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Websites and Social Networks. A Study of Healthcare SMEs in Andalusia.

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Abstract. Small and medium sized enterprises face numerous challenges, including opening up to globalized markets, and internationalization. The modern information society provides great opportunities for SMEs, allowing them to communicate their message globally at low cost through Web 2.0 tools like websites and social networks. The objective of this study is to analyze how SMEs in Andalusia from the dentistry sector use the Web 2.0 tools within their reach, and to determine whether relationships exist between the different variables associated with their usage, focusing on the existence or not of websites and/or social networks, the visibility of profiles on websites, the number of followers and the frequency of social network profile updates, among others.

Keywords: Digital marketing, SMEs, social networks, websites, Web 2.0

1 Introduction

Information and Communication Technologies (ICTs) have meant great change at all levels of society, including the business sphere. Among the opportunities provided to companies by the modern information society, it is worth mentioning the possibility of the global transmission of a message at considerably reduced cost, thus allowing entry into new markets and the exploration of different business models. ICTs have therefore transformed traditional marketing and are a good indicator of the capacity of businesses to modernize and compete in globalized environments [1]. Nevertheless, the economic sphere is in constant flux, which demands that companies, especially small and medium sized ones (SMEs), have a great capacity for adaptation in order to

face the new challenges of an ever more globalized and difficult market. To this end, it is essential for them to take advantage of the elements provided by ICTs when taking their brands to their target audience via the creation of a solid internet presence thanks to the opportunities offered by Web 2.0 tools, including social networks [2, 3].

Digital marketing is today one of the cornerstones for building relationships between consumers and businesses, as it promotes the creation of communities and interaction, favouring loyalty [4, 5]. It can be defined as the efforts on the part of a company to promote and sell products and services over the internet [6]. The application of digital technologies in order to achieve profitability and retain clients is essential, to which it is necessary to recognise their strategic importance, and develop a planned approach to improve knowledge about customers, gain effective communication and offer online services adapted to individual needs [7]. A website is a public relations vehicle for a business and allows it to inform, promote and commercialize its products and services [6]. For this to take place, one of the first steps for companies when implementing digital marketing strategies should be the creation of an attractive website in line that shows their objectives and interests, creates engagement and gains the attention of its users although it should, above all, be useful [1, 2, 6].

We are currently seeing a transfer of power from companies to consumers, to which the former should pay special attention to the opinions and demands of the latter [8]. In this manner, digital marketing also includes other tools such as social networks that, via the multiple platforms they offer, are a great medium for the interaction and expansion of social circles, and for sharing information, organizing events and communities, and even improving competitive positions [1, 8]. In addition, user interaction may be a source of innovation for SMEs [9, 10]. Thus, the appropriate employment of social networks can mean a big advantage in terms of business expansion without translating into excessive costs, to which they are especially advantageous for SMEs. Social networks have been proven to have a positive impact as regards aspects such as: reputation and brand image [11]; business organisation and reduction of marketing and advertising costs [12–14]; reaching a greater number of potential customers[15], and opening new commercialization channels [16].

However, despite all of the advantages offered by Web 2.0 tools like websites and social networks, there is still a long way to go. A number of studies point to the fact that, despite the quality of the corporate websites of Spanish SMEs being acceptable [17–19], their social network presence and activity is, in many cases, merely testimonial; in addition, in general terms, the objective of this presence is not communication and interaction with users [20, 21].

In Europe, practically the totality (99.8%) of companies operating in the economy—save for the financial sector—are SMEs [22]. 77% of European businesses have a website, but only 43% of between 10 and 49 employees make use of social networks [23, 24]. As regards the situation in Spain, the information offered in the latest official report [25] coincides with the European situation. Thus, 99.8% of the Spanish business fabric is comprised of SMEs. In addition, as is the case for Europe, 77% of Spanish SMEs have a website and 43% use social networks [26]. Catalonia, Madrid, Valencia and Andalusia are the autonomous regions that contain the most SMEs, over 60% of the total in Spain. Specifically, 501,097 small and medium enterprises in An-

dalusia make up 99.93% of the business fabric of this region [25]. In terms of Web 2.0 tool usage, Andalusia follows the national and European trend, with 70% of SMEs having a website and 48% using social networks in order to develop their company image or for advertising purposes [25].

It is beyond question that SMEs are a key element in both the Spanish and Andalusian economy; therefore, different initiatives have been set up. At national level, amongst the objectives set by the Agenda Digital para España driven by the Ministry of Industry, Energy and Tourism [27] are the use of ICTs to improve SME productivity and competitiveness. This has translated over to autonomous regional level, in the case of Andalusia, in the development of the Horizon 2020 Strategic Plan for the Internationalization of the Andalusian Economy [28]. For its part, the main objective of the 2020 Stimulus Strategy for the Andalusia ICT Sector is to favor the development and consolidation of the ICT sector in Andalusia [29]. Finally, one of the challenges of the Plan de Acción Empresa Digital (PAED) is to improve the establishment of ICTs in Andalusian SMEs, [30].

If we focus on business activity by sector, according to data from the latest report from the General Secretariat for Industry and Small and Medium Enterprises [31], 81.4% of Spanish undertakings carry out their activity in the services sector. In the case of Andalusia, the figure is somewhat higher, with over 83% belong to this sector [32]. Within it, healthcare is the second biggest group as regards business creation in net terms [31]. These companies belong to what is referred to as Group Q: Healthcare and social services activities according to the CNAE (National Classification of Economic Activities)-2009 classification, [33], which is divided into various subgroups: hospital activities; medical and dentistry activities; and other healthcare activities. Medical and dentistry activities represent around 53% of the total of group Q companies at national level, with approximately 55% companies in Andalusia belonging to this sector [34]. In this paper we will focus on companies who carry out their activity in the dentistry sector, as this has undergone considerable expansion in the last two decades and is currently in continuous growth [35, 36].

The objective of the study is to analyze how Andalusian companies in the dentistry sector employ Web 2.0 tools and to determine if there are relationships between the variables associated with their use, such as the existence of websites and/or social networks, the number of followers and social profile update frequency, among others.

2 Methodology

2.1 Description of the object of study

The object of study was selected using information from the Sectoral Ranking of Companies by Turnover offered by the Spanish source elEconomista.es. The data from this Company Ranking comes from the INFORMA D&B S.A.U. (S.M.E.) database (which boasts the AENOR quality certificate) and is fed from a number of public and private sources, including the Official Companies Register Gazette, the Official Accounts Records, the Official State, Autonomous Regional and Provincial Gazettes, national and regional press, ad hoc studies and other publications.

The selected companies belong to the CNAE sector: (8623) Dentistry activities. This sector contains 4,344 businesses listed in the national ranking, of which 4,307 are SMEs—3,402 small and 905 medium companies. For this study we selected the Andalusian SMEs belonging to this sector. 516 companies were initially examined, after filtering those companies forming part of franchises or large business groups, and a number whose description of the company purpose did not coincide with the activities specific to the sector, with the final sample comprising 498 SMEs in Andalusia, which in this case corresponds to the population of this sector in the region, and which represent 11.5% of the sector at national level according to the Sectoral Ranking of Companies by Turnover. Given that for the ordering of the companies in the ranking their financial situations filed in the Companies Register are used, with the close of registration date being July of the year for the object of study and June of the following year, the data obtained and employed in this paper correspond to 2017. We compiled the company data between the months of May and June 2019.

2.2 Analysis criteria and instruments

Firstly, we compiled the data from the companies obtained from the information provided by the Sectoral Ranking of Companies by Turnover. These data were as follows: Company name; Commercial or brand name (where available); Size according to turnover; Location; Website address (where available). Secondly, we adopted the criteria established in prior studies [37, 38] for compiling data relating to corporate websites and the use of social networks. The social networks analyzed were Facebook, Twitter, LinkedIn, Instagram and YouTube, with the use of other social networks on the part of SMEs being anecdotal and therefore insignificant for analysis. The indicators employed were:

- Existence or not of website. If yes: Contact information and social network links visible on website
- Existence or not of social network profiles. If yes: Existence or not of profile on Facebook, Twitter, LinkedIn, Instagram and YouTube; number of followers for each network and updating of information thereon (daily, very frequently, frequently, not very frequently, sporadically, rarely or social network abandoned).

In all cases we located the company websites and social networks—both using their company name and commercial name, where this appeared in the information from elEconomista.es—via Internet searches. In the cases where it was not possible to locate the link to the website or social networks of the company, or it was not possible to verify the effective belonging of a specific website to a company (consulting information on the legal notice, address, etc.), it was determined that the company did not have, or it was impossible to locate, a website or social network.

In the case of the visibility or lack thereof of links to social networks on the company website, we omitted broken links (17 cases), those that failed to include all profiles of the company present on social networks (9 cases), or those that pointed to links to non-existent social network profiles (3 cases). Thus, we only considered as valid those links that correctly redirected to all company social network profiles.

To analyze follower numbers, as this involved large data groups, we calculated the class interval corresponding to each social network profile, which allowed us to group the data into intervals in order to facilitate their subsequent analysis. To do so, once the total amount of data was determined (number of followers on each social network), we applied the Sturges rule to calculate the number of necessary intervals and then calculated their amplitude.

In the case of the last indicator—social network updating—we took into account posts made in the last month to determine whether the updating was daily (over 20 publications/month); very frequent (16-20 publications/month); frequent (11-15 publications/month); not very frequent (6-10 publications/month) or sporadic (1-5 publications/month). We determined the frequency as rarely if the companies had posted at least once in the last year. Lastly, it was decided that the social network profile had been abandoned if no type of post had appeared in the last year.

The data were treated with the SPSS (v. 22) statistical package via the analysis of frequencies and correlations. As the data did not follow a normal distribution, the Spearman coefficient was calculated—a non-parametric version of Pearson's correlation coefficient—to evaluate the possible associations between the different variables. The degree of correlation for the variables was determined according to the scale proposed by [39].

3 Results

Firstly, of the 498 companies analyzed, 252 had a website, 50.6% of the total. In the case of social network profiles, 244 companies, 49% of the total, had at least one profile (see Table 1).

Table 1. Existence or not of website and social networks.

	Website		Social networks	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Ye	252	50.6	244	49
No	246	49.4	254	51

After calculating the Spearman coefficient, the existence of a mean positive linear directly proportionate correlation between the website and social networks variables can be confirmed (Spearman Rho = 0.679, p = 0.000). This indicates that the fact a company has a social network or not is associated with it having a website. Furthermore, no linear association was found between the company size and the website (Spearman Rho = -0.023, p = 0.615) and social networks (Spearman Rho = -0.18, p = 0.695) variables. Thus, it cannot be concluded that a relationship exists between the size of the company and whether or not it has a website or social networks.

If we look separately at the profiles of each of them with Spearman's rho we find a weak, positive and directly proportionate linear correlation between the website and existence of a Facebook profile (Spearman Rho = 0.183, p = 0.004) and existence of an Instagram profile (Spearman Rho = 0.260, p = 0.000) variables. Despite there being an association between the variables, as it is weak it cannot be concluded that that fact that a company has a website determines whether it has a Facebook and Insta-

gram profile, and it must be presumed that there are further reasons for explaining this dependence. For the rest of the social networks analyzed—Twitter, LinkedIn and YouTube—there is no correlation between the web and social network variables

In addition, we analyzed whether there were correlations between the different social networks, that is, if the fact that a company had a specific social network account was associated with also having other social networks. In this regard, we found a weak, directly proportional positive linear correlation between YouTube and Instagram (Spearman Rho = 0.295, p = 0.000), Twitter and Instagram (Spearman Rho 0.242, p = 0.000) and LikedIn and YouTube (Spearman Rho = 0.224, p = 0.000). This tells us that, to a certain extent, a company having a YouTube channel is associated with it also having profiles on LinkedIn and Instagram. The same occurs in the case of Twitter and Instagram. Nevertheless, given that the correlation is weak, it is presumed that there are more reasons for explaining this dependency.

Table 2. Correlation between the different social networks

Social network	Facebook		Twitter		LinkedIn		YouTube		Instagram	
	Rho	**Fol.**	**Rho**	**Fol.**	**Rho**	**Fol.**	**Rho**	**Fol.**	**Rho**	**Fol.**
Facebook			-.0080	0.218	-0.01	0.838	0.029	0.657	0.093	0.160
Twitter	-.0080	0.218			0.105	0.104	0.117	0.104	**0.242**	**0.000**
LinkedIn	-0.01	0.838	0.105	0.104			**0.224**	**0.000**	0.147	0.026
YouTube	0.029	0.657	0.117	0.071	**0.224**	**0.000**			**0.295**	**0.000**
Instagram	0.093	0.160	**0.242**	**0.000**	0.147	0.026	**0.295**	**0.000**		

Table 3 shows social network visibility and website contact information. That is, if companies had visible links to their social networks on their websites and a section where contact information was clearly specified or not. Over half the websites analyzed (51.2%) had links to company social networks and almost all of the companies analyzed (99.2%) made their contact information available on their websites.

Table 3. Social network visibility and website contact information.

	Social network links		Contact information	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Yes	129	51.2	250	99.2
No	123	48.8	2	0.8

The Spearman rank correlation coefficient indicates the existence of a mean positive linear correlation, directly proportionate between the website and social network visibility variables (Spearman Rho = 0.584, p = 0.000). For their part, there is a very strong positive linear and directly proportional correlation between the website and contact information variables (Spearman Rho = 0.992, p = 0.000). This shows us that

there is an almost perfect association between the fact that a company has a website and the publication of its contact information.

Additionally, to analyze the fact that a company had links on its website to its social networks we calculated the Spearman's rho and verified the existence of a weak negative and inversely proportional linear correlation between the social network visibility and Facebook followers variables (Spearman Rho = -0.289, p = 0.000). This is noteworthy, as it would indicate that the fact that a company's social networks are visible and accessible from its website is not necessarily associated with an increase in followers. Regarding the rest of the social networks, no linear association is found between social network visibility and followers on each.

Moreover, we analyzed whether the updating of social network profiles was associated with follower numbers. The Spearman's rho demonstrated that there is a negative and inversely proportional linear correlation between the Update frequency and Facebook followers variables (Spearman Rho = -0.535, p = 0.000), and also occurs in the case of Twitter, which has a weak correlation (Spearman Rho = -0.297, p = 0.003). These results create dissonance as they do not lead to the conclusion that more frequent updating on social network profiles is linked to a higher number of followers. That is, a very high update frequency could lead to a loss of followers. In the case of the other social networks analyzed, no significant correlations were found between update frequency and follower numbers

Finally, we analyzed whether the number of followers on a specific social network was associated with that of other social networks. Hence, Table 4 shows a mean positive directly proportionate linear correlation between Facebook followers and YouTube followers (Spearman Rho = 0.614, p = 0.000) and a mean positive linear correlation between Twitter followers and Facebook followers (Spearman Rho = 0.298, p = 0.004). On the other hand, no significant correlations were found between followers on the other social networks analyzed.

Table 4. Correlation between followers on the different social networks.

Followers	Facebook		Twitter		LinkedIn		YouTube		Instagram	
	Rho	**Fol.**	**Rho**	**Fol.**	**Rho**	**Fol.**	**Rho**	**Fol.**	**Rho**	**Fol.**
Facebook			**0.298**	**0.004**	0.117	0.596	**0.614**	**0.000**	0.303	0.15
Twitter	**0.298**	**0.004**			-0.358	0.230	0.250	0.228	0.185	0.281
LinkedIn	0.117	0.596	-0.358	0.230			0.694	0.018	0.300	0.370
YouTube	0.614	0.000	0.250	0.228	0.694	0.018			0.110	0.608
Instagram	0.303	0.15	0.185	0.281	0.300	0.370	0.110	0.608		

4 Conclusions

This study analyzes the use of two of the most significant digital marketing tools—websites and social networks—on the part of SMEs in Andalusia dedicated to dentis-

try activities. Firstly, it should be pointed out that the SMEs analyzed are almost twenty points behind the European, Spanish and Andalusian average in terms of website availability. The use of social networks by the SMEs analyzed is, however, one point above the average for Andalusia and six above the Spanish and European average. These data show that they are still not making use of all of the advantages offered by websites and social networks. Notwithstanding, the positive correlation between these variables—having a website and social networks—tells us that those companies that do use the tools seem to be aware of their combined potential, given that the fact that a company has a website is positively associated with it also having social profiles. This association does not however determine on which specific social network the SMEs have an account or profile. Likewise, having a profile on a specific social network is not meaningful in terms of influencing if there are other social network accounts.

Companies are aware of the importance of providing clear and visible contact information on their websites, which is indicated by the near perfect correlation between the website and contact information variables. There is, in addition, a positive correlation between the website and social network visibility variables, which indicates that a significant proportion of SMEs appear to be aware of the need to have links to their social networks on their websites, given that 51.2% of those analyzed had links that effectively redirected to their profiles. However, the fact that a company has links to its social networks on its website is not associated with follower numbers, telling us that a mere digital presence could not be enough to generate engagement among users. It is also insufficient to frequently update social networks; moreover, a high frequency of posts can have negative repercussions on followers in the case of Twitter and Facebook. There are, though, associations indicating that the number of Facebook followers has an influence on Twitter and YouTube followers, and vice-versa.

This study serves as a starting point for further exploration of Web 2.0 tool usage on the part of SMEs, and the different relationships established between the variables involved. Thus, future lines of research should consider an expansion of the object of study including small and medium enterprises in Andalusia, Spain and Europe in the healthcare and social services sector, as well as other economic sectors. It would also be convenient to elaborate on both the perception of companies and users regarding the use of these resources through mixed approaches that include interviews or focus groups, in order to determine the reason for the occurrence of phenomena such as the negative association between frequency of posting and number of followers, and what other reasons would explain the weak correlations found. Furthermore, given that they face a globalized market, it would be necessary to research the degree of the internationalization of companies, paying particular attention to aspects such as website and social network translation, localization and transcreation.

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