FACTORS AND REASONS THAT CAN MAKE USERS TO INCREASE THE USAGE OF SMARTPHONE SERVICES

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Abstract: *The purpose of this paper is to identify and analyze factors that influence the users of the telecommunications smartphone services for increasing the usage of such services. The first approach adopted was to study the literature review related to the technology acceptance models and the second, to test the hypotheses by using SPSS regression analysis. The research was performed in three multinational companies operating in Romania, collecting data from 307 respondents via a web questionnaire survey between 11th – 24th of February 2013. Since many companies have been used in their business the new technology, it is important to link the users' motivations with the specific of telecommunications services, in order to improve, in the end, the job performance.*
The findings suggests that the users of smartphone services are very much influenced by practical reasons of getting access to the smartphone services, so that the telecommunications operators should consider the factors in the model to promote and increase the usage.
In this paper the conclusions related to the reasons and direction that can make users to increase the usage of smartphone services are coming both, from multiple factor regression analysis, as well as from the analysis of the sample research profile.

Keywords: *high technology, smartphone services, technology acceptance model, "national globalization", remote management.*

JEL classification: *M31*

1. Generally Introduction

"Technological innovation is one of the causes of economic growth. Inventions drawn from new technologies and their rapid commercialization are bringing about a material richness in the lives of people" (Ishikawa, A., Tsujimoto, A., 2006:23). The progresses made in technology areas brought major changes in the last century at the level of producers, consumers and markets. The new wave of digital technology enables people to express themselves and collaborate regardless of different geographical areas they are living in. What they need to know, under these circumstances, is how to benefit efficiently by the technological advantages that are all around them becoming more common they thought in the early days. Many researchers were concerned about the reasons people accept and adopt new technologies and, in this respect, developed different models out of what the most popular remained the technology acceptance model.

The Technology Acceptance Model, proposed by Fred Davis in 1985 in his doctoral thesis at MIT Sloan School of Management, Cambridge, Massachusetts, USA is one of the most popular and used theory benefiting from most attention that explains the acceptance reasons of new technologies by users (Bagozzi, R.P., 2007: 22). In his initial theory Davis suggested that the use of a technological and information system is a response and could be explained and anticipated depending on the level of users' motivation which, at its turn, is directly influenced by external stimuli consisting of characteristics, parameters and technical data of that system (Figure 1) (Davis, F. D., 1993:487).

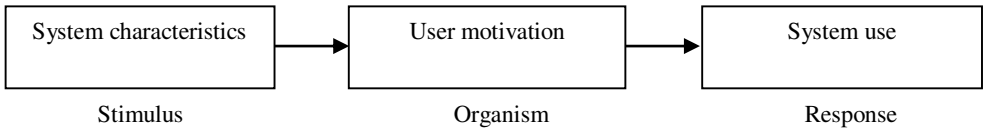

Figure 1: Conceptual model of technology acceptance
Source: Davis, 1985

Based on the importance of Davis theory, this was developed during the years by different researchers getting a final version in 1996 by Venkatesh and Davis (Figure 2) (Davis, F., Venkatesh, V.,1996:45).

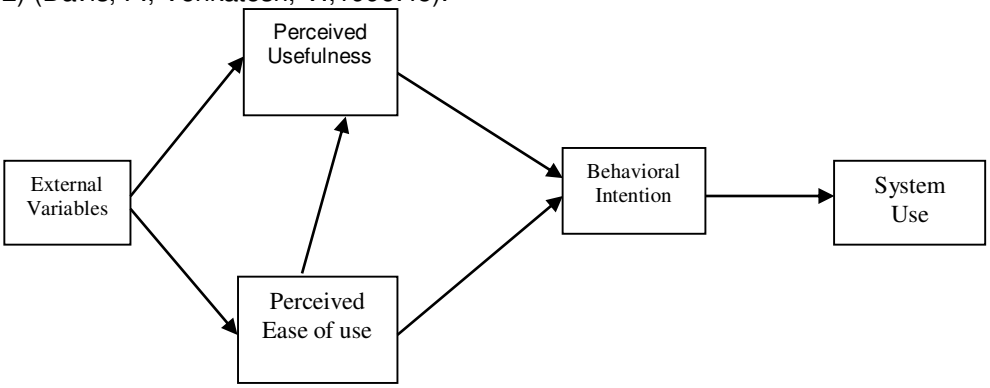

Figure 2: The final version of technology acceptance model
Source: Venkatesh and Davis, 1996

The telecommunications sector is, by definition, one the most exposed to the technological progress and innovation due to the following aspects: imply high technology devices, the means to transform the capabilities of equipments into services are related to a reliable network implying high technology too and the terminology and language is close to IT and technical domain again. One of the very well known theory that describes the influence of innovations on the users' behavior and decision to accept high technology is the Diffusion of innovations developed by E. Rogers starting with 1962. The diffusion of innovation refers to the spread of an abstract idea, concept, technical information and actual practices within a social system using communication and influencing (Rogers, E.M., 2003). The decision-

making process would be influenced by the characteristics of innovations that determine an individual's behavior to adopt or reject an innovation.
The innovation characteristics are highly important in determining the diffusion of that innovation through the members of a social system increasing or not the adoption rate. The spread of a new idea is basically influenced by four main elements: the innovation itself, communication channels, time and a social system. During this communication flow, the idea is rarely evaluated from a scientific standpoint; rather subjective perceptions of the innovation influence diffusion and then the adoption decision (Wejnert, B., 2002:326).

2. The research model and hypotheses development

As a result of studying different theories related to high technology acceptance, the focus in designing proposed research model considered as the background the Technology Acceptance Model (TAM) and it was developed by attaching the variables coming from the specifics of the smartphone services sector within the multinational companies context. What was considered as external variables in the final version of TAM get shape by specifying them in the proposed research model (Figure 3), on the one side, using the attributes of the innovation and on the other side, using the variables coming from the researchers' experience and specialization.
Taking into account the fast progress of technology, the new products and characteristics developed within the telecommunications industry, the others becoming obsolete and useless, the review of the literature and the experience in the field of more than seven years, the smartphone would be described as a mobile phone equipped with an operating system such as: Android (Google), IOS (Apple), Windows Phone (Microsoft), Blackberry OS (RIM) etc. on which can be run multiple applications capable to perform different actions: internet access, document office package, email, messenger, multimedia, agenda, etc., making it very close to a pocket personal computer.
Independently, the smartphone represents just a complex device with huge potential , but without final purpose. Making a parallel thinking with the definition Bouwman et al. (2008) gave to the internet services as being an activity or series of activities that happen when consumers are travelling, the services being delivered by a mobile operator that ensures the connectivity (Bouwman, H., Carlsson, C., Walden, P., Molina-Castillo, FJ. & al., 2008:93), smartphone services could be defined as being those activities and services that can be performed in real time due to the proper integration of the smartphone characteristics and the capacity of the telecommunications operators to value them anytime and anywhere.
The TAM was found as a very usable one with a very important emphasis on the usefulness, ease of use and external variables that are different from business to business (Yousafzai, S.Y., Foxall, G.R., Palliester, J.G., 2007:280).

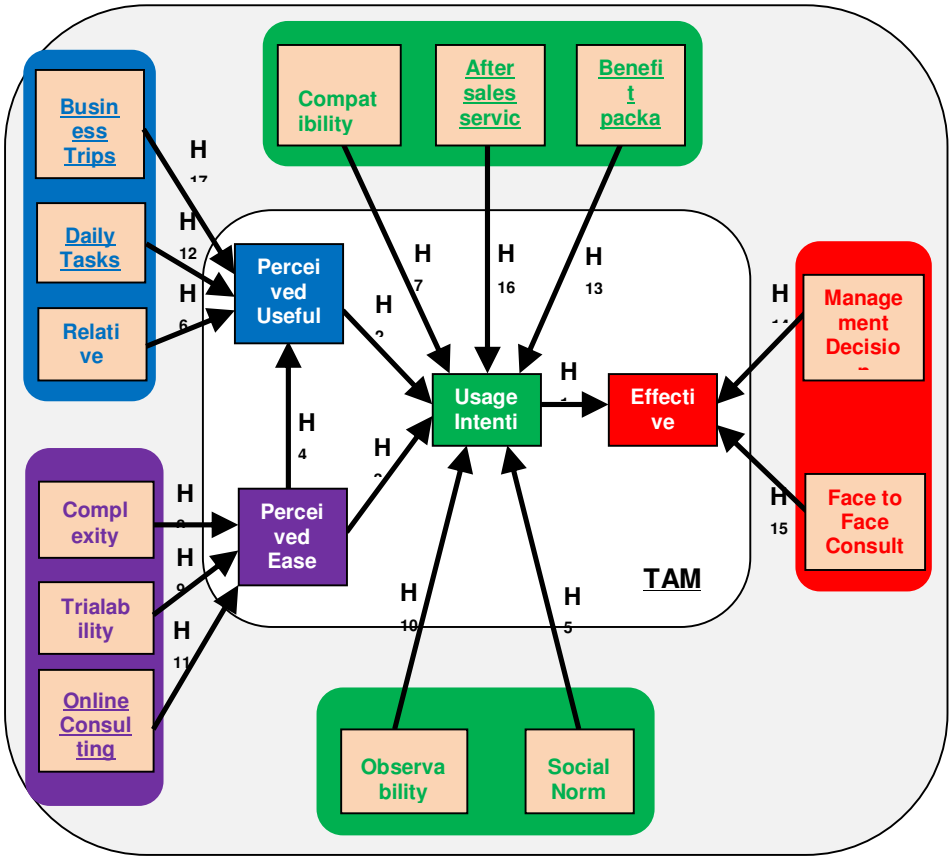

Figure 3: Proposed research model

Telecommunications services have three impacting parts:

- the continuous need of communication between people, especially in a globalization era when the information is required to circulate very fast between people, people and companies , between companies etc.
- the complexity coming from the intrinsic nature of the products that contributes to perform them: user device, technology network and the software included in the device in order to make possible the connectivity
- the level of knowledge that the users should have to perform them effectively. In the digital era, the product development exceeds the speed at which the user can understand and adopt new technologies and, as a consequence, the product performance is far in advance to the consumers' needs (Kotler, P., Caslione, J.A., 2009).

Accordingly, we hypothesize that:

H_1: The intention of use (IU) will have a positive influence on the effective usage of smartphone services (EU)

H_2: The perceived usefulness (PU) of smartphone services will have a positive influence on the intention of use

H_3: The perceived ease of use (PEU) of smartphone services will have a positive influence on the intention of use
H_4: The perceived ease of use (PEU) of smartphone services will have a positive influence on the perceived usefulness
H_5: The social norm(SN) will have a positive influence on the intention of use
As explained in the diffusion of innovation theory the attributes of the innovation could significantly contribute to the decision of adopting or rejecting the new idea or system, in our case the smartphone services. In the mobile telecommunications services it can be seen a range of reasons people use them and a survey made with the students at the University of Ibadan, Nigeria in 2005 showed that: 42% use them because is the latest technology, 75% considers that facilitates the communications on the move, 52% appreciates the access to the information in real time, 50% of the students use them because ensure the communications with friends and colleagues and other reasons refer to the fact that they are used by many people and indicate a certain level of social status (Olatokun, M.W., Bodunwa, I.O., 2006:547).
Considering the high level of technology used together with these services, the day by day need of them and the high speed progress made in this business area when an innovation is replaced by the other in just six months (Omekwu, CO., 2006:863) we hypothesize that:
H_6: The relative advantage (RA) of smartphone services will influence the perceived usefulness
H_7: Compatibility (CMP) with smartphone services will influence the usage intention
H_8: Complexity (CPX) of smartphone services will influence the perceived ease of use
H_9: Trialability (TLB) of smartphone services will influence the perceived ease of use
H_{10}: Observability (OBS) of smartphone services will influence the usage intention
The information technology (IT) is one of the major factors of the globalization process in both, commercial sectors and geopolitical area. The progresses made from early 1990 to our days in software development, telecommunications and digital technology led to a rapid transfer of data and knowledge in the entire world (Kotler, P., Caslione, J.A., 2009). Starting with 2000 in Romania started the process of centralizing the legal entities of the big companies in only one, as a headquarters in one location, keeping in the teritory only points of sales, branches or, at best, the subsidiaries. In this way they moved, in fact, the strategic thinking at a national level, while the execution remained at the local level, naming, in this way, in our view, the ”national globalization” of businesses where the scale economy and other administrative advantages could be better exploited. Therefore, the management of the whole company consisting of one legal entity – headquarters - and point of sales, branches in territory, changed consequently, moving mainly from face to face management to ”remote management” when telecommunications and travelling became very necessary. Moreover, the management of the company related to human resources considers more and more in the benefit package the allocation of telecommunications devices and services making possible the connection anytime and anywhere. Thus, the context of smartphone adoption is influenced both, by individual factors that could be: age, education, experience and personal traits and

organizational factors that include: top management support, size, user involvement and product champion (Park, Y., Chen, J.V., 2007:1365).
The complexity of telecommunications services, as a cumulated consequence of the equipments and technologies complexity associated with specific notions and language lead to the idea that the access and the usage of the related services could not be anymore the result of using by chance, of simple intuition, repetitive attempts, feelings or luck (Ishikawa, A., Tsujimoto, A., 2006). Based on the above reasons and the experience in field of the researchers, we hypothesize that:
H_{11}: Online consulting (OLC) offered to the users will influence the perceived ease of use
H_{12}: The daily tasks performed by employees (DTP) will influence the perceived usefulness
H_{13}: The benefit package suplemented (BPS) with smartphone services and devices will influence the usage intention
H_{14}: The top management decision of the company (TMD) will influence the effective usage of smartphone services
H_{15}: The face to face consulting (FFC) will influence the effective usage of smartphone services
H_{16}: The after sales services (AFS) related to smartphone will influence the usage intention
H_{17}: The business trips (BT) will influence the perceived usefulness of the smartphone services
Kotler, Kartajaya and Setiawan (2010) mentioned in their book Marketing 3.0 (p.85): "(…) that there are two distinct ways to convince people. The first one is to base your ideas on a set of facts and numbers and engage people in intellectual arguments. An alternative, which he thinks is much more effective, is to write compelling stories around the ideas and engage with people emotions instead". Based on this, the study of beliefs and virtual relationships between people that influences behavior becomes more and more important and it is the top priority when new products and services appear on the market.

3. Research methodology

The instrument of this research was a web questionnaire composed of three sections. The first section included terms, definitions, estimated time to complete and some clues about the completion. The second section included the 48 items for measuring the independent variables and multi-items were used to measure each. A five-point Likert scale was used to measure the items from strongly disagree to strongly agree. Most of the items, related to H1-H10, were found in the previous researches related to technology acceptance and the items related to H11-H17 were based on the experience in the field and the specialisation of the researchers. The third section included the demographic data about the respondents.

3.1. Sample and measurement

The research population was coming from the employees of the three multinational companies covering the whole Romanian teritory. There was emailed 617 web questionaires and of those, 589 were received and 28 were returned undeliverable. From a total of 344 questionnaires accessed between 11th-24th February only 307 were finalized, 37 remaining incomplete. The population of smartphone services

users was at a level of 289 which shows a response rate of 46%, while 18 respondents were non smartphone users.
The internal reliability of the multi-items scale was measured using the Cronbach alpha analysis in SPSS 20. Results indicated higher value than 0.7 (Table 1) which is considered acceptable , except the Complexity that due to its low value of 0.245 was removed from further analysis.

Table 1: Mean, Std Deviation and Cronbach alpha of factors

Factors	Mean	Std. Deviation	N	Cronbach alpha
Effective usage	4.11	0.537	289	**0.897**
Usage intention	4.58	0.584	289	**0.850**
Perceived Usefulness	4.29	0.625	289	**0.887**
Perceived Ease of Use	4.19	0.547	289	**0.732**
Relative Advantage	4.01	0.724	289	**0.865**
Compatibilitz	3.97	0.688	289	**0.847**
Complexity	3.77	0.561	289	**0.245**
Trialability	4.11	0.600	289	**0.732**
Observability	3.82	0.696	289	**0.695**
Social Norm	3.34	0.783	289	**0.763**
Management Decision	3.54	0.956	289	**0.924**
Benefit Package	3.41	1.005	289	**0.892**
After Sales Services	4.03	0.739	289	**0.819**
Online Consulting	3.74	0.819	289	**0.812**
Face to face Consulting	3.78	0.739	289	**0.853**
Business trips	4.27	0.719	289	**0.891**
Daily Tasks	3.73	0.847	289	**0.838**

3.2. Hypothesis testing

Considering the big number of variables, independent as well as dependent, the hypothesis testing was performed using the regression analysis in SPSS 20. The first approach was to demonstrate Technology Acceptance Model (TAM) with H1-H4. In summary, this research confirms the results of TAM with IU having a positive significant influence on Effective Usage (Beta=0.598, Sig.=0), then PU and PEoU had a positive impact on IU (Beta=0.626 and Sig.=0 and Beta=0.547 and Sig.=0.02) and finally USP having a positive significant influence on UTP (Beta=0.422 and Sig.=0). The other two variables considered by researchers as having influence on EU namely, MD and FFC showed as follows: MD positive significant impact (Beta=0.587 and Sig.=0) supporting H14 while FFC was demonstrated not to be significant (Beta=0.075 and Sig.=0.06) and thus not supporting H15. This could

come from the fact that in the tested population 62% of respondents have been used smartphone services for more than two years.
The second approach was to test the other hypotheses related to IU, UTP and USP constructed based on literature and the experience of researchers. Out of seven hypotheses related to IU it was showed that two of them (PU and PEoU) were part of TAM and significantly impacting IU and from the other five only one, CMP, (Beta=0.738 and Sig.=0) demonstrated strong positive impact to IU supporting H7, while the other four showed not significant influence on IU as follows: AFS, negative and insignificant influence (Beta=-0.094 and Sig.=0.13), BT as well negative and very insignificant (Beta=-0.041 and Sig.=0.45), the SN was found not influencing IU with Beta=0.075 and Sig.=0.15 and OBS not being significant as well (Beta=0.059 and Sig.=0.37) finally not supporting H16, H13, H5 and H10. The hypotheses related to PU, H17,H12, H6 and H4 proved to be true with significant impact as follows: the strongest positive impact had AR (Beta=0.556 and Sig.=0), then BT with Beta=0.301 and Sig.=0) while the DT showed negative significant impact (Beta=-0.183 and Sig.=0). PEoU as part of TAM had a positive significant impact on PU with Beta=0.422 and Sig.=0.

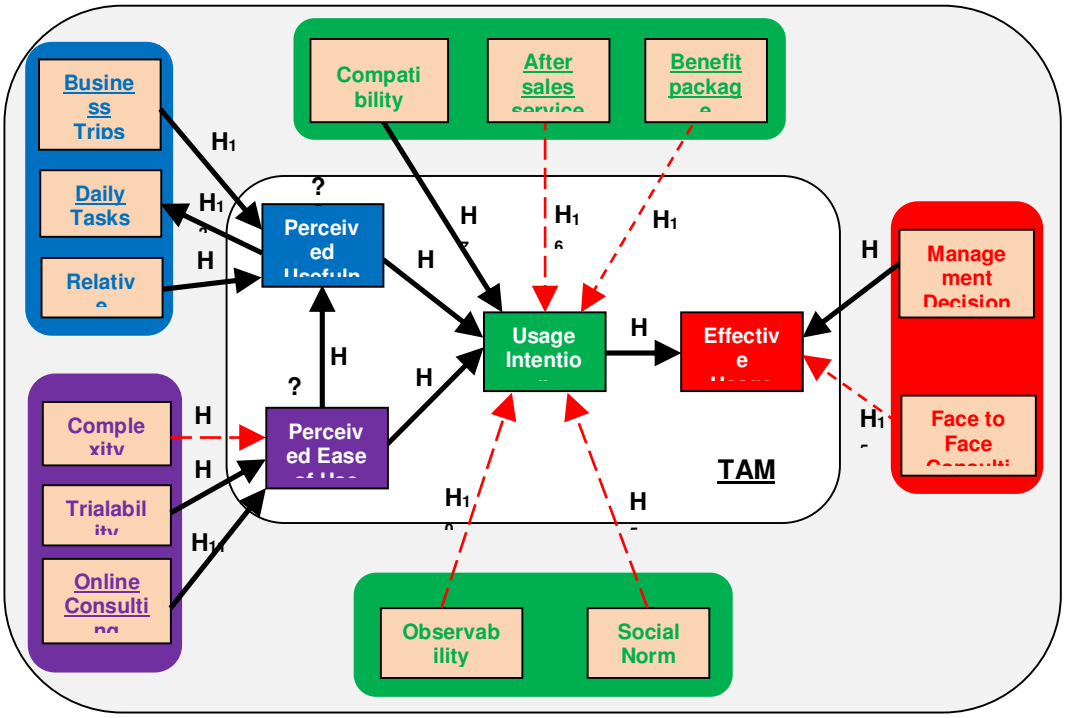

Figure 3: Proposed research model with the entire sample

.....> it was mentioned with dotted arrows the not supported hypothesis
In the end, of the three hypotheses related to PEoU, H8, H9 and H11, CPX not being reliable as factor after reliability analysis, OLC and TLB were found with positive and

significant impact on PEoU (Beta=0.504 and Sig.=0.002, respectively, Beta=0.422 and Sig.=0) supporting H9 and H11.

4. Conclusions and implications

The influencing of technology users today, when they are very well informed and can easily compare similar offers on the market, should make the practitioners use the studies and results in a smart manner to be able to create attraction and interest much more than the users can do.The people shouldn't be treated as simple consumers, who takes the ads and commercials as such, but they should be considered as human being as a whole with brain, heart and spirit (Kotler, P., Kartajaya, H., Setiawan, I., 2010). Based on the results published by Nielsen Global Survey, fewer consumers take seriously the commercials issued by companies and 90% pay much more attention to the recommendations and advices coming from the people they know or friends from social networks (Ishikawa, A., Tsujimoto, A., 2006). The results of this research and the proposed model could serve as a clue to identify manners of how to increase the usage of the smartphone services as the employees have granted access to them. From the model and the regression analysis it results that TAM keeps its reliability applicable in the smartphone services area too, but clearly with some nuances. In order to explain them it is important to understand the profile of the research sample: first, the respondents were smartphone users in proportion of 94% out of that 64% are experienced ones with more than two years of using the related services. Related to the age, 49% are younger than 40 years and 60% males and 40% females having a large professional experience with 60% between 6 and 20 years . In terms of education they had 33% technical background, 38% economic and the difference with other specialties. In our view, this sample profile contributed very much to the results of the research versus what was thought initially. The very obvious one is that in this context of smartphone users, H15 related to face to face consulting and H10 related to trialability are redundant as long as the users are very experienced, that's why, complementary, it is supported H15, the online consulting, the respondents being used with IT devices and services. On the same path H7, the compatibility with their lifestyle is supported. Having an overview at the model we could conclude that, again due to the sample of smartphone users achieved, it would not worth very much in the whole model to stimulate the intention first and then, based on theory of reasoned action (Davis, F. D.,1989), to stimulate the effective usage of the services. It appears clear that for the smarphone services users the model should be totally different from the non users. In order to support this, even if the sample of nonusers was small, it shows completely opposite result for face to face consulting that shows a very strong and positive correlation with effective usage of services.

As long as the sample was mainly composed of the smartphone services users the model should be adjusted considering all the related insights and for the model fit should be performed a structural equation analysis due to large number of dependent variables and the correlations between them.

Finally, knowing the details and having a reference base in this model used for different businesses, the researchers in telecommunications services could perform a specific approach and consistent analysis, finding the applicability of the results in the business field, rather than remaining a theoretical study. Moreover, when the field study is a company or many with national coverage, there could happen to have

even more useful results capturing the needs of those companies from the study phase and making them active part in the research, and thus, improving the gap between theory and practice.
The limitation of the study could come from the fact that the users were high level users coming from the big multinational companies that have used smartphone for a long time, the benefits include these services in the package, so that there is no service limitation and the coverage of the operators was at a high level in the regions where the study was performed.

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