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IMPACT OF MOBILE APPLICATION ON SMARTPHONES FOR EUROPEAN EMPLOYEES

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Abstract: *Relational Marketing is now more possible than ever, due the fact that consumer devices and smart devices had penetrating the consumer markets. One can imagine the effect of this kind of shift at the consumer level. The challenge from the IT point of view was in the last period, to make computing simple, again. Let's take the example of mobile devices, first the mobile devices had a "normal" size, then they had to be small and smaller, and now it seems that the smartphone have to be with some functionality near to a laptop. Do we use them? Do these functionalities use us, or our surroundings? We will consider the impact of mobile devices for the employees, regarding to the concept BYOD – Bring Your Own Device.*

Key words: *Internet penetration, BYOD Bring Your Own Device, EU internet statistics, CRM Marketing, Smart devices, Relational Marketing, Big Data.*

1. Introduction

Relational Marketing takes shape to the extent that users have increasingly more "tools and" devices "able to retransmit an "emotional" state, transcribed in the data, to the manufacturer. If for the refrigerator or the television these data are transmitted only in certain high tech models, and in case of malfunctions, in case of a web browser, the data is transmitted via cookies every time you access a page of net.

There are increasingly more objects used in households about which the user knows almost nothing, in terms of technical-functional. An example in this sense is a photovoltaic installation that is connected to an inverter, the inverter turns DC current into alternative to parameters that the user, the end customer, cannot interpret or adjust. The owner of a plantation photovoltaic cannot verify whether or not the inverter is performing optimally. The inverter can display some data on a display, which are not necessarily accessible or relevant to a "normal" user. So the optimal solution found in the present situation is that the inverters in photovoltaic plantation to "communicate" directly with producers to interpret the data and maintenance.

By extrapolation, the domestic refrigerator will communicate to the supermarket a purchase order, following a paper of necessity approved through a workflow, depending on the food consumed in a given period of time. Water cooler - probably will notify the provider that the water level must be replenished,

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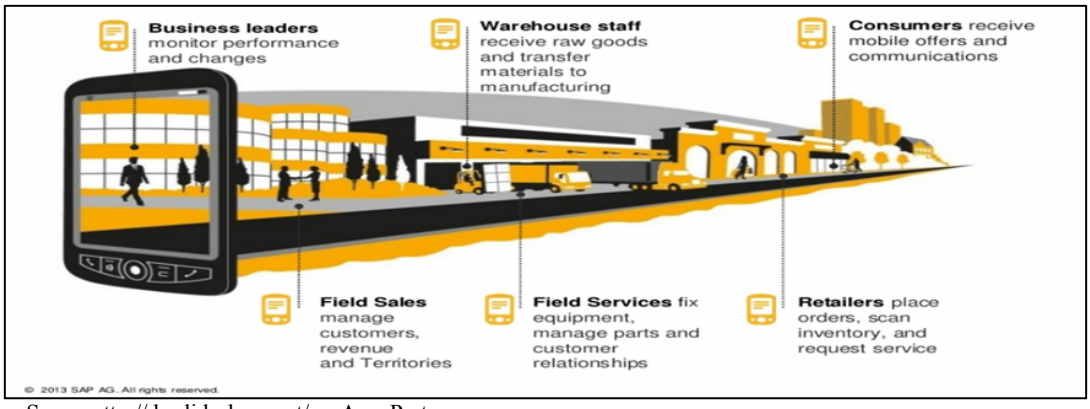
the coffee machine in the kitchen of an open office or in the hall of an institution, will communicate that it must, and the vehicle will communicate oil characteristics necessary and sufficient for the engine to run optimally and if necessary the vehicle will be automatically scheduled for service. Nothing new so far. Let's see what the trend is and what data brings the market.

From the point of view of the supplier, it will be interest to retransmit automatically those automatic commands of preventive maintenance for service, papers of necessity and purchase orders. The provider will still have to its extension such customer orders, a production order for the manufacturer and the supplier, which will not produce stock, but based on an order of sale to service.

The support of this thinking is reflected currently in some applications in the field of "mobile" which are now at the beginning.

Integrating complex systems as SAP (Software Applications Products) ERP now implemented R3 configuration in many companies, plus the latest web based currently running, with a range of mobile applications, seems at first. It is interesting to watch: what exactly and how standardized will develop the field of mobile applications SAP, how much of the data that are run today standard for ERP software will be levied by mobile applications. How stable are these configurations and how they evolve.

A roadmap for relating between final consumer and the chain of production and distribution is presented in a meaningful roadmap below. It would be interesting to see which the relationship between mobile applications is and employees of companies, through conceptual BYOD - Bring Your Own Device (use Your Device).



Source: ttp://de.slideshare.net/sapAppsPartner

Fig. 1. *Roadmap for mobile applications in the field of management software SAP. Description of added value.*

2. Scientific grounding (Background)

Do companies use at European level mobile business applications through employee device? The theme is important of the relationship marketing perspective. We are talking about an existing model, already implemented by the SAP AG. Anyone is free to design mobile application software for the SAP, to publish as a partner and sell it, following the flow below.

Source: https://www.sapmobileappspartnercenter.com/

Fig. 2. *Portal dedicated to SAP partners to publish mobile applications.*

SAP Mobile Apps Partner Program is an end-to-end initiative that supports the development and monetization of mobile applications from SAP partners through SAP Store. SAP has launched Mobile Apps Partner Program to provide an ecosystem of partners who build mobile apps. It includes a complete set of tools with a service end to end. What success will have in the European market for proper mobile business applications in the coming years?

3. Declaring the research purpose (Statement of purpose)

The application in public and in the private sector especially in the applications business. To check this hypothesis we will study statistics in the European Union on internet environment and Smart Devices - Smart Applications. We investigate whether there are statistically bonds between the dynamics of technology for mobile applications and the penetration degree of broadband and 3G - 4G.

Maybe it's an idea to make the following assumptions:

H1 = there are correlated links - European market of the business employees using mobile solutions.

H0 = no links correlated - European market does not allow a trend between Internet used by employees and the mobile solutions.

The evolution of technology is correlated with the evolution of certain mobile applications. Technology in the field of consumer goods competed in the dynamics of software - software and features. It becomes interesting for the future using NFC and the QR marketing data, but also applications and equipment. We considered a simple regression of 15 variables. Multiple regression for the 15 variables, determines which configuration must be "correct" for SAP applications Mobile. Data were collected from: http://gs.statcounter.com/.

4. The research method

Studied statistics provided by Eurostat. Correlation between different variables will suggest, if necessary, the connection between mobile applications and the business employees of a company.

Statistical research at European level indicators used to determine the degree to which mobile application development hypothesis is applicable or not. The simplest networking between employees of companies and the mobile applications on smartphones are: reading emails and surfing the internet. They can grow in complexity so that an employee completely substitutes the desktop workstation with a mobile application.

5. Results

Portable devices are divided into two groups: portable computers (notebooks, laptops, and tablets) and other portable devices such as smartphones and personal digital assistants (PDA). The ratio remains approximately equally distributed: 40%

portable computer and other portable devices 38%. As the main activity in the use of digital devices the email consultation can be referential 48% in 2012.

In the use of portable device have been identified some limitations: mobile application security, the need for a VPN (Virtual Private Network) to access information within the company. Limited coverage and connectivity island for some operators, still has high enough costs for current use. Below are the main obstacles to accessing corporate intranets by their employees.

5.1. Statistical key data

Even if 71% of mobile phone owners have a smartphone in UK sites, only 31% of them used mobile applications, according to a survey MobiLens. Only 15.2% of those who own a smartphone use apps, but at least 27% of all net owners use a browser.

Further, some data on the device "sympathizers" by the market of private persons, who later would use these devices as BYOD in companies and corporations.

It can be concluded that yet the coverage trend with Broadband Internet is not followed by employees of companies with equipment connected to the mobile Internet devices. The correlation between the two quantities is not very strong. The preferred graphics resolution is Full HD, Android operating system, although there are security problems and hardware configuration proposed by Samsung. Given these boundaries imposed by personal choices to consider, companies will set the rules of connection between employees and company's intranet.

According to a ComScore study in Review (February 2011) Japanese consumers are still more advanced in mobile application use, with 55.4% of mobile web access, and 57.1% for mobile email but American and European consumers are about to quickly recover. Even in developed countries (where the penetration of smartphones is higher) consumers are using more the Internet mobile than mobile applications. Only 6% of mobile internet users of USA and only 7% of mobile internet consumers in the EU have admitted they do not use a web browser. While 8% of mobile internet consumers admitted they do not use mobile applications. Further we study a correlation between the percentages of people who have a portable computer that can connect to the Internet, in relation to all companies without the financial sector, starting from 10 employees as measurement unit: mobile internet connection.

As expected, the correlation between the two quantities is negative. Employees use in negative correlation, or a laptop, or a substitute product, a tablet or a smartphone. This however requires certain compatibility between the application used from your laptop or notebook with the use of the PDA or smartphone. For now we assume the main applications: web browser and email.

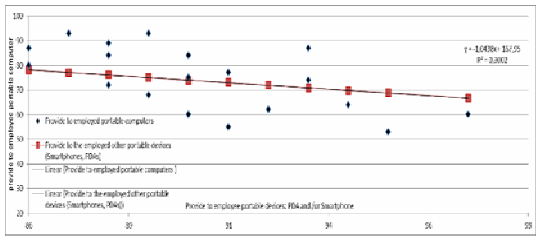


Fig. 3. *Negative correlation between the use of desktop and mobile devices. These are technological substitutes, as one would expect*

Another interesting correlation is between the level of access to the Internet and occupied workforce possessing a mobile device with internet broadband connection.

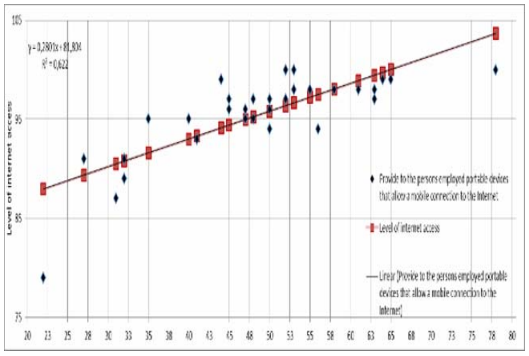


Fig. 4. *Correlation between access to broadband internet and employed person using mobile devices PDA or Tablets.*

A following correlation is made between a mobile Internet connection and the usage by an employee of a search engine.

It seems that the mobile net utility is justified by the possibility of quick access to information on search engines.

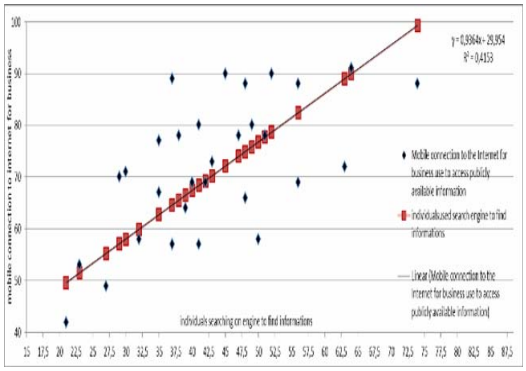


Fig. 5. *Correlation between level of internet access and employed persons using a search engine.*

Next correlation is made between mobile connection to the Internet and using mobile internet by an employee for posting messages and comments on forums. This activity is equivalent to the SMS and hence the correlation is very weak. It can be concluded that for this type of activity, employees use normal desktop or laptop applications.

Next correlation is made between mobile connection to the Internet and using mobile internet by an employee to call. And this time we have a very weak correlation.

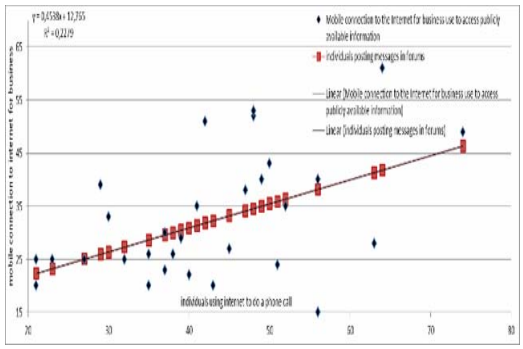


Fig. 6. *Correlation between access to broadband internet and employed person using mobile devices to do a phone call.*

The analysis of variance divides the sum of squares in components. Fischer test calculates the variant between groups and variation within the group. The sum of squares is composed of residual error and regression. Fischer test has a high positive value, so that the hypothesis H1 - is checked.

Interpretation of regression coefficients table

Regression has the following three components: Table statistics, ANOVA table and regression coefficients. R in this article, adjusted R is used for a single variable "x" and the number of observed variables is 25. $R^2 = 0.999$ means that 99.9% of the variation in "y" is explained by the repressors x2 and x3.

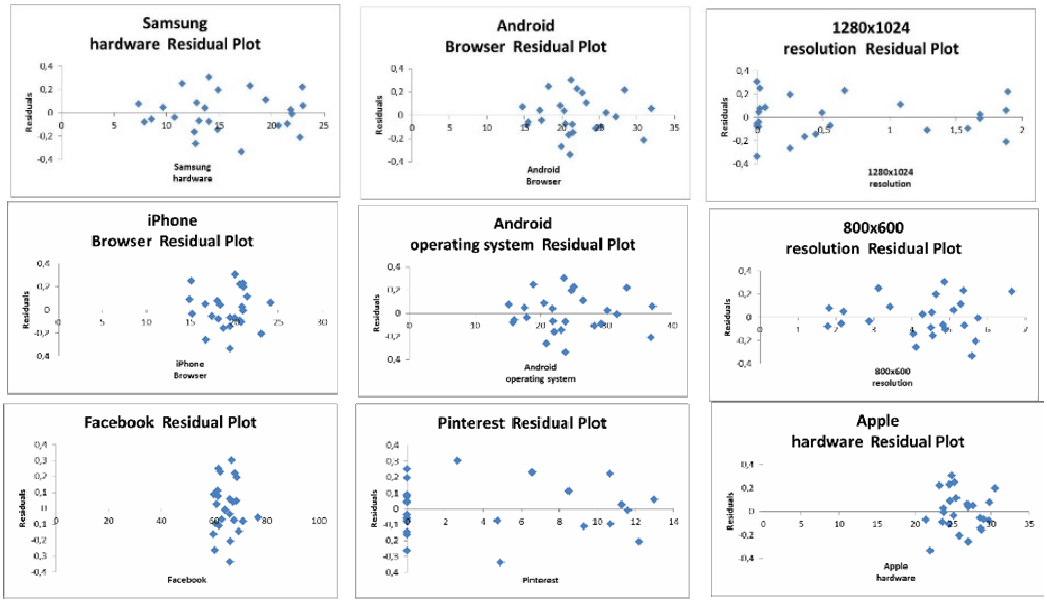


Fig. 7. *Statistical centralization of the results*

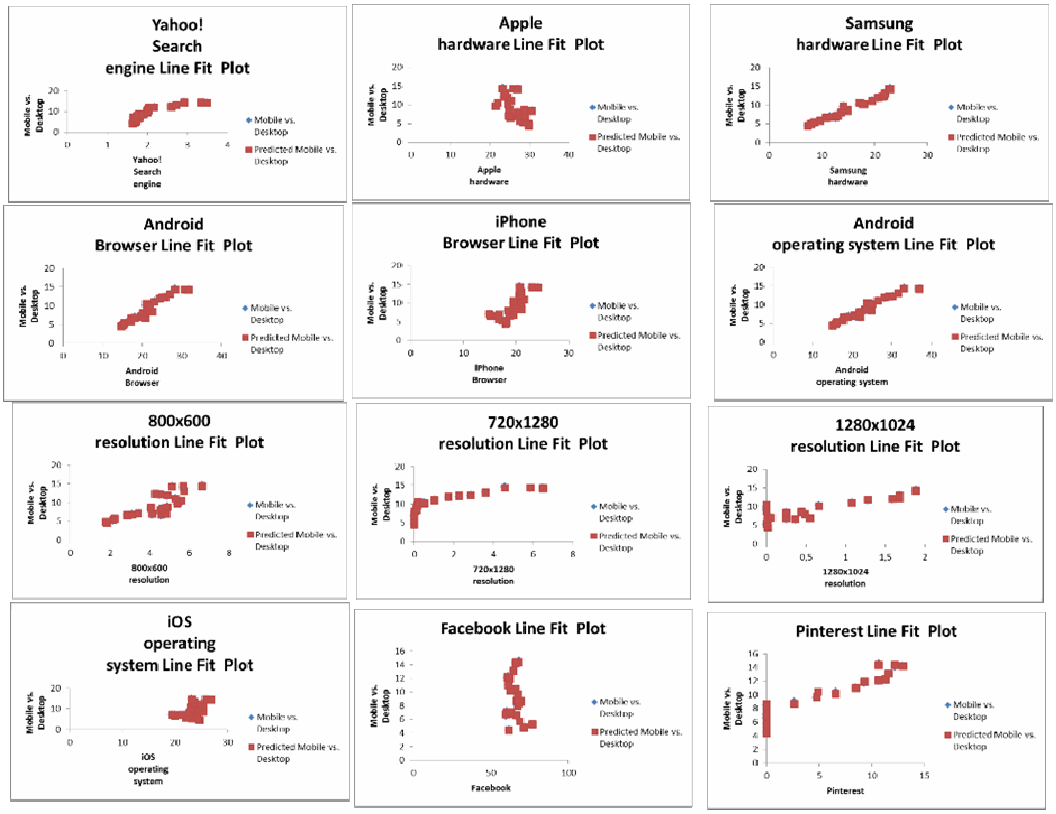


Fig. 8. *Centralization of the results: correlations over the unit to the operating system, resolution and web based applications*

6. Conclusions

We can conclude that for the moment, mobile application field has the amplitude desired by manufacturers but is growing. BYOD - bring your own device - Put the manufacturers of mobile applications for employees in relation to trends preferred by consumers. The domain is rather a "fancy" product that makes use of only limited public and revolutionary, yet not implemented for employees, although there are some positive correlations. There are several issues that need to be clarified: from security, signal coverage 3G - 4G, battery life, structure and complexity of mobile application, platform, operating system, bi-directionality and message synchronization with the firm ERP, domestic policy security, etc. Although there are island groups that use integrated business applications with production and procurement systems of the company, the domain is still in its infancy, but growing. The company will also mould that the policy in the introduction of one or another application, especially according to existing device to its employees, to implement a web based application that fits the existing capacity of the devices.

Although there are island groups using the firm's EPR integrated business applications, they are still at the beginning without a scale of proportions.

We returned to the initial hypothesis that we take into account the SAP mobile application and we discover that SAP AG provides several applications for peripheral processes from and in ERP.

An interesting example: in the SAP HR there are some applications that decongest the desktop or laptop user, also on the CRM Marketing, but not yet at the desired level in relational marketing.

From what can be seen from the existing application, these are rather a "shrink" variant of the application from your laptop or desktop, but not in the sense of minimizing user activity.

Framework for mobile applications:

The mobile application is in competition with notebook and ultrabook laptops.

Applications currently used on your laptop or notebook not scalable by their simple adjustment to tablets and smartphones. It cannot be compared to the purchase order flow on a laptop with a smartphone flow.

Search engines are adapted for browsing smartphone or PDA, display in another way the content. The technique used is SEO (Search engine optimization). The addressing mode of desktop information versus mobile is different. Search not after the "first time optimum" but after a "second best optimum" or information "on the move".

Mobile applications will be built to be customized depending on the smartphone model used. The smartphone platform is very heterogeneous.

For now using smartphones for business specific applications does not substitute the variant.

The modules of operation of the application do not involve the smartphone's ability, but it carries on operations in backend, on a company's server and the smartphone is used only to view the results - according to the cloud philosophy.

Depending on the platform used, it must be taken into account when customizing and using existing transactional data.

For mobile applications in the SAP category to access ERP – is required first a unitary platform, regardless of the smartphone's operating system, data processing in the utmost should be done on a domain, a virtual machine.

Acknowledgments

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