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IMPLEMENTATION OF ANALYSES BASED ON SOCIAL MEDIA DATA FOR MARKETING PURPOSES IN ACADEMIC AND SCIENTIFIC ORGANIZATIONS IN PRACTICE — OPPORTUNITIES AND LIMITATIONS

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Abstract

The article is focused on the issue of practice use of analyses, based on data collected in social media, for institutions' communication and marketing purposes. The subject is being discussed from the perspective of Digital Darwinism — situation, when development of technologies and new means of communication is significantly faster than growth in the knowledge and digital skills among organizations eager to implement those solutions. To diminish negative consequences of Digital Darwinism institutions can broaden their knowledge with analyses of data from cyber space to optimize operations, and make use of running dialog and cooperation with prosuments to face dynamic changes in trends, technologies and society. Information acquired from social media user generated content can be employed as guidelines in planning, running and evaluating communication and marketing activities. The article presents examples of tools and solutions, that can be implement in practice as a support for actions taken by institutions.

Keywords: social media, marketing, communications activities, digital darwinism, knowledge

Digital darwinism — introduction

Rapid growth of communication technologies and growing significance of the Internet in the society do not only enforce changes in the model of business contacts, when a client interacts directly with a product, but also in the style of communication of scientific institutions with groups of stakeholders. New technological and social reality, as well as economy based on information and knowledge require from companies and institutions a greater than ever involvement in building relations and transparency of their activities, as well as efficient extraction of knowledge from constant influx of new data. Exponential accumulation of new data led to the formation of the term Big Data. All of this means that entities can suffer due to digital darwinism — in this situation not keeping up with changes in structure and organization, which would allow them to understand and function efficiently in new reality.

The term of "Digital Darwinism" was popularized in 2011 by the American sociologist, futurist and network researcher Brian Solis. According to Solis, digital darwinism should be understood as a specific evolution of consumer behaviour when the society and technology develop faster than the ability of companies, organizations, corporations and institutions to adapt to the new situation[1]. First reference to Darwin's theory in the context of marketing and management appeared earlier — already in the 1960's Leon Megginson predicted the end of the classic model of running business. He wrote: "According to Darwin, not the most developed, not the strongest species, but the species best prepared to adapt and to change along with the changing environment will survive"[2].

The development of tools and new platforms of communication is now much faster than the growth of knowledge and digital competences among entities that want to use them to gain competitive edge. Without elementary knowledge about the character and profile of our recipients and the rules of conducting dialogue in the era of social media it is hard to use digital possibilities in various aspects of social and economic life. This concerns not only individual users, but also institutions which up till now have been focused on classic forms of communication and promotion.

[1] B. Solis, *Digital Darwinism: Who's Next?*, www.briansolis.com/2011/09/end-of-business, 01.11.2013

[2] L.C. Megginson, *Lessons from Europe for American Business*, „Southwestern Social Science Quarterly" 1963, no. 44, p. 4.

Using data to build solutions

In order to minimize the negative effects of digital darwinism institutions can function on the basic level in two ways: by deriving knowledge from data collected in cyber space in order to optimize operational activities and by taking advantage of the potential of dialogue and cooperation with important stakeholders, including dialogue in cyber space, in order to keep up with the dynamic changes, among others, in trends.

The choice of tools is determined by the character of data and the purpose of analysis. In case of investigating non-verbal behaviours (eg. network traffic, history, logging) among helpful tools are platforms' analytical applications, CRM and business intelligence solutions. At the same time marketing specialists can efficiently analyze all kinds of contents produced by Internet users (e.g. posts on message boards, blog posts, shared videos and photos, messages created and sent within social networks) by using generally available systems for monitoring *user generated content*[3].

In practice, planning and handling a series of communication activities can be based on three basic kinds of data sets:

1. Data from the systems for monitoring of social media[4], which enable insight into the scale and character of content generated by Internet users and their discussions in the context of subjects and issues we find interesting.
2. Detailed data from internal analytical platforms, where we run communication (among others, own Facebook profile, Twitter, blogs)
3. Own resources collected in the process of running communication and marketing activities (e.g. quantified effects of a campaign.

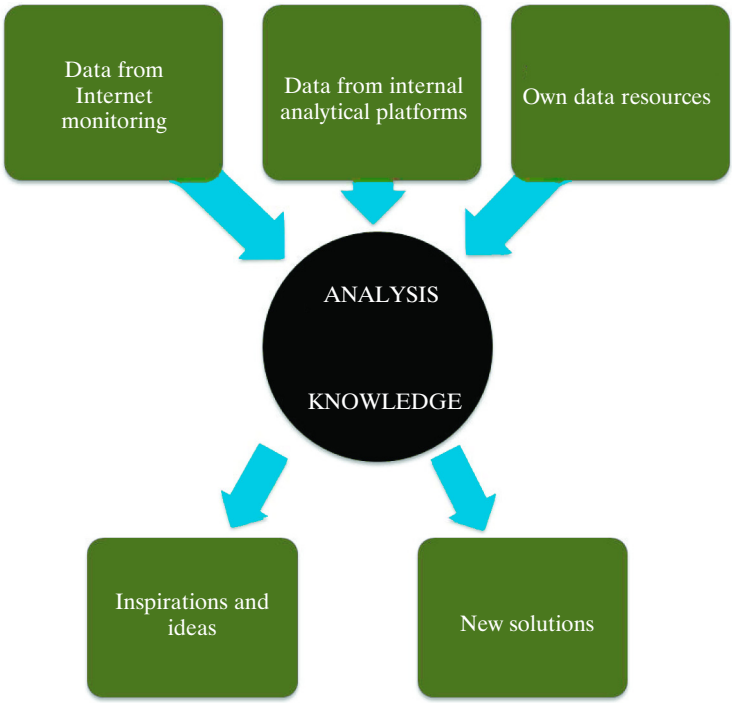
After analysis, the collected data, with the aid of experience and insight of the analyst can be transformed into particular piece of knowledge, which can be later transformed into new inspirations and concepts for managing marketing activity, as well as particular solutions facilitating information management and the development of an institution (see Picture 1.). Thus, it is possible to risk the claim that the one who has the appropriate analytical tool, has this special kind of power, called by Thornton May "new knowledge"[5].

[3] M. Grabarczyk-Tokaj, *Big Data. Big Problem?*, "Marketing w Praktyce" 2013, no. 7, pp. 8-9.

[4] For the purpose of this work, in the broad sense, the term of "social media" includes the platforms, channels and places of communication, which, first of all, allow the user to communicate with other users in real time, second — they enable producing, publishing and sharing own content. Thus, the scope of social media will include social networks eg. Facebook, micro-blog services like Twitter, blogs and blogging platforms, message boards and discussion groups, platforms for exchange of multi-media (eg. YouTube, Instagram), places for exchange of opinions and sharing information (eg. wykop.pl) etc.

[5] T. May, *The New Know: Innovation Powered by Analytics*, Wiley and SAS Business Series, New Jersey 2009.

Picture 1. **From raw data to ready solutions — simplified diagram**



Source: Own materials.

The potential of *user generated content monitoring* tools in planning communication and promotion activities

Information concerning what, when and how people say, write or do is becoming one of key resources of the economy based on digitalization, technology and innovation[6]. This is also the reason why the knowledge concerning the possibility of using the analysis of contents and materials created by users of social networks should be crucial for people associated with communication and promotion of scientific institutions. This is especially important in case of entities and institutions whose main target group are young people eg. potential and current students. The survey titled ''Internauci 2013" conducted by CBOS shows that people aged 18–24

[6] Discussed in D. Batorski, E. Bendyk, M. Filiciak, *Cyfrowa gospodarka: Kluczowe trendy rewolucji cyfrowej. Diagnoza, prognozy, strategie reakcji*, MGG Conferences, Warszawa 2012.

now constitute the biggest and the most active group of Internet users in Poland[7]. In this situation an appropriate and even necessary solution supporting marketing, promotional, or image-building activities, is regular use of the analysis of digital footprints. Internet users are leaving more and more such digital footprints as a result of their daily activities. What scale of data for analysis can be expected in case of universities in Poland? For example, an average of 6,000 pieces of information about the University of Warsaw alone appear on the Internet every month. 30Pc of this material are contents generated independently by users — mostly on Facebook[8]. Taking into consideration the broad range of available data, the hyper-connected target group and the associated possibility of reflecting appropriately broad spectrum of possibilities, in the following part of the work there will be references mainly to the marketing activities of universities. However, it is necessary to remember that the presented examples are universal for the whole network environment.

Materials produced by users of social media and their registered behaviours are an element (even if a small one) of Big Data, because they have three key characteristics in the definition of Big Data: *Volume* (sufficiently big amount of data), *Velocity* (data appear quickly and in a big stream) and *Variety* (data are varied and not structured)[9]. Along with the growth of the volume of information coming from the net and growing diversity of channels and platforms, in which it is possible to participate, the offer of tools, which help to a greater or smaller extent to manage this apparent chaos is growing. Also Poland[10] has a rich offer of solutions for the analysis of *user generated content* on various levels of depth and detail.

The potential of systems of Internet monitoring and simple analytical engines can be used independently and successfully at the stage of planning activities. This way we can gain knowledge in a way *post factum*. However, the knowledge is valuable on the level of strategic planning. Basing on the analysis of Internet materials published

[7] www.cbos.pl/SPISKOM. POL/2013/K_075_13.PDF, 01.11.2013

[8] Averaged data from the January–September 2013 period come from the Internet monitoring system IMM. www.imm.com.pl.

[9] D. Laney, *3D Data Managament: Controlling Data Volume*, Velocity and Variety, http://blogs.gartner.com/doug--laney/files/2012/01/ad949-3D-Data-Management-Controlling-Data-Volume-Velocity-and-Variety.pdf, 01.11.2013

[10] This is particularly important, as global engines are organically based on English language and at the same national solutions are based on Polish language, which greatly improves the quality and accuracy of delivered results and analyses. Some examples of such solutions are, among others,. aMI IMM, Newspoint, Sotrender. These are all commercial tools, but all of them offer trial periods, in which it is possible to test the functionality of the interface and the accuracy of provided results.

in the context of eg. a particular university we can obtain answers to questions, which can highlight the particular paths of action. (see table 1).

Table 1. **Questions and the character of prerequisites stemming from the analysis of *user generated content* in the context of a university**

Questions	Prerequisites stemming from analysis
Does the target group you want to communicate with or monitor actually exists on the Internet? What is its size and scale of activity?	The assessment of potential for online communication and necessity/ ossibility/justifiability/degree of necessary involvement in this type of activity.
Who participated in the exchange of opinions?	Collecting information about particular type of commentators — whether they are eg. students, scientific circles, journalists, local authorities. Checking whether there are unexpected groups/people. Identifying active participant of communication, important from our point of view — prosumers, opinion leaders.
Where and when does communication takes place?	Identifying places outside our channels (eg. Facebook or www site), where discussion concerning the subject we are interested in takes place. Allowing dialogue with a recipient from other places than our own channels. Planning a schedule of communication and the possibility of appropriate distribution of forces, considering new platforms to manage.
What is being discussed? What is passed on? Which issues attract most attention?	Inspirations with regard to the manner of communication, knowledge helpful for supporting promotion of events, exposition of experts based on statistics of frequency of citation of contents eg. statements, mentions about conferences, references to university's activities in discussions, problems which are subject to heated discussion.
What is being said about my institution?	Verifying opinions about yourself, taking a look at your own activity from a distance. Highlighting gaps in communication, negatively and positively assessed organizational elements most often mentioned by commentators. The possibility of generating new organizational and promotional solutions inspired by opinions, discussions, asked questions.
What is being said about other entities?	The possibility of comparison with eg. other universities with a similar profile (analysis of image, benchmark compared to the background, benchmarking) as well as collecting knowledge about the ways other units function — eg. assessment of the recruitment system, handling promotional campaigns, organized events, using non-standard forms of promotion of experts and research results (eg. TED, open source type publications, multimedia etc.).

Source: Own materials.

Utilization of data from internal analytical platforms and Internet monitoring for current communication

Drawing conclusions from the analysis of data generated by users of social media shouldn't be limited exclusively to the stage of planning or forming strategy. Continuous control over the results of Internet monitoring carried out in real time (e.g. through a practical system of alerts or mobile applications) makes it possible to react immediately to contents posted online in our context. This is important in the reality of *social media*, where multi-channel communication and multiplication of platforms on the one hand has big potential for conducting a dialogue with stakeholders and on the other hand poses greater risk of emergence of a crisis caused by one or a series of negative posts concerning our institution.

As the requests for advice, recommendation, as well as all kinds of warnings and spontaneous remarks (both negative and positive) are a regular subject of exchange of opinions, also in the context of universities, keeping an eye on *social media* is thus important not only in case of prevention of crisis situations, but also facilitates quick response in daily situations, eg. to inquiries about the offered courses made on the open subject forum, among friends on Facebook or in a public "Tweet".

Monitoring social media by means of dedicated applications also makes it possible to locate and establish contact with participants of discussion we regard as valuable — Internet prosumers. The author regards the term of Internet prosumer as broader than the definition by Alvin Toffler[11]. Prosumer is not just a consumer and producer at the same time. Prosumer is above all, an active, professional consumer of products, services and ideas, whose activities initiated on the Internet thanks to necessary support of communication technologies and the community built spontaneously around him have a real impact on opinions, judgments and actions taken by other participants of the communication — including companies and organizations. He can also be a producer of ideas and a designer of pro-quality solutions — which should draw the attention of people taking care of promotion and development of institutions.

Apart from data from current monitoring, regular measuring of traffic and involvement in messages created in *owned media* — channels in which we

[11] Alvin Toffler popularized the term "prosumer" with regard to an individual who is a producer and a consumer at the same time and thanks to the individual's independent activity "mass customization" is possible — production of ever more individualized goods and shifting some tasks from the producer to the consumer (Do It Yourself products). See: A. Toffler, *Trzecia Fala*, tłum. Kłobukowski M., Woydyłło E., Wydawnictwo Kurpisz, Poznań 2006.

personally manage communication can help manage communication efficiently. For this purpose it is best to take advantage of analytical tools dedicated to particular platforms (eg. Google Analytics for own www[12] site or Page Insights for fanpage on Facebook). In most cases using these tools in their basic shape is free of charge. The obtained information can give us answers to a series of questions asked in the context of optimization of communication and promotional activities (see Table 2).

Table 2. **Questions and character of prerequisites stemming from analysis of internal platforms based on the examples of Google Analytics and Page Insights**

Questions	Prerequisites derived from analysis
When do most users visit the site?	Identifying the intensity and regularity of visits and traffic on a site makes it possible to appropriately plan the schedule for posting contents and to predict when users are on line and when the best time is to communicate with them.
What is the demographic profile?	The obtained information concerning sex, age, used technological solutions etc. allows us to adopt the correct formula and method of communication
Which contents raise and which contents reduce involvement?	Probing the first effects of our activities, modification of content and form of communication. Identification of the reasons for failure, or success that should be achieved again.

Source: Own materials.

Information collected by means of *social media* monitoring and analytical systems in own media can be supplemented with data we have at our disposal when carrying out other image or promotional activities — eg. efficiency of mailing, attendance at organized events, data from questionnaires etc. Knowledge accumulated this way allows easier modification of intensification of activity, depending on the effected expressed by data and indirectly it should contribute to saving time and resources allocated to promotion.

[12] www.google.com/analytics, 01.11.2013

Subsequent stages of utilization of knowledge derived from data

Data scientists work hard on algorithms of recommendation, which analyzing the emotional potential of our statements in *social media* and the network of connections with other users which will allow some decisions to be made for us[13]. We can already test first examples of such solutions — Graph Search on Facebook, which tells us what our friends like; Pandora and YouTube choosing music and movies for us on the basis of our search preferences; or the recommendations already commonly used by Internet shops — "people viewing this product bought also...".

However, before recommendation algorithms become efficient enough to provide universities with ready solutions for the modification of the programme of research on candidates and what creation to advertise in in order to attract numerous candidates in times of demographic decline, we can still resort to analyses in order to more efficiently carry out the goals of institutions.

For the purpose of evaluation of the effects of campaign, depending on the character of conducted works, we can use indicators showing the scale of changes by comparing data collected before and after marketing activities, eg. the number of unique users, views of particular contents, level of content of key information in publications, or the sentiment and context in which a university, or scientific unit appears in a discussion. Further levels of measurement can cover the investigation of the correlation between carrying out market and promotional activities online and e. g. the number of student candidates.

Regularly collected data make it possible to carry out detailed analyses of strategic character (among others, SWOT type analyses, image, comparison analyses), which can later be used as aid to draw conclusions for the future and continuously raise the knowledge about the environment in which an institution is functioning.

The obtained analyses and data from social media can help universities and research units not only in their planning activities, but they can also serve as a foundation for innovations. As has already been mentioned, on the basis of data from social media we are able to select the most active users interested in the subjects associated with the profile of our institution. Adding to the list the community gathered around our channels, it is possible to use the potential given by *crowdsourcing*. Looking from the perspective of idea and character of crowdsourcing activities defined and described by Jeff Howe[14], in case of scientific institutions it seems that a particularly

[13] E. Bailyn, *Przechytrzyć social media*, tłum. Najman M., Helion, Gliwice 2013, pp. 131–142.

[14] J. Howe, *Crowdsourcing: Why the Power of the Crowd Is Driving the Future of Business*, Tree Rivers Press, New York 2009.

beneficial possibility is collecting ideas from the users and coordinating discussion on particular issues. There is also an interesting potential in the related *crowdfunding* — community fund-raising for eg. carrying out scientific projects[15].

The network of online connections and relations, as well as the involvement of prosumers can be used for building focus groups within the framework of own communication channels and for carrying out simple surveys. Solutions of this kind give us the opportunity to receive responses directly from the people interested in an institution. In case of universities it is possible to obtain opinions about the programme and course of studies, ideas for improving organization. Kazimierz Krzysztofek describes the value of utilization of collective work and initiatives of people for the needs of companies and institutions as protection against "cultural retardation, which emerges when the users of new technologies are unable to are unable to adapt them to their needs, but have to adapt to them themselves, which usually requires time."[16]

Limitations for efficient utilization of analyses based on social media

Rapid growth of various data, the generation of *Digital Natives*[17] entering the education and labour market, the necessity to minimize negative effects of digital darwinism by companies and institutions, the imperative of efficient information management — all of this means that reliable, relevant information concerning behaviours and preferences of current and potential stakeholders and their opinions, judgments and initiatives will be getting even more important. However, obtaining data from social media for the purpose of communication, marketing activities, or activities aimed at raising quality, also has weak points.

Above all, widely available monitoring tools make it possible to only public contents — thus, they don't cover the full scope of discussion concerning the issues we are interested in. Similarly, they don't cover 100 percent of active sources on the Internet.

[15] In Poland there are already first crowdfunding platforms dedicated to community financing for ideas, among others: www.PolakPotrafi.pl, www.MySeed.pl, www.BeesFund.com.

[16] K. Krzysztofek, *Zwrot cyfrowy: ku pracy rozproszonej*, [in:] *Zwrot cyfrowy w humanistyce*, praca zbiorowa pod red. R. Bomba, A. Radomski, E-naukowiec, Lublin 2013, p. 51.

[17] *Digital Natives* tis a generation which opposed to *Digital Immigrants*, never knew a world without the Internet and constant access to the benefits of communication by means of modern digital technologies. See: M. Prensky, *Digital Natives*, *Digital Immigrants* Part 1, „On the Horizon" 2001, no. 9 p. 5.

Despite these limitations they are an easy to use and widely available tool making it possible to expand knowledge about the bahaviours and opinions of target groups — under one basic condition, namely, that they are present in cyber space. This is where another limitation appears — there is risk that in social media channels — both in the most popular ones (like Facebook, Twitter, Instagram) and those dedicated to small groups of experts or hobbyists (eg. specialist, closed fora for doctors, crowdsourcing platforms) just a small group represents the research area we are interested in or associated issues. In this case it is obviously hard to talk about the potential of analytical data. On the other hand, even having access to giant collections of data on various levels of detail, initially analyzed by means of engines and algorithms, we only arrive at the stage of *data mining*. At the subsequent stage manual — in fact, intellectual — work of humans is still necessary. It will take a long time before we get widely available applications providing ready solutions and recommendations. The question is how many years, months or weeks it will take to develop algorithms analyzing big volumes without the need for "human factor".

Another subject for discussion is the level of quality and reliability of the results obtained from research carried out on the Internet. Opponents will point to the non-representative character of the group, strong influence of anonymity and self-creation of the authors of messages, the supporters will point to the general character of social research, in which these problems are also present. The results of analyses of digital footprints undoubtedly provide support for marketing activities and to some extent allow reducing costs and time needed for research carried out based on traditional methods, however, in the nearest future they won't replace the traditional methods completely. Regardless of the ongoing discourse, the author of this work agrees with the reasonable approach proposing the use of the results of research on digital footprints as a support for operational and strategic activities under the condition of sufficiently critical approach to the obtained results[18].

Summary

Information derived from the analysis of *user generated content* in social media can be used as ready hints for communication activities in social media: from such basic elements as platforms that we should use, as they attract the biggest, or the most active

[18] Discussed in: P. Idzik, *Analiza Big Data. Badania niereaktywne w erze Internetu 2.0* [in:] *Zwrot cyfrowy w humanistyce*, praca zbiorowa pod red. R. Bomba, A. Radomski, E-naukowiec, Lublin 2013, pp. 161–162.

group of our stakeholders, through adaptation of the content, manner and style of communication to the profile and needs of recipients to the analysis of weak and strong sides of an organization, which benefits from our marketing activities. What's important is that these are premises based on hard data and quality analysis of content. What's also significant is the fact that such analyses are comparably cheap and simple to carry out, which means they can be widely used.

Not only corporations and brands from the FMCG sector have a chance to derive real benefits from the stream of information concerning them, generated by clients and consumers Educational and scientific institutions can use the potential in a similar way. Additionally, thanks to real interaction with valuable recipients they can take advantage of collective wisdom and react to signals coming from the net in real time. In order to avoid falling victim to digital darwinism, scientific institutions, universities, research units should be aware of two issues: conducting active communication by means of social media is not an obligatory element of marketing and image activities of all kinds of entities, however, the utilization of available applications analyzing contents and behaviours on the Internet for the purpose of supporting decision-making and forecasting processes should become a standard.

Not only regular users (or rather producers of data), but also representatives of business, economy, culture, science and education will have to learn to find their way around the environment of modern technology, in the age of Big Data. Now the question is not: "Should scientific and research institutions consider changes in worked out patterns of communication and promotion?". Currently, the question should concern the issues of scope, scale and particular solutions that scientific and research institutions could use to efficiently implement non-standard forms of promotion of their research, experts, publication and scientific offers.

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