# USE INTENTION OF AUTOMATED SELF-SERVICE SERVICES IN MOBILE TELECOM

## *Intenção de Uso dos Serviços de Autoatendimento em Telefonia Celular*

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## ABSTRACT

The aim of this study is to propose a model to evaluate consumers' intention of adopting a new type customer service technology, self-service customer services (SSCS), analyzing the effects that consumers' cognitive and affective perceptions about technology along with their communication with peers in social media have on their intention to adopt services of this nature. An online questionnaire was made available over the Internet to a base of 830,000 customers of a large mobile telecom carrier, with 5,262 valid questionnaires being obtained in response. Through structural equation modeling, the assumptions of the model were tested and the results show evidence of the influence of cognitive, emotional and social aspects on the consumer intention to adopt self-service customer service technologies.

**Keywords:** Social Media; Consumer Behavior; Cognition; Emotion; Self-Service customer Service technologies.

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# RESUMO

*O objetivo deste estudo é propor um modelo para avaliação da intenção de adoção de uma nova tecnologia de atendimento ao consumidor, o SAC3C (Serviços Automáticos de Autoatendimento), analisando os efeitos que as percepções cognitivas e afetivas do consumidor sobre tecnologia juntamente com sua comunicação com pares em mídias sociais possuem sobre sua intenção de adotar serviços desta natureza. Um questionário online foi disponibilizado pela internet para uma base de 830.000 clientes de uma grande operadora de telefonia móvel, com 5.262 questionários válidos sendo obtidos como resposta. Por meio de modelagem de equações estruturais, as hipóteses do modelo foram testadas e os resultados apontam para a evidência da influência de aspectos cognitivos, afetivos e sociais sobre a intenção de um consumidor em adotar tecnologias de autoatendimento.*

***Palavras-chave:*** *Mídias Sociais; Comportamento do Consumidor; Cognição; Emoção; Tecnologias de Autoatendimento.*

# 1 INTRODUCTION

With the new advances in information technologies and communication, more and more people are communicating online through devices such as mobile phones, smartphones, tablets and computers, using extensively social media and messaging services, like Twitter and WhatsApp instead of voice services (HART, 2010; HAFNER, 2009).

This change can also be perceived in the way consumers interact with businesses, which have adopted different communication channels besides the traditional telephone and face-to-face communication. Tools such as e-mail, blogs, Facebook, Twitter and WhatsApp, among others, are the new interaction modes made available to consumers by businesses to facilitate communication between the parties and improve the customer relationship (SARA, 2011).

The term CRM, Customer Relationship Management, was created to refer to a company's strategies for customer-centered activities. Its goal is to create a set of processes to improve customer interaction and establish a long-lasting relationship with them (PEPPERS; ROGERS, 2011). One of these consumer relationship tools is the Customer Service, which takes place most of the time when a customer needs support with a service and/or product transaction.

For a long time, Customer Service was limited to channels such as telephone (call centers, 0800 and 844 numbers), an expensive service due to the large number of employees needed to meet the growing demand. Nevertheless, with the Internet's growing popularity and consumers' habit changes (SCHELMETIC, 2008), the traditional customer relationship means are becoming slow and inefficient. Therefore, given the importance of Customer Service to the relationship with the consumer, businesses have heavily invested in the development of new technologies and tools to improve the efficiency of support services. On the other hand, the ongoing concern with cost avoidance leads to further cost reduction solutions for this service. One possible way to lower the cost of customer service is to automate some processes, creating the self-service concept (DABHOLKAR, 1990; REINDERS; DABHOLKAR; FRAMBACH, 2008). Businesses outsource part of the consumer services to the consumer themselves (Self-Service Customer Service - SSCS), demanding from them a more proactive role in the service and problem-solving processes (SALOMANN et al., 2007).

Despite the advances, it is not quite clear yet if consumers will prefer to solve their problems via automated services rather than human interaction in case they need support. Kattara and El-Said (2013) investigated the preferences of a consumer group in different situations seeking services at a five-star hotel and found that most of the times they preferred human interaction to automated services. However, services with very high contact flow between business and

consumer, such as telecom companies' customer service, human interaction tends to become a slow service, besides demanding greater workforce. In addition, one can assume that most of the times the consumer wishes for a quick solution for a potential problem and, in simpler cases, a quality automated service could solve it. Given all the arguments above, we wonder if consumers would be willing to use automated services in simple everyday issues, such as telephone services, now that they are more connected and immersed in social media. Thus, the goal of this study is to understand the influence degree of peer communication in social networks on the consumer's attitude and intention to use SSCS technologies and evaluate the emotional (through affection and anxiety) and cognitive (through the perceived usefulness and ease of use) effects on these customers' perceptions in relation to such service technologies.

To meet this goal, the literature presents several technology acceptance and use models, such as the UTAUT2 (VENKATESH et al., 2012), the TAM (DAVIS, et al., 1989), the CAT (KULVIWAT, 2007) and the CART (FERREIRA et al., 2013). Those models seek to capture nuances within the studied contexts which will lead to the understanding of the development of the consumer's intention to adopt a technology. Among those, the Technology Acceptance Model (TAM) is the most used in the literature due to its explanatory power and parsimony (KULVIWAT, 2007). On the other hand, when talking about consumer behavior, the affective dimension becomes an important aspect of the adoption decision (FERREIRA et al., 2013) therefore, it should be taken into consideration.

Moreover, Ward et al. (1974) suggest that individuals do not make decisions independently. They suffer cognitive, behavioral and attitudinal interferences from their peers. In addition to that, large scale use of social media has facilitated even more the information exchanges among individuals, making communication between consumers and third-party opinions an even more relevant aspect in the adoption and consumption decision-making process (LUEG et al., 2006; LUEG & FINNEY, 2007; MURATORE, 2008; KOHLER et al., 2011).

This way, within the context of this study, and intrinsically connected to the use of digital social media by consumers, it is suggested that constructs that evaluate the social influence of peers on consumers' decision-making processes should be included in the analysis, besides the TAM constructs (Perceived Ease of Use, Perceived Usefulness. Attitude and Intention to Use). To do so, the proposed model includes peer communication concepts, peer connection strength and peer identification, and will evaluate their impact on the individual's behavior towards accepting a certain technology (WANG; YU; WEI, 2012). Similarly, when dealing with an analysis of consumers' adoption behavior, it is justifiable to include dimensions of the affective realm, such as Affection and Anxiety, in the model (FERREIRA et al., 2013). Therefore, the proposed model is not just a replication of some model described in the literature (e.g. TAM, UTAUT2, CAT or CART), but a TAM extension taking into consideration affective and social aspects, once they are important in the assessment of the evaluated technology adoption.

# 2 LITERATURE REVIEW

## 2.1 Self-service Technologies

With the advance of technologies, consumers are increasingly encouraged to use self-service tools (REINDERS; DABHOLKAR; FRAMBACH, 2008). It is partially due to the understanding that, through technology, it is possible to deliver a higher quality service in a more efficient and speedy manner. In addition to that, this trend adopted by businesses is greatly influ-

enced by the idea of reducing costs by transferring to the customers the responsibility of running certain tasks, which were previously run by employees. (MUSTAK; Jaakkola; Halinen, 2013).

As a concept, self-service technologies are services fully or partially created by consumers, without involvement or interaction with the business' employees, assigning a crucial role to technology in this process (BATESON, 1985).

Vargo and Lusch (2004) suggest that, according to their service-dominant logic, a customer-centered vision must be consumer oriented and relational. This opens the debate that in a self-service environment we should not focus only on the business' perspective of a potential cost reduction. It is necessary to analyze the consumer's point of view, especially in a relational environment, to avoid frustration from the customer towards the business when dealing with a machine (REINDERS; DABHOLKAR; FRAMBACH, 2008). In this aspect, the authors observed that the consumer, when using self-service technology, feels more positively prone to use it if they think they can count on human interaction in case of any uncomfortable situation.

According to Lin and Hsieh (2007), there are three key points to the adoption, or non-adoption, of self-service technological solutions: (1) if there is significant influence on customer satisfaction from dimensions of technology readiness, showing that the more technically prepared the customer is, the more satisfied they will feel when using self-service solutions; (2) the more technically prepared the individual is, the more likely it is they will use such solutions; (3) the greater the consumer satisfaction when using self-service tools, the more likely it is for them to use the solution again or refer them.

It is clear that when implementing those self-service tools, businesses should understand the importance of the customer being prepared to use them. In other words, the degree of technology readiness their customers have. Otherwise, even with all technological support, they may fail in the relationships with these consumers, leading to a non-adoption of such technology as a result from an experience of dissatisfaction with the proposed self-service. This, in turn, can lead to customers switching suppliers.

## 2.2 Social CRM (SCRM)

Digital technologies advance and, hence, the advance of internet and social media have turned consumers more oblivious to conventional media (TV, radio, newspaper) and more subject to trusting their peers (WOODCOCK; GREEN; STARKEY, 2011). In the current consumer society, peer communication emerges as one of the most significant factors that influence consumer attitude in regard to a product or brand (WANG; YU; WEI, 2012).

We can observe that social media has given more power to consumers due to a kind of interaction that in not purely one-way anymore (from business to consumer), migrating to a two-way interaction (between consumers and businesses and among consumers themselves). In other words, talks about products, services or brands take place in social media without any censorship from businesses, forcing them to become more transparent in their relations with consumers, once they no longer have control over this communication (WOODCOCK; GREEN; STARKEY, 2011; WANG; YU; WEI, 2012).

In this scenario, there is the need by the businesses for monitoring this interaction, aiming at improving their relationship with their clients. Thus, Social Customer Relationship Management (SCRM), or Social CRM, appears. It is a business strategy of engagement with consumers through social media aiming at building brand credibility and loyalty (WOODCOCK; GREEN; STARKEY, 2011).

While CRM if done offline, based on data mining in markets where there are large amounts of client data (financial services, telecommunications), SCRM takes place in an online environment, using online environment monitoring software (WOODCOCK; GREEN; STARKEY, 2011). The goal is to extract the most from the client database, widening the range of services offered to those clients, retaining the most profitable or attracting new ones. CRM and SCRM are fundamentally the same thing. The difference is the media used to manage the relationship with consumers.

## 2.3 Consumer Socialization Theory

Ward et al. (1974) suggest that individuals do not make decisions independently. They suffer cognitive, behavioral and attitudinal interferences from their peers. Wang, Yu and Wei (2012) also verify the positive influence of socialization among peers on consumer's purchase intentions through social media. However, De Gregorio and Sung (2010) state that the influence of friends' and acquaintances' groups are the major predictor of attitudes and behaviors in regard to product choice.

When analyzing social media, we can observe that those tools offer conditions that facilitate socialization among peers in the online environment because they allow a simple and convenient socializing way (MURATORE, 2008). With the internet advance and the development of new communication tools, more consumers have accessed social media searching for information on products and consumption decisions (LUEG et al. 2006; GOH; Heng; Lin, 2014), facilitating access to large amounts of information in a quite speedy manner, which increases consumer knowledge and, thus, their decision power (TAYLOR; LEWIN; STRUTTON, 2011).

## 2.4 A Model to Evaluate Intention to Use Self-Service Customer Service

Using the basis of the socialization, technology adoption and diffusion of innovation theories, Figure 1 shows the proposed conceptual model to evaluate how, in a digital social media environment, several of its constructs influence consumer's intention to adopt technologies that use SSCS.
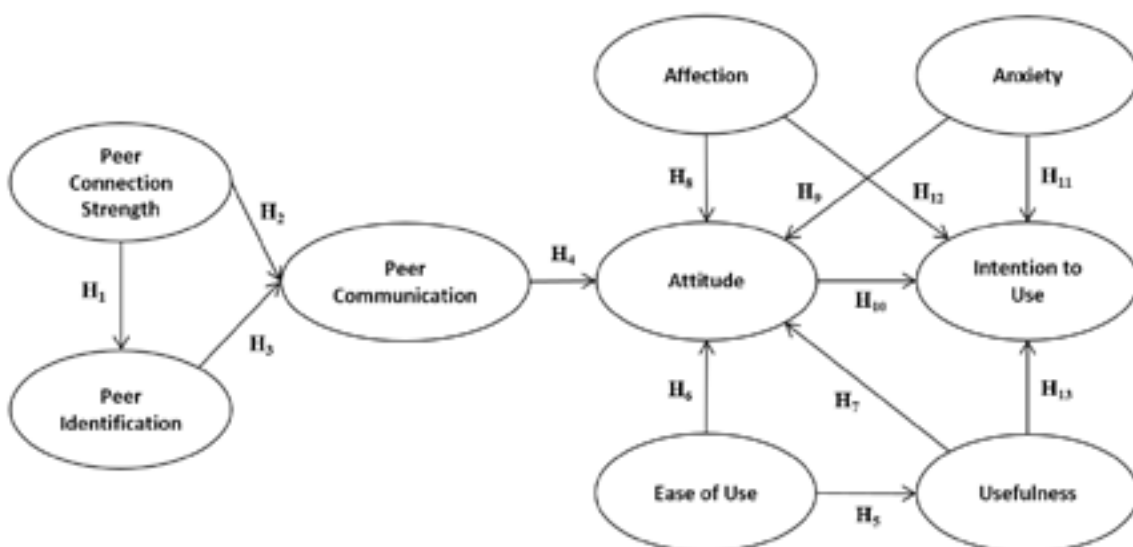


**Figure 1**. Proposed Conceptual Model

### Peer Connection Strength

The literature on socialization among consumers shows that peers (friends and acquaintances) are the first agents of socialization besides the family (KOHLER et al. 2011; MOSCHIS; CHURCHILL, 1978). Consumers interact with peers to talk about consumption patterns, which will influence their attitudes towards products and services (MUKHOPADHYAY; YEUNG, 2010).

Thus, De Bruyn and Lilien (2008) define the term "Peer Connection Strength" as the degree to which a person is willing to keep a relationship with other peers through a social medium. The stronger these connections are, the greater the chances of knowledge transfer and influence on receivers.

### Peer Identification

Connection strength between one individual and their peers precedes and positively contributes to that individual's identification as belonging to the group (ALGESHEIMER; DHOLAKIA; HERRMANN, 2005; WANG; YU; WEI, 2012).

"Identification with peer group" can be understood as how individuals perceive themselves as members of a group or community. This construct tries to explain the degree to which individuals see themselves as part of a collective or shared identity taking into account the idea that: "I see myself as part of this group". The greater the identification with the group, more likely it is that the individual will agree with the norms, traditions, rituals and objects of that community and, thus, the greater the chances of establishing a more harmonious peer communication (ALGESHEIMER et al., 2005). The following hypothesis is based on the what has been mentioned above:

**Hypothesis 1:** Peer connection strength has a direct and positive effect on peer identification.

### Peer Communication

The concept of "Peer Communication" can be defined as the conversation established among peers, which can exert normative and informational influence (BEARDEN; NETEMEYER; TEEL, 1989).

Normative influence can lead an individual, who is willing to be part of a certain group, to change their attitude and behavior, in order comply with the group's standards and norms. However, informational influence makes people seek information on a specific subject through their peers, which can take place through active research or just by observing peer behavior. Social media help this information exchange and group members' interaction because the cost to access this information is very low or even inexistent (WANG; YU; WEI, 2012). In addition, one can assume that the greater the connection strength and identification among the peers, the greater the possibility of relevant peer communication. Therefore, the hypotheses below are proposed:

**Hypothesis 2:** Peer connection strength has a direct and positive effect on peer communication.

**Hypothesis 3:** Peer identification has a direct and positive effect on peer communication.

### Attitude

Attitude is the set of cognitive and favorable affective (or non-affective) judgements of

something (SCHIFFMAN; KANUK, 1997). Within a consumption context, and in an intense messaging social media environment, consumers learn attitudes and behaviors through written and shared messages from peers (LUEG; FINNEY, 2007). In this aspect, peer communication is associated to learning about consumption, preferred brands, involvement, intention to purchase/use, service use and interaction with the business generally speaking. Thus, consumer behavior and their attitudes tend to suffer influence from acquired learning through agents of socialization, in this case, social media peers (WANG; YU; WEI, 2012). The more information these individuals receive through peer communication, the greater the chances of developing positive attitudes towards products and/or services (KIM; HALEY; KOO, 2009; WANG et al., 2012). If we extend this notion to self-service customer services (SSCS), the following hypothesis is formulated:

**Hypothesis 4:** Peer communication affects directly and positively the individual's attitude towards self-service customer services.

### Technologies Acceptance

Several models have been used to evaluate technologies acceptance and diffusion of innovations. The most used models are the Theory of Reasoned Action (TRA) (FISHBEIN; AJZEN, 1975), the Technology Acceptance Model (TAM) by Davis (1989) and Davis, Bagozzi and Warshaw (1989), the IT Diffusion Process Model (STRAUB, 1994), the Theory of Planned Behavior (TPB) (AJZEN, 1991), the Theory of Diffusion of Innovation (ROGERS, 2005), the Unified Theory of Acceptance and Use of Technology (UTAUT) (VENKATESH, 2003), which is an attempt to unify several models, and the Theory of Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2) (VENKATESH et al., 2012). The TAM model, due to its parsimony and good explanatory power, has been widely used to evaluate information and computational system-related technologies acceptance (KULVIWAT et al., 2007). Two of its constructs have been thoroughly evaluated as responsible for influencing individual's attitude towards technology (YOUSAFZAI; FOXALL; PALLISTER, 2007): perceived usefulness and ease of use.

### Perceived Usefulness and Ease of Use

Perceived usefulness is the degree to which a person believes the usefulness of a certain system will improve their performance (DAVIS, 1989). However, perceived ease of use is the degree to which an individual believes the use of a system demands little effort (DAVIS, 1989). According to Davis (1989), perceived usefulness and ease of use are the most significant constructs to predict a system use: perceived usefulness is the concept that determines that people tend to use, or not, a certain solution if they understand it will help them deliver more easily their tasks, while ease of use is the dimension that measures how simple it is to use that solution. Therefore, one can argue that upon realizing that using SSCS can be useful at problem solving, the individual would be willing to use it. Nevertheless, the use of this support must seem simple, with easy-to-follow instructions, otherwise the individual will give up trying a self-service solution. In addition, the ease of use perception can affect its usefulness perception (DAVIS, 1989). Therefore, the hypotheses below are proposed:

**Hypothesis 5:** Ease of use has a direct and positive effect on the perceived usefulness in relation to self-service customer services.

**Hypothesis 6:** Ease of use has a direct and positive effect on the attitude towards self-service customer services.

**Hypothesis 7:** Perceived usefulness has a direct and positive effect on the attitude towards self-service customer services.

### Affection and Anxiety

The possibility of using self-service tools may raise emotional reactions in the individuals, which can influence their attitudes as in the case of mobile phone companies' SSCS. Reactions such as affection and anxiety can emerge and influence the individual's attitude (COMPEAU; HIGGINS; HUFF, 1999; CRITES; FABRIGAR; PETTY, 1994). The individual's affection, or how much they like something, can have strong influence on their actions (BANDURA, 1986) and represents the positive share of emotions. On the other hand, anxiety represents the negative share of emotions. In other words, apprehension or anxiety feelings (COMPEAU; HIGGINS; HUFF, 1999) can emerge when the individual is using self-service solutions. Thus, we propose the following hypotheses:

**Hypothesis 8:** Affection has a direct and positive effect on the attitude towards self-service customer services.

**Hypothesis 9:** Anxiety has a direct and negative effect on the attitude towards self-service customer services.

### Intention to Use

Intention to use includes indicators that try to explain if the individual has the intention to use certain technology (DAVIS; BAGOZZI; WARSHAW, 1989). On the other hand, Zeithaml, Berry and Parasuraman (1996) show that some behaviors indicate that a consumer is increasing their ties to service providers, for example: when they pay a compliment to a business, express preference in comparison to a competitor, refer a business or service, increase their purchasing volume, accept higher prices or remain loyal to brands and services. Deep down, consumers are expressing their positive assessment regarding that product or behavior. Therefore, one can argue that the involvement with businesses and, thus with the technology, can raise emotions such as affection and anxiety (COMPEAU; HIGGINS; HUFF, 1999) which could directly affect SSCS intention to use in case there is the need to solve a problem or support ticket.

Perception of usefulness, in its turn, presents a direct and positive influence on the intention to use a certain technology (YOUSAFZAI; FOXALL; PALLISTER, 2007). Finally, the intention to use is a result from the individual's positive (or negative) attitude (DAVIS; BAGOZZI; WARSHAW, 1989). Therefore, the model's final hypotheses are proposed:

**Hypothesis 10:** Attitude towards self service has a direct and positive effect on intention to use self-service customer services.

**Hypothesis 11:** Anxiety in relation to self service has a direct and positive effect on intention to use self-service customer services.

**Hypothesis 12:** Affection in relation to self service has a direct and positive effect on intention to use self-service customer services.

**Hypothesis 13:** Usefulness in relation to self service has a direct and positive effect on intention to use self-service customer services.

# 3 METHODOLOGY

To test the hypotheses a cross-sectional survey (PARASURAMAN; GREWAL; KRISHNAN, 2006) with a non-probabilistic sample of the population of interest was done. Most of the studies on technology acceptance by consumers use this same survey method (KULVIWAT et al., 2007), presenting consumers with structured questionnaires at one single moment in time. The data processing for the hypotheses test was done through Structural Equation Modeling (SEM) via AMOS 20 software. Firstly, a confirmatory factor analysis (CFA) of the used constructs and scales was performed to refine the proposed measurement model. The next step was to verify face validity, nomologic validity, convergent validity and discriminant validity of the used scales, as well as their internal consistencies and reliabilities. Finally, the survey hypotheses were tested through a structural model.

## 3.1 Operationalizing the Variables

This study uses scales already developed and tested in the literature for the measurement of all constructs (the final research instrument was composed by 40 items) as described below:

- **Peer connection strength:** De Bruyn and Lilien scale (2008), composed of 4 items;
- **Peer group identification:** Algesheimer, Dholakia and Herrmann scale (2005), composed of 5 items:
- **Peer communication:** original Moschis and Churchill scale (1978) adapted by Wang, Yu and Wei (2012), composed by 5 items;
- **Affection:** Compeau, Higgins and Huff scale (1999), composed by 5 items;
- **Anxiety:** Compeau, Higgins and Huff scale (1999), composed by 4 items;
- **Perceived usefulness:** Davis (1989) and Davis, Bagozzi and Warshaw. (1989) scale, composed of 5 items.
- **Perceived ease of use:** Davis (1989) and Davis, Bagozzi and Warshaw. (1989) scale, composed of 6 items.
- **Intention to use:** original Zeithaml, Berry and Parasuraman (1996) scale, adapted by Cronin, Brady and Hult (2000) and Lin et al. (2007), composed of 3 items.
- **Attitude:** Crites, Fabrigar and Petty scale (1994), composed of 3 items.

The items included in the survey instrument were translated from English into Portuguese by professionals, using translation and back-translation steps to ensure that the scales in Portuguese were as close as possible to the original. We conducted two pretests of the research instrument to assess the understanding of the respondents of the questionnaire. With the results of the final pretest, the final survey instrument was prepared, with a total of 38 items measured by using five-point Likert scales, and 2 items measured by using semantic differential scales, in addition to 11 items relating to demographic and behavioral variables.

## 3.2 Sample and Data Collection Procedures

The survey instrument was made available for respondents in an online survey-specialized website (Qualtrics). The studied population was limited to youngsters and young adults (under the age of 34), who are generally more avid mobile phone and social media websites users.

The sample was obtained directly from a large Brazilian mobile phone carrier database. Invites to participate were sent to the carrier's 830,000 client emails, who used a specific kind of cell plan which allowed the use of social media for self-service customer services. The questionnaire could be answered after a brief introduction explaining the concept of self-service customer services and showing a short video about self-service in general and SSCS in particular. In order to increase respondents' participation, a smartphone lottery draw was offered to those who finished the questionnaire. As a result, 14,697 people clicked the link on the email and answered the questionnaire (1.77% response rate). Out of this total, only 7,555 answers were complete (7,142 were discarded due to absent values – 48.59%) Finally, from the complete responses base, yet another 2,293 questionnaires were excluded which referred to respondents under 15 and above 34 years old, or individuals who did not use social media.

Thus, the final sample was composed of 5,262 valid respondents. Of this total, 1,820 were female (34.6%) and 3,442 were male (65.4%). The great respondents' majority stated to be single (82.7%), 844 were married (16.0%), 53 respondents stated to be separated/divorced (1.0%) and only 5 were widowed (0.1%). As far as household income is concerned, only 3.1% declared having a monthly income above US$3,000, and the majority (74.2%) presented monthly income lower than US$1,000, which can be explained by the fact that sample was composed of young pre-paid service users. As for education, the majority, 42.2%, stated to be in college. In terms of age, 50.3% ranged between 15 and 24 years old, and the remaining 49.7% ranged between 25 and 34 years old.

# 4 RESULTS

## 4.1 Measurement Model

After an initial confirmatory factor analysis, we observed a few items that contributed to a poor model fit. After a series of modifications and refining tests, 4 items were excluded, which resulted in a final measurement model composed of 36 items. The excluded items were: item 1 from the Peer Connection Strength scale, items 4 and 5 from the Affection scale and item 4 from the Perceived Ease of Use scale.

The refined measurement model, with 36 items, presented a sensitive improvement in the fit indices, where RMSEA was 0.056 (with confidence interval from 0.055 to 0.057), CFI was 0.95, IFI 0.95, TLI 0.94, $\chi2$ = 5385.83, d.f. = 1048, p<0.001 and $\chi2$ /d.f. = 5.14 and, finally, SRMR = 0.047. Such results indicate a satisfactory adjustment of the proposed model.

The face validity for all scales was guaranteed during the development of the research instrument (choice of scales already used in literature, careful translation, and pretests). The correlation matrix between constructs was examined to verify the nomological validity: all the correlations were significant and in the expected direction. In relation to the convergent validity, the calculated AVE for all the constructs was between 0.55 and 0.79, proving the convergent validity of the scales used. With respect to internal consistency and reliability of the scales used, all of them used met the minimum reliability levels considered adequate by the literature (FORNELL; LARCKER, 1981), showing values between 0.78 and 0.95 for the Alpha coefficient, and between 0.71 and 0.92 for composite reliability. Finally, all the shared variances (squared correlations) were below the variance extracted through the items that measure the constructs, indicating appropriate discriminant validity.

## 4.2 Structural Model

Structural Equation Modeling (SEM) was conducted via the AMOS 20 software to test the proposed model and the hypotheses of the research. The model tested here has already been based on the refined measurement model composed of 36 indicators and it obtained a significant value for the chi-squared indicator ($\chi2$ = 10158.6, d.f. = 581, p<0.001, $\chi2$/d.f. = 17.48). As observed, the ration $\chi2$ /d.f. was very high. According to literature, this can be justified by the fact this measure is very sensitive to sample size and the sample acquired for this research was composed of 5,262 valid respondents (BENTLER; BONETT, 1980; HAIR et al., 2009).

On the other hand, all the fit indices showed a good adjustment of the model to the data. The incremental fit indices were above 0.90, with CFI of 0.92, IFI of 0.92, and TLI of 0.91. In regard to the absolute fit indices, the RMSEA was 0.056 (with confidence interval from 0.055 to 0.057) and the SRMR was 0.063, which show a good fit for the proposed model.

After verifying the fit of the proposed measurement and structural models, the path co-efficients estimated for the proposed casual relationships were evaluated. The estimated standardized coefficients, their significance and the related survey hypotheses are presented on table 1 and figure 2. We can observe support for 14 out of 15 proposed hypotheses.

|  | Proposed Relationship | Standardized Coefficient | p-value | Hypothesis Verified |
|---|---|---|---|---|
| H1 | Peer Connection Strength à Peer Identification | 0.61 | *** | Yes |
| H2 | Peer Connection Strength à Peer Communication | 0.11 | *** | Yes |
| H3 | Peer Identification à Peer Communication | 0.54 | *** | Yes |
| H4 | Peer Communication à Attitude | 0.15 | *** | Yes |
| H5 | Ease of Use à Usefulness | 0.75 | *** | Yes |
| H6 | Ease of Use à Attitude | 0.22 | *** | Yes |
| H7 | Usefulness à Attitude | 0.41 | *** | Yes |
| H8 | Affection à Attitude | 0.21 | *** | Yes |
| H9 | Anxiety à Attitude | -0.18 | *** | Yes |
| H10 | Attitude à Intention to Use | 0.34 | *** | Yes |
| H11 | Anxiety à Intention to Use | -0.04 | *** | Yes |
| H12 | Affection à Intention to Use | 0.02 | 0.06 | No |
| H13 | Usefulness à Intention to Use | 0.52 | *** | Yes |

**Table 1:** Standardized Path Coefficients, Hypotheses and Significances for the Proposed Structural Model
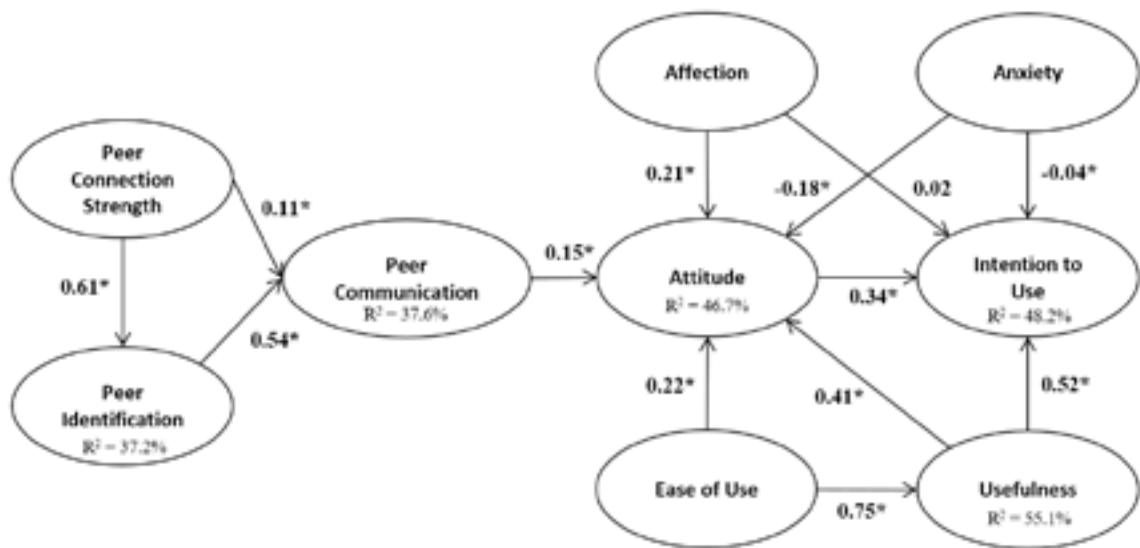
**Figure 2.** Standardized Path Coefficients for the Proposed Model (* indicates p-value < 0.001)

# 5 DISCUSSION

## 5.1 Influence of Peer Relationships on Social Media (H$_1$, H$_2$ and H$_3$)

Analyzing the antecedents that deal with peer relationships and communication on social media, it was possible to observe that there are significant influences among the three constructs: peer connection strength, peer identification and peer communication (p<0.001). Both direction and significance of the relationships were confirmed.

The study verifies that the effect of connection strength among peers on identification with peers (H$_1$ – magnitude of 0.61) is greater than the direct effect of connection strength on communication (H$_2$ – magnitude of 0.11). Such finding is in line with the researched literature (WANG; YU; WEI, 2012), showing that consumers who have a strong connection and sense of identification with their peers tend to communicate more than those with finer ties. Communication becomes more effective and influential as the connection and identification with peers increases.

## 5.2 The Effect of Social Media Peer Communication on Attitude (H$_4$)

A direct, significant and positive relationship (magnitude of 0.15) between peer communication in social media and attitude (H$_4$) has been observed, showing that the better/greater the peer communications is, the more positive would be the attitude towards SSCS (H$_4$). This result is consistent with results found by Wang, Yu and Wei (2012). This points out that consumers admit learning from peers, actively seeking information or just observing their peers and social media as part of information exchanges (WANG; YU; WEI, 2012). The more information these individuals receive, the greater the engagement with a certain product or service and, thus, the greater the chances of developing positive attitudes towards that same product or service (KIM; HALEY; KOO, 2009; WANG et al., 2012). Finally, the model confirmed that a positive attitude influences positively the intention to use SSCS by the consumer (H$_{10}$), presenting a moderate magnitude (0.34). Therefore, we can say that, when communicating with peers, being influenced by

their opinions and getting more involved with the evaluated self-service technology, consumers tend to form more favorable evaluations about the service to be adopted, which affect their intention to use SSCS.

## 5.3 Assessment of the Impact of the Cognitive Evaluations ($H_5$, $H_6$, $H_7$ and $H_{13}$)

The presented model verifies all the relationships found in the TAM model (DAVIS; BAGOZZI; WARSHAW, 1989) regarding the effects of cognitive constructs on attitude towards the adoption of a product or service and towards the intention to use it. Both perceived ease of use ($H_6$) and perceived usefulness ($H_7$) presented direct significant effects on attitude (0.22 and 0.41, respectively, both with $p<0.001$), showing that the greater the perception of SSCS' usefulness and ease of use, the more positive will be the consumer's attitude towards the intention to use it to solve problem and seek support solutions.

In regard to $H_5$, perceived ease of use showed a positive, significant and high magnitude (0.75) effect on usefulness, pointing out that the greater the perceived ease of use by the consumer, the greater the chance they will perceive usefulness in that solution. Therefore, one can say that, by understanding SSCS use as being effortless, the consumer will perceive a greater usefulness in the self-service technology by experiencing more support possibilities when contacting the business for problem solving or any issues concerning the provided service.

One can also conclude from the verification of $H_{13}$ that perceived usefulness has a direct and positive effect on the intention to use. This relationship presented a quite high significant positive effect (0.52), indicating that the greater the usefulness a consumer perceives in a certain service, the greater are the chances of that consumer having the intention to use it, according to literature (DAVIS; BAGOZZI; WARSHAW, 1989; KULVIWAT et al., 2007; ROGERS, 2005).

## 5.4 The Influence of Affective Evaluations on Attitude and Intention ($H_8$, $H_9$, $H_{10}$, $H_{11}$ and $H_{12}$)

The proposed model confirms, as the literature suggests (WANG; YU; WEI, 2012), that attitude was a strong predictor of the intention to use the solution ($H_{10}$). Attitude presented a moderate magnitude effect (0.34) on the intention to use, showing that the more favorable the consumer's attitude, the greater the individual's chances of actually having the intention to use self-service technologies.

Attitude was also directly and significantly affected by affection ($H_8$), showing that when a person develops positive emotional reactions towards a business, this can lead to a positive attitude in regard to SSCS. Nevertheless, the relationship between affection and intention to use has not been confirmed ($H_{12}$). The reason for not confirming this hypothesis can be related to the fact that affection is a dimension more closely related to attitude than to intention and, thus, it already has a share of emotional involvement with the product directly measured by attitude.

On the other hand, another emotional reaction, anxiety, presented a direct and negative effect on attitude ($H_9$), showing that an individual who experiences negative anxiety feelings can form a negative attitude towards using SSCS (COMPEAU; HIGGINS; HUFF, 1999). The consumer's anxiety assessment is especially relevant to the evaluation of the adoption of self-service technologies, since SSCS is mainly a channel by the business for problem solving and client's doubts. Therefore, one can expect clients to experiment relevant anxiety levels until they have had the answers or solutions they desired while dealing with the self-service. If this anxiety towards the problem to be solved is aggravated by difficulties or frustration in dealing with the self-service technology, both the consumer's attitude towards the technology as well as their intention to use it would suffer negative impacts.

However, regarding the intention to use, despite the low magnitude effect (-0.04), anxiety had a direct, significant and negative effect on intention to use ($H_{11}$) as expected. This suggests that an anxious person and that fears using a certain product or service should be less inclined to adopt the behavior of actually using a SSCS solution.

# 6 CONCLUSION

The article's greatest theoretical contribution was to be able to test the proposed model with a real database from a large Brazilian mobile phone carrier (with more than 830,000 customers), with a large number of valid responses (5,262). Therefore, the results here obtained are relevant to evaluate SSCS intention to use in a large scale and with real telecom customers actually grappling with the offer of such services by their carrier.

The proposed model verified the effects from both the cognitive and the affective dimensions on the intention to use a self-service technology. According to Ferreira et al. (2013) and Kulviwat et al. (2007), this is a relevant theoretical contribution, given that the models that jointly evaluate those different dimensions of new technologies and how they relate to the adoption behavior by consumers are not so prevalent. Although inspired by the TAM (Davis et al., 1989) and by model presented by Wang et al. (2012), we must highlight that the tested model was original, which grants even more relevance to the findings. Since the proposed model ties together digital social influence and the cognitive and affective evaluations of new technologies, our research model contributes to a better understanding of the adoption of digital services (such as self-service technologies). The model captured the social media endorsement relationship in the intention to adopt such technologies, indicating that consumers are subject to peer influence during the adoption process. The model was able to explain 48.2% of the variability of the intention to use self-service technologies. It also explained 46.7% of the observed variance in attitude, 55.1% of the variance in usefulness, 37.6% of peer communication and 37.2% of the variance in the peer identification construct.

As managerial contributions, given the obtained results, managers, who are planning to adopt self-service solutions, must be mindful of the increasing power that clients have over the brands and should be aware that online word-of-mouth marketing can be a strong ally, as consumers have more trust in what their peers are talking about on social media. The understanding of the influence that peer communication has on the individual's attitude indicates that businesses must propose solutions and tools to follow up and encourage positive peer communication in social networks, increasing consumer's likelihood to become more involved with the product/service and their intention to use self-service technologies to contact the business or problem solving.

The study also confirms the importance of communicating well the benefits of the available solution or offer, once the effect of consumer's perceived usefulness on intention to adopt is large.

The study's main limitation is regarding the chosen technology. Despite all the constant studies on self-service solutions, the respondents who still haven't had contact with them may have experienced some difficulty expressing their attitude, assessments and felling towards the evaluated self-service technology. In regard to the results' external validity, despite the large number of responses, given the convenience sample from a single telecom carrier and the fact that the data reflect only young clients' point of view, it is possible that the verified relationships cannot be generalized for each and every mobile phone consumer and other industries'.

For future studies it is necessary to explore more deeply the contact between the interviewee and the specific self-service solutions, aiming at better capturing the respondents'

perceptions on this type of solution. In addition, it would be interesting to replicate the proposed model to consumers with diverse profiles from the ones used in this study, with the purpose of validating and widening the scope of the results obtained here. Future surveys can also explore other scales for the constructs present in the proposed model or constructs that are conceptually similar and compare with the results found here. Finally, it would be interesting to investigate possible moderating effects that some demographic variables (such as gender, income and age) could present on the observed relationships.

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