Cloud services and Marketing

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Nowadays, most of the companies use cloud tools. Well-known services, such as Gmail, Google Docs and Dropbox are used every day. Salesforce is commonly used in companies' business routine. Through social networks (Facebook, LinkedIn, Twitter), significant part of personal and business data is collected and saved in the cloud. So, all these services and their data are easily accessible and available for different purposes.

On the other hand, users have to give up their privacy and control. Anyone with moderate analytical skills can research, profile and use all published data for their own gain and interest (advertising, sales, different analysis, etc.).

Nothing excites managers and marketers more than the massive application of cloud services and infinite flow of fresh information about consumers, which is then used to improve their products and services. In this paper we present process improvements in marketing automation, lead tracking, and inbound marketing as a result of cloud services.

No matter which cloud supported services are used, they are less time and money consuming and easier to access and manage. They are accepted by more users than traditional desktop tools. In the future, processes could be even more automated which could put businesses on autopilot. This might be the Holy Grail everyone is seeking.

I. INTRODUCTION

The theme of this paper is application of cloud services in business, especially in marketing. Our aim is to present how certain marketing concepts were not even plausible without cloud services.

Firstly, we present advantages and disadvantages of cloud services. So, we address issues of privacy and safety and then we present a couple of great implications of cloud services in marketing. We want to remind readers of all negative issues of cloud services, as we feel that users often embrace new applications of cloud services without taking these safety and privacy questions into considerations. We present marketing cloud implementations, because we want to show the vast area of cloud implication in business, and significant improvements it brought. We think that more and more services will migrate to the cloud in the years to come.

Our hypothesis is: "Marketing landscape has changed since cloud services were invented."

We use methods of description and compilation of secondary data to research the hypothesis.

Before we go any further, we would like to shortly define certain terms and terminology concerning cloud computing.

"Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared poll of configurable computing resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management efforts or service provider interaction. This cloud model is composed of five essential characteristics: on-demand self-service, broad network access, resource pooling, rapid elasticity and measured service [4]."

In the simplest terms, *cloud computing* and *working in the cloud* refer to performing computer tasks using shared resources for services running in public, private or combined cloud.

According to the reference [5], cloud model is composed of four service models. These services are referred to as:

- *IaasS* (Infrastructure as a service – servers, networks, virtual machines),
- *SaaS* (Software as a service – virtual desktops, Email, CRM),
- *PaaS* (Platform as a service – databases, development tools) and
- *UCaaS* (Unified communication as a service – instant messaging, audio, web & video conferencing, desktop sharing).

The lines between different service models are not always clearly defined as there is no universally accepted distinction between lower-level and higher-level infrastructure.

According to reference [4] cloud model is composed of four deployment models:

- *Private cloud* is used by an organization for its completely internal use. So, it is built exclusively for an individual enterprise. Private cloud may be owned, managed, and operated by the organization, a third party, or some combination of them, and it may exist on or off premises.

- *Community cloud* is provisioned for use by a specific community. It may be owned, managed, and operated by one or more organizations, a third party, or some combination of them. It exists on the premises of the cloud provider.
- *Public cloud* is made available to the general public. Customers benefit from economies of scale because infrastructure costs are spread across all users.
- *Hybrid cloud* is composed of two or more distinct cloud infrastructures (public, community, or private).

When the cloud's service is being sold, that is *utility* or *on-demand computing*.

So, cloud computing is the sum of service model (SaaS, PaaS, IaaS, or UCaaS), deployment model (private, public, community, or hybrid) and utility computing.

II. Advantages of Cloud Services

Broad application of cloud technology in our everyday life, especially in terms of business, is often related to instant access to the tools used by the millions for affordable service fees.

Developing great IT solutions takes extensive knowledge, financing, risk taking and time. It is not an easy task. However, everyone wants to consume IT without constructing it – and finally, with cloud services, it is possible!

Businesses that use cloud implementations, no longer need to invest large capital in hardware or human resources to build their services. They can even choose among different solutions from several certified cloud service developers. Companies of all shapes and sizes are rapidly adopting cloud technology, since it is cost efficient and the usage of cloud services presents minimal risk for business. Cloud services are usually developed in a way that they can be applicable in different companies regardless of their size, shape or industry. Therefore, development costs are distributed over many users, positively influencing the pricing policy. So, prices of cloud services are relatively low.

Another benefit of cloud services is device and location independence. Modern cloud systems are constructed of sophisticated server geo-clusters. So, a specific piece of information is stored on several cluster nodes worldwide and on-demand, it is transmitted to the user as soon as possible. This system offers greater level of service comparing to the traditional system architecture. Moreover, it is also pretty common that cloud services offer application programming interface (API), allowing users to expand the functionality of the service and tailor it to their needs. Most of solutions are Web-based and even older computers can be used to access cloud services.

Cloud computing facilitates easier collaboration, since distributed teams or combinations of mobile workers and in-office staff can all work together on shared information stored centrally in the cloud. From the employee point of view, cloud's greatest beneficiaries may be remote workers, as Web-based applications empower them to be truly mobile and still accomplish their work.

Key characteristics of cloud computing mentioned above are just a few of many advantages cloud computing offers.

III. Disadvantages of Cloud Services

Along with pretty great advantages, cloud services have disadvantages, as well.

The first shortcoming of cloud computing is the fact that an Internet connection is necessary to take full advantage of a cloud service. Therefore, when users are offline, or if there are some disruptions with the cloud service the data may not be accessible at all. So, if the service is disrupted or stopped, it can result in additional costs.

However, there are applications, such as Evernote (note-taking application), that offer a good in-between or hybrid solution, with both desktop or phone software, and an online service that synchronizes data to the cloud. So, there are applications (e.g. Gmail) that offer some basic offline functionality, as well.

Far more serious and not easily solvable issue with cloud computing is security – both from providers' and consumers' point of view.

The location data processes and storage determinates the security in terms of data safekeeping. Organizations have a full control over data only when the data is stored on their own physical computers and servers. On the other hand, when organizations have service and data in the cloud, then they are not fully aware of where their processes are running or where their data is stored, as they have no control over it. They have to trust cloud service providers to respect their privacy and follow the regulations. So, individuals and/or companies may not be comfortable storing their information, especially proprietary or sensitive data, on someone else's server on the Internet.

End users have to agree to the privacy policies before they start using cloud services – it is "take it or leave it" contract. So, if it is not encrypted, cloud services providers have access to all the data and they could accidentally or deliberately disclose it to third parties or use it for unauthorized purposes. Of course, this raises privacy and confidentiality concerns.

The social networks' privacy issue is one of the biggest, as some applications are explicitly centered on "cyberstalking".

For instance, when Facebook recently announced changes to its default privacy settings regarding user's content sharing with friends, it was also revealed that Facebook can access smartphone's microphone to capture and analyze songs, TV shows and other content users listen to. This sounds disturbing.

Google suffered a court ruling in Europe last year, forcing it to allow petitioners to be "forgotten" by its search engine.

Yahoo recently changed its policy, so that it can deny users the ability to request that their behavior is not tracked, and called it an improvement in "personalized experience".

It is crystal clear that the main goal of cloud service providers is profitability which depends on users' shared data and on users remaining unaware of the extent to which their privacy is exploited.

Most of cloud service providers' profit comes from businesses, that want to acquire as much data as possible about their customers, because it enables them to not only better recognize customers' needs, but to anticipate them, ideally before they have been consciously acknowledged by customers themselves.

These issues of trust, confidentiality and reliability are critical for cloud services to resolve before everyone truly moves to the cloud. Certain security assurance is provided through service level agreements (SLA) or other standardized agreements. However, cloud services need way more reliable assurances of encryption technologies, privacy protection and solutions for offline accessibility.

There are a couple of suggested solutions to privacy issues in cloud computing. These suggestions include policy and legislation, as well as end users' choice for how data is stored [5]. The cloud service providers need to establish clear and relevant policies that describe how the data of each cloud user will be accessed and used. Cloud service users should be able to encrypt their data when it is processed or stored within the cloud, as encryption is one of the solutions for preventing unauthorized data access [3].

IV. CLOUD APPLICATIONS

According to reference [1], public services linked with cloud computing grew from $9 billion to $40 billion over the last five years. This convergence is aggravated by the increased usage of e-Commerce, social media, smart phones and mobile commerce.

Reference [6] has divided all cloud computing business models into eight types: (1) service provider and service orientation, (2) support and services contracts, (3) in-house private clouds, (4) all-in-one enterprise cloud, (5) one-stop resources and services, (6) government funding, (7) venture capitals, and (8) entertainment and social networking.

Today, companies can find almost all desired applications in the cloud. Following services are just some of many useful tools that can speed up daily work and lower operational costs, especially in small and medium enterprises (SMEs).

Solutions like Openstack offer private cloud building tools, so companies can create their own clouds. Such services often have strong online community, so users can get help and support quite easily.

Applications such as Gmail or Hotmail refer to software solutions provided over the Internet, or SaaS. They support communication within and outside the company. Other cloud computing services might include server virtualization and data storage, or IaaS, such application is Amazon Web Services, offering wide variety of services. If a cloud service includes software and product development tools then it is PaaS, e.g. Google Apps.

Mozy, Dropbox and Goggle Drive are online backup and synchronization services that continuously back up the files on a computer or server. They give small businesses the space to back up all their computer and server files for a very reasonable price, so owners of small or medium enterprises know their files are retrievable, even during a data loss crisis.

Finance cloud applications, like Outright help small businesses with their business accounting. They allow enterprises to track income, expenses, tax obligations, and profits or losses, in real time. This type of service is ideal for small companies or entrepreneurs that are looking to get a hold of their finances, as it provides access to finance data whilst on the move.

Here are other well-known cloud services that don't need much introduction:

- Salesforce – it supports most of company's marketing and sales activities and it can be easily expanded,
- Google Docs and Google+ – they support data storing, sharing and communication,
- Facebook, Twitter, Pinterest and other social networks – they support networking, communication, sharing, content marketing, etc., and
- Skype – it supports communication through instant messaging, video conferencing, as well as data sharing.

In spite of all the benefits these services offer, the integration of all different cloud services into the organization's core business software might not be possible or it might cost a lot of money, so organizations should choose their cloud services carefully.

V. APPLICATION OF CLOUD SERVICES IN MARKETING

In today's knowledge economy, the marketing landscape for businesses has changed dramatically especially thanks to the cloud services. Companies that hope to effectively: spread the word about their brands and products, attract customers, engage with them and ultimately retain them, need to adapt to mentioned market changes as soon as possible. Those that fail to do so will fall behind.

There are some marketing concepts that are impossible without cloud computing, and before cloud services, they existed only as mere ideas.

A. *Marketing automation and lead tracking*

Marketing automation is a process that enables marketers to nurture and quantify leads.

It includes: lead generation, segmentation, lead nurturing and lead scoring, relationship marketing, cross-sell and up-sell, customer retention, and marketing return on investment (ROI) measurement.

First and foremost, marketing automation software helps organizations discover more about their leads and customers. Organizations can track and expand their leads' profile data, including demographic and firmographic information that can be used to better segment and target the marketplace. Profile data can even include attitudinal information obtained from different surveys and form questions that provide powerful insights into leads' intentions and authority. By tracking what was previously invisible – the interactions leads have with organization's content – companies gain a much richer overview of the audience and how content meets their needs.

Armed with a greater understanding of their leads, organizations are in a position to expand their market reach. With automated outbound messages, whether in the form of newsletters, messages triggered by site registrations or complex automated nurture campaigns, they can reach more prospects in easier and more effective manner.

More touch points with leads mean more interactions and deeper understanding of leads, so organizations can prime them for engagement. The engagement starts with understanding the buyer's needs and the whole process buyer goes from awareness through research to a purchase decision. So, with marketing automation tools each customer step is carefully recorded by the IT infrastructure, and then compared to existing data, so next step can be predicted, often more accurately than sales personnel does it. Organizations can now create content to better meet their leads' information needs at every stage of their purchase decision process, and track their level of engagement.

Marketers' ultimate goal is to convert visitors to leads, leads to sales opportunities and finally, profitable customers. Marketing automation software enables organizations to convert anonymous visitors into qualified prospects using features such as reverse IP look-up and real-time website personalization with collaboration filtering. Organizations track and score these leads and convert them into sales opportunities.

Marketing automation is all about measuring. When using marketing automation service for sending out an e-mail (e.g. newsletter), firstly, companies can send it to more e-mail addresses, and they can also see how many e-mail receivers have actually opened the e-mail in question and/or specific (offer) link within the e-mail. They can also identify those receivers and keep records of them that can be used for personalization of future marketing activities. Companies can also measure the conversion of leads into potential customers, and finally buyers, which is their ultimate goal, of course.

Furthermore, before executing an e-mail campaign, several different versions of the e-mail can be prepared and tested, varying in title, content, day and time of sending. So, different versions of e-mail are sent out as a pilot testing, feedback is measured, analyzed and then the most successful scenario is chosen and used for the final e-mail campaign.

Services like MailChimp and Mandrill offer detailed analytics and control over sent e-mails and with their new mobile friendly templates they can reach almost everyone.

Well-known marketing automation cloud services with very similar sets of solutions offer wide application possibilities and they support many marketing techniques. Here they are:

- Oracle Eloqua – it offers content creation templates for e-mails, landing pages, social media marketing, lead segmentation, lead scoring/analysis, and personalization of marketing activities,
- Marketo – it also supports generating demand, building relationships with prospects, driving sales, measuring and optimizing,
- Google Analytics – it offers all web analytics, reporting and it measures conversions and sales,
- Adobe Marketing Cloud – it offers analytics, social, media optimization, targeting, web experience management, and cross-channel campaign management.

B. *Inbound marketing*

Marketing automation can be both outbound (e.g. e-mail marketing) and inbound (e.g. social media marketing).

Problems with some outbound marketing techniques include: difficulty in tracking return on investment (for TV or print ads), increasing blocking techniques ("do not call" list in phone marketing, spam filters in e-mail marketing, etc.) and high cost – low yield as a result.

The greatest advantage of inbound marketing lies in its extensive possibility of tracking and measuring. As mentioned before, the tracking of what was before social networking invisible, helped companies get a much larger picture of all their prospects and potential customers, and considerably richer view of their customers' needs, wants and interests.

Social networks tend to make users more open. Spending significant time online, using social networks, users become much invested in social media and they feel

connected through them with their friends. They follow their online friends' content and advices about products and services, which then consequently raises their level of trust in those products. Social network marketing campaigns are becoming more and more efficient, because it became easy to personalize those campaigns, lower marketing costs and improve conversions, all as a result of insights from considerable user data analysis.

Inbound marketing, in the simplest words, consists of creating content and posting it on the Internet. Inbound marketing strategy focuses on attracting customers, or leads with original content, thereby having potential customers come to the company themselves, rather than marketers vying for their attention. The beauty of inbound marketing lies in this very element that content readers are interested in the content and they voluntarily look for it, so they immediately become potential customers and even future promoters.

Inbound marketing is one of the hottest marketing techniques in business today. Be that as it may, managing outstanding marketing campaigns requires some human and technical resources and knowledge.

Quality content is not easily created and it takes much time and energy. Moreover, content marketing requires contemporary information sharing, active educational approach, significant general knowledge about product and related issues, and to top all up, excellent writing skills. All these competences are equally important, if marketers want users to perceive the content as reliable and significant, and to relate it to the product or company and get involved with the whole idea, so that they will share it with their friends and hence, become promoters the brand or product.

Inbound marketing content can be in form of: blog and blogging, forum activity, comment marketing, video and/or audio materials (webinars, online video, tutorials, etc.), podcasting, document or links sharing, questions and answers sites, social media marketing, self-published books, etc. With social networks, sharing such content is easy, as social networks facilitate user interactions.

The impact of the published content is usually measured in user interactions. Social networks offer different ways of sharing content, choosing right audience, choosing language, scheduling date and time of posts, reposting and post-editing, adding links, photos and videos, and performing descriptive statistics on users, posts, interactions, etc. As end users also have considerable set of tools to make their social network experience more agreeable, they can choose how they want to be served with the content. They can choose their interests and ways to get notified, as well as frequency and importance of the certain notifications and information, so basically, content can be personalized and with appropriate analytics and marketing skills, users can be served with targeted content and advertisements.

YouTube, Twitter, Pinterest and Facebook are all examples of cloud hosted services that have enabled the rise of inbound marketing.

Successful inbound marketing softwares simplify organizations' marketing efforts by automating content creation and distribution, lead capture and management, and measuring of ROI.

C. The art of engineering which makes it all work seamlessly

In general, marketing oriented cloud services address users that are potential customers and they promote users' engagement in company's content.

As mentioned, the most commonly used cloud services are Facebook, Youtube, and Twitter. They all allow users to share, comment and like the content. Sophisticated algorithms allow indexation of graphical, audio and video content, then they process the data in specific cloud services to extract all kind of metadata, from simple keywords, to human faces (Facebook acquired DeepMind, a small company that developed a software, which can recognize human faces with higher accuracy then a human being) and according to the results, algorithms can identify and "calculate" users' interests, personality and their mood [2].

Sophisticated algorithms can also perform predictions for larger group of people, and for the society as a whole [2]. So, well calibrated sophisticated prediction algorithms can, for example, predict society mood and satisfaction, and with high accuracy they can predict major world events such as strikes and protest, crises, even wars.

To increase the volume of analytics, social networks (e.g. Facebook), create widgets such as "Like", "Share" or "Comment" buttons which can then be integrated into external sites, as well. So, beside richer user experience and smooth content sharing mechanisms, these "buttons" facilitate monitoring of the user's activities all over the Internet. A user can be identified on the Internet in several ways. Most common way is through login, during which a cookie is saved on user's device, so each and every time specific user goes to pages with Facebook wigets, no matter from which device, the information about user's activity is gathered and saved. Furthermore, along with monitoring users' activity on the site, cookies also get information about which external pages are visited during and after Facebook sessions. Based on that, sophisticated algorithms can calculate user behavioral patterns.

With all the information gathered, marketers can thoroughly profile users, and according to all relevant information their experience can be nicely personalized. Personalization leads to one-to-one marketing or targeted marketing which is an extreme form of database marketing.

Marketing used to be based on product differentiation. Namely, marketers tried to differentiate their products from competing ones. Personalization has changed these marketing principles, since it tries to make a unique product offering for each customer individually. Consequently, users are served with the content, which is exactly what they want to see, hear or buy.

As these days most of the people from developed countries have smartphones – it is even simpler to perform personalization. Namely, smartphones send their location information when sending audio or video data from the phone to the cloud services, and new marketing strategies are based on proximity services, so users receive push notifications according to their current location. Smartphones represent a huge potential and great advantage for marketers.

With software platforms like HP Autonomy's HAVEn almost all the information can be extracted and categorized, forming unimaginable rich context for a specific user. As these platforms analyze and find meaning in "big data", this means that marketers can know more about users than users are aware of, which gives them a huge advantage in sales processes.

Thanks to "big data" and algorithms, it has become possible to anticipate individual's needs and tailor online advertisements and content according to a specific user. Additionally, services that help users personalize their devices and make it easier to automate tasks across applications are adding even more layers of functionality to mobile gadgets. In the future, these services will embrace emerging technologies such as augmented reality (AR) and then, the options for further development and application will be endless. For example, with AR all the data will be streamed directly from the cloud, according to user location and presented on next generation gadgets.

VI. Conclusion

The evolution of cloud computing over the past few years is potentially one of the major advances in computing.

Before cloud services, marketers used concept of four Ps (product, price, place and promotion), outbound marketing (TV and outdoor ads, direct marketing, etc.), segmentation of customers and differentiation of the products (figure 1) but now, they use new cloud based marketing activities that are build on completely different marketing philosophy.

Old marketing concepts were difficult to track and evaluate. Segmentation was long-lasting and never ending process that took place hand in hand with differentiation of the product, but was never flexible enough or quick enough to follow all market changes. Furthermore, it was quite demanding to calculate marketing return on investment (ROI).

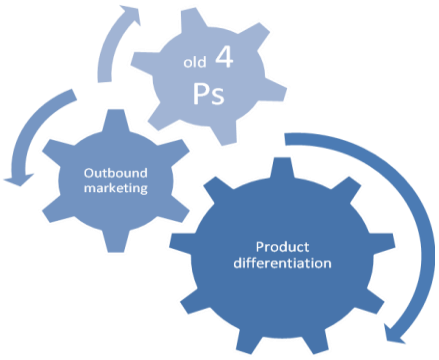

Figure 1. Pre-cloud marketing

These new concepts are less time and money consuming and more effective than older ones.

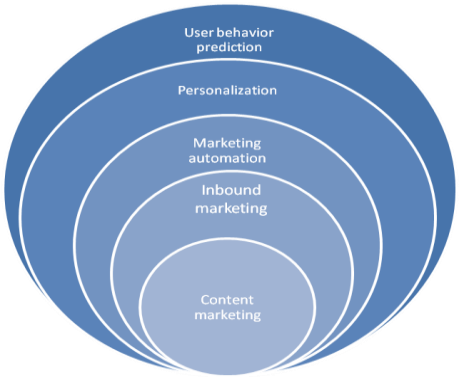

Figure 2. Post-cloud marketing

Cloud based content marketing, inbound marketing and marketing automation tools help organizations find out more about their leads and customers. They also provide great deal of functionality and measurement, so personalization and even user behavior prediction are possible (figure 2).

Cloud based marketing tools made it possible for organizations to bring customers on their sites, monitor their behavior, compare the results in real time and adjust marketing strategies accordingly. Furthermore, it is possible to create several different strategies and learn from a pilot test which one is the most effective. So, through better lead and customer analysis and personalization help organizations offer such products and services that are exactly what customers want. So, marketing principles have changed drastically. Marketers have adopted these new concepts and they exploit them in their everyday work. The philosophy has changed.

Therefore, we confirm our hypothesis: "Marketing landscape has changed since cloud services were invented."

Emerging technologies will blur the boundary between digital and real, and merge the two worlds together. Our every move, interaction and behavior will be recorded and processed in the cloud, and then used to augment our world.

For this reason, if cloud computing is to achieve its potential, everyone needs to research and address security and personal privacy issues with more care. It is much needed that various raised questions (both from the perspective of the providers and the consumers of the technology) are resolved, sooner rather than later.

Cloud services remain not just one of the most interesting contemporary computing issues, but one of the most challenging issues in general.

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