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Comparing Turkish Universities Entrepreneurship and Innovativeness Index's Rankings with Sentiment Analysis Results on Social Media

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Abstract

In this article we have compared the rankings of Turkish Universities obtained by The Scientific And Technological Research Council of Turkey's (TUBITAK) Entrepreneur and Innovative University Index (EIUI) with rankings obtained by Sentiment Analysis(SA) of the related university's students or graduate student's social media messages. SA is a method for automatically mining the attitude of the author (or more generally the source) about a thought, behaviour, service or product. For this case, we have conducted SA in the context of Entrepreneurship and Innovativeness. We used random related university's official twitter account's followers to form a database for user names. Selection of followers and number of followers for university was made randomly. We have used 13.007 tweets that contain "entrepreneur" keyword and 14.579 tweets that contain "Innovation" keyword to identify the relevant class and #OezgecanAslan and #SevgiNeydi trend topic's tweets for irrelevant class and with this way we generate a lexicon about entrepreneurship and innovation for SA. In this generation phase we have used Support Vector Machines and Naive Bayes Classifier data mining algorithms. We have performed SA on the approximately 1.353.803 tweets of 57.321 followers of 50 universities of interested and we obtain a new ranking of these. Finally we have conducted statistical tests for compatibility of these two university rankings.

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Keywords: Entrepreneurship, Innovation, Universities, Sentiment Analysis

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1. Introduction

Entrepreneurship is a big phenomenon of last three decades. Because of its positive effect on wealth and employment, not only governments but also academicians and private sector pay much attention to entrepreneurship. As very well known, economic development is about regional or national economic changes that lead growth and improvements in the capacities and capabilities of economic system (Reese and Fasenfast, 1997). Entrepreneurship is associated with innovation in order to emphasize importance of creative and integrative thinking in post modern business environment. Beyond educating students and promoting research, universities are contributing to creating entrepreneurial business ideas and they play a key role in today's society. Contemporary universities are far from traditional ones by embracing the importance of innovation, commercialization, entrepreneurship and the creation of economic value for their communities as a result of the researches. A successful technology-based economic development leverages local university assets to build new companies and a science, technology, engineering and math field workforce (Robinson, 2014). Beside, Turkish Universities' core objective predominantly is to educate young generation as a manager for business and a staff for governmental departments. Most of employments are created by high technologic industries and numbers of them are low in Turkey. Universities can be responsible from that since they are not working for their researches' commercialization. It can be said that universities are the weakest circle of the entrepreneurship ecosystem in Turkey. Small and Medium Scale Enterprises are generates 54% of added value of Turkish economy; however they generates 76% of total employment of the country. Turkish government has an awareness of the fact that only new enterprises can create new jobs, so 10th Development Plan covers a large scale of entrepreneurship objectives. The Scientific and Technological Research Council of Turkey has created Entrepreneurship and Innovativeness Index which evaluates universities annually in order to encourage their entrepreneurial and innovativeness activities. Index is assembling from 23 criteria in 5 groups. First group is scientific and technological research proficiency; second group is intellectual property rights; third group is cooperation and interaction; forth group is entrepreneurship and innovativeness culture; fifth and the last group is economic contribution and commercialization. 179 universities take a place at the list and are arranged due to mentioned criteria.

2. Literature Review And Hypotheses

2.1. Entrepreneurship and Innovation

The study of the entrepreneur has a long tradition and yet there continues to be no widely-accepted definition of the term "entrepreneurship" (Hornaday, 1992; Ucbasaran, Westhead, &Wright, 2001; Watson, 2001). Entrepreneur itself drives from French verb "entreprendre", meaning "to undertake". Economist Richard Cantillon is accredited with being the first in 18th century, in the context of how we define today entrepreneurship. He defined entrepreneurs as risk takers, in sense that they purchased goods at certain prices in the present to sell at uncertain prices in the future (Cantillon, 1755/1931). Joseph Schumpeter related entrepreneurship, additionally, to innovation. He advocated that entrepreneurs are innovator who implements change in markets though the carrying out of new combinations (Shumpeter, 1934). In business sense, Shumpeter's definition equates entrepreneurship with innovation. Even entrepreneurship is widely recognized today as innovation there is still debate on this issue. Peter Drucker, very well-known management guru, argued that entrepreneurs are who starts new business venture, it may not a new market, and even they may fail to make a profit. Drucker develops to claim that innovation is as risky as all economic activities. Innovators are not "risky-focused"; they are "opportunity-focused". (Drucker, 1985)

As can be ordered different definitions of entrepreneurship throughout history and added perspectives of scientist and researches, entrepreneurs are different from other business owners by identifying new products, markets or processes. Entrepreneurship covers innovation and by this way entrepreneurs increase efficiency, success, productivity of their enterprises. On the other hand, entrepreneurs do not have to be at the helm. They can be someone who is working for the enterprise. Creating an idea is important for entrepreneurship but it is necessity to embody that idea in to the business. From this point of view, intra-preneurship is an important impact factor for entrepreneurship.

2.2. Entrepreneurial and Innovative Education

It has been arguing that is entrepreneurs are born or made. Even there is a still considerable uncertainty on this issue there seems to be no compelling reason to argue that at least some aspects of entrepreneurship can successfully be taught (Henry, Hill, & Leitch, 2005). Studies have been shown that entrepreneurial training can measurably change individual's scripts (Sanchez, Carballo, & Gutierrez, 2011).

Entrepreneurial education is the process of providing individuals with the ability to recognise commercial opportunities and the insight, self-esteem, knowledge and skills to act on them (Jones &English, 2004). It includes instruction in opportunity recognition, commercialising a concept, marshalling resources in the face of risk, and initiating a business venture. Instruction of traditional business disciplines such as management, marketing, information systems and finance are also parts of it (Jones & English, 2004). First known entrepreneurship course was at Harvard University in 1947 by Myles Mace (Brush, Duhaime, Gartner, Stewart, Katz, Hitt, Alvarez, Meyer, & Venkataraman, 2003). Since then entrepreneurship and innovative education format has been discussed by pedagogues and alternative teaching methods has been presented (Soriano, 2007). Entrepreneurship education refers to the scope of curricular lectures or "legitimated" courses (Katz, 2003) aiming to sensitize and qualify students for an entrepreneurial career. It transfers specific entrepreneurship human capital that can foster the recognition and development of business opportunities (Walter, Tarboteeah, & Walter, 2010). Berchar and Gregoire have found out that social-cognitive, psycho-cognitive and spiritualist or ethical dimensions, from theoretical and empirical references associated with Bertrand's (1995) typology of education research, are playing a role in both entrepreneurship and education (Berchar, & Gregoire, 2005). Beyond its pedagogical approach, it has been shifted the emphasis from educating "about" entrepreneurship to educating "for" it (Kirby, 2004). New ventures need to teach classes that permit students to learn about new ventures, small firm management, entrepreneurial competences and growth strategies "for" entrepreneurship (Edelman, Manolova, & Brush, 2008). In the cover of the education issue, it is vital to create entrepreneurial mind set for students. In order to enhance firm performance not only successful entrepreneurs but also managers require an entrepreneurial mind set in unpredictable environments since to take decisive action based on considered responses to the situation (Shepherd, Douglas, & Fitzsimmons, 2008). This entrepreneurial mind-set involves the ability to rapidly sense, act, and mobilize, even under uncertain conditions (Ireland, Hitt, & Sirmon, 2003). If uncertainty, which is a distraction and discouragement to many entrepreneurs, treated in the right way it offers new business opportunities. Entrepreneurial benefits allows to competing in uncertainty (McGrath, & MacMillan, 2000). Concept of innovative education, as a part of entrepreneurial education, is not the training of prospective entrepreneurs in a broader sense but; it is an issue that pertains to the education of the entrepreneur with innovative propensities (Baumol, 2004). Entrepreneurship, as a set of skills, can be applied across professional environments and activities to supplement the students' classroom experience by investing both in formal programs as well as extra-curricular activities to channel students' interest in solving global problems though entrepreneurship (US Department of Commerce, 2013).

2.2.1. Role of the Universities

In the global economy, technology innovation is a driver for national economic growth and universities are incubators of this national capacity (Graham, 2014). Theories of economic growth and human capital suggest that there should be a positive relationship between investment in higher education and economic prosperity, including a concentration of high technology industries (Perorazio, 2001). In this context, universities are seeking closer links with industry in order to expand their research activities though the spinoff new companies. Regional analyses show that success depends heavily on institutional "thickness" (Allison & Keane, 2001). Universities are embracing the importance of innovation, commercialization, entrepreneurship, and the creation of economic value for their communities. They play an important role in development, including education, research and incubation of industries and enterprises (Gunesekara, 2005).

Knowledge-related collaboration by academic researchers with non-academic organizations is defined as "academic engagement" and these interactions include formal activities such as collaborative research, consulting, networking with practitioners (Perkmann, Tartari, McKelvey, Autio, Broström, D'este et al., 2013). Academic engagement represents an important way in which academic knowledge is transferred into the industrial domain; many companies consider it significantly more important than licensing university patents (Cohen, Nelson, &

Walsh, 2002; Perkmann, Tartari, McKelvey, Autio, Broström, D'este et al., 2013). Government can also be seen part of knowledge-related collaboration. University, industry and government triple helix, which shows the relations among them (Lowe, 1982; Etzkowitz, & Leydesdorff, 1995), is elaborated by Etzkowitz and Leydesdorff in order to study on knowledge-based economies (Etzkowitz, & Leydesdorff, 2000). Bilateral and trilateral coordination can be done and the system remains in transition since each of them develops its own mission. Therefore, a trade-off can be explored and potentially shaped (Leydesdorff, 2012). In this so called partnership, government and companies began to expect research universities to generate new ideas and to contribute innovation (Lecetera, 2009). New type of university integrates its functions with entrepreneurship and this concept is called as "entrepreneurial university" (Clark, 1998). Key factors for entrepreneurial university are university-industry relationship and collaborative research model (Igartua, Errasti, & Markuerkiaga, 2013). Entrepreneurial universities' framework has been designed around commonly identified seven areas (EC, & OECD, 2012):

- Leadership and Governance: Strong leadership and good governance have high importance. Entrepreneurship and enterprise should be in universities' mission statement and this needs to be more than a reference.
- Organisational Capacity, People and Incentives: Universities should minimise their organisational constrains such as financial strategy, attracting and retaining the right people and incentivising entrepreneurial behaviour, to fulfilling its entrepreneurial agenda.
- Entrepreneurship development in teaching and learning: Entrepreneurial development can take place in many areas and organisational structure should support development of entrepreneurial mindsets and skills. It also should provide right tools to promote diversity and innovation in teaching and learning.
- Pathways for entrepreneurs: Entrepreneurship is a process. Entrepreneurial universities need to support pathways which are taken by future's entrepreneurs from ideas to market growth or employment. This section is a statement for the universities which is aim to support intra-praneurs during their career development and/or individuals who would like to be entrepreneur.
- University – business/external relationships for knowledge exchange: In order to achieve full potential of the university in research, teaching and in other third mission activities, it has vital importance to build and sustain relationship with key partners and collaborations such as industry, society and the public sector.
- The Entrepreneurial University as an internationalised institution: Universities should be international in order to be entrepreneurial. It is essential for universities to be able to make informed decisions on institutional direction, as well as assess and enhance performance due to different aims over a wide range of international activities.
- Measuring the impact of the Entrepreneurial University: There are different kinds of impact from local to global level. Internal stakeholders (students, graduates, and staff) and external stakeholders (local businesses, organisations and whole communities) affect from this impact. In order to measure this impact, spin-offs, IP and research outcomes relate measurements can be used.

Entrepreneurial universities create research corridors which offer a resource pipeline for local communities, universities & collages that have similar research interests and challenges and they attract industry by providing technical support, access to capital and a large network of experts (US Department of Commerce, 2013). Entrepreneurial universities promote and support entrepreneurship in an organisation by putting their agenda "Senior Management Commitment to Entrepreneurship" and "Development of an Intrapreneurial Culture" (Yıldırım & Aşkun, 2012; Kirby, 2006). Beyond their strategy, universities can establish science parks and incubators (Clarysse, Wright, Lockett, Van de Velde, & Vohora, 2005; Klofsten & Jones-Evans, 2000), technology transfer offices (Clarysse, Wright, Lockett, Van de Velde, & Vohora, 2005), career services (Vidal-Gimenez, Galiana-Lepera, & Torrecillas-Moreno, 2014) for students and graduates, and entrepreneurship centres. In addition to organisational establishments, universities can also strength their relationships with entrepreneurs by organising company visits, writing case studies on entrepreneurs, providing internships, involving entrepreneurs to entrepreneurship education, organising coaching activities between entrepreneurs and students (Nathusius, 2013). Hence, this kind of university-based organisations creates positive impact on individual students, university environment and the regional economy (Yıldırım & Aşkun, 2012).

2.2.2. Entrepreneurial and Innovativeness Index for Turkish Universities

Entrepreneurial and Innovativeness University Index (EIUI) list is obtained by The Scientific and Technological Research Council of Turkey (TUBITAK). Higher Education Council, Turkish Statistic Institution, Ministry of Science, Industry and Technology, Ministry of Development, Ministry of Treasury, Turkish Patent Institute, Small and Medium Enterprises Development Organization and Universities contribute to this work. 136 universities participated to this competition in 2013. List is assembling from 50 Turkish Universities and rankings have been recalculating annually since 2012 in order to encourage entrepreneurship and innovation activities at universities. TUBITAK aims to increase competition among universities and contribute development of entrepreneurship ecosystem in the country by this way. There are 5 dimensions in the cover of 23 indicators. First dimension is "Scientific and Technologic Research Proficiency" which's weightiness 0,20. Second dimension is "Number of Intellectual Property" and its' weightiness is 0,15. Third dimension is "Cooperation and Interaction" with 0,25 weightiness. Forth dimension is "Entrepreneurship and Innovativeness Culture" with 0,15 and the last dimension is "Economic Contribution and Commercialization" with 0,25 weightiness. Universities are ranged from top to bottom due to their rankings.

2.2.3. Sentiment Analysis

Sentiment analysis is the field of study that analyzes people's opinions, sentiments, attitudes, and emotions towards products, services, organizations, individuals, issues, events, and topics. Sentiment analysis focuses on opinions which express or imply positive or negative sentiments.

SA represents a large problem space. But research articles published about SA focused on several datasets and objectives:

- Mining movie reviews for Developing SA
- Mining product reviews for Business issues
- Mining political messages for prediction and policy development
- Mining public opinion for social issues
- Mining economic texts for gain

SA research has 9 subtasks:

- Feature Selection
- Opinion Extraction
- Emotion Detection
- Polarity detection
- Opinion target detection
- Opinion Summarization
- Resource Development
- Learning Transfer
- Opinion Source Detection

In SA, words, phrases, n-grams, POS Tags, dependency information, subword features; emoticons, punctuations, letter capitalization, etc. can be used as features.

3. Methodology

3.1. Research Goal

Major discussion of our research is: TUBITAK's EIUI sufficient to rank universities in entrepreneurship and innovation context. While calculating TUBITAK's EIUI 23 indicators in 5 dimension has been used but it seems as the main part which is at the core of all these parameters: "measuring university student's entrepreneurial and innovative behaviours" is missing. Since then we design the research as an alternative ranking approach. Then we compare the two approaches' results for deciding whether we need to add this core parameter to this index or not.

3.2. Experimental Design and Data Collection

In order to measure university student's entrepreneurial and innovative behaviours we selected the twitter as a survey field. We direct our scope to the 50 Turkish universities which is in the list of 2014 Tübitak's EIUI results. After this we get the random number of followers of these 50 university's official twitter accounts and take the last 50 tweets of these accounts.

3.3. Analyses and Results

In order to implement a Sentiment Analysis about entrepreneurship and innovation we need to begin with developing a lexicon about our subject. For this purpose we collect relevant and irrelevant tweets. To get relevant tweets we search twitter with "innovation" and "entrepreneur" keywords and get 14.579 and 13.007 tweets respectively. To get irrelevant tweets we used #ÖzgecanAslan (for hate and anger) and #SevgiNeydi (Valentine's day trending topic for love and affection) which were the trend topics meanwhile at our research. The keywords and number of tweets are shown on the Table 2.

Table 1. Tweets of training dataset.

Keyword / Hashtag of collected tweets	# of tweets	Class
Entrepreneur	13.007	1
Innovation	14.579	1
#ÖzgecanAslan	24.697	0
#SevgiNeydi	4.821	0

After this we used Multinomial Naïve Bayes (MNB) and Support Vector Machine (SVM) for classification. These classifications success rates are show in Table 3.

Table 2. Success rates of classifications

Type of Classifier / Classification Algorithm	Kappa	F-Measure
MNB	0,9064	0,953
SVM	0,9791	0,99

The highest accuracy obtained by SVM, so we used this model for developing lexicon. Obtained lexicon contains 1.593 words and their weights. An image of this lexicon is shown in Figure 1.

agirlik	kelime	agirlik	kelime	agirlik	kelime	agirlik	kelime	agirlik	kelime	agirlik	kelime
3,2190	girişimci	1,7898	başarılı	1,4410	nun	-0,4861	varmış	-0,5397	sey	-0,6598	şubat
3,0612	inovasyon	1,7844	24	1,4194	çalışmak	-0,4876	aşk	-0,5435	dimi	-0,662	ceza
2,9095	ınovasyon	1,7713	başarı	1,4149	Akıllı	-0,4944	dua	-0,5449	kadın	-0,6849	insandır
2,8894	girisimci	1,7048	ErhanErkut	1,3792	projeler	-0,4945	ön	-0,5524	sevmekti	-0,687	cinayeti
2,8692	Girişimci	1,7026	icat	1,3461	Başarılı	-0,5061	ülkeye	-0,5619	unuttuk	-0,7164	idam
2,7238	Girisimci	1,6796	Kulübü	1,2895	http	-0,5115	adalet	-0,5631	çığlık	-0,719	sonsuz
2,5154	GıRışıMCı	1,6671	0	1,2780	2011	-0,5136	tamam	-0,5669	13	-0,7478	ülkeyiz
2,4938	ıNOVASYON	1,6599	0	1,2777	Ankara	-0,5184	yolcu	-0,5716	bilmem	-0,7663	deniz
2,2587	com	1,6121	yenilik	1,2328	Eğitim	-0,5195	dakikalık	-0,5737	TECAVÜZ	-0,7669	karşılıksız
2,0000	AB	1,6011	girişim	1,2317	patent	-0,527	Erkeklik	-0,5752	saygı	-0,791	erkeğin
1,9849	Teknoloji	1,5923	program	1,2129	isteyen	-0,5303	Kadına	-0,5777	Namus	-0,7917	katil
1,9600	ış	1,5800	sermaye	1,2121	CEO	-0,5312	ağır	-0,5905	katilleri	-0,8028	simsiyah
1,8675	yüzde	1,5642	inovatif	1,1572	Jobs	-0,5353	bakan	-0,5964	Türkiyede	-0,9631	şerefsizleri
1,8589	Bilgi	1,5415	Liderlik	1,1572	Steve	-0,5387	hapiste	-0,6288	utanır	-1	ıdam
1,8414	Derneği	1,5253	Girişimcilik	1,1512	alanda	-0,539	utanıyorum	-0,6332	ederiz	-1	ınsanlık
1,8053	29	1,5107	girişimcilik	1,1429	zengin			-0,6596	tecavüze	-1,1676	emekti

Fig. 1. An image from Lexicon

We classified 1.353.803 tweets of 57.321 social media accounts from 50 universities that were interested in using this lexicon. The rankings were obtained by SA and TUBITAK's EIUI and the statistics about the results shown on Table 4.

Table 3. SA Statistics and Comparison of University Rankings using Sentiment Analysis and TUBITAK EIUI

University	# of tweets	# of relevant tweets	# of users	Sentiment Analysis Rank	TUBITAK's EIUI Rank
Ankara Üniversitesi	1971	22602	1655	1	29
Çankaya Üniversitesi	190	4234	532	2	22
İstanbul Medeniyet Üniversitesi	1142	26618	3198	3	40
Tobb Ekonomi Ve Teknoloji Üniversitesi	1336	33362	3953	4	8
İstanbul Şehir Üniversitesi	1417	35331	3996	5	36
Gebze Yüksek Teknoloji Enstitüsü	59	1425	161	6	12
Sabanci Üniversitesi	1321	31813	2983	7	2
Çukurova Üniversitesi	462	11169	1033	8	18
Hacettepe Üniversitesi	255	6482	594	9	14
İzmir Ekonomi Üniversitesi	1041	26426	2403	10	28
Özyeğin Üniversitesi	1559	40449	3656	11	6
Fatih Üniversitesi	1687	42329	3736	12	30
Melikşah Üniversitesi	1511	38224	3324	13	37
Atilim Üniversitesi	580	14464	1237	14	17
İhsan Doğramaci Bilkent Üniversitesi	982	23561	2010	15	4
İstanbul Teknik Üniversitesi	1390	35002	2969	16	7
Bahçeşehir Üniversitesi	1899	48372	4041	17	27

Boğaziçi Üniversitesi	1655	43004	3585	18	3
Koç Üniversitesi	445	10696	886	19	5
Orta Doğu Teknik Üniversitesi	1957	44780	3693	20	1
İzmir Yüksek Teknoloji Enstitüsü	495	12553	1034	21	9
Kadir Has Üniversitesi	1254	32199	2649	22	47
Eskişehir Osmangazi Üniversitesi	122	3252	266	23	42
Yildiz Teknik Üniversitesi	849	22286	1739	24	11
İstanbul Üniversitesi	2128	54026	4134	25	32
Kahramanmaraş Sütçü İmam Üniversitesi	216	5143	384	26	23
Uludağ Üniversitesi	765	21039	1568	27	19
Erciyes Üniversitesi	1335	33943	2483	28	21
Yeditepe Üniversitesi	1880	47527	3407	29	26
Okan Üniversitesi	1822	45770	3276	30	35
Gaziantep Üniversitesi	1945	41590	2896	31	25
Düzce Üniversitesi	1070	26786	1859	32	41
Anadolu Üniversitesi	351	8043	544	33	13
Süleyman Demirel Üniversitesi	1184	30198	2006	34	20
Karamanoğlu Mehmetbey Üniversitesi	271	6754	447	35	44
Selçuk Üniversitesi	1223	31157	2061	36	10
Ondokuz Mayis Üniversitesi	513	13362	877	37	50
Mersin Üniversitesi	1511	34565	2261	38	31
Atatürk Üniversitesi	1693	41720	2712	39	43
Firat Üniversitesi	1181	29236	1892	40	46
Akdeniz Üniversitesi	1144	25805	1658	41	34
Karadeniz Teknik Üniversitesi	75	2035	130	42	38
Ege Üniversitesi	1873	42569	2665	43	15
Sakarya Üniversitesi	1652	36623	2254	44	45
Pamukkale Üniversitesi	367	9928	606	45	48
Niğde Üniversitesi	599	13410	818	46	49
Dokuz Eylül Üniversitesi	2466	54947	3334	47	33
Galatasaray Üniversitesi	1691	30129	1812	48	39
Kocaeli Üniversitesi	1701	43524	2601	49	24
Gazi Üniversitesi	1086	13341	772	50	16

Both rankings compatibility tested with Spearman Correlation to prove the H1(There is a relation between TUBITAK's EIUI and SA lists). The spearman correlation coefficient is equal to 0,413. H1 is supported. Since there is a positive correlation between two lists we can say that TUBITAK's and SA's lists have positive relations, but this relation is weak (Sipahi, Yurtkoru, Çinko; 2008).

Table 4. Spearman Correlation of SA Rankings and TÜBİTAK's EIUI Rankings

			SA Rank	TÜBİTAK's EIUI
Spearman's rho	VAR00001	Correlation Coefficient	1,000	,413**

	Sig. (2-tailed)	.	,003
	N	50	50
VAR00002	Correlation Coefficient	,413**	1,000
	Sig. (2-tailed)	,003	.
	N	50	50

**. Correlation is significant at the 0.01 level (2-tailed).

4. Conclusion

Both entrepreneurship and Innovation are multi dimensional concepts. TUBITAK's mentioned Index is designed in multi level but, it is inadequate. Our research shows that social and behavioural side of TUBITAK's EIUI is weak. So surveys about entrepreneurial and innovativeness tendency field must be designed and applied to the university's class 1 and class 4 students and this measurement should be added to the index as a parameter. The alternative way of design the list, is to add SA implementation to the social media messages of the university students in regular basis as a parameter. To state the matter differently, TUBITAK should determine social indicators and measure them as well as technical data. Even though there is positive relation between two lists, it is not strong enough. This may be because of they are not alternative of each other. We can honestly say that expressions of the followers of universities on twitter can show their entrepreneurial and innovativeness attention, but this is not a measurement alone. This can be an addition indicator to 23 indicators as a 24^{th}. It is under debate if Turkish Universities are entrepreneurial or not (Gürol, & Atsan, 2006). Entrepreneurship is not emphasised in strategic statements at universities in general. Entrepreneurial education has increased recently. The fact is universities are teaching entrepreneurship behalf of acting as an entrepreneur.

Another output of our research is the importance to use and to track social media as a new mainstream; hence working with huge data is necessity. For this purpose SocioParks must be established for providing collaboration between social science academics and computing science specialists.

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