

INVESTIGATING THE INNOVATION POTENTIAL OF A COMPANY OBTAINED THROUGH SOCIAL MEDIA

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ABSTRACT

The 21st century is a century of technology where social media is the quickest developing pattern in the history of technology. With just one click or a quick look at your phone, you can access an entire world of content. So, here it can be the perfect place for companies to make themselves known on the market, to provide or capture information, to gather reactions, to adapt, to innovate, to develop. In this regard, the authors of this paper conducted an exploratory study to analyse the relationship between social media and the innovation potential of an organization, in order to understand how and if different social media networks affect the capacity of companies to develop new products or services, to improve products or services or even work processes. The results pointed out that the social media networks will positively affect the innovation potential. Also, we identified the social media network that positively influence the most the innovation potential of a company, taking into account a sample of graduated engineers from the University POLITEHNICA of Bucharest, Romania.

KEYWORDS: *business, innovation potential, social media, organizational innovation, WEB 2.0.*

1. INTRODUCTION

Nowadays there is a fierce battle on the economic market between the companies, which is why each of them has to come up with a new, improved or superior offering compared to the rest of the competitors. Under these circumstances, every company, regardless of industry, size, age or profit needs to begin to innovate, whether we are referring to a good, service or process innovation.

Although we would be tempted to say that the resources are one of the most important elements when we are talking about innovation and reducing costs, the development of a company does not depend so much on the use of raw material resource (Sidorov and Shapkin, 2008). Also, considering that innovation does not depend on the number of employees in a company (Ivanov, 2013), the organizations need to find new ways to grow, develop themselves and become closer to customers, suppliers and other partners.

In the last few years, the technology development has contributed to the development of an economy that is based on knowledge and innovation. Companies have started to use both internal and external sources for innovation, identifying and adopting valuable ideas from their customers and employees. Social media and Web 2.0 have found their place among internet users, becoming an important pawn for communication, entertainment, promotion, advertisement, raising awareness and exposure to the market. Taking into account that people all over the world are connected via internet and social media, companies have taken actions and started to use social media with its various tools in order to be as close as possible to users.

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Social media and Web 2.0 allow users to generate content that can provide new ideas, opportunities and also challenges for companies to transform and develop their businesses. (Dong & Wu, 2015; Jarvenpaa & Tuunainen, 2013).

The purpose of this paper is to analyse the relationship between social media and the innovation potential of an organization, in order to understand how and if different social media networks affect the capacity of companies to develop new products or services, to improve products or services or even work processes. This paper is structured as follows. Firstly, the authors discussed about social media and Web 2.0. Then, it was presented the methodology for the research. In the next section, the authors revealed their results, while the last section was reserved for conclusions.

2. WEB 2.0 AND SOCIAL MEDIA

When we are talking about Web 2.0, we would be tempted to say that this is an improved version of a program, a platform or a technology, but this is not entirely true. There are some papers (Keen, 2007; Lim & Palacios, 2011; Carmichael et al., 2011) that present the potential of developing the web in order to make it easy to find, share or transfer information with the participation of the user, aspects that are also known as Web 2.0.

The "inventor" of the term Web 2.0 is O'Reilly (2007) who had first talked about Web 2.0 at a conference in October 2004. In his paper, he tried to explain which are the differences between Web 1.0 and Web 2.0. As indicated by O'Reilly (2007), Web 2.0 technologies are a powerful second generation of web services that provide a virtual stage for associations to work together, communicate and interact with partners. Therefore, this new concept depends on the participations of the internet users. For a better understanding of the Web 2.0 concept, O'Reilly gave some examples for different activities that were presented in Web 1.0 and what are their correspondence in Web 2.0 (Table 1).

Table 1. Web 1.0. vs Web 2.0

Web 1.0	Web 2.0
DoubleClick	Google AdSense
Ofoto	Flickr
Akamai	BitTorrent
mp3.com	Napster
Britannica Online	Wikipedia
personal websites	blogging
evite	upcoming.org and EVDB
domain name speculation	search engine optimization
page views	cost per click
screen scraping	web services
publishing	participation
content management systems	wikis
directories (taxonomy)	tagging ("folksonomy")
stickiness	syndication

Source: adapted from O'Reilly, T. (2007), p.18

We can say that Web 2.0 is characterized by the quantitative and qualitative impact that an internet user has on data present on the Internet. After being defined, there were a lot of studies about Web 2.0 and marketing, where social media meets creative consumers (Berthon et al., 2012, Thackeray et al., 2008). As a part of Web 2.0 there could be a lot of categories, but according to Constantinides and Fountain (2008), Web 2.0 also contains social media forms.

While there is an absence of a formal definition, social media can be represented as Internet-based applications through which internet users produce content which includes “media impressions made by customers, commonly educated by personal experience, that are shared online for simple access by other impressionable consumers” (Blackshaw, 2006, quoted by Karakiza, 2015). Social media includes a lot of sources of information that are created, shared and used by consumers who want to educate each other about brands, products, services and other issues (Blackshaw & Nazzaro, 2006). On the other hand, Lietsala and Sirkkunen (2008) referred to social media as an umbrella term, under which different types of practices are used according to the online content and the people who are involved with that content.

By analysing some papers (Wirtz et al., 2010, Thackeray et al., 2008, de Araújo and Zilber, 2016), the authors found that there are different types of social media that are used especially for: social networks (for connecting people), media sharing networks (for sharing media content), discussion forums (for sharing ideas or news), consumer review networks (for finding and reviewing companies), blogging (for publishing online content), internet-based networks (for sharing hobbies or interests), social shopping networks (for online shopping) or sharing economy networks (for trading products or services).

According to The Statistics Portal (2018), the most famous social network sites worldwide (April 2018) were: Facebook with 2.2 billion monthly active users, YouTube and WhatsApp with 1.5 billion monthly active users, and the other social media tools. All these are presented in Figure 1.

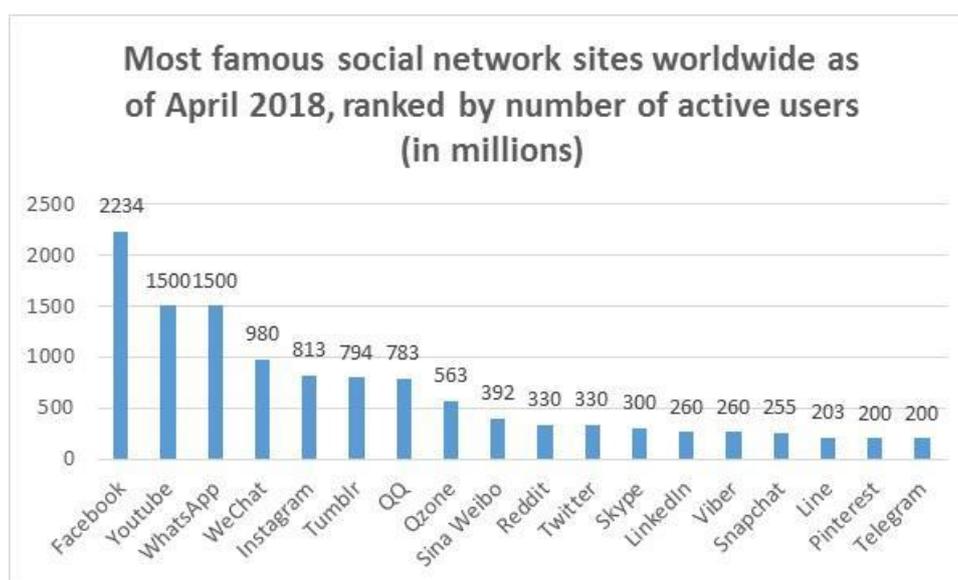


Figure 1. Most famous social network sites worldwide as of April 2018, ranked by number of active users (in millions)

Source: adapted from <https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>

2.1. Social media in business

According to Kärkkäinen et al. (2010) who have quoted Coleman (2009) only 15% of people used social media at work, while the rest of them used it outside the work context. This could be explained by the fact that managers don't know all the social media and Web 2.0 tools, Facebook and Twitter being for them the most known social media used by a company.

Before buying some products or services, customers usually collect a lot of information from social media, where other clients had similar experiences and shared their thoughts and ideas about brands, products, services or the quality of them. Consequently, the managers of the companies need to be

more open minded and use Web 2.0 in order to be closer to their clients, to see their needs, complaints and preferences.

Some studies (Gordon, 2009, along with other studies presented by Kärkkäinen et al., 2010 such as Helfenstein and Penttilä, 2008, Stelzner, 2009) demonstrate that the general adoption and also understanding of social media used by companies is quite low, while the adoption of social media is mostly used in different business functions, such as: branding, information sharing, public relations, understanding customers, lead generation, collaborative work, internal communication, and sales support (Gordon, 2009).

In Romania, there are a few studies about social media and their role in companies, most of them being based on the relationship between social media and organizational communication (Badea, 2014) or social media and online consumer behavior (Vinerean et al., 2013). The majority of these papers have Facebook as their main social media network that was used for conducting some studies (Marandi et al., 2010).

Taking into account the limited number of research papers found by the authors, the questions that we want to answer through this paper are:

Q1: What are the most used social media networks by the companies from Romania?

Q2: What is the social media network that influences the most the development of new products/services?

Q3: What is the social media network that influences the most the development of the products/services of a company?

Q4: What is the social media network that influences the most the development of the processes of a company?

2.2. Social media and the innovation potential

On one hand, there are a lot of studies about innovation capability and firm performance (Dooley et al. 2017; Roger et al., 2002; Calantone et al., 2002), innovation potential (Korolev et al., 2017; Valitov and Khakimov, 2015; Korolev et al., 2017; Sabadka, 2012,) as a measure that characterizes the company's ability to implement the processes of innovation, and the relationship between customer orientation and innovation (Wang et al., 2016).

On the other hand, there are few recent academic studies about the adoption of social media in companies in the innovation context, which is why the authors decided to make this study where they can improve the lack of information from this field by analysing the relationship between social media and the innovation potential of a company.

A part of the existing studies about social media and innovation potential presents the impact of social media in innovation processes based on customer co-creation (Piller et al., 2011) where social media may improve the viability and the productivity of co-creation by reducing the cost of communication among members and by enabling a higher number of members to add to a specific co-creation activity, or addresses issues related to creative performance and communication in innovation teams (Kratzer et al., 2004).

Fang et al. (2017) discussed in their paper how firms are able to improve innovative performance by using network structure and content. Garcia-Morales et al. (2018) also discussed about how social media technologies may affect business opportunities by encouraging networks to routinize the firm's innovation competencies. According to Inno Support (2007), between new idea/ invention and new product/service stays innovation, that can be influenced by education, R&D, support structures, technology transfer, management, marketing and investments, while the authors argued that social media should also be considered a variable that can complete the scheme presented in Figure 2. Before the model presented in Figure 2 can be considered a valid one, the authors decided to verify through this paper if there is any relationship between social media and innovation.

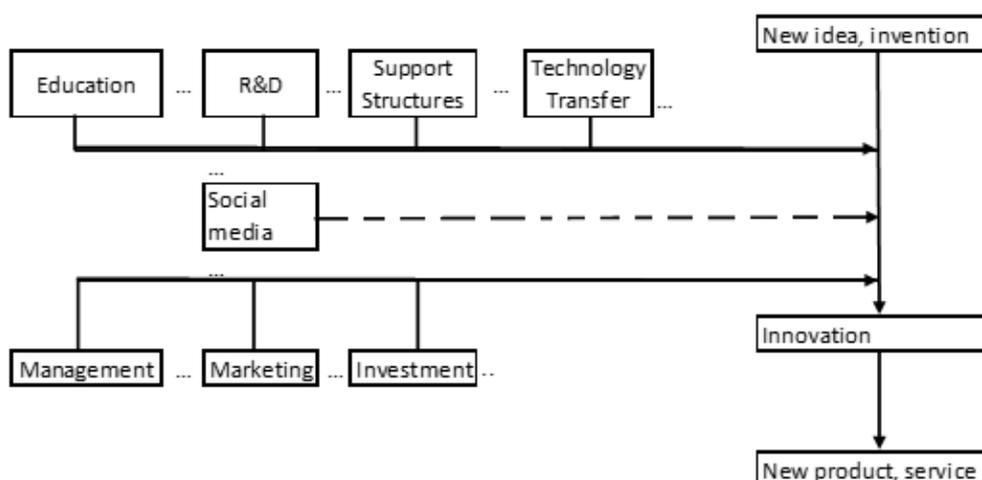


Figure 2. Innovation Process

Source: adapted from InnoSupportTransfer – Supporting Innovations in SME, 1 Characteristics and types of innovation, 2007

3. CONCEPTUAL FRAMEWORK

The aim of this paper is to analyse the influence of social media networks on the innovation potential of an organization.

The conceptual framework is presented in Figure 3, which shows the relationships between social media and the innovation potential of a company. For this study, the independent variable is represented by social media, while the dependent variable is represented by the potential innovation. For the first construct, the authors used the most known social media networks and tools, where a part of them were identified in a study made in 2015 by Ernst & Young Romania. The innovation potential is measured by the following indicators: developing new products/services, developing the products/services of a company, developing the process of a company. For this study, the authors use the following control variables: number of employees, age of the company and domain of activity.

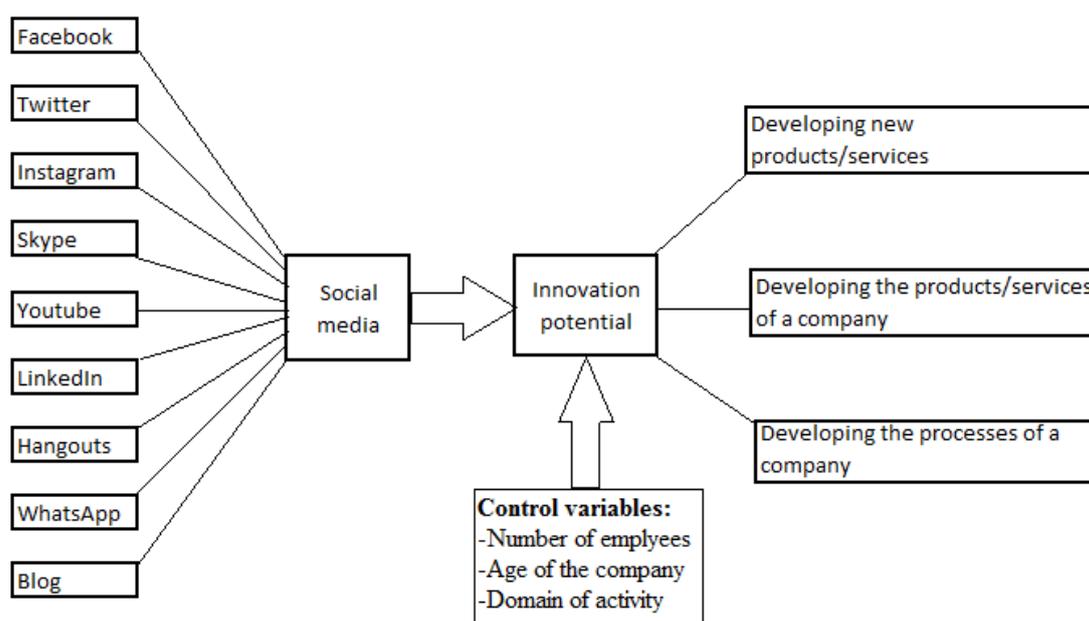


Figure 3. Conceptual Framework

Source: authors

4. RESEARCH DESIGN AND METHODOLOGY

The purpose of this paper is to analyse the relationship between social media and the innovation potential of an organization. In order to understand how and if different social media networks affect the capacity of companies to develop new products or services, to improve products or services or even work processes, the authors made the following hypotheses:

H1. Social media positively influences the innovation potential.

The authors thought that by analysing social media content, the companies can collect precious information that can be used for organizational development.

H2. Developing new products/services is influenced by using social media.

People use social media for a countless reasons, sharing a lot of ideas about what they think, they need or they want. If companies would also take into account these users' wishes and ideas, then they could increase their portfolio by developing new products or services.

H3. Developing the products/services of a company is influenced by using social media.

Customers use social media platforms to share information about products or services. If the companies search for their reviews, opinions and recommendations, they can use this information in order to develop their products or services.

H4. Developing the processes of a company is influenced by using social media.

Also, both customers and employees or partners have social media accounts where they can express themselves. By using social media, the companies could also develop their processes taking into consideration the information found and received on social media.

For collecting the data, the authors used a questionnaire containing 11 items that can be divided into 4 sections: employees' perceptions about innovation potential of the companies where they work, social media networks used by their companies, the relationship between social media and innovation potential, and control variables.

Data was collected from a group of engineers who graduated from the Faculty of Entrepreneurship, Business Engineering and Management within the University POLITEHNICA of Bucharest, during June 2018. The majority of the respondents works in companies with more than 250 employees (41.2%), these companies having more than 10 years since their founding (62.7%).

In order to get answers to the questions asked, the authors analysed 38 variables that can be divided into 4 sections, as it can be observed in Figure 5. In section 1, the authors identified what is the people's surveyed level of knowing the term innovation (I) and also what are their perceptions about the 3 variables (A, B, C) that can define the innovation potential of the firm where they are working. In section 2, the authors analysed what social media network is the most used in their company (SM). In section 3, it can be observed that each identified social media network is analysed in relationship with each one of the 3 variables (A, B, C) that define the innovation potential construct. In the last section, the control variable are presented: age of the company, number of employees, domain of company.

Most of the variables were measuring perceptions of the people surveyed. For the variables A, B, C and all the variables for section 3, the items were measured on a 7-point Likert-type scale ranging from 1 (not at all) to 7 (very often).

Table 2. Identified variables and their codes

Section 1		Section 2		Section 3						Section 4	
Variable	Code	Variable	Code	Variable	Code	Variable	Code	Variable	Code	Variable	Code
Knowing the term innovation	I	Social media used by company	SM	Facebook-A	FA	Facebook-B	FB	Facebook-C	FC	Age of the company	Age
Developing new products/services	A			Twitter-A	TA	Twitter-B	TB	Twitter-C	TC	Number of employees	NrE
Developing the products/services of a company	B			Instagram-A	IA	Instagram-B	IB	Instagram-C	IC	Domain of company	D
Developing the processes of a company	C			Skype-A	SA	Skype-B	SB	Skype-C	SC		
				YouTube-A	YA	YouTube-B	YB	YouTube-C	YC		
				LinkedIn-A	LA	LinkedIn-B	LB	LinkedIn-C	LC		
				Hangouts-A	HA	Hangouts-B	HB	Hangouts-C	HC		
				WhatsApp-A	WA	WhatsApp-B	WB	WhatsApp-C	WC		
				Blog-A	BA	Blog-B	BB	Blog-C	BC		
				Other-A	OA	Other-B	OB	Other-C	OC		

Source: authors

5. RESULTS

All measurements of the analysed items were based on the respondents' perceptions. Data was analysed using SPSS 20.0 software. The number of respondents for this analysis was 51, which is why this study should be treated as an exploratory one, where 92.2% of the respondents were very familiar with the term innovation. The authors used Cronbach's alpha coefficients in order to determine the internal consistency of items in each scale. According to Hair et al. (2007) the recommended value for a minimum high reliability is 0.7. If we had taken into account OA, OB and OC variables, the Cronbach's alpha coefficients would have been under 0.7 value, so we deleted them for the next analyses. After that, as it can be seen in Table 3, each construct (SMA, SMB, SMC and IP) had a Cronbach's alpha coefficient greater than 0.75, which indicates an acceptable level of reliability.

Table 3: Cronbach's alpha

Variable	Cronbach's alpha	Variable	Cronbach's alpha	Variable	Cronbach's alpha	Variable	Cronbach's alpha
SMA	0.767	SMB	0.802	SMC	0.777	IP	0.900
FA	0.745	FB	0.784	FC	0.784	A	0.860
TA	0.713	TB	0.786	TC	0.722	B	0.811
IA	0.742	IB	0.769	IC	0.754	C	0.897
SA	0.741	SB	0.793	SC	0.757		
YA	0.715	YB	0.786	YC	0.767		
LA	0.757	LB	0.782	LC	0.725		
HA	0.776	HB	0.797	HC	0.764		
WA	0.752	WB	0.762	WC	0.758		
BA	0.756	BB	0.784	BC	0.768		

Source: authors

The next step taken by the authors was to average some items in order to obtain simple values (Table 4) for Innovation Potential (IP), Social media in relation to Developing new products/services (SMA), Social media in relation to Developing the products/services of a company (SMB), Social media in relation to Developing the processes of a company (SMC) and Social media in relation to Innovation Potential (SMIP).

Table 4. New variables and their codes

New variable	Code	How it was obtained
Innovation Potential	IP	$IP=(A+B+C)/3$
Social Media-A	SMA	$SMA=(FA+TA+IA+SA+YA+LA+HA+WA+BA)/9$
Social Media-B	SMB	$SMB=(FB+TB+IB+SB+YB+LB+HB+WB+BB)/9$
Social Media-C	SMC	$SMC=(FC+TC+IC+SC+YC+LC+HC+WC+BC)/9$
Social Media - Innovation Potential	SMIP	$SMIP=(SMA+SMB+SMC)/3$

Source: authors

After that, the authors identified what is the favorite social media network used by companies. In Figure 4, it can be seen the distribution of social media networks, Facebook having an overwhelming presence (92.15%).

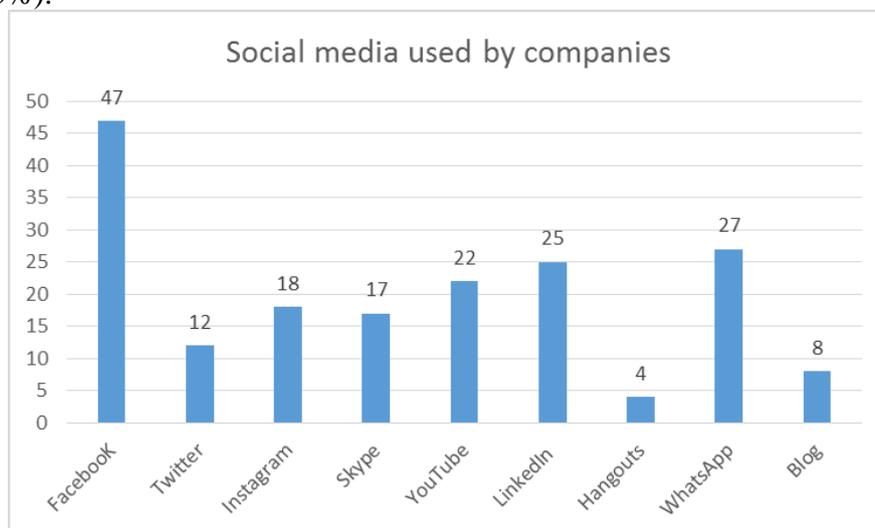


Figure 4. Social media networks used by companies

Source: authors

Finally, the authors wanted to see if there is any correlation between social media and innovation potential, developing new products/services and social media, developing the products/services of a company influenced and social media, developing the processes of a company and social media (Table 5).

Table 5. Correlation matrix among variables and control variables

Construct	A	B	C	IP	SMA	SMB	SMC	SMIP
A	-							
B	0.814**	-						
C	0.683**	0.755**	-					
IP	0.915**	0.938**	0.886**	-				
SMA	0.412**	0.437**	0.304*	0.422**	-			
SMB	0.471**	0.523**	0.411**	0.513**	0.883**	-		
SMC	0.399**	0.445**	0.393**	0.452**	0.801**	0.929**	-	
SMIP	0.448**	0.491**	0.386**	0.484**	0.937**	0.981**	0.950**	-

Note. N=51; **Correlation is significant at the 0.01 level (2-tailed).

Source: authors

In all of these results, the correlation between items was significant at the 0.01 level (2-tailed). According to the guide that Evans (1996) suggests for the absolute value of R-values: a "very weak correlation" is between 0.00-0.19; "a weak correlation" is between 0.20 - 0.39; "a moderate correlation" is between 0.40 - 0.59; "a strong correlation" is for 0.60 - 0.79 and "a very strong correlation" is between 0.80-1.0. Considering this guide, it can be observed that between almost every item (except SMA and C- 0.304*) is at least a moderate positive correlation, with a degree of significance of 99%.

For the last 3 questions formulated by the authors at the beginning of this study, in Table 6 it can be observed the relationship between different social media networks and the innovation potential.

Table 6. Social media networks that influence the Innovation Potential of a company

	A		B		C		IP
LinkedIn-A	0,449**	LinkedIn-B	0,476**	LinkedIn-C	0,459**	LinkedIn-C	0,440**
Facebook-A	0,392**	Facebook-B	0,397**	YouTube-C	0,394**	YouTube-C	0,351*
Twitter-A	0,367**	YouTube-B	0,382**	Hangouts-C	0,274	Hangouts-C	0,306*
Instagram- A	0,313*	Twitter-B	0,346*	Blog-C	0,255	Twitter-C	0,293*
Hangouts-A	0,281*	Hangouts-B	0,295*	Skype-C	0,200	Blog-C	0,282*
Skype-A	0,214	Instagram- B	0,293*	WhatsApp-C	0,195	Skype-C	0,251
YouTube-A	0,188	Blog-B	0,263	Twitter-C	0,178	Facebook-C	0,228
Blog-A	0,040	WhatsApp-B	0,236	Facebook-C	0,100	Instagram- C	0,185
WhatsApp-A	0,006	Skype-B	0,235	Instagram- C	0,055	WhatsApp-C	0,127

Note. N=51; *p <0.05, **p<0.01

Source: authors

6. DISCUSSION

By analysing Figure 4, we can get answers for the first question formulated at the beginning of this paper. Therefore, the results of this study show that in Romania, the most used social media network by a company is Facebook (92.16%), followed by WhatsApp (52.94%), LinkedIn (49.02%) and YouTube (43.14%). Google Hangouts has the lowest share, being present in only 4 answers (7.84%). For investigating the relationship between social media and the innovation potential, the authors analysed some correlations between Innovation potential (IP) represented by Developing new products/services (A), Developing the products/services of a company (B), Developing the processes of a company(C), and Social Media (SMIP), that was also analysed through three variables (SMA, SMB, SMC) that represent arithmetic mean values for 9 items each. In this regard, the authors identified a positive moderate correlation between developing new products/services and using social media for this purpose ($R=0.412$, $p<0.01$ – *Hypothesis 2 being partially confirmed*), a positive moderate correlation between developing the products/services of a company and using social media for this purpose ($R= 0.523$, $p<0.01$ - *Hypothesis 3 being partially confirmed*), while there is a weak correlation which tends to be a moderate one between developing the processes of a company(C) and using social media for this purpose. Taking into account that the R-value is close to the inferior limit for the moderate correlation, ($R=0.393$, $p<0.01$) it can be said that *Hypothesis 4 is partially confirmed*. Also, there is a positive correlation between Innovation potential and Social Media ($R= 0.484$, $p<0.01$), which shows us that *Hypothesis 1 is also partially confirmed*.

Furthermore, there are very strong correlations between Developing new products/services and Developing the products/services of a company ($R= 0.814$, $p<0.01$), Developing new products/services and Innovation Potential ($R= 0.915$, $p<0.01$), Developing the products/services of a company and Innovation Potential ($R= 0.938$, $p<0.01$), Developing the processes of a company and Innovation Potential ($R= 0.886$, $p<0.01$).

There is also a very strong positive correlation between social media used for Developing new products/services (SMA), Developing the products/services of a company (SMB) or Developing the processes of a company (SMC) ($R > 0.801$ for all of them, $p < 0.01$)

Taking into account all these identified values and correlations, it can be said that our exploratory study shows the positively influence of social media on the innovation potential of a company.

Table 6 contains a hierarchy of social media networks that most influence the innovation potential of a company. In this regard, it can be seen that the first place is occupied by LinkedIn, which is the social media network that positively influences the most the innovation potential of a company ($R = 0.440$, $p < 0.01$) through its relationships with Developing new products/services ($R = 0.449$, $p < 0.01$) Developing the products/services of a company ($R = 0.476$, $p < 0.01$) or Developing the processes of a company ($R = 0.459$, $p < 0.01$). Taking into account the information presented in Table 6, it can also be said that Facebook and YouTube are two of the most used social media networks that affect the innovation potential of a company.

7. CONCLUSIONS

The results of this study presented the way that social media influence the innovation potential of a company. The results pointed out that the social media networks will positively affect the innovation potential that is represented by the capacity of the company to develop new products/services (SMA), develop the products/services or the processes of a company. Our findings indicate that LinkedIn is very important, being on the first place in our hierarchy presented in Table 6. LinkedIn is the social media network that positively influences the most the innovation potential of a company, while many of the companies continue to focus their efforts on using Facebook. This could mean that a company is more guided by the social media networks that are better known and promoted publicly, forgetting to try to develop their own social media networks according to their own needs, from where they could extract the most important information to grow on all levels, not just in relation with their customers.

Also, we must mention that our study has some limitations. Firstly, in this study there were taken into account only the perceptions of the graduated students that were surveyed. Therefore, it would be helpful if future researchers examine perspectives not only of the users but also companies that use social media networks. Second, the data was collected from a group of graduated students from University POLITEHNICA of Bucharest, the sample being represented only by 51 people.

So this study is an exploratory one, which is why, in the future, the authors want to conduct more studies in this area, on a much larger national sample in order to see if the hypotheses they demonstrated will be strongly confirmed.

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