Electronic Reverse Auction: An Analysis of Its Use in Public Administrations of Cities in Brazil

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**ABSTRACT**

**Background:** The Brazilian law nº 10.520, of July 2002, establishes the method of trading within the Union, States, Federal District and Municipalities. The decree nº 5.450, of May 31th 2005, in its Article 4° § 1º, regulates and makes mandatory the use of electronic reverse auction for the purchase of common goods and services.

**Objective:** In this way, this article seeks to investigate the use/non-use, advantages/disadvantages, difficulties/facilities found in using this modality within the municipalities bordering the city of Curitiba, State of Paraná, Brazil, these being: Almirante Tamandaré, Araucária, Campo Largo, Campo Magro, Comolobo, Fazenda Rio Grande, Piraquara, São José dos Pinhais and Pinhais.

**Results and Conclusion:** It was found that the main advantages obtained by the use of the method of electronic trading, match: transparency in public expenditure management, impersonality in the negotiations process agility, reduced costs in general, equality (equality before policy the law), extension of negotiations.

INTRODUCTION

The similarity between the public and the private purchase, meet the parallelism that both seek the lowest price, with quality assurance. On the other hand, the public purchase requires specific procedures to have efficacy, as legislation; it no longer applies to private purchase, where procedures are freely chosen (Batista & Maldonado, 2008). Thus, the government finds itself obliged to use a high degree of formalism in their relations for goods and services procurement. This is reflected in the governability of a country where the values that ensure efficiency and effectiveness in the use of public goods of society should be preserved (Faria et al., 2010).

In this sense, Vasconcellos (2008) represents the electronic reverse auction as a form of bidding with the highest number of positive points for public administration, highlighting the significant increase in the number of suppliers and, hence, a greater reduction in prices. For Pena (2010) modernization and computerization of the media envisioned the need for new solutions to improve procedures and relationships between managers and managed. Public administration, meanwhile, innovated using the method of bidding favoring electronic form, the fast access via internet makes speedy and transparent the process of procurement by public institutions. Thus, the trading session is a method that extends the bidding dispute, allowing the participation of a larger number of companies in various states, in the extent that it does not require the presence of suppliers in the physical space or entities performing the electronic reverse auction.


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Thus, this article aims to investigate the use/non-use, advantages/disadvantages, difficulties/facilities found in using this modality within the municipalities bordering the city of Curitiba, State of Paraná, Brazil, these being: Almirante Tamandaré, Araucária, Campo Largo, Campo Magro, Colombo, Fazenda Rio Grande, Piraquara, São José dos Pinhais and Pinhais. The reason for conducting the research is reflected in the survey of contributions, benefits, difficulties, agility, advantages, cost reduction, and transparency of electronic reverse auction, within the entire management chain (Domakoski et al., 2011).

This article first presents the objectives proposed for this study, then a basis of the classical theory of electronic reverse auction. In a third step, it presents the research methodology used and the collected data, performs an analysis of all observed points, and finally exposes the appropriate conclusions.

**Theoretical Framework:**

The reverse auction arises in Brazil as synonymous with morality and economy. It is believed that the new modality, especially in electronic form, transcends boundaries ever imagined, under the regency of Law 8.666/93, by public administration, opening paths to competitiveness and consequent cost reduction (Alves, 2010). For Pena (2010), throughout time the measures adopted present themselves so much bureaucratic, adding an excessive burden to the public funds. According to these factors, the need to create a new tool faster and more efficient in choosing the best approach for public administration emerged. Seeking a greater administrative efficiency in the procurement process, a new bidding method was created, known as the electronic reverse auction. Concerning the formation of a public organization, for Saldanha (2006), it is derived from various reasons and interests, because it is targeted to meet the needs of the population. What is expected of public servants is that they present a responsive, efficient and accountable administration, where there is citizen participation, charging results, and the greatest end is the welfare of the whole society (Peixe, 2010).

According to Nunes et al. (2007), the efficient procurement of goods and services enables the organization to achieve its goals with less expenditure of financial resources and satisfy its stakeholders. For Niebuhr (2006), the definition of common goods and services matches the type of expression with large semantic fluidity, which concept is usually called indeterminate, in the extent that it can vary according to the subjectivity of the speaker. Slomski (2009) comments that the use of public resources should have as pillars efficiency and effectiveness. The efficiency is related to the production costs or the way in which resources are consumed by the institutions. While effectiveness, is related to the achievement of objectives and goals. Thus, is not enough to be efficient, consuming relatively fewer resources to offer services and products to society, it is necessary that these services meet the real needs of your demand, as to the timing, opportunity and quality.

For Schwaab (2012), the procurement system has many differences when comparing the public sector with the private sector. In public organizations, the focus is to satisfy the desires of society, transparency in actions and in the use of public resources, while in private enterprises, is to meet the aspirations of the owners and shareholders, for profit. The bidding for Barros (2009), therefore, in its historical evolution, let exclusively the economic aspect to become instrument, while still aiming to grant such a benefit to the public administration also sought to guarantee the possibility of participation of all interested, subjecting those with the commitment of obedience to the law and to the public notice to act impersonal, moral and honest. According to Meirelles (2002), the law that created the reverse auction was Law 10.520/02, whose precept is based on the legal certainty provided to the city manager. According to Mota and Martins (2011), the reverse auction became part of the arrangements for bidding by Provisional Measure No. 2.026/2000, which suffered eighteen editions, until it was finally replaced by Law 10.520, of 17/07/2002.

For Silva (2008), the reverse auction is a form of bidding for the purchase of common goods and services, whatever the value of the contract, in which the dispute for the provision is made in public session, through proposals and bids for the classification and qualification of bidders with the lowest bid, subdivided into two types, the attendance auction and the electronic auction. The electronic reverse auction was regulated by Decree 5.450/05, with the goal of making the necessary purchases less complicated in the public arena, and with the possibility to purchase goods and services through the use of an electronic communication system (Mota & Martins, 2011).

According to Justem Filho (2004), the electronic trading is the new mode of innovative bidding; it is a dispute for the supply of goods and common services, which takes place through the internet. This new form of bidding came to modernize and facilitate the routine of the public administrator. Electronic reverse auction is filling a gap left by existing procurement arrangements. Currently the country has experienced fraud in the public administration in bidding processes for the acquisition of goods and services.

The advantages of electronic reverse auction for Public Administration according to Pena (2010) are concentrated in its realization, through the use of technological means of information, this interaction between the public agents responsible for conducting the bid (auctioneer and support staff) and bidders (suppliers), occurs via the Internet. Thus, a greater supply in the universe of participants provides transparency, promptness and advertising on course of the event. Any interested person can track the development of the public session,
and have access to all the acts and procedures practiced since the opening to the closure of the works relevant to the bidding process.

For Sousa (2008), the practical advantages of electronic reverse auction are: the runtime, it has an average value to be paid, it provides the process for a greater number of bidders, the documents verification only of the winner, it makes the bidder to offer less value than offered previously. In the traditional process, the documents of all participants are checked before opening of proposals; the value of proposals does not undergo reduction, in some cases the notices do not mention limit values to be paid for the product/service.

Palaveri (2005) points out that there are numerous innovations such as: modifications regarding deadlines and forms of proceeding to the challenge and provide clarification. Ability to send lower bid by the bidder, as regards the latter offered by him, which stimulates competition by other placements in the procedure; enabling the possibility of hiring engineering services through electronic reverse auction. Thus, it is required the attention directed to the appropriate use of public money, in regard to purchases of goods and services for municipalities, especially those in small towns, where the physical and human resources are limited, disadvantaging their public activities in detriment to the satisfaction of the society desires (Justem Filho, 2005).

Who most benefits from this new form of bidding is the society, because at the Federal Government, all bids and events of an electronic trading are recorded in the minutes at the address “Compras Net”, which can be consulted by any interested citizen (Vasconcellos, 2008). Here one can consider the reasoning of Paula (2001) in recent decades, Brazilians have been engaged in the democratization process of the country, seeking to reform the state and build a public management model more open and participatory able to meet the social of Brazilian citizens, more transparent and geared to the public interest and efficient coordination of the economy and public services.

Alongside this theoretical basis, considering this scenario and applying the proposal of Gomes and Cavalcanti (2001), which offers a new model of business management within the knowledge society and business intelligence, focused on the management of capital knowledge, where productivity of knowledge should be understood as essential for today's managers. In this sense, the authors propose a business model for the knowledge society, with designation of Artificial Intelligence. For a successful knowledge management, the four capitals: environmental capital, structural capital, intellectual capital and relationship capital; are presented in this model and should be properly managed and monitored (Figure 1). Thus, applying this model of capital knowledge in this study:

- Environmental Capital: factors that describe the environment in which the company operates. Socio-economic characteristics, legal, ethical and cultural issues, government involvement, political stability, financial aspects, regulations, competition, customer market and technologies. In this case, it can be translated as the term of office period of the municipality, its participants, its influence, its continuing work against electoral changes.
- Intellectual Capital: ability, skill and experience of the employees of the company with regard to knowledge and how it can add value to the company and therefore, this capital cannot be considered as owned by the company. Its application in this research can be expressed by knowledge of specific legislation, knowledge of the modality, training, capacity building of the auctioneer and his staff.
- Structural Capital: factors that allow the company to work better, such as: administrative systems, trademarks, patents, information systems, infrastructure, processes, equipment, culture, projects, products and services. This capital should address three distinct processes, but which somehow complement each other, namely: the definition of the set of processes (key business), defining the profile of the company structure and the definition of tools to be used for evaluation and monitoring projects. In this case one can list the necessary structure for the use of the modality: computer(s), internet access, space, system.
- Relationship Capital: the company's relationship with its employees, customers, suppliers and partners, allowing somewhat to outline a strategy and hence its definition in the market (positioning). Here lies the interaction between the staff of auctioneers to the administration of the municipality, with suppliers, customers, the institution that provides the used system and especially the communication between the team itself.
Fig. 1: The Knowledge Capital
Source: Adapted from Gomes and Cavalcanti (2001).

Methodology:
This section presents the methodological aspects used for this study, showing the characterization of the cities and graphics data, the classification of municipalities and, finally, the design of the research.

Characterization Of Cities And Infographics Data:
Table 1 shows the infographics data, comparatively, of the cities in the metropolitan region of Curitiba, the city that is the capital of the state of Paraná in Brazil, while Figure 2 shows the map of the metropolitan region of Curitiba.

Table 1: Infographics data of the cities in the metropolitan region of Curitiba

<table>
<thead>
<tr>
<th>City</th>
<th>Area Km²</th>
<th>Population (2010)</th>
<th>Population Density (inhab/Km²)</th>
<th>GDP per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almirante Tamandaré</td>
<td>194,744</td>
<td>103,204</td>
<td>529.94</td>
<td>R$ 4,496</td>
</tr>
<tr>
<td>Araucária</td>
<td>469,240</td>
<td>119,123</td>
<td>253.9</td>
<td>R$ 61,264</td>
</tr>
<tr>
<td>Campo Largo</td>
<td>1,249,674</td>
<td>112,377</td>
<td>89.94</td>
<td>R$ 10,599</td>
</tr>
<tr>
<td>Campo Magro</td>
<td>275,352</td>
<td>24,843</td>
<td>90.15</td>
<td>R$ 4,117</td>
</tr>
<tr>
<td>Colombo</td>
<td>197,793</td>
<td>412,967</td>
<td>1,079.08</td>
<td>R$ 5,339</td>
</tr>
<tr>
<td>Fazenda Rio Grande</td>
<td>116,678</td>
<td>81,675</td>
<td>700.02</td>
<td>R$ 4,360</td>
</tr>
<tr>
<td>Pinhais</td>
<td>60,865</td>
<td>117,008</td>
<td>1,926.09</td>
<td>R$ 12,514</td>
</tr>
<tr>
<td>Piraquara</td>
<td>227,046</td>
<td>93,207</td>
<td>410.54</td>
<td>R$ 3,648</td>
</tr>
<tr>
<td>São José dos Pinhais</td>
<td>946,435</td>
<td>264,210</td>
<td>279.16</td>
<td>R$ 26,920</td>
</tr>
</tbody>
</table>

Source: IBGE (2013).

Fig. 2: Map of the metropolitan region of Curitiba
With observations on the map, Campo Largo is the largest municipality (Km²), although its population is not representative compared to Pinhais (264,210 inhabitants). The highest population density (inhabitants / km²)
is characterized in the city of Colombo, even though this is the fourth smallest city in area (km²). Araucaria is a significant city with the highest GDP per capita.

**Municipalities Classification:**
For a better analysis of the data obtained, the municipalities were categorized into classes according to Table 2, according to the use or not of the type of electronic reverse auction and the existence of a necessary structure for the use of electronic reverse auction, i.e. study was directed at organized groups so that they are homogeneous, to obtain a more careful and targeted examination.

**Table 2: Classification of the municipalities regarding the electronic reverse auction**

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Municipality that uses the modality of electronic reverse auction;</td>
</tr>
<tr>
<td>B</td>
<td>Municipality that does not use the modality and lacks necessary structures;</td>
</tr>
<tr>
<td>C</td>
<td>Municipality that does not use the modality and possesses the necessary structures.</td>
</tr>
</tbody>
</table>

Source: Authors (2013)

It is considered as necessary infrastructure for the use of electronic reverse auction factors such as: computer (s), internet access, space, system.

**Research Design:**
The research has its foundations in a questionnaire developed and implemented by the authors themselves, through the software tool of the Federal University of Paraná: LimeSurvey. This questionnaire was provided for the interviewees through the web platform at: [http://paginas.ufpr.br/questionariosUFPR/index.php/984825/](http://paginas.ufpr.br/questionariosUFPR/index.php/984825/), where through controlled access, each participant answered the questionnaire according to class to which your municipality is characterized.

The questionnaire was divided according to the classes of municipalities and targeted to each group. The answers are given according to their degree of agreement within the application of a Likert scale, which according to Sellitz et al. (1959) is an ordinal scale that allows the relationship to the researched phenomenon related claims, and empirically consistent with the final results. The Likert scale survey has five positions (1-5): strongly disagree (1), disagree (2), does not agree nor disagree (3), agree (4), fully (5) agree. There is still the possibility of expressing opinions, considerations on some issues that the participant believes appropriate, applying open questions.

The questions range from the implementation of electronic reverse auction, factors influencing the application of this tool, raising difficulties in its implementation, personal barriers, perceived advantages/disadvantages, influences on operational factors, raising targets expected, request for the modality implementation, training, indication of the tool use, among others. The selected cities were chosen according to their physical borders with the city of Curitiba.

**Data Analysis:**
This section presents the results obtained from the research. First municipalities classified as class A, those that use the method of electronic reverse auction, are presented: Almirante Tamandaré, Campo Largo, São José dos Pinhais e Pinhais. Then, class B, with cities that do not use the form of electronic reverse auction and lacks necessary structures: Fazenda Rio Grande and Araucaria. Finally, class C with cities that do not use electronic reverse auction mode and possesses the necessary structures: Campo Magro, Colombo and Piraquara.

**Class A – Municipality That Uses The Modality of Electronic Reverse Auction: Almirante Tamandaré, Campo Largo, São José Dos Pinhais And Pinhais:**

In all municipalities the auctioneers interviewed worked on average six years in the function and, on average, the municipalities already use the electronic mode of trading for eight years, being the system used in the city of São José dos Pinhais from Caixa Econômica and in the cities Almirante Tamandaré, Campo Largo and Pinhais from Banco do Brasil. There was no variance between the groups with respect to the main factors responsible for the use of electronic reverse auction, which were: Law No. 10.520, July 2002 and Decree No. 5.450 of May 31, 2005, in addition to Law 8666/93 for the city of São José Dos Pinhais.

The difficulties noticed in implementing this modality for the municipalities of Almirante Tamandaré and Pinhais occurred significantly to both systemic problems as technical unknowns. For Campo Largo, the difficulties in implementing occurred due to technical unknowns. The obstacles faced by training factor and knowledge of the modality were quite considered for the municipalities of São José dos Pinhais and Almirante Tamandaré, for Campo Largo and Pinhais these difficulties are considered moderate.

The advantages most noticed by municipalities were in this order: morality, cost savings, agility, time savings, increased competition, favoritism for possible negotiations, convenience for participants, equality, and finally the reduction of bureaucratic procedures. The disadvantages were significantly more noticed by the cities of Almirante Tamandaré and Pinhais, factors that contributed to this item were connection problems, system
crashes, and technical knowledge of the system used. The city of Campo Largo points as obstacle problems such as technical knowledge of the tool, unlike the Town of São Jose Dos Pinhais totally agree in that there were no perceived disadvantages with the use of electronic reverse auction.

The determinants factors were cost reduction, negotiating prices, increased competition and greater number of participants, where both the city of Campo Largo and Almirante Tamandaré totally agreed with these factors, this behavior can be seen a little more moderately at the municipality of Pinhais. This same behavior can be observed in factors like the reduction of operating costs, here related with copies, phone, and hand labor. At this point we emphasize the observation made by the city of Campo Largo, which reflects the fact that while chairing the session in the dispute room, other tasks can be developed in parallel.

The municipalities of Almirante Tamandaré, Campo Largo and Pinhais agree that electronic auction mode corresponds to a user-friendly system, its use indicates conform to the new technologies, laws, decrees and regulations. Factors such as image gain and marketing were few relevant to all municipalities in this class. Bookmark as personal motivation was only positively evaluated by the city of Campo Largo, who also cites the reliability of the method. When the auctioneers was asked about satisfaction with the modality, advice and ease of use with the system, the municipalities of Almirante Tamandaré and Campo Largo carried out an agreement, which cannot be observed through the responses of São José Dos Pinhais. All municipalities in this class affirmatively agree about the quality of the training received.

**Class B – Municipality That Does Not Use The Modality And Lacks Necessary Structures: Fazenda Rio Grande And Araucária:**

These municipalities do not adopt the method of electronic reverse auction, only the traditional reverse auction. In the case of Araucaria, as occurred for the administration to request the use of the modality of electronic auction, the return was given to the various companies offering the system and tools for carrying out the method. The result of these statements was satisfactory, even with a training targeting the auctioneer’s team. In the case of the of Fazenda Rio Grande, there was no request to the administration to acquire a structure for the use of electronic auction mode, because there is no interest of both the administration as well as the auctioneers team itself.

The interest in working with electronic auction can only be realized in the municipality of Araucaria, where the modality is seen as more appropriate for objects whose market is very small and the company headquarters are in other states. The municipality of Fazenda Rio Grande values the proximity of suppliers and their purchases are made in small quantities. The noticed advantages through the modality of electronic auction by the city of Fazenda Rio Grande can be perceived only for agents that undertake acquisitions in big quantities. For the town of Araucaria, celerity, participation of more companies, and therefore, hiring the lowest cost are factors seen as advantageous by the tool.

The disadvantage of using the electronic reverse auction cited by the city of Fazenda Rio Grande, when the buying small quantities of procured products, I think it is disadvantageous to the municipality because the supplier can refuse to provide and cause major problems for the administration. For the city of Araucaria, the difficulty of punishments for winning companies those refuse to sign the contracts and are from very distant cities. Both respondents have never used this tool and have knowledge of Law No. 10. 520, July 2002 and Decree No. 5.450 of May 31, 2005.

**Class C – Municipality That Does Not Use The Modality And Possesses The Necessary Structures: Campo Magro, Colombo And Pirapuara:**

For the municipalities of Colombo and Piraquara, there was a significant agreement on the knowledge of electronic reverse auction, as well as appropriate training and capacity building. In the municipality of Campo Magro, training was conducted for a permanent auctioneer commission. Another significant factor observed in the municipalities of Colombo and Piraquara is not using electronic reverse auction because the auctioneer does not feel comfortable in using the tool. The reason related by the first municipality matches on the slow delivery of original documentation from suppliers.

When asked about the incentive of municipalities in the use of electronic reverse auction, there is a huge gap between the municipality of Colombo, where the use of this tool is not encouraged, the related motive is not successful attempts occurred, however in Piraquara this incentive exists. All municipalities are unanimous in recommending the electronic auction, for the city of Colombo were cited reasons of transparency, economy and competitiveness. For the city of Colombo and Piraquara list the delay in delivery of documentation and products, and lack of communication with suppliers. The municipality of Campo Magro advertising and other principles of public procurement, are positive factors for the recommendation of electronic reverse auction.

When asked about the advantages of the use of electronic reverse auction, all completely agree on this point, for the same reasons already listed in the recommendation. About the disadvantages, municipalities of Colombo and Piraquara list the delay in delivery of documentation and products, and lack of communication with suppliers. The municipality of Campo Magro notices no disadvantage of electronic reverse auction method.

A willingness to work with the electronic auction has been demonstrated as significant to the city of Piraquara, mainly for the purchase of medicines. For the city of Colombo, this desire is reflected by the
experience factor. Knowledge of Law No. 10, 520, July 2002 and Decree No. 5.450 of May 31, 2005, was another positively significant factor in all municipalities.

**Conclusion:**

The key point of this research is the relation of the theory and purposes of electronic reverse auction modality and its effective reality in the routine of municipalities: Almirante Tamandaré, Araucária, Campo Largo Campo Magro, Colombo, Fazenda Rio Grande, Piraquara, São José dos Pinhais and Pinhais. With background in classical theory available, it was found that the main advantages obtained by the use of electronic reverse auction match: transparency in public expenditure management, impersonality in the negotiations, process agility, reduced costs in general, equality (political equality before the law), enlargement negotiations. Decree No. 5,450, of May 31, 2005, makes mandatory the use of electronic reverse auction for the purchase of common goods and services, except in cases where it proves its impracticability, proper justification by the competent agency.

**Class A – Municipality That Uses The Modality of Electronic Reverse Auction: Almirante Tamandaré, Campo Largo, São José Dos Pinhais And Pinhais:**

Within this class the factors that led the municipalities to the use of electronic reverse auction, correspond to the establishment of Law No. 10, 520, July 2002 and Decree No. 5.450 of May 31, 2005. All interviewees have experience of six years in function (average) and its municipalities adopt this tool on average for six years, reflecting a solid extensive experience of the auctioneers’ teams. The perceived advantages to the use of the tool have been suggested, agility, cost and time savings, morality, increased competition, greater number of participants, an increase of negotiations, the convenience of participants, which is in accordance with theory and propositions taken as advantageous in using this modality.

Particularly the advantage of lower prices is evaluated and is resulted of: enlargement negotiations, the greater number of participants, greater competition, and reduced operational costs, mainly observed with costs of copies, prints notices, telephone and labor-works. On the other hand, the difficulties encountered with the use of electronic reverse auction are not localized in the classical theory, can only be noticed according to the progress of activities in daily life, i.e., the disadvantages can be observed and evaluated in practice, in this sense they were identified as being: problems connecting to the system, and faults of the used system.

**Class B – Municipality That Does Not Use The Modality And Lacks Necessary Structures: Fazenda Rio Grande And Araucária:**

The municipalities adopt as a rule not to use the mode of electronic reverse auction, even for the city of Araucária, that exhibited satisfactory results. The advantages with the use of electronic auction, according to the municipality of Fazenda Rio Grande, are only noticed in agencies that perform purchases of large volume. These, for the municipality of Araucária, are translated with the expansion of negotiations and cost reduction.

For the town of Fazenda Rio Grande, the main obstacles, translate to the volume of municipal government purchase itself, corresponding to small amounts, which makes the implementation of electronic auction unfeasible. For the town of Araucária, they correspond to difficulties in punishments regarding denials of contract signatures, mainly because of the distance from the suppliers. The factor of proximity to the supplier corresponds to an important point for the town of Fazenda Rio Grande.

**Class C – Municipality That Does Not Use The Modality And Possesses The Necessary Structures: Campo Magro, Colombo And Piraquara:**

In this class the most significant factor was in the recommendation of the use of electronic reverse auction, even though none actually use the tool. The main factors considered advantageous, contributing to this recommendation agree with the advantages described by the theory of electronic auction: cost-effectiveness, transparency, extensive competition, and advertising. On the other hand, the disadvantages cited include delay in delivery of the original documentation, products, great distances from their suppliers and the lack of communication from the city hall to suppliers. The main reason for not using the electronic reverse auction can be noted with respect to the feeling of the auctioneer himself with the modality, because of discomfort in working with electronic reverse auction.

In general, the advantages mentioned by the municipalities interviewed are according to the purposes and characteristics found in the theory. The advantages have little variation among the municipalities, which can be translated according to the profile and reality of each one. The disadvantages listed are not found in any theoretical framework; reflect the daily work of each prefecture and his team of auctioneers. Some of these obstacles can be considered as non-predictable difficulties, which somewhat hinders its contextualization for preventive.
On the other hand, one can list some disadvantages that are frequent and may be classified as predictable, where treatments according to their events can be worked in a preventive and proactive manner. Planned training and technical skills - system of electronic auction, creating a team of IT support (to aid in systemic difficulties, preventive and corrective maintenance), expert system developed according to the specific needs of the municipality and in accordance with the profile and expectations of auctioneers team. Thus, this attempt to make use of the most attractive tool more readily used and accepted. The limitation of the research in accordance with its population was stipulated by the authors as a line cutting the municipalities of the metropolitan region of Curitiba/PR, that make geographic bordering of the capital of Paraná. Suggestions for future work correspond to investigate all the municipalities of the state of Paraná and the ratio of the observed behavior with the use of the modality of electronic reverse auction, with the city of Curitiba/PR.

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