The Engine of Sustainable Rural Development: Embeddedness of Entrepreneurs in Rural Turkey

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ABSTRACT

The aim of this study is first to explore the profile of rural entrepreneurs, and second to identify the most important factors that determine their different embeddedness levels in rural areas. First, descriptive statistical techniques, and later on one of the artificial intelligence methods, i.e. rough set data analysis are used in order to investigate 255 entrepreneurs from Turkish rural areas who filled in our questionnaire. This study is the first attempt to evaluate entrepreneurs and their place in rural areas. According to the results, embeddedness of entrepreneurs is strongly associated with the remoteness of villages and the personal profile.

Keywords: rural entrepreneurs, embeddedness, Turkey, sustainable rural development

1. SUSTAINABILITY AND ENTREPRENEURSHIP IN RURAL AREAS

Contemporary theories have taken entrepreneurship (which is an individual process though contributing to both the local and the national economy) into account as the main tool to create a new equilibrium where sustainable development will be realized.

In recent years, entrepreneurship has also been seen as the engine of rural development, on the basis of its potential to improve rural areas as a new node in their relations while bringing the necessities of growth such as technology and education. In the literature, there is evidence that recent changes in rural areas have been obtained by the contributions of entrepreneurs and entrepreneurial activities. Entrepreneurship is the driving force for the enhancement of the innovative capacity and growth potential of a region [1-3]. Hence, entrepreneurship is also one of the driving forces of rural development.

Sustainable rural development on the basis of entrepreneurship aims to achieve the optimum use of local resources, while obtaining and maintaining social capital. In the literature, the desired outcomes of socio-economic development rely strongly on the contribution of social capital [4-6]. Despite traditional and social determinants, in modern theories, social capital is measured by social cohesion, civic and economic well-being, and the social processes, which all contribute to highly beneficial outcomes, while also producing social capital itself [4, 5]. In other words, social capital measures common values, explicit and tacit norms, ways, and the density and the intensity of social interaction in a group that all together increases the group's capabilities and enhances socio-economic mechanisms.

Due to the conservative attitudes and reluctance in rural areas to change the cultural heritage, traditions and values, in the literature, it is commonly assumed that change agents of rural capital are mainly migrants and that changes have happened by their integration into the

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rural areas. The increasing attractiveness and the realization of the capacity of rural areas have stimulated some entrepreneurs to act in and/or move into rural areas where they became the economic change agents.

The economic changes in rural areas, where most of such changes are dominantly dependent on social relations and social life, are due to the embeddedness of entrepreneurs and their activities in the rural environment. In the literature, embeddedness is a must for desired social and economic outcomes [7]. Therefore, it also identifies the place of entrepreneurs in the rural setting and their success. In other words, embeddedness is the identifier of links between economic agents and the rural physical and social environment. Not only the embeddedness but also the continuity of the rural setting and of the entrepreneurial activity, in this setting, is the key concerns for the desired outcome.

Taking all this into account, the aim of this study is first to explore the profile of entrepreneurs, and second to identify the most important factors to define their different embeddedness levels in rural areas. To achieve our aim, we first use descriptive statistical techniques, and later an artificial intelligence method, i.e. rough set data analysis in order to investigate 255 entrepreneurs from 17 Turkish rural areas on the basis of the data obtained from in-depth questionnaire interviews. 17 Turkish rural areas are determined by the application of multi-stage sampling. The multi-stage sampling is conducted first at macro level covering NUTS 2 and NUTS 3 regions in Turkey using demographic and physical variables. Then, at micro level, sampling has focused on NUTS 4 regions and villages on the basis of

demographic, rural, economic and physical variables. Therefore, 17 villages from mainly South West, West and North West of Turkey are included in the analysis.

2. EMBEDDEDNESS OF ENTREPRENEURS IN RURAL AREAS

Economic sociologists have developed the notion 'embeddedness' to emphasize the social dimension of economic activities. Therefore, Granovetter [7] suggested that economic activities need social relations which have an important and significant role in terms of generating trust for economic activities to happen. On this basis, embeddedness is very important for entrepreneurs in rural areas. Being embedded is not easy task as rural inhabitants are heavily dependent on primary group relationships and close personal ties [8].

In this section, we used the evaluation of Gülümser and her colleagues [9] to better understand embeddedness issue and entrepreneurship in rural areas. According to this, the ties of rural areas (primarily social ties) and the ones of the entrepreneurs (composed of locally-based economic system and the collective efforts of members of communities) concur if entrepreneurs link production to consumption via local potential [8]. In addition, business can be present and survive if there is market. On this basis, it is plausible to say that rural entrepreneurs, depending on their entrepreneurial characteristics, are increasingly choosing rural areas as a living and working environment or as a resource/input of their entrepreneurial process, while seeing the market as a must for their business (Figure 1) [9].
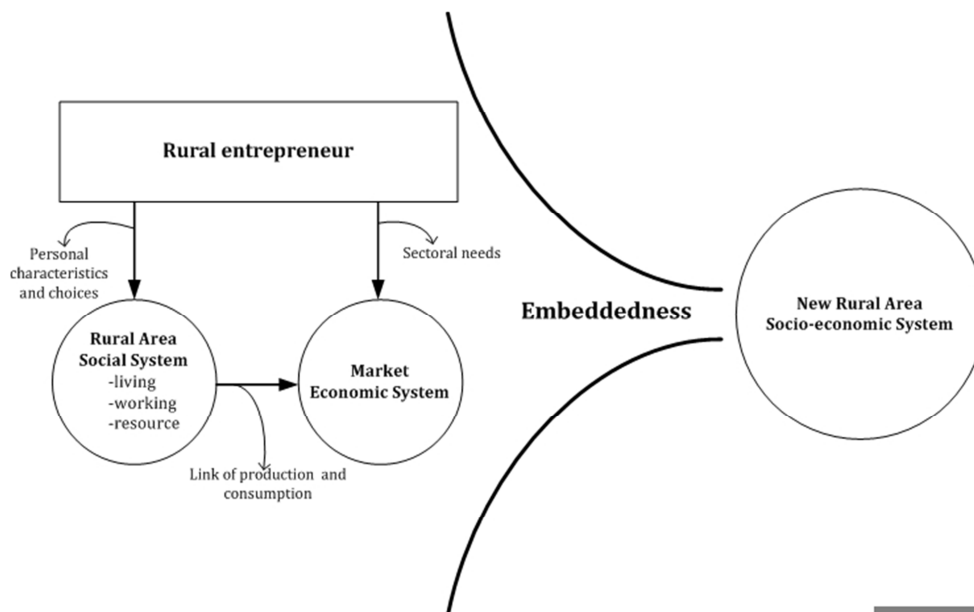

Figure 1. The effect of embeddedness on rural areas [9, 10]

According to this approach, both rural and market need to be tied by rural entrepreneurs to develop the link between production (local resources) and consumption (market beyond rural areas). Therefore, a new rural area appears as the result of the embeddedness of

entrepreneurs in rural areas while bringing first, knowledge about the market and beyond, second, innovation to the market, as rural areas are not very well known in the market as a resource; and, finally, an environment to the entrepreneur who is striving,

according to his/her own needs, to have a better living [9].

Embeddedness, which is seen as a configuration element of the general business process, measured as the nature, depth and extent of an agent's ties with the environment [11,14]. The consensus about the notion is that the embeddedness of entrepreneurs in both local and beyond local settings, i.e. the presence of other entrepreneurs and individuals from outside their environment, is very important if entrepreneurs are to succeed [9].

In rural entrepreneurship studies, embeddedness is measured by the locality and externality of entrepreneurs' market and social relations, including the involvement of rurality in the entrepreneurial process. Therefore, the level of embeddedness can be grouped into four categories [9]:

1. Disembeddedness level referring to entrepreneurs who have no economic or social relations with the local environment but produce and sell outside of the rural area;
2. Underembeddedness level referring to entrepreneurs who have not yet gained full trust but are trying to have the local community as their market in order to sell their products;
3. Embeddedness level referring to entrepreneurs who have obtained a balanced and integrated relationship between themselves and society in the local area.
4. Overembeddedness level referring to entrepreneurs whose innovativeness is barred by social closure, and therefore their creativity has led them to create external relations by protecting their embeddedness in order to expand their business.

In the literature, it is strongly stated that the success and the continuity of economic activities depend on the involvement of locality in the economic activity ('institutional embeddedness') and the involvement of economic agents in the localism ('social embeddedness'). Kloosterman and his colleagues define this two-sided embeddedness as 'mixed embeddedness' [15]. They argue that their explanation of mixed embeddedness gives a more comprehensive explanation than previous models. Although the mixed embeddedness was originally generated for the immigrant entrepreneurs and enterprises, the success of the two-sided perspective of the phenomenon has led us to construct our analysis with respect to the mixed embeddedness model.

In the rural settings, both rural areas and entrepreneurship can be affected negatively by the defensive localism if the local community is not engaged in the new activities [16]. In addition, rurality affects entrepreneurship with regard to creating, realizing, and operating a new economic opportunity while offering a desirable milieu [17]. This positive effect can be only realized by the creation of new economic activities to support existing activity which is agriculture.

Therefore, bringing new economic activities can also be a threat for rural areas in terms of the sustainability of the natural and social environment. But these new economic activities will definitely contribute to economic growth and the development of rural areas, depending on the success of entrepreneurs in becoming embedded and maintaining their activities. The next section evaluates the embeddedness of rural entrepreneurs in Turkish villages.

3. THE RURAL ENTREPRENEURS IN TURKISH VILLAGES

In this study, we aim to investigate who are the entrepreneurs in rural Turkey and what are the main factors to determine their embeddedness in rural areas. Therefore, this section first investigates the profile of the entrepreneurs as the prefatory remarks by descriptive statistical techniques and then explains the methodology used to identify the most important factors of different embeddedness levels of rural entrepreneurs in Turkey. Moreover, this section reflects the results of the analysis of 255 entrepreneurs from 17 villages.

3.1. Prefatory remarks

The increasing emergence of small firms in rural areas has shown the different needs of entrepreneurs in rural areas from those of their urban counterparts. In urban settings, the entrepreneurs are heterogeneous, and have a low involvement in social networks [18]. In contrast, in rural areas, entrepreneurs are more homogeneous and have an involvement in social groups [19].

Entrepreneurs in rural areas are the main economic agents. To survive in conditions of closed social localism, economic agents need to be accepted by the social environment and to be a part of it. In the literature, the effect of social behaviour on economic activities is called 'embeddedness'. Therefore, the embeddedness of entrepreneurs is very important for the continuity of economic activity in rural areas. Moreover, gender, the use of local resources, the origin of entrepreneurs, and the sector in which they are operating are stressed more in rural entrepreneurship studies focusing on embeddedness. Early studies have found that both the personal and the firm profile of entrepreneurs are the indicators of the embeddedness level of an entrepreneur. On this basis, in this section, we aim to explore the profile of 255 entrepreneurs from 17 rural areas on the basis of the data obtained from the in-depth questionnaire interviews.

17 Turkish rural areas are determined by the application of multi-stage sampling. The multi-stage sampling is conducted first at macro level covering NUTS 2 and NUTS 3 regions in Turkey using demographic and physical variables. Then, at micro level, sampling has focused on NUTS 4 regions (although in Turkey there is no such classification yet, district level which is also classified in the one of the EU as NUTS 4 level has been taken into account as NUTS 4 regions) and villages on the basis of demographic, rural, economic and physical variables. Therefore, 17 villages from mainly South West, West and North West of Turkey are included in the analysis.

The questionnaire of entrepreneurs aimed to investigate the entrepreneurial, personal and firm profile of the rural entrepreneurs and elicited the factors behind their success, their impacts on the villages, and their need to continue their entrepreneurial activities in the village.

Here, we use the term 'firm profile' to explain the characteristics of the entrepreneurial activity. Thus, in our study, entrepreneurial activity/firm profile covers the characteristics of both firms and farms. It is not easy to distinguish firms and farms, but we can distinguish them according to sector. The entrepreneurs who are in agricultural sector are usually the owners of a limited amount of land and have limited agricultural production, and/or they do small scale husbandry. These can be called 'farmers'. These farmers sometimes gather and sell their product under the name of a cooperative, or sell their product by themselves to the dealer who takes the products to the open market. Thus, farmers in Turkey have no direct relations with the market. On the other hand, what we call 'firms' are those enterprises which are in non-agricultural activities and that are again sole proprietorship firms. Table 1 shows that 88.6 per cent of entrepreneurs in our sample are farmers (Table 1).

Table 1. Descriptive statistics of entrepreneurs

	#	%		#	%
Remoteness	128	50.2	Remoteness	128	50.2
Entrepreneurial Profile			Entrepreneurial Activity (Firm profile)		
Age over 60	69	27.1	Owner	234	91.8
Female	29	11.4	Agriculture sector	226	88.6
High Education	5	2.0	Local input	226	88.6
Newcomer	71	28.0	Regional output	64	25.1
Wants to stay in the village	192	75.0			

According to the data obtained from our survey, entrepreneurs are equally distributed in both remote and accessible rural areas. In other words, half of the entrepreneurs in our sample live in remote rural areas (Table 1). With regard to the personal profile of entrepreneurs, only 11.5 per cent are female and 2.0 per cent have a Bachelor's degree. Although 28.0 per cent of them have lived abroad for more than 5 years or are newly moved to the village, 25 per cent want to leave the village (Table 1). In our study, we defined entrepreneurs as owners or the managers, and it was found that 91.8 per cent of them are owners and 88.6 per cent work in the agricultural sector. 88.6 per cent of them include local input ('local information') in their

entrepreneurial activities, while 25.1 per cent use regional output ('external information').

The majority of the entrepreneurs are happy and find themselves successful (Table 2). Of 205 successful entrepreneurs, 78 per cent of them claimed that social relations are the most important reason for their success (Table 2). In addition, 42 and 41 per cent of the entrepreneurs suggested, respectively, that the diversity of their product and their marketing are also the reasons of their success. Thus, even entrepreneurs think that embeddedness is very important to be successful in their economic activity.

Table 2. Satisfaction, success, and reasons for the success of entrepreneurs

	Success	
	#	%
Satisfaction	156	76
Reasons for success		
Diversity of product	85	42
Marketing	84	41
Social relations	161	78

The next sub-section introduces the methodology of rough set data analysis in order to clarify our study steps.

3.2. The methodology: rough set data analysis

Pawlak [20] in the early 1980s introduced rough set data analysis (RSDA) and later, Pawlak [21] and Slowinski [22] developed this non-parametric classification technique [23] which has been developed

as an artificial intelligence method for the multidimensional classification of categorical data. In recent years, RSDA has become popular in the social and economic sciences not only because of the advantage arising from its non-parametric character but also because of its ability to handle imprecise and qualitative data [24-30].

RSDA, by eliminating less relevant data attributes, serves to pinpoint regularities in classified data, in order

to identify the relative importance of some specific ones, and to discover possible cause-effect relationships by logical deterministic rules [31]. The basic idea in RSDA is to describe the data with rough sets which can be characterized as a set for which the classification of a group of certain objects is uncertain [25, 32]. To perform RSDA, a modular software system created at the Laboratory of Intelligent Decision Support Systems of the Institute of Computing Science in Poznan by Predki, Slowinski and Stefanowski in 1998 [30, 33] Rough Set Data Explorer (ROSE) is used.

The application of RSDA is composed by three steps, viz. pre-processing, attribute reduction, and rule induction.

1. Pre-processing: The first step enables the researcher to see the quality of classification and the accuracy of each of the categories of the decision attribute by dividing the lower approximation by the upper approximation of each category. In other words, if quality and accuracy of classification is lower than 1, then the chosen data and examples in the sample are not fully unambiguous concerning their allocation to the categories of decision attribute. This step strengthens the conclusions made on the basis of the other steps of the rough set analysis.

2. The reduction: This step is used to form all combinations of condition attributes that can completely determine the variation in the decision attribute without needing another condition. In other words, in this step, minimal sets of attributes are found, and these are called reducts. While finding reducts, RSDA can also find the frequency of appearance of all condition attributes in the reducts. If among them, one or more attributes has a frequency of 100%, this is called the core.

3. Rule induction: This provides rules which explain both the exact and the approximate relations between the decision and the condition attributes. An exact rule guarantees that the values of the decision attributes correspond to the same values of

the condition attributes. Therefore, only in this case is it always possible to state with certainty whether an object belongs to a certain class of the decision attribute. In addition, if a rule is supported by more objects, then it is more important, for instance, in summarizing the different single study results. This is generally considered as an "if…then…"clause. Another indicator can be the strength and support of the rules by cases. If a rule is supported by more objects, and it has a high percentage frequency, then it is more significant and important when summarizing different study results.

The following sub-section applies the RSDA and discusses the results of the analysis.

3.3. The analysis: critical factors for embeddedness

To investigate the most important factors of the embeddedness, we used 10 condition attributes which reflect five dimensions, viz. personal profile; firm profile; locality; externality; and regional characteristics, and one decision attribute, i.e. embeddedness (Table 3). Therefore, to better understand the important factors of embeddedness, we used RSDA. Condition attributes related to the externality and locality include information about the local knowledge used in the production, the customers, workers and production of the entrepreneur: in other words, both sides of the embeddedness, viz. social networks and institutional networks. Due to the relatively large sample (255 observations), the codification of the variables was difficult and needed careful treatment. So, we used only four dummy condition attributes and six categorical attributes. After the codification of the attributes, the information table was compiled and then RSDA was applied.

The classification of the RSDA conducted for 255 entrepreneurs has a relatively high significant accuracy and quality (Table 4). In other words, the accuracy and the quality of classification can be scored 1 as the highest score, but here they are scored 0.99. This shows that the embeddedness of two entrepreneurs cannot be exactly approximated as they can be either embedded or underembedded.

Table 3. Attributes used for the embeddedness analysis

Name	Explanation	Category
Gender	Gender of the entrepreneur	Dummy: 1=female; 0=male
Age	Age of the entrepreneur	Categorical: 1= 19-26; 2=26-35; 3=36-45; 4=46-55; 5=55+
Motivation	The will of the entrepreneur to move from the village	Dummy: 1=yes; 0=no
Remote	Remoteness of the village	Dummy: 1=remote; 0=not remote
Region	NUTS3 region of the village	Categorical: 1= Antalya; 2= Aydın; 3=Bilecik; 4=Sakarya
Education	Education level of the entrepreneur	Categorical: 1=illiterate; 2=literate no school; 3=primary; 4=secondary; 5=high school; 6=vocational school; 7=university
Origin	Origin of the entrepreneur	Dummy: 1= newcomer; 0= local
Locality	Percentage of local information use in the entrepreneurial activity	Categorical: 1=0%; 2=1-49%; 3=50-99%; 4=100%
Externality	Percentage of outside information use in	Categorical: 1=0%; 2=1-10%; 3=11-30%; 4=31-50%; 5=51-88%

	the entrepreneurial activity	
Sector	The sector in which the entrepreneur is active	Categorical: 1= traditional; 2=non-agriculture
EL	Embeddedness level of entrepreneur	Categorical: 1= disemb.; 2= underemb.; 3= emb. 4= overemb.

Table 4. Approximations for embeddedness levels

Approximations	Accuracy	Upper level	Lower level	Objects
Disembeddedness	1	1	1	1
Underembeddedness	0.99	15	13	14
Embeddedness	0.87	166	164	165
Overembeddedness	1	75	75	75
Accuracy of classification		0.99		
Quality of classification		0.99		

According to the results of RSDA, it is possible to classify entrepreneurs in 7 reducts depending on 10 attributes (Table 5). Among these attributes, two of them, viz. externality and age, are used in each reduct and, thus, they are the core attributes. The attributes locality and region follow them by appearing in six reducts, and then come four attributes, i.e. remote, education, origin and motivation, by appearing in two reducts. The attribute gender, which appears in one reduct, and the attribute sector, which appears in none of the reducts are not very important factors.

Table 5. Frequency of attributes, reducts, and core of embeddedness analysis

Attributes	Frequency #	%	Reducts
Externality	7	100	{Locality, Externality, Remote, Age, Region}
Age	7	100	{Locality, Externality, Gender, Age, Region}
Locality	6	86	{Locality, Externality, Origin, Age, Education}
Region	6	86	{Locality, Externality, Motivation, Age, Region}
Remote	2	29	{Locality, Externality, Origin, Age, Region}
Education	2	29	{Locality, Externality, Age, Education, Region}
Origin	2	29	{Externality, Remote, Motivation, Age, Region}
Motivation	2	29	Core
Gender	1	14	
Sector	0	0	Externality; Age

There are four different levels of embeddedness. Two of these levels, i.e. overembeddedness and embeddedness, demonstrate the embedded entrepreneurs, while the other two levels, i.e. underembeddedness and disembeddedness, define the disembedded entrepreneurs. The results, up to now, allow us to state that our approximation is accurate to evaluate different embeddedness levels of entrepreneurs. But, it should be kept in mind that, in terms of underembeddedness and embeddedness levels, the cases are not fully discernable.

In the last step of the analysis, there are seven exact rules and one approximate rule presented by more than 10 per cent of the related cases that are generated as the result of RSDA. There is only one rule for each disembeddedness and underembeddedness level, while four rules are related to the embeddedness level, and one rule is related to the overembeddedness level (Table 6). In addition, the single approximate rule shows that the level of embeddedness of two entrepreneurs aged between 46 and 55 with a low level of externality can be approximated as either embedded or underembedded (Table 6).

Table 6. Rules and their strengths in the embeddedness analysis

		Strength #	%
Disembedded			
Rule 1	(Externality = 1-10%) (Age = 36-45)	1	100
Underembedded			
Rule 2	(Age = 36-45)	6	57
Embedded			
Rule 3	(Externality = 1-10%)	36	21
Rule 4	(Sector = agriculture)	33	20
Rule 5	(Age = 56+)	23	14
Rule 6	(Locality = 50-99%)(Remoteness = none)	20	12

Overembedded			
Rule 7	Remoteness = Remote)		24	32
Approximation(underembedded-embedded)			
	(Externality = 1-10%) (Age = 46-55)		2	100

Entrepreneurs in Turkish villages are usually embedded, although breaking into the closeness of rural communities is not so easy especially in Turkey. In other words, entrepreneurs in Turkish villages cannot survive nor enter the community without being embedded. The results of the analysis show that, if entrepreneurs are in the age 36 and 45, then they are either underembedded or disembedded (Table 6). Entrepreneurs at this age usually live in accessible villages and have the motivation to leave rural areas, and thus they do not need to be integrated into the community, or they are the newcomers pursuing quality of life, so they do not have time to be embedded. In addition, the disembeddedness is also associated with externality, and some level of externality can cause disembeddedness. Turkish villages still lack openness to novelty, so they cannot accept anyone with external ties.

The results on these embedded entrepreneurs who have embeddedness or overembeddedness levels show that the more remote the village is, the more embedded is the entrepreneur. In addition, according to the RSDA rules, an entrepreneur to be embedded must have a low level of externality, or be in agricultural sector, or be older than 55, or be in an accessible village and use a high level of local information, while to be overembedded, to be in a remote village is enough to be stimulated to use external information combined with local information (Table 6).

4. CONCLUSION

In recent years, entrepreneurship is seen as the most relevant and effective way to obtain sustainability and sustainable rural development. In addition, sustainable rural development can be only obtained if the involvement of rural inhabitants is achieved. Therefore, the embeddedness of entrepreneurs has seen as the engine of both rural development and sustainability. Entrepreneurs are the economic change agents in rural areas, and therefore their embeddedness levels depend on their economic goals if they are to become a part of the rural area or not. Therefore, in this study, we aimed first to explore the profile of entrepreneurs, and second to identify the most important factors to define their different embeddedness levels in rural areas.

The results of the analysis on the embeddedness levels of entrepreneurs showed that the embeddedness and the disembeddedness of entrepreneurs are strongly associated with the remoteness of the villages, the personal profile of entrepreneurs – especially their age, and their use of external information. In addition, the results of the analysis on the origin of entrepreneurs suggested that newcomer entrepreneurs are better

educated and younger than locals and create economic diversity in rural areas by choosing remote villages to settle in. But they are not directly responsible for the rural changes. The results also showed that local entrepreneurs are more likely to be male-oriented, older entrepreneurs who contribute to natural capital. These results are parallel to the theoretical basis and emphasize the importance of embeddedness in rural areas for a business to survive.

The small number of villages under investigation prevents us from generalizing our findings for a large number of villages. Nevertheless, the results signal the start of a turnaround in villages, while clarifying the need for controlled development to obtain sustainability and continuity of rural areas and their economy. Indeed, there seems to be a turnaround, at least in the investigated villages. Therefore, the extension of this study in order to generalize our findings and to test them is a future research task.

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