dados. Com base nos resultados da análise fatorial explicativa, da análise fatorial confirmatória e dos índices de melhoria (modificação) calculados a partir dos dados da pesquisa, foi obtida uma estrutura de sete fatores. De acordo com os resultados da escala de potencial empreendedor para veterinários clínicos, as seguintes subdimensões da escala foram listadas de acordo com sua contribuição para a variância total explicada: "liderança comunicativa eficaz", "desenvolvimento de recursos estratégicos", "autoeficácia", "criatividade inovadora", "resiliência-força", "motivação para liberdade econômica" e "propensão a

Corresponding author: cevatsipahi@mehmetakif.edu.tr, cevatsipahi@gmail.com
Submitted: August 23, 2023. Accepted: November 7, 2023.

assumir riscos". Essa classificação revela uma tendência a possuir essas características na Turquia para o potencial de empreendedorismo, independentemente da profissão. À luz dos dados obtidos, recomenda-se que os veterinários clínicos recebam treinamento sobre os tópicos de formação de redes sociais, assunção de responsabilidade e desenvolvimento de inteligência emocional, que não estão incluídos na escala, bem como instigar o desejo de se tornarem independentes e economicamente motivados para melhorar seu potencial empreendedor.

Palavras-chave: potencial empreendedor, EPAI-TR, empresa de clínica veterinária

INTRODUCTION

Entrepreneurship involves the production of goods or services by combining labor, capital, and natural resources, which are called factors of production. An entrepreneur is a person who evaluates the opportunities in the market; integrates the production factors such as capital, natural resources, and labor; and undertakes the risk to produce goods and services (Mason and Harvey, 2013).

Many studies on entrepreneurship have emphasized that successful entrepreneurs may have some common characteristics. Several factors such as innovativeness, adaptability to change, flexibility, dynamism, risk-taking behavior, creativity, and having a development-oriented approach affect the success of entrepreneurs (Brettel *et al*., 2015). In fact, taking risks, assuming responsibility, having a dynamic personality, being open to innovation, accepting change and transformation, being ambitious and having a passion for growth, and finally focusing on success can be listed as the common characteristics of entrepreneurs who have achieved great success in business life in a short time span as compared to others (Bulut and Sayın, 2013). All these characteristics that enable the individual to have entrepreneurial potential can be considered as a set of features that are required for an emerging entrepreneur. Several psychological, behavioral, and social characteristics known as entrepreneurial potential are frequently associated with successful entrepreneurs, and it has been thought that these characteristics could be used to explain the success of an entrepreneur. According to Santos *et al.* (2014), entrepreneurial potential includes the following four basic dimensions: entrepreneurial motivation, management competencies, psychological competencies, and social competencies (Santos *et al*., 2014).

Management competencies include the basic skills that enable entrepreneurs to manage a business. Management competencies include the following three sub-dimensions: vision, resource mobilization capacity, and leadership capacity (Santos *et al*., 2014).Vision refers to a long-term and general expression of the objective intended to achieve in the future (Bowen, 2018). Vision capacity is the foresight capability of an entrepreneur based on their experience **(**Ling, *et al*., 2012). Resource mobilization capacity is the ability to gather resources to manage the venture, and it has been identified as an important indicator of entrepreneurial success (McDermott *et al.*, 2018). Studies on leadership have revealed that leadership capacity is significantly affected by personality traits (Wu, 2018).

Psychological competencies are also included among the individual characteristics that are distinctive among entrepreneurs (Shava and Chinyamurindi, 2019). These characteristics include innovation capacity, emotional intelligence, and resilience. Innovation capacity is one of the main characteristics of entrepreneurial human capital (Muhamad *et al*., 2018).

Social competence refers to an individual's ability to interact effectively with others, and it can affect entrepreneurial success (Baron and Markman, 2003). Social competencies consist of communication and persuasion capacity and social network development capacity (Santos *et al*., 2014). Communication and persuasion capacity has a positive impact on entrepreneurial success. The capacity of entrepreneurs to develop a social network with other individuals who can provide resources for implementing and developing the business is one of the factors affecting entrepreneurial performance (Ng and Rieple, 2014).

In Türkiye, entrepreneurial potential has been widely evaluated by measuring the related

personality traits (Kızılgöl and İşgüden, 2008; Ören and Biçkes, 2011; Ensari and Hazal, 2017). Moreover, sociocultural characteristics that are thought to affect entrepreneurial potential have also been emphasized (Aytaç and İlhan, 2007). The related studies were focused on the possibility of an individual being an entrepreneur rather than on holistic entrepreneurial potential research. Orhan (2017) examined a theoretical model (Entrepreneurial Potential Assessment Inventory [EPAI]) (Santos *et al*., 2014),on the entrepreneurial potential structure and the main psychosocial aspects that contribute to an individual's readiness to participate in typical entrepreneurial activities and adapted this scale to Turkish conditions. He then proved the validity of the adapted scale for entrepreneurs in Türkiye. The present study was conducted using the model of Orhan (2017) after obtaining the necessary permissions from the author. Thus, an inventory whose psychometric analyses were completed was obtained for studies examining entrepreneurial potential.

Clinician veterinarians operate in an industry where they should not only focus on the health of animals, but also be successful from a business perspective. Therefore, the entrepreneurial potential of veterinary practice is a critical factor for both individual career development and adaptation to changing dynamics in the industry. As of 2021, 2543 veterinarians graduated from 35 veterinary faculties affiliated with the Council of Higher Education in Türkiye (Genç and Koçak, 2023). Veterinary clinics are important areas for the employment of veterinarians. Clinical veterinary practice often begins with a passion for animals for veterinarians, but today's veterinary practice is not limited to just building relationships with animals. The way to be successful in this field also requires understanding the complexities of the business world. Many veterinary students choose veterinary school because they love animals and dream of running their own clinic. However, as they enter the workforce during their post-graduate years, they face common challenges regarding the intricacies of the business world. Veterinarians work in a field where they are in constant interaction not only with animals but also with clients. Therefore, business skills and entrepreneurship have become an indispensable requirement for modern veterinarians. There are also new opportunities arising from changing paradigms in veterinary medicine. To the best of our knowledge, to date, no study has been conducted to measure the entrepreneurial potential of clinical veterinarians in Türkiye, where intense competition is being observed. The present study aimed to determine the unique values of entrepreneurial potential of clinical veterinarians and to evaluate this potential by using a reliable and valid measurement tool.

MATERIALS AND METHODS

The study material was data obtained from the survey conducted in 59 provinces of Türkiye (include all geograpichal regions) between May 2020 and April 2021 that involved 343 veterinarians who were actively working in a veterinarian clinic. Participation in the study was voluntary, and the response to the survey was collected online using the Google Survey Form. According to official records, there are 7930 veterinary outpatient clinics and veterinary clinics in Türkiye (Finland, 2022). The minimum sample size was calculated using Neyman's stratified sampling method.

$$n_0 = \frac{Nt^2pq}{d^2(N-1)+(t^2pq)} = \frac{7930(1.96)^2 0.95\times0.05}{0.05^2(7930-1)+(1.96)^2 0.95\times0.05} = 72.34$$

The value of the t-statistic at a probability of 95% was 1.96.
Probability of being selected: p=0.95; q=0.05.
N=size of the population
p=frequency of occurrence of the event in question
q=frequency of non-occurrence of the event in question
t=theoretical value found on the t table at a certain degree of freedom and level of significance.
d=± deviation according to the frequency of occurrence of the event

The sample size of the study was determined as n = 72.34 by choosing pi value = 0.05 a certain universe (N = 7930) (Akın *et al*., 2020). In this respect, the number of participants in the survey (n = 343) represents the universe.

EPAI was developed by Santos *et al*., (2014). The tool was adapted to the conditions of Türkiye (EPAI-TR) by Orhan (2017), and it was found that the adapted tool could be used as a reliable scale according to the results of the first psychometric analysis in Türkiye. Written permission was obtained from Orhan (2017) to use EPAI-TR, which included 44 items, 11 sub-dimensions, and answers with scores between 1 and 5 points on a 5-point Likert scale. Entrepreneurial scores can be obtained for each sub-dimension or in total by calculating the average score.

Reliability and validity analyses were performed for the entrepreneurial potential survey of clinical veterinarians. Cronbach's alpha (α) coefficient was used to perform reliability analysis. Because the items with a total correlation coefficient of <0.20 were statistically insignificant (Kılıç, 2016), a total of 7 items were not included in the scale. The measurement power of the items with a total correlation value below 0.40 is weak; consequently, they do not contribute to the measurement of the structure that is thought to be measured using the scale (Kol, 2012). Therefore, one item was excluded from the scale because its factor load values were lower than 0.40. Eight items were removed from the model, and the model was created using the 36 most confirmatory items. The suitability for factor analysis was evaluated using Bartlett's Test of Sphericity, while the adequacy of the sample size was evaluated using the Kaiser-Meyer-Olkin (KMO) test for sampling adequacy. Because the goodness of fit values were not within the desired limits after the first analysis of the created model, necessary corrections and combinations were made by considering the improvement (modification) indices (Işıldar, 2008). If the goodness of fit indices were poor according to the model estimation, a modification might be needed to improve the fitness of the model to better estimate the relationship between the variables, provided that there was adherence to the theoretical structure. The following improvement (modification) indices were applied with the confirmatory factor analysis: chi-square/degrees of freedom (x2/df), root mean square error of approximation (RMSEA), the goodness of fit index (GFI), standardized root mean square residual (SRMR), comparative fit index (CFI), and incremental fit index (IFI). The chi-square statistic indicates a perfect fit if $\chi^2/df<2$, and it indicates an acceptable fit if $\chi^2/df<3$ (Yaşlıoğlu and Toplu Yaşlıoğlu, 2020); the GFI and CFI indicate an acceptable fit if values are ≥0.90 (Bryne, 2001). An RMSEA value between 0.05 and 0.10 indicates an acceptable fit (Stevens, 2012). According to the results of the explanatory factor analysis, confirmatory factor analysis, and modification indices calculated for the survey of the entrepreneurial potential of clinical veterinarians, a 7-factor structure was obtained (Hu and Bentler, 1999; Byrne, 2001; Kline, 2011).

RESULTS AND DISCUSSION

The mean age of the participating clinical veterinarians was 33.73 ±8.15 years, and 91.84% of them were males (Table 1). Approximately 35% of the clinical veterinarians received a M.Sc. Degree and 4.4% have a Ph.D. Degree after their undergraduate education; furthermore, approximately 37% of the veterinarians defined their clinic as a pet clinic, while the remaining defined it as a bovine animal clinic. A total of 48.4% of the participants stated that the biggest problem they experienced while founding veterinary clinics was the inadequacy of loans and finance; according to the responses, the period for opening their first clinic was 2.46 ±3.81 years.

An explanatory factor analysis was performed to test whether the selected 44 items covered the proposed theoretical model of entrepreneurial potential. The measurement power of the items with a total correlation value below 0.40 is considered to be weak; consequently, these items are not considered to be strong enough to contribute to the measurement of the structure that is thought to be measured using the scale. Items with a total correlation coefficient of <0.20 should not be included in the scale as they are not statistically significant. Accordingly, the items of S3, S5, S8, S31, S36, S40, and S44 in Table 2 were removed from the scale because they had low correlation values. S7 was also excluded from the scale as its factor load values in Table 3 were lower than 0.40. Thus, eight items were removed from the model, and the model was created using the 36 most confirmatory items.

Table 1. Descriptive data of clinical veterinarians included in the study

Descriptive Variable		n	%
Gender	Male	315	91.84
	Female	28	8.16
Educational Status	Bachelor's Degree	208	60.64
	Master's Degree	120	34.99
	Doctoral Degree	15	4.37
Veterinary Clinic Type	Pet Clinic	127	37.03
	Bovine Animal Clinic	216	62.97
Did you work in a job other than a clinic while you were at the university?	Yes	92	26.82
	No	251	73.18
Did you do an internship at a clinic regularly while you were at the university?	Yes	201	58.60
	No	142	41.40
Do you consider quitting the clinical veterinarian position?	Yes	101	29.45
	No	242	70.55
Do you run your clinic together with a partner veterinarian?	Yes	108	31.49
	No	235	68.51
What is the most important problem experienced while founding your clinic?	Lack of devices and equipment	38	11.08
	Lack of credit and finance opportunities	166	48.40
	Bureaucratic procedures at the founding stage	36	10.50
	Difficulty in choosing the place of the clinic	30	8.75
	Recruiting qualified auxiliary staff	26	7.58
	Other	47	13.69
Do you regularly attend in-service training programs?	Yes	198	57.73
	No	143	42.27

		n	Mean ±SD	%
Age	Male	315	33.93 ±8.23	91.84
	Female	28	31.57 ±6.98	8.16
	Total	343	33.73 ±8.15	100
Entrepreneurship Experience	Male	315	7.71 ±7.02	91.84
	Female	28	7.14 ±6.52	8.16
	Total	343	7.66 ±6.98	100
How many years after graduation did you open a clinic?	Male	315	2.40 ±3.88	91.84
	Female	28	3.14 ±2.77	8.16
	Total	343	2.46 ±3.81	100

Table 2. Item total statistics for the clinical entrepreneurship scale (n = 343)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I1	165.9796	519.371	0.444	0.935
I2	165.9942	520.655	0.440	0.935
I4	165.9825	517.070	0.479	0.934
I6	165.9446	520.082	0.453	0.935
I9	166.3090	513.536	0.451	0.934
I10	166.2915	511.780	0.492	0.934
I11	165.9971	514.482	0.597	0.934
I12	166.1749	510.999	0.565	0.934
I13	166.3003	512.515	0.515	0.934
I14	166.0845	514.282	0.460	0.934
I15	166.4869	504.794	0.688	0.933
I16	166.3907	504.666	0.691	0.933
I17	166.4461	505.423	0.682	0.933
I18	166.5627	506.387	0.650	0.933
I19	166.3178	508.007	0.617	0.933
I20	166.1808	512.745	0.576	0.934
I21	166.0612	511.958	0.501	0.934
I22	165.9475	515.383	0.468	0.934
I23	166.2770	513.768	0.416	0.935
I24	166.3236	503.313	0.613	0.933
I25	166.1370	508.306	0.633	0.933
I26	166.2274	506.925	0.588	0.933
I27	166.5510	504.324	0.634	0.933
I28	166.6239	504.691	0.646	0.933
I29	166.2711	508.806	0.603	0.933
I30	166.3324	507.035	0.639	0.933
I32	165.8746	516.022	0.528	0.934
I33	165.9213	513.734	0.567	0.934
I34	165.9592	514.957	0.556	0.934
I35	166.1603	506.615	0.653	0.933
I37	166.6531	512.578	0.413	0.935
I38	166.5918	508.774	0.588	0.933
I39	166.3848	505.752	0.655	0.933
I41	166.1050	510.498	0.567	0.934
I42	165.9184	515.227	0.541	0.934
I43	165.8746	516.701	0.479	0.934
I3	167.8280	517.330	0.271	0.937
I5	168.3848	521.220	0.263	0.936
I7	166.7085	508.312	0.428	0.935
I8	167.0729	527.202	0.115	0.938
I31	166.5948	511.856	0.394	0.935
I36	167.3032	523.978	0.174	0.937
I40	167.6239	523.235	0.185	0.937
I44	167.8834	514.530	0.277	0.937

The KMO sampling adequacy test is used to determine whether the distribution is sufficient for factor analysis, and the range of 0.80–0.90 indicates very good adequacy (Akgül and Çevik, 2003). From the results presented in Table 3, the KMO value in this study is very good. The result of Bartlett's Test of Sphericity was 7648.894 ($p<0.05$). This indicates that the variable we measure has a multivariate nature in the universe parameter. In this study, no limitation was imposed on the number of factors, and factors with eigenvalues ≥ 1 were accepted as significant factors (Büyüköztürk, 2002). Because variance percentages ranging between 40% and 60% are considered to be ideal in factor analysis (Scherer *et al*., 1988), it can be stated that the value of variance calculated in this research is sufficient.

Cronbach's alpha (α) was found to be sufficient as it was above 0.70. Of the 11 sub-factors in the

EPAI-TR scale, only 7 measure the separate characteristics of the clinical entrepreneurial scale. According to these results, the survey we prepared is a reliable measurement tool.

Having a factor load higher than 0.40 indicates that the problem is required for the scale. The factor loads of all questions in Table 3 are above 0.40 for their factors (Kol, 2012).

Table 3. Explanatory factor analysis for the clinical entrepreneurship scale (n = 343)

	Effective Communicative Leadership	Strategic Resource Development	Self-efficacy	Innovative Creativity	Resilience-Strength	Motivation for Economic Freedom	Risk-Taking Propensity
I17	0.480						
I19	0.489						
I18	0.537						
I20	0.539						
I15	0.629						
I16	0.645						
I14	0.684						
I11	0.698						
I12	0.716						
I13	0.761						
I28		0.565					
I25		0.649					
I29		0.656					
I24		0.685					
I27		0.761					
I30		0.766					
I6			0.545				
I4			0.571				
I1			0.739				
I2			0.780				
I35				0.557			
I43				0.689			
I41				0.705			
I34				0.707			
I33				0.730			
I32				0.730			
I42				0.787			
I37					0.543		
I38					0.609		
I39					0.434		
I23						0.414	
I26						0.488	
I22						0.802	
I21						0.802	
I10							0.806
I9							0.828
Eigenvalue	4.823	4.639	4.608	2.778	2.694	1.972	1.946
Variance Explained	13.397	12.885	12.799	7.717	7.484	5.479	5.405
Cronbach's alpha (α)	0.911	0.893	0.777	0.890	0.764	0.794	0.786
			Total Variance Explained (%) = 65.166				
			Kaiser-Meyer-Olkin (KMO) = 0.924				
			Bartlett's test value = 7648.894			P = 0.001**	
			Cronbach's alpha (α) = 0.916				

The obtained model (χ^2= 1446.168, df = 575) contained seven sub-dimensions of the entrepreneurial scale. Because the goodness of fit values were not within the desired limits after the first analysis of the created model, necessary corrections and combinations were made by considering the improvement (modification) indices. After making the improvements that are possible theoretically and that provided the highest contribution to the model as a correction value, combinations were made by associating the sub-dimensions with each other considering the fit indices of the sub-dimensions of the variables (Fig. 1).

The fit indices of the χ^2/df, RMSEA, GFI, SRMR, CFI, and IFI revealed that the model was acceptable (Table 4).

Table 4. Confirmatory factor analysis for the entrepreneurship scale

Measurement	Good Fit	Acceptable Fit	Fit Index Values of the Model
(χ^2/sd)	≤ 3	≤ 4–5	2.515**
RMSEA	≤ 0.05	0.06–0.08	0.065*
SRMR	≤ 0.05	0.06–0.08	0.067*
IFI	≥ 0.95	0.94–0.90	0.902*
CFI	≥ 0.97	≥ 0.95	0.901*
GFI	≥ 0.90	0.89–0.85	0.856*
TLI	≥ 0.95	0.94–0.90	0.902*

Acceptable fit * Good fit **

As shown in Table 4, the fit values were as follows: χ^2/sd = 2.515, RMSEA = 0.065, SRMR = 0.067, IFI = 0.902, CFI = 0.901, GFI = 0.856, and TLI = 0.902. This implies that the fit values of the model are sufficient in general (Hu and Bentler, 1999; Byrne, 2001; Kline, 2011). Figure 1 presents the tested model.

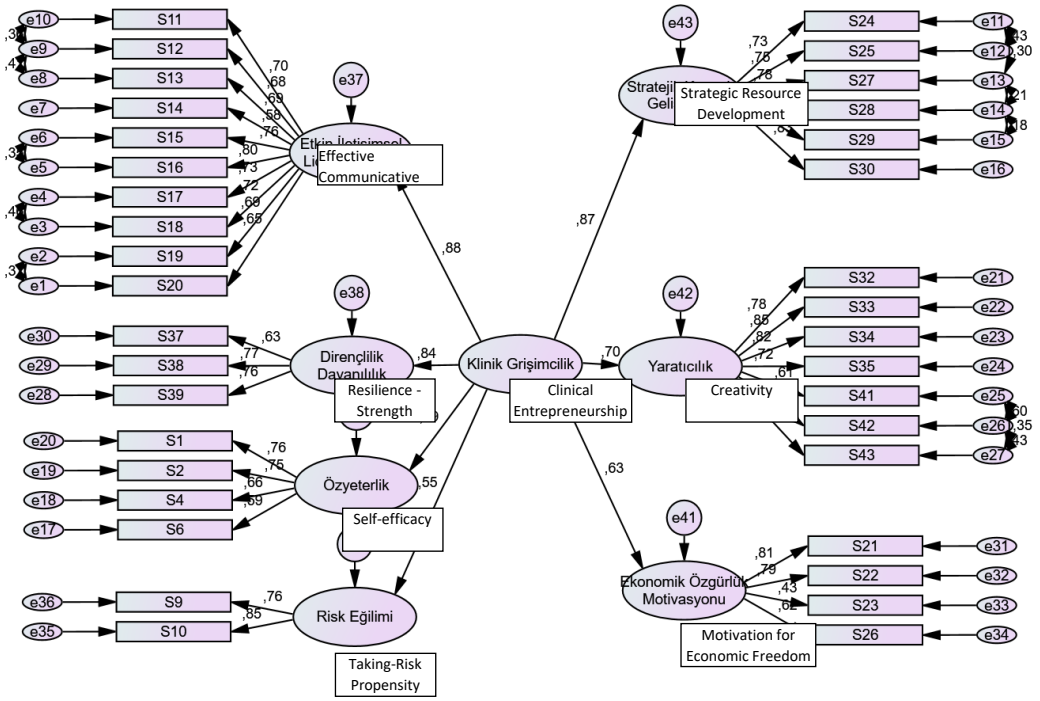

Figure 1. Clinical entrepreneurship scale model

Figure 1 presents the confirmatory model of the Clinical Entrepreneurship Scale adapted from EPAI-TR. The Clinical Entrepreneurship Scale Model included 7 sub-dimensions and explained 65.17% of the total variance. Table 1 shows the distribution of all items to the factor structures.

Item analyses revealed that expressions were attributed to the same factors as their original dimensions; however, some factors were observed to merge or decompose.

The results of the analyses showed that the first factor comprised items 13, 12, 11, 14, 16, 15, 20, 18, 19, and 17. The sub-dimension consisting of these items explained 13.397% of the total variance. Item loads ranged between 0.48 and 0.76. Three items in this sub-dimension (items 11, 12, and 13) constituted the "Communication and Persuasion" sub-dimension in the expanded original scale, while the other items constituted the "Leadership Competence" sub-dimension. Therefore, this sub-dimension is named "Effective Communicative Leadership" unlike the study on which the present research was based.

The second factor comprised items 30, 27, 24, 29, 25, and 28, and 12.885% of the total variance was explained by this factor. Because the items that make up the "Resource Development" and "Vision" sub-dimensions in the expanded original scale are collected in this factor, it is called the "Strategic Resource Development" sub-dimension.

The third factor comprised items 2, 1, 4, and 6, and it is named the "Entrepreneurial Self-efficacy" sub-dimension in the expanded original scale. The "Self-efficacy" sub-dimension explains 12.799% of the total variance.

The fourth factor comprised items 42, 32, 33, 34, 41, 43, and 35. It included a combination of creativity and innovation expression on the expanded original scale. Therefore, it is called the "Innovative Creativity" sub-dimension. The Innovative Creativity sub-dimension explained 7.717% of the total variance.

The fifth factor comprised items 38, 37, and 39 and explained 7.484% of the total variance. This sub-dimension is fully compatible with the expression on the expanded original scale and is also called "Resilience-Strength."

The sixth factor comprised items 21, 22, 23, and 26 and explained 5.479% of the total variance. Because it is a combination of the sub-dimensions of "Desire to be Independent" and "Economic Motivation," it is called "Motivation for Economic Freedom (Independence)" in the expanded original scale.

The seventh factor is named the "Risk-Taking Propensity" sub-dimension that emerged in the same way as the expanded original scale. This sub-dimension included items 9 and 10 and explained 5.405% of the total variance. The sub-dimensions of "developing social networks," "taking responsibility," and "emotional intelligence" in the EPAI-TR scale are not supported in the model of the entrepreneurial potential scale for clinical veterinarians.

According to Table 5, the "effective communicative leadership" sub-dimension had the highest effect on the entrepreneurial potential of clinical veterinarians. The sub-dimensions of "strategic resource development" and "resilience-strength" had an effect on entrepreneurial potential close to that of "effective communicative leadership." The "innovative creativity," "self-efficacy," and "motivation for economic freedom" sub-dimensions have a moderate effect on entrepreneurial potential. The "risk-taking propensity" showed the lowest effect on the sub-dimensions on the entrepreneurial potential of clinical veterinarians.

Considering the dimensions in Table 6, the entrepreneurial potential showed the highest correlation with the "effective communicative leadership" sub-dimension ($r = 0.940$; $p = .000$). Other sub-dimensions included in the study, particularly "strategic resource development" ($r = 0.937$; $p = .000$) and "resilience-strength" ($r = 0.921$; $p = .000$), were found to have a statistically significant and high correlation with entrepreneurial potential. The result of the validity studies confirmed that the entrepreneurial potential scale for clinical veterinarians adapted from EPAI-TR was a valid inventory.

Table 5. Effects of sub-dimensions on the entrepreneurship scale

Test Direction			Standardized Prediction (β)	Prediction (β)	Standard Error	Critical Value	P
Effective Communicative Leadership	←	Clinical Entrepreneurship	0.877	1	-	-	0.001**
Strategic Resource Development	←	Clinical Entrepreneurship	0.872	1.467	0.15	9.812	0.001**
Resilience-Strength	←	Clinical Entrepreneurship	0.838	1.292	0.133	9.705	0.001**
Innovative Creativity	←	Clinical Entrepreneurship	0.695	0.888	0.098	9.06	0.001**
Self-efficacy	←	Clinical Entrepreneurship	0.686	0.61	0.081	7.531	0.001**
Motivation for Economic Freedom	←	Clinical Entrepreneurship	0.626	1.04	0.126	8.272	0.001**
Risk-Taking Propensity	←	Clinical Entrepreneurship	0.555	0.892	0.131	6.824	0.001**

P<0.05*, P<0.01**

Table 6. Relationships between the entrepreneurship scale and its sub-dimensions

		Clinical Entrepreneurship	Risk-Taking Propensity	Motivation for Economic Freedom	Resilience-Strength	Innovative Creativity	Self-efficacy	Strategic Resource Development
Risk-Taking Propensity	R	.634**						
	P	0.000						
Motivation for Economic Freedom	R	.708**	.455**					
	P	0.000	0.000					
Resilience-Strength	R	.921**	.517**	.574**				
	P	0.000	0.000	0.000				
Innovative Creativity	R	.764**	.461**	.564**	.701**			
	P	0.000	0.000	0.000	0.000			
Self-efficacy	R	.774**	.467**	.470**	.690**	.449**		
	P	0.000	0.000	0.000	0.000	0.000		
Strategic Resource Development	R	.937**	.533**	.631**	.841**	.702**	.664**	
	P	0.000	0.000	0.000	0.000	0.000	0.000	
Effective Communicative Leadership	R	.940**	.597**	.638**	.820**	.629**	.746**	.828**
	P	0.000	0.000	0.000	0.000	0.000	0.000	0.000

P<0.05*, P<0.01**

The determination, evaluation, measurement, and development of entrepreneurial potential in advance have emerged as an important field of study in Türkiye. In the study of Orhan (2017), the EPAI developed by Santos *et al*., 2014, was adapted to the conditions of Türkiye, and it was validated that the EPAI-TR could be used as a measurement tool for this need.

Cronbach's alpha coefficient and the KMO tests were used to analyze the reliability of the entrepreneurial potential scale for clinical veterinarians by using the EPAI-TR scale. The Cronbach's alpha coefficient of the scale was 0.916, and the KMO coefficient was 0.924. The results of the specified coefficients and the coefficients obtained from the sub-dimensions

were consistent with the results of the original scale Santos *et al*., 2014, as well as with its Italian (Spagnoli *et al.*, 2016) and Turkish Orhan (2017), versions. The original EPAI Santos *et al*., 2014, consists of 46 items, 33 confirmatory items, and 11 sub-dimensions, while the EPAI-TR Orhan (2017), consists of 44 items and 11 sub-dimensions. The entrepreneurial potential scale for clinical veterinarians includes the most confirmatory 36 items of the 44 items in EPAI-TR Orhan (2017), and 7 sub-dimensions. In previous studies, some items from the scale were removed because lower factor values were attributed to cultural differences between countries (Nakana *et al*., 2002).

According to the results of the factor analysis, the "Leadership" and "Communication and Persuasion" sub-dimensions in the original form constituted the "Effective Communicative Leadership" sub-dimension, the "Resource Development" and "Vision" sub-dimensions constituted the "Strategic Resource Development" sub-dimension, the "Creativity" and "Innovation" sub-dimensions constituted the "Innovative Creativity" sub-dimension, and the "Desire for Independence" and "Economic Motivation" sub-dimensions constituted the "Motivation for Economic Freedom" sub-dimension. These sub-dimensions are consistent with those in the EPAI-TR scale adapted by Orhan (2017).

According to the results of the factor analysis of the entrepreneurial potential scale for clinical veterinarians, the sub-dimensions of the scale were listed according to their contribution to the total variance explained as follows: "effective communicative leadership," "strategic resource development," "self-efficacy," "innovative creativity," "resilience-strength," "motivation for economic freedom," and "risk-taking propensity." This ranking coincided precisely with the study of Orhan (2017); moreover, this ranking indicated a tendency toward these characteristics in Türkiye in terms of entrepreneurial potential regardless of the profession.

The most dominant sub-dimension of the original EPAI Santos *et al*., 2014, and the Italian version of EPAI Spagnoli (2016) was the "desire for economic freedom," which was followed by the "persuasion and communication" sub-dimension. This result is important as it indicates that there are differences between countries in terms of entrepreneurial potential. Santos *et al.* (2010) reported that the "desire to be independent" and "economic motivation" are two entrepreneurial motives that can be encouraged in educational environments. The fact that the "desire for economic freedom," which consists of a combination of the specified dimensions, is higher in foreign countries than in Türkiye shows that education to develop the motives of "desire to be independent" and "economic motivation" during university education is not sufficient. The sub-dimensions of "developing social networks," "taking responsibility," and "emotional intelligence" in the EPAI-TR scale (Orhan, 2017) are not supported in the model of the entrepreneurial potential scale for clinical veterinarians. This is thought to be related to the specific business structure of the clinical veterinary field and the nature of the education provided at the university.

There are also many previous researches that support the importance of the sub-dimensions that stand out in the entrepreneurial potential of veterinary clinical enterprises in terms of entrepreneurship. For the "effective communicative leadership" sub-dimension; the close relationship and interaction between leadership and entrepreneurship has been emphasized in various researches (Lord *et al*., 1986; McCarthy *et al*., 2010). It has been stated that entrepreneurs play an important role in finding the balance between leading others with their leadership qualities, using resources effectively and searching for opportunities and targeting advantages. Therefore, effective communicative leadership can be a critical factor in the success of entrepreneurs (Eyal and Kark, 2004; Ireland *et al*., 2003). The "strategic resource development" sub-dimension, the ability to gather financial and financial resources for venture management, has been identified as an important predictor of entrepreneurial success. Resources are considered a key feature in the development of new ventures and have been reported to make it easier for new ventures to adapt to complex environments (Romanelli, 1987; Tan and Peng, 2003). "Self-efficacy", an individual's belief in achieving a particular goal, has been described as vital for many activities. Self-efficacy has been associated with business

venture initiation and success (Chen *et al*., 1998; Poon *et al*., 2006).

A limitation of this study is that the sample did not include students at the veterinary faculties. It would be useful to test the factor structure by applying the scale to students at the veterinary faculties in future studies. This will enable us to compare the changes in the entrepreneurial potential between students at the veterinary faculties and clinical veterinarians.

EPAI can be used as a self-assessment tool by future entrepreneurs for critical dimensions related to entrepreneurial activity to assess their psychosocial profiles and thus improve their entrepreneurial excellence (Baron, 2013). Individuals who exhibit a high profile of the competencies and motives included in the entrepreneurial potential model have a higher probability of becoming successful entrepreneurs (Santos *et al*., 2014). Individuals who have some weakness in certain competencies or motives may have the chance to participate in training programs to improve these competencies. Making a self-assessment by using this questionnaire enables them to improve their entrepreneurial competencies and provides a greater chance for success in business life.

CONCLUSION

This study was designed to examine the entrepreneurial potential of clinical veterinarians using EPAI-TR. The results of the factor analysis revealed that this scale consists of seven different dimensions, allowing for the assessment of various aspects of entrepreneurial potential among clinical veterinarians.

The findings offer valuable insights into the pre-determination and development of entrepreneurial potential. Particularly, the dimensions of "Effective Communicative Leadership," "Strategic Resource Development," and "Entrepreneurial Self-efficacy" were identified as having influenced significant effects on the entrepreneurial potential of clinical veterinarians. In addition, although the sub-dimensions "social networks", "taking responsibility" and "developing emotional intelligence" have an important place in the original EPAI model, they were not supported by the model due to their low scores in EPAI-TR.

In conclusion, providing clinical veterinarians with training on the topics of forming social networks, taking responsibility, and developing emotional intelligence, which are outside the scale model because they have low scores, as well as promoting their desire to be independent and economically motivated are thought to be beneficial to improve their entrepreneurial potential. However, the study has certain limitations. For instance, veterinary university students were not included in this research, and further investigation is needed to explore the impact of this student group on entrepreneurial potential and future research should delve into the relationship between entrepreneurial potential and the professional success of veterinarians in more detail.

REFERENCES

AKGÜL, Ç.; ÇEVİK, O. *Statistical analysis techniques*: business management applications in SPSS. Ankara: Emek Ofset, 2003.

AKIN, A.C.; SİPAHİ C.; ÇEVRİMLİ, M.B.; MAT, B.; GÜNLÜ, A. Labour satisfaction levels of managers in cattle farms. *Mehmet Akif Ersoy Univ. Vet. Fak. J.*, v.5, p.48-57, 2020.

AYTAÇ, Ö.; İLHAN, S. Entrepreneurship and entrepreneurial culture: a sociological perspective. *Selcuk Univ. J. Soc. Sci. Inst.*, v.18, p.101-120, 2007.

BARON, R.; MARKMAN, G.D. Beyond social capital: the role of entrepreneurs' social competence in their financial success. *J. Business Venturing*, v.18, p.41-60, 2003.

BARON, R.A. *Enhancing entrepreneurial excellence*: tools for making the possible real. 4.ed. Cheltenham, U.K: Edward Elgar Publishing, 2013.

BOWEN, S.A. Mission and vision. In: Heath,R.L.; Johansen, W. *The International encyclopedia of strategic communication*. Hoboken, NJ, USA: Wiley Online Library, 2018. 9p.

BRETTEL, M.; CHOMIK, C.; FLATTEN, T.C. How organizational culture influences innovativeness, proactiveness, and risk-taking: Fostering entrepreneurial orientation in SMEs. *J. Small Business Manag.*, v.53, p.868-885, 2015.

BYRNE, M. Data analysis strategies for qualitative research. *AORN J.*, v.74, p.904-905, 2001.

BULUT, Y.; SAYIN, E. An evaluation of entrepreneurship characteristics of university students: an empirical ınvestigation from the Faculty of Economic and Administrative Sciences in Adnan Menderes University. *Int. J. Econ. Persp.*, v.4, p.559-568, 2010.

BÜYÜKÖZTÜRK, Ş. Factor analysis: basic concepts and using to development scale. *Educ. Admin. Theory Pract.*, v.32, p.470-483, 2002.

CHEN, C.C.; GREENE, P.G.; CRICK, A. Does entrepreneurial self-efficacy distinguish entrepreneurs from managers? *J. Business Venturing*, v.13, p.295-316, 1998.

ENSARİ, M.Ş.; HAZAL, K. A research on the investigation of the mediating effect of entreprenurship history of the families on the relation between the tendency to innovativeness and entrepreneurship potentials of university students. *Pamukkale Univ. J. Soc. Sci. Inst.*, v.28, p.235-248, 2017.

EYAL, O.; KARK, R. How do transformational leaders transform organizations? A study of the relationship between leadership and entrepreneurship. *Leadership Policy Schools*, v.3, p.211-235, 2004.

FINLAND. Ministry of Agriculture and Forestry. List of veterinary clinics allowed to work, 2022. Available in: https://www.tarimorman.gov.tr/Konu/1122/Ruhsatli-Ozel-Klinikler-Listesi%E2%80%8B. Accessed in*:* 21 Apr. 2022.

GENÇ, S.V.; KOÇAK A. Evaluation of the effect of the Covid-19 pandemic on job finding anxiety of veterinary faculty final year students in Turkey. Proceeding of 5th International Cukurova Agriculture and Veterinary Congress July 21-23, 2023-Adana/Türkiye. Available in: https://www.ziraatkongresi.org/_files/ugd/614b1f_646cf4bfdc4a445d8f6c82ccc97f2b90.pdf. Accessed in: 15 Aug. 2023.

HU, L.T.; BENTLER, P.M. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct. Equation Modeling*, v.6, p.1-55, 1999.

IRELAND, R.D.; HITT, M.A.; SIRMON, D.G. A model of strategic entrepreneurship: The construct and its dimensions. *J. of management*, v.29, p.963-989, 2003.

IŞILDAR, G.Y. Evaluation of the effects of "environmental education" on environmental approaches and behaviors of vocational school students. *J. Turk. Educ. Sci.,* v.6, p.759-778, 2008.

KIZILGÖL, Ö.; İŞGÜDEN, B. Evaluating entrepreneurship potential of Bandırma. *Dokuz Eylül Üniv. İşletme Fak. Derg.,* v.9, p.257-279, 2008.

KILIÇ, S. Cronbach's alpha reliability coefficient. *J. Mood Disord.*,v.6, p.47-48, 2016.

KLINE, R. B. *Principles and practice of structural equation modeling* 3.ed. New York: Guilford Press, 2011.

KOL, S. Development of attitude scale devoted to the usage of technology in pre-school education. *Kastamonu Educ. J*., v.20, p.543-554, 2012.

LING, H.C.; HSIEH, S.Y.; CHAO, C. Vitality of hospitality and leisure education of a department of hospitality management in Taiwan. *J. Stat. Manag. Syst.*, v.15, p.169-183, 2012.

LORD, R.G.; VADER, C.L.; ALLIGER, G.M. A metaanalysis of the relation between personality traits and leadership perceptions: an application of validity generalization procedures. *J. Appl. Psychol.*, v.71, p.402-410, 1986.

MASON, C.; HARVEY, C. Entrepreneurship: contexts, opportunities and processes. *Business Hist.*, v.55, p.1-8, 2013.

MCCARTHY, D.; PUFFER, S.; DARDA, S.V. Convergence in entrepreneurial leadership style: evidence from Russia. *Calif. Manag. Rev.*, v.52, p.48-72, 2010.

MCDERMOTT, K.; KURUCZ, E.C.; COLBERT, B.A. Social entrepreneurial opportunity and active stakeholder participation: Resource mobilization in enterprising conveners of cross-sector social partnerships. *J. Cleaner Prod.*, v.183, p.121-131, 2018.

MUHAMAD, S.; SULAIMAN, N.F.C.; SAPUTRA, J. The role of human capital and innovation capacity on economic growth in ASEAN-3. *J. Ekon. Malays.*,v.52, p.281-294, 2018.

NAKANO, Y.; SUGIURA, M.; AOKI, K. *et al*. Japanese version of the quality of relationship inventory: Its reliability and validity among women with recurrent spontaneous abortion. *Psiquiatr. Clin. Neurosci.*, v.56, p.527-532, 2002.

NG, W.; RIEPLE, A. The role of networks in entrepreneurial performance: new answers to old questions? *Int. Entrepreneurship. Manag. J.*, v.10, p.447-455, 2014.

ÖREN, K.; BIÇKES, M. Effects of personality traits on entrepreneurship potential: a study on higher education students in Nevşehir. *Süleyman Demirel Üniv. İktisadi İdari Bilimler Fak. Derg.*, v.16, p.67-86, 2011.

ORHAN, K. Adapting entrepreneurial potential assessment inventory (EPAI) to Turkish and its psychometric properties. *ODU J. Soc. Sci. Res.*, v.7, p.609-625, 2017.

POON, J.M.L.; AINUDDIN, R.A.; JUNIT, S.O. Effects of selfconcept traits and entrepreneurial orientation of firm performance. *Int. Small Business J.*, v.24, p.61-82, 2006.

ROMANELLI, E. New venture strategies in the minicomputer industry. *Calif. Manag. Rev.*, v.30, p.160-173, 1987.

SANTOS, S.; CAETANO, A.; CURRAL, L. Psychosocial aspects of entrepreneurial potential. *J. Small Business Entrepreneurship*, v.26, p.661-685, 2014.

SANTOS, S.C.; CAETANO, A.; CURRAL, L. *et al*. Atitude dos estudantes universitários face ao empreendedorismo: como identificar o potencial empreendedor? *Rev. Portug. Bras. Gestão*, v.9, p.2-14, 2010.

SCHERER, R.F.; LUTHER, D.C.; WİEBE, F.A.; ADAMS, J.S. Dimensionality of coping: factor stability using the ways of coping questionnaire. *Psychol. Rep.*, v.62, p.763-770, 1988.

SHAVA, H.; CHINYAMURINDI, W.T. The influence of psychological competencies on the willingness of employees involved in dirty work to become entrepreneurs. *J. Contemp. Manag.*, v.16, p.430-458, 2019.

SPAGNOLI, P.; SANTOS, S.C.; CAETANO, A.; LO PRESTI, A. A contribution towards thevalidation of the Italian version of the entrepreneurial potential assessmentinventory. *BPA Appl. Psychol. Bull.*, v.64, p.37-49, 2016.

STEVENS, J.P. *Applied multivariate statistics for the social sciences.* 5.ed. New York: Routledge Taylor&Francis Group, 2012.

TAN, J.; PENG, M.W. Organizational slack and firm performance during economic transitions: Two studies from an emerging economy. *Strategic Manag. J.*, v.23, p.1249-1263, 2003.

WU, M.S.F. Research of female supervisors' personality traits on the leadership styles and organizational commitment: the impact of relatedness. *Rev. Cercetare Interventie Soc.*, v.63, p.42-53, 2018.

YAŞLIOĞLU, M.M.; TOPLU YAŞLIOĞLU, D. How and when to use which fit indices? A practical and critical review of the methodology. *Istanb. Manag. J.*, v.88, p.1-20, 2020.