

THE RESISTANCE TO USE TECHNOLOGY AND INFORMATION SYSTEMS: A CASE STUDY IN THE RONDÔNIA'S STATE ACCOUNTS COURT

ABSTRACT

The change's concept combined with the implementation and use of Information Technology creates a reorganization almost always associated with the reactions of those involved. This research deals with the concepts of resistance to the use of technology and information systems in a public institution of Rondônia from the perspective of Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh *et al.* from the eight different models of technology acceptance area. It is a case study in Rondônia's State Accounts Court, the control public agency responsible for judging the public accounts, property and values, using as research instrument a structured questionnaire in Likert scale, interviews and literature & documentary's review. The general objective of this research is to analyze the use resistance problems occurred during the process of adopting the information system used, from the following specific purposes: verify the expected benefits at the time of adoption of the information system (1), identify the difficulties in implementing and utilization of the system (2) and characterize obstacles caused by use's resistance by users (3). Among the advantages achieved with the computerization, it stands out the easier access to information, effectiveness and procedural celerity, the implementation of cost reduction and ensuring sustainability. From the data obtained in the Middle Ranking faced of Unified Theory of Acceptance and Use of Technology, it appeared that the acceptance is related to the association of age group, the respondents' experience of use and gender, and indifference is allied with the age of the users.

Keywords: Resistance, Systems, Information Technology.

1 INTRODUCTION

The impacts caused on organizations by the changes resulting from technological advances impose the need to create mechanisms that allow to anticipate events and opportunities subsidizing the process of making decisions, according to Antonelli *et al.* (2010). Cassiano (2001) claims that the implementation of systems always involves change and, in general, humans are averse to any implication of change, as confirmed by Passos da Silva (2013) *apud*

Denton (2010), which claims that people tend to resist new information or changes in their acting way.

On this point, this research will discuss the concepts of resistance to the use of technology and information systems in a public institution of Rondônia from the perspective of Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh *et al.* (2003).

1.1 Objectives

The overall objective of this research is to analyze the use resistance problems occurred during the process of adopting the information system used in the Rondônia's State Accounts Court. As specific objectives, seek to verify the expected benefits at the time of adoption of the information system (1), identify the difficulties in implementation and utilization of the system (2) and characterize obstacles caused by use's resistance by users (3).

2 THEORETICAL REFERENTIAL

On the theoretical and conceptual reference that follows, the main references used to support the study are covered, conceptualizing systems and information technology (IT), the benefits and characteristics of the adoption of the systems, as well as resistance to the use of these technologies from the perspective of Unified Theory of Acceptance and Use of Technology (UTAUT).

2.1 Information Technologies and system's adoption

Organizations are experiencing an extremely competitive environment, set in a society deeply affected by the standards introduced by the information age. This reality causes an intense reorganization generating changes in organizations according to Audy & Brodbeck (2003).

Passos da Silva (2013) reveals that the concern with the adoption's process and implementation of information technology has been referenced by several authors. In Albertin's (2001) vision, the use of IT results in significant changes to the organization and the way to proceed should be planned in order to ensure success, being necessary to have the ability to anticipate and overcome inevitable resistance barriers.

To Audy & Brodbeck (2003) the implementation of an Information System's plan requires a series of steps that must be taken by the change process' agents to implement the defined changes due the planning process in technological and organizational dimensions.

According to Fetzner e Freitas (2012), the practice with a new IT is not a completely open process, because technologies as artifacts have properties that set limits to use. The change is located, described as a progressive and incremental adjustment and also a process of users' adaptation.

2.2 Resistance to the IT's use

Resistance to change is one of the frequent topics in studies on organizational change, considering adverse reactions to change, including the resistance as solvable problems for Change Management actions, as stated by Fetzner e Freitas (2012).

In a public organization's practical study, Passos da Silva (2013) observed that employees in some cases, do not appropriate the new way, preferring to work with a mechanically form to develop their tasks, being a probable result of lack of clarity and perception of the value that technology itself brings to its users and for the customer, ignoring or resisting the use by failing to realize the utility of an information system.

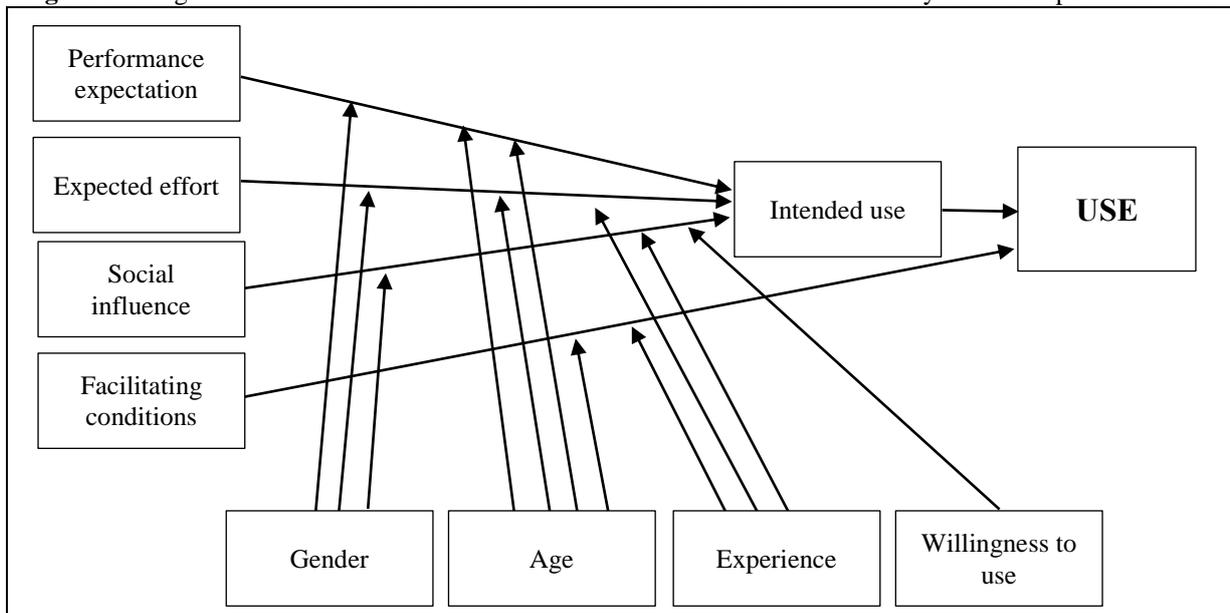
In Cassiano's (2001) vision, to overcome this hurdle, basically should make an essentially technical and professional work to expose the targeted goals and the methodology used, always demonstrating that the work aims to improve the conditions of its realization.

2.3 Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology – UTAUT, treated by Venkatesh *et al.* (2003) constitutes a tool to evaluate the possibility of successful implementation of new technologies. Builds upon major study of technology's acceptance area.

The theory was successful in integrating key elements, which had four independent and fundamental determinants constructs of intention and use of IT and four key relationships moderators, shown in Figure 1.

Figure 1: Integrated model into four constructs determinants to the use of IT and key relationships moderators.



Source: Adapted from Venkatesh *et al.* (2003).

According to the model shown, the four independent constructs play a significant role as User Acceptance's direct determinants and behavioral use of technology: performance expectancy, effort expectancy, social influence and facilitating conditions. In turn, these constructs are

moderated by four factors: gender, age, experience and willingness to use, confirmed as integral features of the UTAUT.

According to Venkatesh *et al.* (2003), the expectation of performance is the most influential factor on the intended use. The attitude towards the use of technology, self-efficacy and anxiety are theorized as not determinants of intention to use direct.

3 RESEARCH METHOD

This study was conducted from a field research of the qualitative-descriptive type. The method used was the case study in the Rondônia's State Accounts Court. The main data collection instrument used was a questionnaire, structured, tested and applied to users of EAP's system (Electronic Audit Process). Google Drive was used as development and implementation tool. As a strategy to improve the validity and reliability of the data, it was decided to include the observations made from semi-structured interviews and documentary analysis.

The questionnaire was available from April 17th to 24th of 2015 for all 618 users of EAP's system, although only 100 have heeded the invitation and answered to the questionnaire. Because of the impossibility of studying an entire population, the sample of respondents was, therefore, involuntarily selected.

The objective responses suggested in the questionnaire follow the five-point Likert scale, where respondents indicate the degree of agreement or disagreement with the statements on a scale of five categories ranging from "strongly disagree" to "strongly agree", according to Malhotra (2006). The theoretical basis of the issues under UTAUT model is presented in Table 1:

Table 1: The questionnaire’s anchoring to UTAUT model.

Independent constructs		Issues
Performance expectation	Shows the degree of contribution’s expectation with the job performance	The system change has damaged my work in some ways.
		The previous system (SAP) was more effective.
		I consider the EAP helpful to my daily work.
		The EAP allows me to finish my tasks quickly.
		The EAP’s use contributes to the increase of my productivity.
Expected effort	Highlights the perception of system’s use facility	At the beginning I had difficulty using the EAP.
		I still have difficulty using the EAP.
		I have colleagues who have difficulty using the EAP.
		For me, the EAP is clear and understandable.
		It was (is) easy to learn to use the system.
Social influence	Collective perceptions on the use of the system	I have colleagues who resist to the use of EAP.
		My superiors support the EAP’s use and facilities.
		The SAC-RO is committed to motivate EAP’s use and improvements.
Facilitating conditions	Belief in the support structure to the system	Information and manuals are available to help me use the system properly.
		Initial training for using the system was effective.
		The informatics sector is able to answer questions and provide the necessary support to the system’s use.
		The EAP’s information and functionality are reliable.
		The EAP’s functionalities are sufficient for my daily work.
Moderators		Issues
Gender		Demographic issues.
Age		
Experience		Educational level. Experience in the organ under study. Time experience with computers and systems (in whole professional life).
Willingness to use		Does not apply, since the use of the system is not optional.

Source: Adapted from Gomes (2014).

Analysis of the data obtained in this study aims to elucidate the implicit information and solve the problems suggested in goals. The techniques used for this purpose will be provided alongside the results.

4 RESULTS AND DISCUSSIONS

In this topic will be presented the results of documentary research, interviews and questionnaires with EAP’s information system users and also the analysis and discussion of those results.

4.1 Rondônia's State Accounts Court (SAC-RO)

The SAC-RO, a control office, is responsible for judging the accounts of managements and those responsible for public property and values of the State, Municipalities and indirect administration entities of government units, including foundations, funds and companies instituted and maintained by the public authorities and the accounts of those who have caused a loss, misplacement or other irregularity resulting damage to the Treasury, according to the Administrative Resolution No. 005/SACR-96 (1996).

4.2 Expected benefits at the time of EAP's system adoption

With the extensive computerization and free access to information, following the conversion to a progressively globalized world, Public Administration could only be conceived in this new perspective with the use of new tools. With the promulgation of Law No. 11,419 of December 19th, 2006 (BRAZIL, 2006), known as the Electronic Process Law, the aim was to evolve the process of the traditional form (paper) for electronic media, increasingly effective and adjusted to contemporary reality.

Among the advantages bargained with the computerization's process, highlights the facilitation of access to information and decisions with the convenience, the effectiveness of the trial's celerity principle, the implementation of cost reduction committed to material resources and management tasks, and also sustainability's ensuring, since tons of paper are saved.

Apart from ensuring the electronic structure of acts and procedural documents, the EAP requires the introduction of new computerized routines and the adaptation of existing ones. With the system, the Court approaches, integrates and inserts all those involved in its institutional activity for the external control to be faster, more economical and efficient,

therefore, converging with the efficiency's and reasonable duration of the process' constitutional postulates.

4.3 The implementation and use of the system's difficulties

From the Resolution No. 165/2014/SAC-RO, the Court constituted its processes exclusively in electronic form to carry out external control functions related to supervision, assessment and judgment of matters within its competence, without a physical process.

Decision No. 22/2012 of SAC-RO Honorable Superior Administration Council formally establishes the adoption of Eletronic Audit Process – EAP's system, gradually developed from the TRAMITA's system functionalities used by the Paraíba's State Accounts Court – SAC-PB, in parity with the proper adjustments in order to not harm the valid and regular fiscalization activities' development of State Accounts Court. The senior management of the agency was unanimous in regarding the deployment.

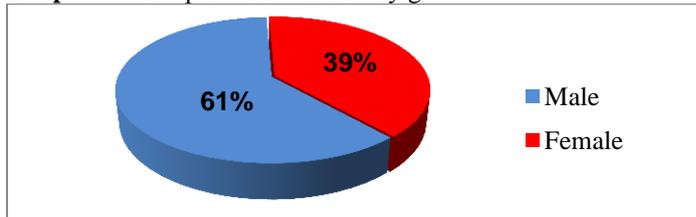
The SAC-RO's Strategic Plan (2011) defines in its 11th strategic objective the modernization's promotion and IT structure's strengthening, including systems implementation of actions, covering the stages of research, approval, training and data migration. According to the Virtual Monitoring of the Strategic Plan, all deployment plans of action had the deadlines extended.

Another difficulty was the lack of technical skills to perform the implantation. External talents were recruited to lead the procedures and perform the necessary training for those who would work in the implementation process and for the future system's users. According to the technical interviewees' reports, the qualification of users was not effective, since this was merely a platform for the presentation and difficulties arise as a result of use, being necessary to improve the tool.

4.4 Obstacles' characterization caused by resistance to the use

Among the 713 effective, commissioned, assigned servers and high school and university's interns of SAC-RO, 618 daily use the EAP's system. Graphic 1 shows the distribution of the respondents' sample under the criterion of gender.

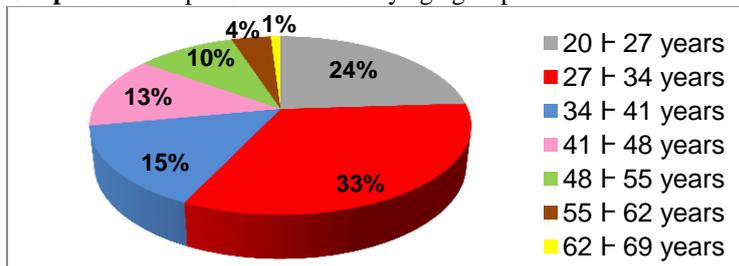
Graphic 1: Sample's distribution by gender.



Source: Authors.

The sample is composed in its majority by males (61%). Graphic 2 shows the sample distribution by age group.

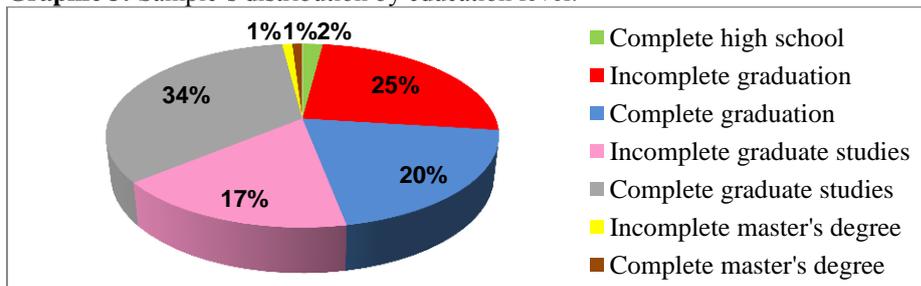
Graphic 2: Sample's distribution by age group.



Source: Authors.

As the graphic shows, the predominant age range is between 27 and 33, i.e., it is relatively young servers in relation to the minority of respondents, represented by ranges 55-69 years old. The following graphic shows the distribution of respondents by level of education.

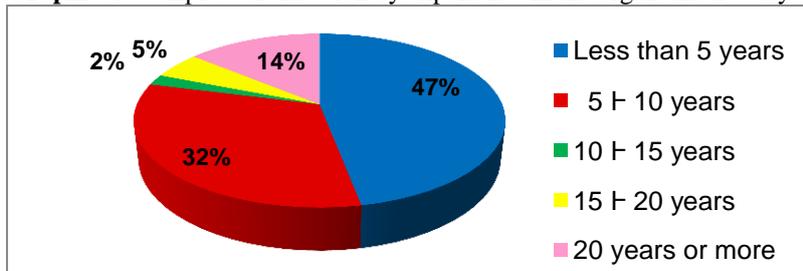
Graphic 3: Sample's distribution by education level.



Source: Authors.

The largest share of the sample (34%) have complete graduate studies, stating the majority representation of the responses by servers and suggesting that users have mostly highly educated level, although the minority reach a complete or incomplete master's degree. The following graphic shows the sample operating time in the organ under study.

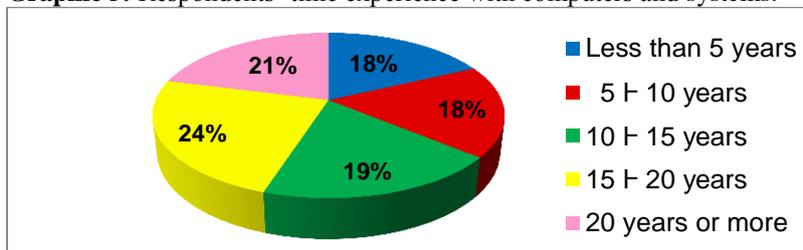
Graphic 4: Sample's distribution by experience in the organ under study.



Source: Authors.

Respondents with until 10 years of experience in the organ are dominant, and the smaller portion are servers with 10 to 20 years of experience. Graphic 5 shows the respondents' experience with computers and information systems.

Graphic 5: Respondents' time experience with computers and systems.



Source: Authors.

Among the five classes of servers' time with information technology experience, it was noted a relative uniformity in the results. However, it can be concluded that most users have a minimal know-how for the use of such technologies.

The research instrument consisted on 18 statements submitted by Likert scale, divided into a block of 06 questions based on perceptions against the subject and 12 questions on perceptions in favor of the subject by personal or social level. Follows in Table 2 the value assigned to each of the scale answers.

Table 2: Value assigned to each of the scale answers.

Answer	Qualitative value	Quantitative value
Strongly disagree	Very low	1
Partially disagree	Low	2
Neither agree nor disagree	Neutral	3
Partially agree	High	4
Totally agree	Very high	5

Source: Authors.

Data will be analyzed by the Middle Ranking's method which, according to Malhotra (2006), it is obtained from the weighted average division achieved by attending the responses and score awarded in Table 2, by the sum of the answers' frequency. Follows in Table 3 the average ranking of the block perceptions' against the subject by personal and social level:

Table 3: Average ranking of questions on perceptions against the subject.

Questions		Value attributed to answers					Weighted average	Average ranking (AR)
		1	2	3	4	5		
		Answers' frequency						
Personal	At the beginning I had difficulty using the EAP.	5	15	6	40	34	$(5*1)+(15*2)+(6*3)+(40*4)+(34*5)=383$	$383/100=3,83$
	I still have difficulty using the EAP.	11	21	8	49	11	$(11*1)+(21*2)+(8*3)+(49*4)+(11*5)=328$	$328e/100=3,28$
	The system change has damaged my work in some ways.	30	11	12	33	14	$(30*1)+(11*2)+(12*3)+(33*4)+(14*5)=290$	$290/100=2,9$
Social	I have colleagues who have difficulty using the EAP.	1	5	7	31	56	$(1*1)+(5*2)+(7*3)+(31*4)+(56*5)=436$	$436/100=4,36$
	I have colleagues who resist to the use of EAP.	15	13	17	28	27	$(15*1)+(13*2)+(17*3)+(28*4)+(27*5)=339$	$339/100=3,39$
	The previous system (SAP) was more effective.	19	20	16	34	11	$(19*1)+(20*2)+(16*3)+(34*4)+(11*5)=298$	$298/100=2,98$

Source: Authors.

From the data obtained in the Middle Ranking, it is possible to conclude that the servers had difficulty using the EAP in the beginning of implementation, recognizing the colleagues' difficulties and resistance in using the system, while demonstrating indifference regarding their own difficulty on using it, the damage to the actual work with the system change and the relative effectiveness of the previous system (SAP).

Table 4 presents the average ranking of block perceptions' in favor of the subject by personal and social level:

Table 4: Average ranking of questions on perceptions in favor of the subject..

Questions		Value attributed to answers					Weighted average	Average ranking (AR)
		1	2	3	4	5		
		Answers' frequency						
Personal	For me, the EAP is clear and understandable.	8	26	9	47	10	$(8*1)+(26*2)+(9*3)+(47*4)+(10*5)=325$	$325/100 = 3,25$
	It was (is) easy to learn to use the system.	6	22	7	49	16	$(6*1)+(22*2)+(7*3)+(49*4)+(16*5)=347$	$347/100 = 3,47$
	EAP was helpful to my daily work.	4	9	12	37	38	$(4*1)+(9*2)+(12*3)+(37*4)+(38*5)=396$	$396/100 = 3,96$
	The EAP's functionalities are sufficient for my daily work.	15	31	13	35	6	$(15*1)+(31*2)+(13*3)+(35*4)+(6*5)=286$	$286/100 = 2,86$
	The EAP allows me to finish my tasks quickly.	23	22	13	36	6	$(23*1)+(22*2)+(13*3)+(36*4)+(6*5)=280$	$280/100 = 2,8$
	The EAP's use contributes to the increase of my productivity.	22	15	23	26	14	$(22*1)+(15*2)+(23*3)+(26*4)+(14*5)=295$	$295/100 = 2,95$
	The EAP's information and functionality are reliable.	10	18	15	40	17	$(10*1)+(18*2)+(15*3)+(40*4)+(17*5)=336$	$336/100 = 3,36$
	There is information available to help me use the system properly.	5	13	13	45	24	$(5*1)+(13*2)+(13*3)+(45*4)+(24*5)=370$	$370/100 = 3,7$
Social	Initial training for using the system was effective.	19	27	11	32	11	$(19*1)+(27*2)+(11*3)+(32*4)+(11*5)=289$	$289/100 = 2,89$
	The informatics sector is able to answer questions and provide the necessary support.	8	15	24	27	36	$(8*1)+(15*2)+(24*3)+(27*4)+(36*5)=398$	$398/100 = 3,98$
	My superior supports the use and facilities of EAP.	4	7	20	28	41	$(4*1)+(7*2)+(20*3)+(28*4)+(41*5)=395$	$395/100 = 3,95$
	The SAC-RO is committed to motivate EAP's use and improvements.	3	6	8	32	51	$(3*1)+(6*2)+(8*3)+(32*4)+(51*5)=422$	$422/100 = 4,22$

Source: Authors.

The results clarify that the servers believe it was (is) easy to learn to use the system, that is useful to their daily work, the information and functionality EAP are reliable, existing available information to help them to properly use it. They consider the informatics sector able to answer questions and provide the necessary support to users and also recognize that their superiors support the use and facilities of the EAP and that SAC-RO is committed to motivate the use and improvements.

The servers were indifferent in their responses for clarity, understanding and functionality of EAP. That indifference also covers the system's contribution to work's celerity, increased productivity and the effectiveness of initial training for using the system.

Comparing the results checked by the UTAUT's parameters model presented in the literature review, the four independent constructs and moderators determine the acceptance or resistance factors of users in the use of technology. It is presented in Table 5 a list of with which the servers agree with the UTAUT's constructs and moderators.

Table 5: Connection between statements and the constructs and moderators.

Users' concordance	Constructs	Moderators
The EAP is useful to the daily work.	Performance expectation	Gender Age
At first, there was difficulty using the EAP.	Expected effort	Gender Age Experience
Colleagues have difficulty using the EAP.		
It was (is) easy to learn to use the system.		
Colleagues resist to the use of EAP.	Social influence	Gender Age Willingness to use Experience
The superiors support the use and facilities of EAP.		
The SAC-RO is committed to motivate the EAP's use and improvement.		
There is information available that help to use the system properly.	Facilitating conditions	Age Experience
The informatics sector is able to answer questions and provide the necessary support to the use of the system.		
The EAP's information and functionality are reliable.		

Source: Authors.

The highlighted moderators for the statements presented are age, experience and gender, leading to believe that acceptance is related to the association of age, experience's use of respondents and gender. Table 6 shows the list of statements which the servers were indifferent to the UTAUT's constructs and moderators.

Table 6: Connection between statements and the constructs and moderators.

Users' indifference	Constructs	Moderators
The system change has damaged my work in some ways.	Performance expectation	Gender Age
The previous system (SAP) was more effective.		
The EAP allows me to finish my tasks quickly.		
The EAP's use contributes to the increase of my productivity.		
I still have difficulty using the EAP.		
For me, the EAP is clear and understandable.		
Initial training for using the system was effective.	Facilitating conditions	Age Experience
The EAP's functionalities are sufficient for my daily work.		

Source: Authors.

The average moderator presented by the statements is age. It concludes that indifference triggered in these topics is combined with the respondents' age.

5 CONCLUSIONS

The change's concept combined with the implementation and use of Information Technology creates a reorganization almost always associated with the reactions of those involved. This research deals with the concepts of resistance to the use of technology and information systems in a public institution of Rondônia from the perspective of UTAUT's model.

It was verified that among the advantages achieved with the computerization, it stands out the easier access to information, effectiveness and procedural celerity, the implementation of cost reduction and ensuring sustainability.

As for the difficulties in the implementation, it was observed that all the action's implementation plans had their deadlines extended and the servers' lack of technical skills and inefficiency of initial training.

From the data obtained in the Middle Ranking it is possible to conclude that the servers had difficulty using the EAP in the beginning of implementation and recognize their colleagues' difficulties and resistance in using the system, while demonstrating indifference regarding their own difficulty on using it, the damage to the actual work with the system change and the relative effectiveness of the previous system (SAP). The users believe it was (is) easy to learn how to use the system, which is useful and reliable, existing information available to help them to use it properly. They consider the informatics sector able to answer questions and provide the necessary support, recognizing that their superiors and SAC-RO is committed to motivate the use and improvement of the new system. The servers were indifferent as to clarity, understanding and functionality of EAP. Indifference also covers the system's

contribution to work's celerity, increased productivity and the effectiveness of initial training for using the system.

Comparing the results observed in the parameters of the UTAUT's model, acceptance is related to the association of age, experience's use of respondents and gender, and the indifference is allied with the age of the users.

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