THE ACCEPTANCE OF INFORMATION TECHNOLOGY BY THE ACCOUNTING AREA

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ABSTRACT

The information and communication technologies (ICT) in the accounting area play a relevant role and reflect the advance in the accounting profession. Accounting combined with ICT provides more agility in accounting records and in the management of business activities. ICT is, at present, one of the fundamental tools for facilitating the processing of accounting data. The Technology Acceptance Model (TAM) is widely used to assess the level of ICT adoption. The foundations of TAM express that individuals tend to adopt a certain technology from the perceived ease of use and value of their perceived utility. This field research used a questionnaire with 16 closed questions structured as a Likert type scale with 7 points; the data were treated and evaluated by means of Structural Equation Modeling, using the software SmartPLS 3.2.1 with the objective of analyzing the technological acceptance in the accounting environment. The research findings reveal that the indicators that predict the construct of behavioral intention are adequate to explain 32.3% of the model and the current use of the system presents a power of enlightenment around 23.9% through constructs that predict this behavior.

Keywords: Information Technology; Accounting; Technological Acceptance Model (TAM).
1. INTRODUCTION

The history of accounting has always been associated with the evolution of Information and Communication Technologies (ICT). With the advent of ICT as a working tool, the accounting professional changed the way of performing the tasks and adapted to the changes occurred in the business scenario. Accounting has as a priority to provide timely and relevant information, in line with the real needs of customers; thus ICT is a strategic resource for accounting professionals, since it provides more agility in the launching and processing of the information and, consequently, in the communication to clients.

ICT has brought great advances to society in general, including the accounting area, also contributing to the appreciation of this profession. To stay on the market, the professional must constantly improve on the new tools used in the market in which it is inserted, adapting to the new concepts, methods and technologies. For some time, the accountant was regarded as a professional who merely performed calculations and filled out forms to assist the treasury. However, this scenario has become increasingly distant from the current reality.

In the face of changes in the technological environment, the accounting professional must be permanently updated in order to provide his clients with reliable and timely information. Before this scenario, the following questioning is presented: **What influence do new digital technologies have on the professional accounting environment and what level of acceptance do these professionals have?**

The general objective of the study was to analyze the degree of acceptance and effective use of new digital technologies by the accountants, using as parameter the Technological Acceptance Model (TAM). The study innovates by trying to understand the impacts and improvements related to technological changes that have been taking place over time in accounting, trying to detect the reasons that contribute to the acceptance and use of new ICTs.

The research sought to portray the difficulties that the accounting professional has faced in order to be able to adapt to the technological innovations, which have brought more ease and convenience to the professional practice of accountants.

The theme is justified by contributing to the academic environment regarding the knowledge of the level of acceptance of new technologies by accounting professionals, since, with the use of technological resources, digital modernizations can bring improvements to the performance of their activities.

2. THEORETICAL FRAMEWORK

2.1 Accounting and technology

ICT provides more agility in the recording of accounting facts and in the management of business activities. Technological development has given rise to numerous tools that have facilitated the work of accountants, bringing more speed and quality to the production of information and increasing the level of transparency of the decision-making process. Such technological resources helped to maximize the main function of the accountant, which is the generation of information (Martins et al., 2012).

The use of ICT is fundamental to facilitate the processing of accounting data and also to offer confidence and efficiency in the provision of ancillary services to the management of business activities (Sã, 2006). According to Martins et al. (2012), the performance of the accounting professional is an important factor in the process of accounting evolution and in the growth of the technologies related to the profession, since, parallel to the development of the profession and government requirements, the investment in resources for facilitating the activities and adding value to the service provided is greater.

Throughout history, accountants had to review their procedures and experience moments of transition, in which the mechanical phase was replaced by the technique and, soon after, by the phase of insertion of digital technologies. Since then, the accountant has sought to play a role ever more distant from the former bookkeeper role. In view of this new reality, the accounting professional must be in constant evolution and qualification, becoming an agent of changes in the market, capable of transmitting quality information that helps in the decision-making process of companies (Marion, 2005).

The term Information Technology (IT) is defined to choose the set of technological resources and computational system, use of information and non-human groups destined to the storage, processing and communication of such information, so as to be organized in a system that can execute a set of tasks, as described by Borges & Miranda (2011).

IT can be understood as a set of activities and solutions that allow the collection, storage, access, management and use of information. In that sense, technology has brought accountants with a different vision: they have left aside stacks of books and papers and replaced them with automated procedures and routines with digital storage. The emergence of the internet caused distances to be eliminated, contacts that took hours or even days to happen were reduced to seconds. With this, communication was facilitated
and streamlined, thus bringing improvements to the every day of the professional.

Updating the technology park is now a fundamental measure for business competitiveness. Therefore, the accountant should view information technology as a strategy for their business, as it directly affects the survival of organizations (Nunes, 2009). According to Ghasemi et al. (2011), IT has created significant benefits for accounting departments. Indeed, computer networks and systems have shortened the time required for accounting professionals to prepare and present financial information to management and stakeholders. The use of these new technologies has also improved the efficiency and accuracy of the information. They represent a gateway to a new era dominated by applications with a high degree of intelligence, and are also able to facilitate the search for information as a support for decision making (Ionescu et al., 2009).

The technological advances in the accounting area are at an accelerated pace and the innovations are growing every day, thus improving the service provided to customers. Accounting has begun to work with more precise numbers and apparently the errors have become smaller and smaller. The automation of accounting has brought advantages, such as increasing productivity and improving the quality of services provided and, consequently, raising the level of information security. It has been pointed out as one of the most significant components of the current business environment, and Brazilian institutions have used them abundantly, both at strategic and operational levels (Albertin & Albertin, 2008).

Bazzotti & Garcia (2006) recognize that information systems are classified according to their applicability and to the return obtained in the decision-making process. The operations support systems are responsible for supervising the activities, processes and updating the database, in order to provide the necessary information. Management support systems have the primary purpose of providing information for development in decision making.

With the continuous use of technological resources and information systems, accountants have become essential for tracking and monitoring activities, improving the quality of services provided. In order for the accounting information system to be considered useful, it must serve the company in its operational and management needs, transmitting information to all sectors and connecting them to the company’s processes. Given the advances in digital technologies, the possibilities of using accounting have increased significantly, making information about all sectors, activities and employees of the organization indispensable (Cotrin et al., 2012). Such integration is now possible thanks to the perceived advances in ICT for the rendering of accounting services.

Tasks that previously took days to be executed are performed in a fraction of a second and with significant reduction of errors and costs to the service operator. With the advent of ICT, the need to establish mechanisms that could measure their degree of acceptance by market professionals arose. The following section presents the Technological Acceptance Model (TAM) developed by Davis et al. (1989), which will base the theoretical model proposed in this study.

### 2.2 Technology Acceptance Model (TAM)

TAM’s development originated from an agreement with IBM Canada and the Massachusetts Institute of Technology (MIT) in the 1980s. The goal was to assess the market potential for new branded products and to identify what determined the use of equipment (Davis et al., 1989). TAM was designed to understand the corresponding similarity between external variables of user acceptance and effective use of the computer, seeking a better understanding in terms of user behavior by comprehending the utility and users disposition understood by them (Davis et al., 1989). TAM is the research method used to evaluate the acceptance of information technologies proposed by Davis et al. (1989), with the purpose of explaining the reasons that led users to accept or reject certain technology.

The foundations of TAM indicate that the tendency of an individual to manipulate a given system is guided by two principles: the perceived ease of use and the perceived utility; both measured the effects of external variables, such as system characteristics, growth method, capacity and use plan (Davis, et al., 1989). Perceived utility of use refers to the stage at which a person recognizes that the use of a private system is capable of perfecting his behavior. And the perceived ease of use is a stage in which a person recognizes that the use of an information system will happen regardless of his personal effort.

As Maia & Cendón (2005) explain, there are reasons that also hinder user behavior, such as the specific technical skills of using the systems, in the same way as the context and the space where the person develops use. In an inquiry with e-commerce users, Gefen (2003) considers the existence of another independent variable in the TAM model, the habit, resulting from the experience that users accumulate in relation to the use of an information system. The author proposes that the purpose of use for a new technology is a primary product of the rational analysis of the perceived responses by the perceived utility constructs and perceived ease of use. According to Gefen (2003), when people acquire experience, the force of habit dictates most intentional behaviors, that is, previous repetitive behavior tends to influence current behavior regardless of rational judgment.
The study developed by Diniz et al. (2016) eliminates the purpose-of-use ratio and includes the computer use self-efficacy (autoeficiência no uso do computador - AEC, in portuguese) standard; Costa Filho et al. (2007) analyzed the implications of the “habit” construct in their research; Shin (2012) introduced four aspects of quality: call, service, mobility and coverage; Fernandes & Ramos (2012) added the constructs trust, perceived risk and social influence; Moraes et al. (2014) added the constructs anxiety, ease of access, ability with the cell phone, fun and compatibility; and other researches that have been carried out in many areas.

2.3 Conceptual Model

This research adopts TAM as a conceptual model, the last model presented by Davis & Venkatesh (1996). This model recognizes that, for a behavioral response to exist, it is essential to have an intention; however, this intention results from intellectual return or beliefs, and this in turn consists of external motivations.

Describing a real fact, Venkatesh & Davis (2000) explain that the intrinsic motivations are the external variables; the intellectual responses are perceived utility and perceived ease of use; the intention is the behavioral intentions; and at the same time the behavioral response is determined as the current use of the system.

TAM assumes that the behavioral intention precedes the current and actual use of a system. In this situation, the consequences of external variables on behavioral intention are interfered by perceived utility and perceived ease of use (Venkatesh & Davis, 2000; Venkatesh et al., 2003).

In this way, they recognize that perceived utility and perceived ease of use influence a person’s behavioral intention to use a system and, consequently, reaches the actual use of the system (Davis & Venkatesh, 1996), as shown in figure 1.

![Figure 1. Technology Acceptance Model - TAM](Source: Elaborated from Davis et al. (1989))

3. RESEARCH METHODOLOGY

This is a descriptive methodology, since it seeks to investigate the existing relationships through the constructs capable of influencing the intention to use information technology. The descriptive research aims to portray characteristics of a particular group, seeking to investigate the relationship between the variables and the constructs of the conceptual model through a structured technique of data collection and analysis. Firstly, it was sought to identify, analyze and classify scientific articles dealing with the topic related to the importance of ICT in the accounting area. The descriptive research aims at observing the facts, describing the characteristics of a given population, recording, analyzing, classifying and understanding them, or establishing relations between the variables under study (Beuren, 2006).

For accounting professionals, the aim is to show how important ICT is for the growth and development of activities in accounting offices, maximizing time, providing timely information, and assisting decision making inside and outside organizations. According to Nunes (2009), information technology is currently a key measure of business competitiveness. Therefore, the accounting professional should see information technology in strategic terms, since it is a resource that directly affects the survival of organizations.

The quantitative approach was used based on the need to quantify and use statistical techniques, both in data collection and analysis. Moreover, the quantitative approach is used in descriptive research aimed at differentiating the relationship between variables and the coincidence between phenomena (Malhotra, 2012; Beuren, 2006). This research used a questionnaire with 16 closed questions, with the objective of analyzing technological acceptance in the accounting environment, which was elaborated through Google Docs. Malhotra (2012) describes that a questionnaire has three objectives: to demonstrate a set of questions in order to reach the expected information; lead and motivate the researcher to be absolutely involved with the research; reduce the response error. The 7-point Likert scale, organized in the range of 1 to 7 (I strongly disagree - strongly agree) was used, according to what was used by the author of the scales (Davis et al., 1989). Likert et al. (1993) state that their scale is a simple technique of distributing points on scales of action, since it does not cover the use of a set of judges, but relies on several samplings in order to be more reliable than the original technique.

Field research was conducted during the months of July to September 2016, and as a data collection instrument, questionnaires were used to analyze the index of technological acceptance by professionals in the accounting area. The questionnaire was also made available to groups of
accountants on social networks (Facebook) and shared by email with accountants of the researchers’ contact network.

We considered the following research variables distributed in the respective constructs presented in the conceptual model previously exposed.

<table>
<thead>
<tr>
<th>Dimension / Concept</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived utility</td>
<td>UP1: I can achieve my goals using modern accounting systems</td>
</tr>
<tr>
<td></td>
<td>UP2: I perform tasks faster using new technologies</td>
</tr>
<tr>
<td></td>
<td>UP3: Using new technologies streamlines the execution of my tasks</td>
</tr>
<tr>
<td></td>
<td>UP4: Using new technologies improves my productivity</td>
</tr>
<tr>
<td>Ease of perceived use</td>
<td>FUP1: Learning how to use new technologies is easy</td>
</tr>
<tr>
<td></td>
<td>FUP2: Training is required to use new technologies</td>
</tr>
<tr>
<td></td>
<td>FUP3: The use of new technologies is clear and easy to understand</td>
</tr>
<tr>
<td></td>
<td>FUP4: Using new technologies is easy</td>
</tr>
<tr>
<td>Behavioral Intent</td>
<td>IC1: I am motivated to use new accounting technologies</td>
</tr>
<tr>
<td></td>
<td>IC2: I think we should use new technologies as much as possible</td>
</tr>
<tr>
<td></td>
<td>IC3: I prefer to use new accounting technologies</td>
</tr>
<tr>
<td></td>
<td>IC4: I recommend using new technologies</td>
</tr>
<tr>
<td>Current system usage</td>
<td>UAS1: The use of new technologies is independent of suppliers</td>
</tr>
<tr>
<td></td>
<td>UAS2: It is safer to use a modern accounting system</td>
</tr>
<tr>
<td></td>
<td>UAS3: Using new technologies is a way to save money</td>
</tr>
<tr>
<td></td>
<td>UAS4: Using new technologies favors the development of the accounting class</td>
</tr>
</tbody>
</table>

Subtitles - UP: perceived utility; FUP: perceived ease of use; IC: behavioral intention; UAS: Current System Usage.1

The hypotheses adopted were those specific to the TAM:

- H1: Perceived ease of use positively influences perceived utility.
- H2: Perceived ease of use influences behavioral intention.
- H3: Perceived utility positively influences behavioral intention.
- H4: Behavioral intention positively influences the current use of the system.

The collected data were analyzed through the modeling of structural equations in order to statistically measure the effective connection between the constructs of the model. This structure is also considered as hypothetical path analysis of relationships between a set of variables, which is used to identify and analyze the correlation between latent variables. This procedure allows a number of benefits, including the probability of covering the application of a more detailed structure in its model, containing latent variables (not measured directly) and observable variables (indicators of latent variables), in addition to providing the analysis at the same time from a group of analogy (Hwang et al., 2010; Hair et al., 2009).

The procedure of modeling structural equations using the PLS technique shows the hypothesis and preparation of two directly associated models. The first model depicting the latent variables, or constructs, constitutes the model and the relation with the constructs and their variables, that is, the criteria that allow to estimate the constructs. The second model corresponds to the quality relation between the constructs and the clarification power in the model.

McDaniel & Gates (2003) assert that statistical analyzes are used to decrease and evidence data that allow for understanding and to allow the relationships between variables to be verified. Malhotra (2012) admits that there is a technique of data analysis that represents the choice of perfectly filled and acceptable questionnaires, the creation of data and their reproduction.

4. RESULTS

The collected data were treated and evaluated through the statistical program SmartPLS 3.2.1 in the Modeling of Structural Equations for the formation of data of general evaluation of the model and the information treated. In order to proceed with the data procedure, the structural model of the project was generated in SmartPLS, as shown in figure 2. In the model, the perceived utility, perceived ease of use, behavioral intention and current use of the system constructs are linked with their respective initial variables.

After the calculation of the PLS algorithm, the first criterion was the Variance Inflation Factor (VIF). This coefficient analyzes the multicollinearity of the data, whose presence would be capable of generating exorbitant or incorrect results; the ideal result would be a VIF value below 3.3. The initial verification of the data presented a satisfactory VIF, as evidenced in table 1, whose values

1 T.N. – The initials were kept according to the titles in Portuguese.
reached for the VIF met the criteria recommended by Kock (2015).

Table 1. Variance Inflation Factor (VIF)

<table>
<thead>
<tr>
<th></th>
<th>FUP</th>
<th>IC</th>
<th>UAS</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUP</td>
<td>1,183</td>
<td>1,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC</td>
<td></td>
<td>1,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAS</td>
<td></td>
<td></td>
<td>1,183</td>
<td></td>
</tr>
</tbody>
</table>

Source: Research Data (2016).

Subtitles - UP: perceived utility; FUP: perceived ease of use; IC: behavioral intention; UAS: Current System Usage.

Afterwards, adjustments were made to the initial model, eliminating the variables with lower factor loads in three interactions. The variables UP2 and FU2 were excluded from the model; IC2 and UAS1. With the elimination of these four variables we obtained values of Average Variance Extracted (AVE) above the parameter recommended by Ringle et al. (2014) of 0.50. Table 2 shows the final values of the adjustment quality criteria.

Table 2. Quality criteria adjusted model

<table>
<thead>
<tr>
<th>Constructs</th>
<th>AVE</th>
<th>Compound reliability</th>
<th>R²</th>
<th>Alpha by Cronbach</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP &gt; Perceived utility</td>
<td>0.656</td>
<td>0.850</td>
<td>0.155</td>
<td>0.7</td>
</tr>
<tr>
<td>FUP &gt; Perceived ease of use</td>
<td>0.794</td>
<td>0.875</td>
<td></td>
<td>0.8</td>
</tr>
<tr>
<td>IC &gt; behavioral intention</td>
<td>0.553</td>
<td>0.784</td>
<td>0.323</td>
<td>0.6</td>
</tr>
<tr>
<td>UAS &gt; Current System Usage</td>
<td>0.581</td>
<td>0.806</td>
<td>0.239</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Source: Research Data (2016).

Subtitle – AVE: Average Variance Extracted

The discriminant validity of the model is to compare the individual AVEs with the square root (Pearson’s correlation).

Figure 2. Structural model adjusted – SmartPLS.

Source: Research Data (2016)

Subtitles - UP: perceived utility; FUP: perceived ease of use; IC: behavioral intention; UAS: Current System Usage.

T.N. – The initials were kept according to the titles in Portuguese.
of the AVE of each construct (Ringle et al., 2014). The respective values are shown in Table 3.

Table 3. Discriminant validity

<table>
<thead>
<tr>
<th></th>
<th>FUP</th>
<th>IC</th>
<th>UAS</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUP</td>
<td>0.839</td>
<td>0.744</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC</td>
<td>0.239</td>
<td>0.762</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>UAS</td>
<td>0.488</td>
<td>0.489</td>
<td>0.712</td>
<td>0.81</td>
</tr>
<tr>
<td>UP</td>
<td>0.394</td>
<td>0.568</td>
<td>0.712</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Source: Research Data (2016).

Subtitles - UP: perceived utility; FUP: perceived ease of use; IC: behavioral intention; UAS: Current System Usage.4

We then examined the path coefficients (CC)5 of the hypothetical model. This index presents the hypothetical relations through the constructs, and they diverge from -1 to +1. At the moment in which values are close to +1, it conjectures that strongly favorable relations and those closest to -1 are in a negative relation. Usually the values of -1 and +1 are statistically relevant (Hair et al., 2009). Table 4 shows the CCs identified in the model after adjustments.

Table 4. Path coefficient

<table>
<thead>
<tr>
<th></th>
<th>FUP</th>
<th>IC</th>
<th>UAS</th>
<th>UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUP</td>
<td>0.018</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC</td>
<td>0.489</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAS</td>
<td>0.561</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UP</td>
<td>7.169</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Research Data (2016).

Subtitles - UP: perceived utility; FUP: perceived ease of use; IC: behavioral intention; UAS: Current System Usage.6

The relationship between the variables of the sample was then evaluated. Table 5 shows the results, covering the values reached for each of the variables.

Table 5. Analysis of relationship between variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Relationship between variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUP</td>
<td>IC</td>
</tr>
<tr>
<td>FUP</td>
<td>UP</td>
</tr>
<tr>
<td>IC</td>
<td>UAS</td>
</tr>
<tr>
<td>UP</td>
<td>IC</td>
</tr>
</tbody>
</table>

Source: Research Data (2016).

Subtitles - UP: perceived utility; FUP: perceived ease of use; IC: behavioral intention; UAS: Current System Usage.7

From the reading of figure 3 we conclude that H1 hypotheses (perceived ease of use positively influences perceived utility), H3 (perceived utility positively influences behavioral intention) and H4 (behavioral intention positively influences current system use) were confirmed by a coefficient greater than 1.96, which indicates statistical significance. However, the H2 hypothesis (perceived ease of use influences behavioral intention) was not confirmed.

5. FINAL CONSIDERATIONS

The purpose of this paper was to analyze the level of acceptance of ICT by accountants. It was possible to notice that the profession of the accountant had the mechanical phase replaced by the technique and, soon after, by the phase of the technology. In view of the new reality, accounting professionals have been in constant evolution and qualification, being able to transmit quality information, assisting in the decision-making process of the companies.

This research sought to answer the following question: what influence do the new technologies have on the professional accounting environment? For that, a field survey was carried out and the data collected underwent a statistical procedure through the modeling of structural equations, applying the process of partial least squares.

The objective of the study was to make possible the analysis of this conviviality and was fully achieved to the extent that it was possible to verify the degree of acceptance and effective use of new digital technologies by accountants, through the use of TAM.

It was observed that the practical consequences drawn from this field study show clear evidence of the relationship between the constructs to explain the intent and the current usage of a system by the accountants. The statistical results confirmed that the proposed conceptual model was appropriate to explain the current intention and use of the system. The endogenous constructs of perceived utility, behavioral intent and current system use had a coefficient of determination (R² adjusted) for the proposed model of 0.155, 0.323 and 0.239, respectively. Based on this result, it is concluded that the indicators that predict the construct of behavioral intention are adequate to explain 32.3% of the model and the current use of the system presents a power of enlightenment around 23.9% through constructs that predict this behavior. In this way, the results confirmed that the proposed
conceptual model is appropriate to clarify the intention and the current use of the system.

The results achieved in this research are able to collaborate with professionals in the accounting area, since it emphasizes the importance that ICT has on accounting. The research contributes in the academic scope to a better understanding about the factors that influence the adoption of new technologies by the accountants and their impacts on the intention and the current use of the system in the accounting area. Finally, more in-depth studies on TAM are suggested to identify factors that influence the intent and current use of information systems in other professional categories.

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