

ORGANIZATIONAL AND BUSINESS INNOVATIONS BROUGHT BY THE SPED: AN EMPIRICAL STUDY FROM THE POINT OF VIEW OF ACCOUNTANTS AND TAX AUDITING BODIES

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ABSTRACT

The research described in this article aimed to analyze the perception of accountants and federal and state tax auditing bodies in the metropolitan region of Belo Horizonte, Minas Gerais, on the adoption of the Public Digital Bookkeeping System (SPED). Data collection was done through a survey type research, based on a semi-structured questionnaire with open and closed questions. The results arising from the information of 98 respondents were subjected to quantitative and qualitative analysis, performed by the technique of content analysis. Our findings expand the knowledge on the subject helping to identify that the SPED increased the tax efficiency of the government and brought significant organizational impacts. This required that companies innovate in their corporate and business processes. All in all, the research findings show that SPED: (i) can be considered a milestone of the 'digital age', (ii) represents a technological breakthrough which modernized the system of fiscal controls, (iii) led innovation in the practices of taxing and accounting bookkeeping, (iv) increased government access to business information, (v) caused cultural changes, (vi) required learning new methodologies and technologies, (vii) promoted improvements in compliance with accessory tax obligations, (viii) reduced the tax evasion and (ix) increased the revenues of the Government. It was also found that accountants and regulatory agencies need to better prepare for the use of SPED, which is an organizational and business innovation that is here to stay.

Keywords: Public Digital Bookkeeping System. Organizational and Business Innovations. Corporate taxation. Accounting and taxing records..

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1 INTRODUCTION

Brazil has one of the most complex tax regimes in the world and one difficult to apply (SIQUEIRA, 2005; PEGAS, 2015). Companies, in addition to a large variety of taxes, have to meet around 170 accessory obligations, the numbers alone making their collection difficult (BRITTO, 2008; PEGAS, 2014). According to Amaral *et al.* (2009), Brazilian taxpayers frequently act illicitly to flee the high tax costs. Maia (2012) reminds us that the fight against evasion has not been efficient, tax inspection in Brazil, up to the year 2006, having been carried out in a very old-fashioned way. The inspecting bodies (OF) visited the companies, analysing the accounting and tax records, which were printed on paper, and expended a great deal of effort in trying to find irregularities in this way.

Given the advances in information and communication technology (TIC) and the need to create methods for combatting evasion, some countries have tried to take advantage of these technologies by creating a so-called “Electronic Government” (GE) as a means of controlling taxes (OKOT-UMA, 2001; CHEN *et al.*, 2006). In Brazil, this occurred in 2007 with the institution of the Public Digital Bookkeeping System - *Sistema Público de Escrituração Digital* (SPED) (BRASIL, 2007). Several years have now passed since the institution of the SPED, but still little is known about the perception of the several players involved, regarding its advantages and disadvantages. This is because the transformations arising out of the setting up of the SPED may have required the adoption of organizational and business innovations on the part of the companies, which required adaptations of OF accountants to respond to these innovations.

Given this context, the objective of the research described in this article is to analyse the perception of accountants and Federal and State inspectors (OF) in the Belo Horizonte metropolitan region regarding the adoption of the Public Digital Bookkeeping System (SPED).

More than the importance of the theme highlighted by Lizote and Mariot (2012), and who stressed the magnitude and complexity of the organizational changes brought in the train of SPED, the justification of the present study is the need to understand the impacts caused by it on the taxation method of Brazilian companies, because this theme is still only incipient in the literature, especially the Brazilian, with little analysis of the question, as Geron *et al.* (2011) point out. Additionally, according to Futema *et al.* (2009), the effects of the tax changes on companies are of great interest for the theory of finances and business management, in addition to being a question of significant relevance for academia and society, further justification for this paper, and stressing its contribution.

The article is presented in four more sections in addition to this Introduction. Section two examines the principal theoretical concepts utilized, followed by section three that looks at the methodological procedures. Section four presents the results of the quantitative and qualitative analyses of the two groups of respondents. Section five closes off the article, presenting the main conclusions in line with the initial objectives.

2 INNOVATIONS AND PROPOSITIONS OF THE PUBLIC SYSTEM OF DIGITAL ACCOUNTING

The concern of companies in fulfilling their obligations towards the Federal, state and municipal tax authorities has grown appreciably in recent years (LIZOTE; MARIOT, 2012). Additionally, organizations have shown concern with the high cost of taxes on their activities (PEGAS, 2014; PEGAS, 2015) and seek alternatives for the purpose of reducing the payment, or even ceasing to pay taxes – which can sometimes occur illegally. Tax evasion, in the view of Abdenur

(2011), can be considered the factor that most compromises the development of an economy, especially the economies of emerging countries, which is the case of Brazil.

According to a recent study of the Brazilian institute of Planning and Taxation (IBPT), Brazilians worked up to 31 May 2014 to pay taxes, in view of the fact that 41.37% of the gross revenue of the taxpayers was destined for the payment of Federal, state and municipal taxes (IBPT, 2014). A survey undertaken by the British organization Tax Justice Network (TJN) points out that Brazil is the country that most suffers from loss of tax revenue in the world, which corresponds to 11.24% of the gross domestic product (GDP). This means that it is prevented from collecting 280 billion dollars through the non-payment of taxes, as shown in Table 1. The same study points out that the United States is the country that possesses the largest absolute tax evasion, losing 337 billion dollars annually, but this represents only 2.23% of this nation's GDP, and it is situated in fourth place among the countries of the world than most lose through tax evasion, as a proportion of the respective GDPs (TJN, 2011). Another study, carried out by this same organization, found that the figure world-wide for tax evasion is 4.9% of world GDP (TJN, 2014).

TABLE 1 - Money lost yearly through tax evasion

POSITION	COUNTRIES	EVASION	GDP VALUES	EVASION/ GDP (%)
1	Brazil	280.1	2,492.9	11.24%
2	Italy	238.7	2,198.7	10.86%
3	Germany	215.0	3,577.0	6.01%
4	USA	337.3	15,094.0	2.23%

Source: Prepared by the authors based on International Monetary Fund data (FMI, 2011) and Tax Justice Network (2011). Amounts in millions of dollars.

The GE is a proposal for the integration of companies with the OF by electronic means. The term GE was used for the first time in 1999 in the United States and is one of the greatest innovations in supervisory systems in the world (CHEN *et al.*, 2006). Even given the socio-economic relevance of the theme of GE, the innovations and correlated measures involved, whether originating in government or in the companies themselves, have still been little studied (ANDRADE Jr.; CERANTO, 2013). Equally there appears to be an alignment between innovations and sustainability not only on the part of the companies, but also of the governments that need to recognise the risks and challenges relative to the development of companies and markets (PINSKY *et al.*, 2013). In this sense, SPED innovated the method of government supervision with the proposal to reduce tax evasion and thus make competition between companies more balanced, between those that pay taxes and those that do not. According to Duarte (2008), the SPED is a form of GE that becomes an overseeing of companies, in real time, by the OF and which can be compared to a fiscal "Big Brother". In which the targets are obtaining information on the operations carried out by the company and combatting evasion.

With the new wording given by Decree nº 7.979 emerged on 8 April 2013, SPED can be defined as the "instrument that unifies the activities of reception, validation, storage and authentication of books and documents that make up the accounting and tax bookkeeping of businessmen and corporations, including those immune or exempt, by means of one only computerized flow of information". SPED consists of the discharge, in a more modern way, of the accessory obligations for OF by means of digital electronic files. Companies cease to send these obligations on paper, doing it instead by digital means on-line, signing digitally, and using a SPED certificate. The three main sub-projects that make up the SPED are the Digital Accounting Bookkeeping - *Escrituração Contábil Digital* (ECD), the Digital Tax Bookkeeping - *Escrituração Fiscal Digital* (EFD)

and the Electronic Invoicing - NF-e *Ambiente Nacional*, and it is based on mutual transparency in the search for positive results for the whole of society. SPED has started to establish a new type of relationship between the OF and companies, and comprises also the Contributions SPED - *SPED das Contribuições*; SOCIAL SPED; Electronic Invoicing of Services - *Nota Fiscal de Serviços Eletrônica (NFS-e)*; Electronic Transport Bill of Lading - *Conhecimento de Transporte Eletrônico (CT-e)*; Transition Tax and Accounting Control - *Controle Fiscal e Contábil de Transição (FCONT)*; Books for the Determination of Electronic Real Profit - *Livro de Apuração do Lucro Real Eletrônico* and the Central Brazilian Balance Sheets - *Central de Balanços Brasileira (E-LALUR)*.

SPED has the objects of promoting the integration of the OF through the standardization and sharing of accounting and tax information; rationalizing and making uniform the accessory obligations for companies, with the once only transmission of distinct accessory obligations for different OF. It also seeks to diminish tax evasion. For this reason Lizote and Mariot (2012) observe that the government has been developing and innovating its controls and methods of supervision every year, having presented significant progress with the development of SPED and its sub-projects.

In the view of Dinis (2009), this system came with a promise to proportion benefits for taxpayers, such as the simplification of the accessory obligations, the elimination of manual digital invoicing, the reduction of errors in bookkeeping entries and of costs with printing and purchase of paper and forms, in addition to better storage for documents. It thus also contributes with a favourable impact on the environment.

Geron *et al.* (2011) analysed whether there had been operational improvements in companies on the adoption of SPED. In practice, the empirical results obtained by these authors demonstrated that Brazilian taxpayers did not obtain satisfactory results in terms of reduction of time for issuing an invoice, greater agility and productivity in the receipt of merchandise nor any reduction in the purchases of paper. Many of them retained the perspective that they would receive benefits in the future, mainly in relation to the reduction of the risk of fraud and the reduction of operational expenses.

Thus, from what has been stated, it remains to confront the perceptions of the different interested parties to know whether, in fact and to what degree, this is justified from the business perspective, or is simply a useful mechanism for the government.

3 METHODOLOGICAL PROCEDURES

The research described herein consisted of an exploratory and descriptive study of a quantitative and qualitative nature (COOPER; SCHINDLER. 2003; GEORGE; BENNETT. 2005). In addition to the bibliographical research, data collection of the survey type was carried out in accordance with the instructions of Comin *et al.* (2014) based on the variables extracted from the literature, to reflect the perception of SPED of the accountants and the OF over the period 2007 to 2012. Geron *et al.* (2011) suggest that this method is sufficiently sensitive to capture the specific factors inherent to the perception of the effects caused by SPED in companies.

Regarding the approach of the research, the present study is of a quantitative and qualitative nature. It should be pointed out that the non-probabilistic approach for the analysis of sample data imposes restrictions on the generalization of the results obtained. The universe of research selected consisted of accountants and OF. Although it is not possible to dimension the representativeness of the sample of professionals in relation to the total population, care was taken to comply with the minimum established in the literature (*e.g.* HAIR *et al.*. 2010; HAIR *et*

al., 2011) of 30 to 40 observations made by 51 accountants and 47 tax auditors. The sampling method utilized in the research was of the intentional type, justified by the typical nature, that is, by the informational capacity that the respondents possess about the problem under examination (JORDÃO *et al.*, 2014). According to Granlund (2003) and Jordão and Novas (2013), this type of selection is justified, as access to the information constitutes one of the greatest difficulties in this type of research. The accountants examined occupy positions in private companies or are owners of accounting office's possessing experience with SPED in their professional activities. The OF are represented by the tax-inspectors of the state of Minas Gerais or the Inland Revenue, that have had experience with the SPED project, since 2006, when the use of electronic invoicing started. The two groups of respondents are active in the Belo Horizonte Metropolitan Region. These informers were contacted in the period from October 2012 to January 2013, by e-mail and personally. Qualitative results proceeding from the information from 98 respondents were submitted to qualitative and quantitative analysis. The quantitative part was based on descriptive statistics and the compilation by groups through the evaluation of average ranking. The results of the statistical tests were evaluated using the Statistical Package for the Social Sciences (SPSS) programme and SmartPLS, generating a set of descriptive analyses. To evaluate the perception of the accountants and inspectors, a Likert type scale was adopted with five categories of replies (COMIN *et al.*, 2014), going from "totally disagree" to "totally agree" (JORDÃO; COLAUTO, 2013; JORDÃO *et al.*, 2015). At the end of the research questionnaire, four open questions were presented for the qualitative analysis. To verify whether there exists a relationship between the items evaluated and the respondent's profile, a technique entitled Chi-Square Automatic Interaction Detector (CHAID), proposed by Kass (1980), was utilized – which allows the evaluation of the relationships between the dependent variable and others at a categorical or continuous level.

The result is presented in the form of a tree, where the predictive variables more associated with the dependent variable are displayed. To increase the internal validity of the study, we sought to aggregate information collected with other sources. This process is known as triangulation (JICK, 1979). In triangulation, an inter-group and intra- group analysis was undertaken, to construct a chain of evidence and provide more robustness to the study, following the recommendations of Eisenhardt (1989). Thus, wherever possible, information derived from one source was confronted with that from others to confirm and validate, or perhaps reject it.

It should be pointed out that, in the present work, this procedure started with the aggregated descriptive statistics themselves, subsequently seeking to analyse the different topics in each one of the two groups of respondents separately. Subsequently, we sought to undertake a qualitative analysis through the technique of the analysis of content, as recommended by Bardin (2004). To save time and space, the results are presented already triangulated throughout the text, that is, without explicit segregation of the results by data source (JORDÃO, 2009; JORDÃO; SOUZA, 2013). Nevertheless, the external validity was augmented by confrontation with the base referential, corroborating, complementing, or contradicting the previous results and the bases contained in the platform of theoretical research support.

4 PRESENTATION AND INITIAL ANALYSIS OF THE RESEARCH RESULTS

In this section, the results of the quantitative and qualitative research are presented, starting with a comparison of the general view of the respondents. Following that, an analysis of the perceptions of the effects provoked by SPED is made and the future perspectives relative to

it in each group of respondents (starting with the accountants and then the OF), based on quantitative and qualitative analyses respectively.

4.1 Typology of the respondents and comparison of their general view

The analysis of the result of the typology of the respondents showed a balance between the two categories investigated, as there were 48% of inspectors and 52% of accountants. The premises that support the quantitative part of the research were broken down into 12 questions, and were evaluated by the p value, p values over 0.05 indicating an absence of significant differences of perception between the accountants and the OF. The quantitative results appear in TABLE 2.

TABLE 2
Perception of the respondents of SPED

Nº	QUESTIONS	Mean	Standard Deviation	CHAID (p Value)	Differences of perception
1	With the use of SPED, the supervisory bodies have become more efficient in identifying and combatting tax fraud.	4.25	0.79	0.23	No
2	The companies are prepared for SPED.	2.61	0.91	0.00	Yes
3	The profession of accountant has increased in value with the advent of SPED.	3.58	0.96	0.10	No
4	SPED has increased the sharing of information between the supervisory bodies and companies.	4.27	0.74	0.00	Yes
5	SPED has contributed to the reduction of evasion.	3.82	0.93	0.00	Yes
6	The collection of taxes has increased because of SPED.	3.47	0.93	0.03	Yes
7	Companies are being more closely monitored after the implementation of SPED.	3.48	0.88	0.05	Yes
8	There has been a reduction of operational costs for your entity, because of the adoption of SPED.	2.54	1.06	0.00	Yes
9	The adoption of SPED has provoked additional investments in your entity.	4.02	0.98	0.00	Yes
10	SPED has been a secure means of transmission of information to the supervisory bodies.	4.08	0.85	0.87	No
11	SPED has been responsible for improvements in the discharge of accessory tax obligations.	3.75	0.88	0.18	No
12	SPED has been responsible for cultural changes in your entity. (for example the printing of books and documents on paper).	3.88	0.90	0.00	Yes

Source: Research data.

The analysis of the data in TABLE 2 demonstrated a similarity of perception between accountants and OF in questions 1, 4, 9 and 10, where means greater than four were obtained. This indicates that, in the perception of the respondents, SPED contributed to OF being more efficient in identifying and combatting tax fraud, confirming Eckert *et al.* (2011); to an increase in the sharing of information between the OF and companies; and also to the occurrence of an increase in investments in the entities, and was considered a secure means of transmission of information to the OF.

The idea that the SPED increased the sharing of information between these bodies and companies was also confirmed by Salvino *et al.* (2011), who state that given the technological advances, globalization and the need to implement new processes, the companies and the tax authorities understand that they must modernize and increase integration and the sharing of information. This is one of the reasons for the creation of SPED, which has provoked changes in the method of accounting and tax bookkeeping, substituting hard copy by digital resources.

In analysing the statements where the p value was over 0.05, the perception inherent in questions 1 and 10, was confirmed and the observations for questions 3, 7 and 11 also expanded. The mean (around 3.5), indicates a slight tendency to agreement, but, taken together with the p value, it can be seen that the profession of accountant has increased in value, corroborating Silva and Krüger (2013); and that companies are being more closely supervised after the implementation of SPED, improvements having been made in the discharge of accessory tax obligations due to it, in line with Muraro *et al.* (2014).

TABLE 3 indicates the situations where there exist greater differences of perception between the groups of respondents (corresponding to questions 2, 5, 6 and 8), detailing them per group. It must be stressed that very significant differences between the perceptions of the two groups analysed were not detected.

TABLE 3 - Comparison between the perceptions of the accountants and the supervisory bodies

Question	Total Sample				Supervisory bodies				Accountants				
	Nº	Mean	Standard Deviation	N	%	Mean	Standard Deviation	N	%	Mean	Standard Deviation	N	%
2		2.608	0.911	98	100	3.213	0.883	47	48	2.265	0.614	51	52
5		3.823	0.927	98	100	3.320	0.907	47	48	4.120	0.792	51	52
6		3.469	0.925	98	100	3.210	0.810	47	48	3.617	0.925	51	52
8		2.538	1.065	98	100	3.138	0.824	47	48	2.205	0.854	51	52

Source: Research data.

The results indicate a divergence of perception between the OF, who think that the companies are prepared for SPED, and the accountants, who think they are not. This can be seen in TABLE 3 with means equivalent to 3.213 and 2.265, respectively. This fact was also detected by Gegers (2012), who observed that in Brazil, in the year 2012, 90% of the companies were not prepared to deal with Tax SPED and with the correct discharge of accessory obligations by digital means. The idea was that they still needed to make several internal adjustments such as the capacitation of the workforce and investments in IT.

Question 5 on the other hand deals with the perception whether SPED would have contributed, or not, to the reduction of evasion. The mean obtained by the OF is 3.320, lower than the mean presented by the accountants of 4.120. So that, the research demonstrates that for the OF the degree of accord that SPED contributed to the reduction of tax evasion is less. Reinforcing this question, Sampaio (2007) affirms that SPED is an effective tool in combatting tax evasion.

In the analysis of question 6, relative to the increase of tax collection because of SPED, it can be seen that the OF are indifferent to the fact, and the accountants have a positive perception of it, in line with the thinking of Ilarino (2010), who reports that the computerization of the tax system, carried out by the Federal Government, had the objective of unifying and cross-checking company accounting and tax information to increase tax collection.

We tried to identify if there was a reduction of operational costs in the entities because of the adoption of SPED in question 8, where we observed a mean for the OF of 3.138, which shows indifference to the question, while the figure found for the accountants is 2.205 which reveals a divergence

and disagreement in relation to the reduction of operational costs. In the view of Meni (2012), SPED increases the costs for companies, even if it is fundamental for the market. The idea is that setting it up produces costs with the training of personnel and the preparation of internal teams and clients.

Regarding question 9, one can see that the adoption of SPED produced a need for additional investments on the part of the entities, which can be observed in the mean obtained by the OF, 3.641. In the accountants' group a high level of evidence was perceived with equivalent values, 4,026, as demonstrated in TABLE 3. This situation is explained by Gegers (2012), who reveals that companies, to deal with Tax SPED and the correct discharge of accessory obligations by digital means, need to make several investments in the capacitation of the workforce and information technology.

4.2 Description and quantitative analysis of the results of the accountants

Examining the replies to the questions presented in TABLE 4 by the accountants, for a more detailed understanding of their perceptions.

The data analysed point to the fact that the accountants have perceptions that companies were not prepared for SPED, running counter to the observations of Gegers (2012) that there was no reduction of costs because of the adoption of SPED. This can be observed through the means smaller than 3, in statements 2 and 8. In these questions, the results point to the contrary. This can be perceived through the mean, mode and median having a value equal to or near to 2. Authors such as Silva and Krüger (2013) have suggested that SPED would generate an increase in disbursements for the interested parties. This also is the thinking of Maia (2012), who affirms that companies still need to adapt to this SPED digital taxation era, and the lack of knowledge and unpreparedness can bring loss in its train. In the other questions, a general tendency to agreement with the affirmations can be observed.

TABLE 4 - Perception of the accountants regarding SPED

AFFIRMATIONS	1	2	3	4	5	6	7	8	9	10	11	12
MEAN	4.24	2.27	3.61	4.33	4.12	3.61	3.63	2.20	4.02	4.16	3.67	3.78
STANDARD DEVIATION	0.86	0.67	0.98	0.77	0.79	0.92	0.92	0.85	0.91	0.68	0.95	1.06
MODE	4	2	4	5	4	4	4	2	4	4	4	4
MEDIAN	4	2	4	4	4	4	4	2	4	4	4	4

Source: Research data.

In the first question it was sought to evaluate the efficiency of the OF in identifying and combatting tax fraud, confirming Eckert *et al.* (2011). It was observed that, for the accountants, these bodies had become more efficient. This can be seen through the mean equivalent to 4.24. In it, it is possible to observe that there was significant variation in the similarity of perception of the accountants through the standard deviation equal to 0.86. In its turn the analysis of trends indicated a high degree of confirmation of this perception through the values of the median and mode equal to 4.

From the analysis of question 3, it was sought to discover whether the accountants perceived that their profession had gained in value by the advent of SPED. The result of the mean obtained – 3.61 indicate that the accountants agree that the profession has gained in value, in line with Silva and Krüger (2013). It can be seen however that the standard deviation, equivalent to 0.98, indicates that they did not have a harmonious perception. The value of the mode obtained, equal to 4, represents the presence of a strong confirmation of such a relationship.

Questions 4 and 5, analysed together because of the mean reached of 4.33 and 4.12, revealed

that SPED increased the sharing of information between the OF and the companies; and contributed to the reduction of evasion. The moderate value of the standard deviation observed, 0.77 and 0.79, indicates that the respondents possessed similar perceptions, corroborating Salvino *et al.* (2011).

Question 6 shows through the mean, mode and median the perception that the collection of taxes increased because of SPED, although some respondents are insecure about the matter. With the analysis of question 7, it is possible to see that companies have been more monitored in the view of the accountants. The mean of 3.63 demonstrates that companies have become more monitored with the advent of SPED, corroborating the findings of Eckert *et al.* (2011). It can also be seen, that the high standard deviation indicates that various accountants do not believe this. Even so, the trend revealed by the median provides confirmation of the item evaluated.

Question 9 shows that the adoption of SPED provoked additional investments in the entities because of the values of the mean, mode and median, confirming and augmenting the findings of Silva and Krüger (2013), because the perception of some respondents was indifferent towards this aspect. In question 10, we sought to evaluate whether SPED is a secure means for the transmission of information. The results obtained demonstrated that, for the accountants, SPED is a secure means. It can also be seen, that there was similarity in the affirmation because of the low value of the standard deviation, signifying that the majority of the accounting professionals interviewed trusted in SPED.

With the analysis of question 11, it could be seen that SPED produced improvements in the discharge of accessory obligations. As the standard deviation presented a value of 0.95, in a similar fashion to what happened in other questions, it can be seen that there was no uniform perception from the respondents. However, because of the mode and median the majority of them agree with this improvement. Question 12, evaluated whether SPED produced cultural changes. The analysis of the mean and median confirms the premise that the adoption of SPED caused cultural changes in the entities, confirmed by the mode of 4 points. This situation was also dealt with by Azevedo and Mariano (2009), when they reported that SPED had altered the way of discharging the obligations, resulting in a change in the “paper culture”, present in society, towards the utilization of a culture based on digital files.

After analysing these results and to evaluate the future expectations of accountants on the question of SPED, qualitative research were undertaken using 4 open questions. In this way it was sought to verify the additional perceptions of the participants in the study. It is stressed that this part of the research allowed us not only to examine the different perceptions of the respondents in relation to the theme proposed, but also to explore how the facts are articulated, confronted and altered and, further, to undertake a deeper analysis of the problem investigated within each group of respondents.

It is important to stress that although all the respondents were centred on the same theme and replied to the same questions, each one had the liberty to reply to the open questions as he/she wished, focusing their own personal perspectives on the theme, and in this way enriching the study.

4.3 Description and qualitative analysis of the results of the accountants

The accountants were quite emphatic in their positioning regarding the positive and negative effects for society that have arisen with the setting up of the SPED. Among the positive points that they mentioned, the following stand out: greater transparency in information declared, rapid access to the information, reduction of administrative costs and the preservation of the environ-

ment through less use of paper, reduction of tax evasion and increase of collection, greater agility in the discharge of accessory obligations, increase in the education of taxpayers, improvement in professional recognition. Other points raised were: reduction of informal work, the increase of transparency, in addition to the demand for greater levels of organization and control, of socio-cultural changes and the reduction in unfair competition, because of the greater difficulty of tax evasion, as recommended by Sampaio (2007) – who sees SPED as an effective tool in combatting evasion. We now take some replies to illustrate and explain some of the above mentioned points:

SPED will increase the control of monitoring among the treasury departments, permitting a reduction in tax evasion. It will be easier to cross-check the accounting data with the inspectors, and there will be a reduction of costs with the issue and storage of paper and greater uniformity in tax information (ENTREV47).

It will increase the sharing of information, security of collection (ENTREV8).

There will be greater security in the transfer of information between companies and OF (ENTREV36).

Increase of tax collection, valuing of work of tax planning. Greater possibility of reverting the collection to the social benefit and even ability to promote tax reform (ENTREV28).

The negative effects of SPED given were: lack of preparation for dealing with this system on the part of some accountants, the duplication of work in some states (that continued obliging the taxpayer to print the books), the greater dependence of companies on software, the low commitment of Brazilian business people to the system, some companies had not adapted to the new rules, increase of costs with training or purchasing, development and implementation of systems. The quotes below illustrate the negative aspects:

For society the negative points are the rise in costs and the excessive exposure of business people, as well as the taxpayer being penalised with fines, for any type of information errors (ENTREV14).

One of the negative points was the way in which SPED was implemented, because the majority of companies were not prepared not even public bodies (ENTREV29).

It will increase costs, time and perhaps personnel (ENTREV21).

Excessive exposure to the tax authorities, breach of industrial and commercial secrecy, high cost of setting up (ENTREV30).

When questioned about in what ways SPED, as a new model of supervision, could improve the relations between companies, accountants and OF, it was observed that this system would not only make the relationships closer, but also stimulate greater organization, transparency and improvements in communication, reduction of errors, clarity and the sharing of information, reduction of deadlines, simplification of processes, standardization of activities and greater agility and control. One of the respondents reported that:

There will be an improvement in the procedures and internal and external controls; reduction in bureaucratic processes and in the excessive use of paper; importation of files; greater agility and the elimination of errors in the bookkeeping and in the determination of taxes and in the reception of documents by the supervisory bodies; greater interaction between companies and accountants; bookkeeping in the establishment and generation of files in the accountancy department; constant exchange of information; and greater integration of the accountancy, technological and logistical areas (ENTREV22).

Another respondent stated that

there will be an improvement in the quality of information passed from the company to

the accountant and from there to the supervisory bodies, immediately, allowing checking and/or correction of the taxation of the products with the taxpayer (ENTREV37).

When questioned about what would be the principle repercussions that SPED would have for the companies, accountants and OF, one of the first matters that emerged was the cultural change and a breach of paradigms, arising out of the new procedures introduced by this system.

SPED will bring a cultural change, demanding the setting up of more rigid internal controls, obliging companies to discover their real operational costs, to make investments in the professional development of staff in the accounting area, as well as to eliminate the 'barrier' between companies and the tax authorities, making the relationships more habitual and closer (ENTREV13).
It will increase the quality, reliability and rapidity of information (ENTREV6).

According to the respondents, success in the process of setting up SPED depends, in addition to other factors, on the view that the taxpayer possessed of the system. If it is perceived as a tool to improve internal controls and tax aspects, it can become a strong ally of the supervisory bodies and make possible a reduction in tax costs. However, if it is understood to be merely one more unjust and onerous accessory obligation, there may be problems with the process and make the business of some companies unfeasible. In general, the idea of the accountants is that SPED is a necessary evolution and all those involved stand to gain, provided the government conducts the setting up of this tool properly, acting as a partner of the companies and stimulating the professionals to adapt themselves to the new reality.

4.4 Description and analysis of the quantitative results of the supervisory bodies

The results obtained from the replies to the questions by the OF are presented in TABLE 5, which indicate that the tax auditors did not have perceptions contrary to the statements of the research, some inconclusive situations being observed, however, relative to questions 2, 3, 5, 6, 7 and 8, where a value of the mean slightly above 3 was observed, with a high variability in the sample and mode and median also of 3, but with opposed perceptions on these questions.

TABLE 5 - Perception of supervisory bodies of SPED

AFFIRMATIONS	1	2	3	4	5	6	7	8	9	10	11	12
MEAN	4.15	3.21	3.34	4.00	3.32	3.21	3.26	3.13	3.64	4.00	3.70	3.68
STANDARD DEVIATION	0.72	0.88	0.87	0.75	0.91	0.81	0.79	0.82	1.03	0.98	0.83	0.78
MODE	4	3	3	4	3	3	3	3	4	4	3	4
MEDIAN	4	3	3	4	3	3	3	3	4	4	4	4

Source: Research data.

The analysis of the first question was made in an attempt to evaluate whether the OF had become more efficient in identifying and combatting tax fraud. It was seen, from the score obtained, a mean equal to 4.15, that this statement was confirmed. The mode and median equal to 4 reinforce this finding. Bezerra (2011) had already found this when he affirmed that the authorities are becoming swifter in identifying tax frauds, obliging companies to adapt themselves to this new reality. Analysis of question 4 reveals that there was an increase in the sharing of information between OF and the companies, confirming the findings of Eckert *et al.* (2011). The tendency of the mode and median equal to 4 indicates a high degree of confirmation of the item evaluated.

Question 10 demonstrates a high level of confirmation that SPED is a secure means of transmitting information to the OF. This can be confirmed by the value of the mean, the mode and the median, equal to 4. With the standard deviation of 0.98, it can be seen that the inspectors do not possess similar opinions regarding this researched item. In general, these three questions show that the perceptions of the tax auditors were in line with that observed in the group of the accountants, tending towards strong agreement. The replies to questions 9, 11 and 12 on the other hand are also relatively aligned to the first group of respondents, but with a lower degree of agreement. The evaluation carried out in question 9 was related to the need of additional investments because of the SPED adoption. A tendency to agreement was observed, but with a high standard deviation, which reveals that some respondents had very different perceptions. Nevertheless, the mode and median equal to 4 demonstrate that the OF possess a high degree of affirmation on these items analysed, in line with the observations of Silva and Krüger (2013).

In questions 11 and 12, the results obtained demonstrate that SPED improved the discharge of accessory tax obligations and provoked cultural changes, towards less use of paper and the consolidation of the GE through advances of the TIC as a means of tax control, as recommended by Okot-Uma, 2001 and Chen *et al.*, 2006. The two statements can be evaluated together because of their similarity, revealing a tendency to greater affirmation in the last question because of the values attained of the modes and medians. Similarly to that which occurred in other questions, high variability of the values around the mean obtained through the standard deviation was observed, demonstrating that, even with the tendency to agreement, there are also different perceptions among the tax auditors.

In similar fashion to what was done with the accountants, after analysing the quantitative results of the OF with the objective of evaluating their future expectations regarding the SPED, a qualitative survey was carried out through the use of 4 open questions, In this way it was sought to relate the additional perceptions collected with the participants in the study. seeking not only to examine the different views of the respondents in relation to the theme proposed, but also to explore how the facts are articulated, confronted and altered and, also, to carry out a deeper analysis on the problem investigated, according to the perceptions of each respondent .

4.5 Description and qualitative analysis of the results of the supervisory bodies

For the OF, the utilization of SPED brings with it several positive results, such as speed in the processing of documents, reduction in inflation and increase in collection, greater control of information by the authorities, improvement in the discharge of accessory obligations by companies and, especially, in the increase in the sharing, in the search for information and in making it more uniform, in line with the premises of Cleto (2008), who perceives SPED as a project that seeks to improve tax control, through the sharing of accounting and tax information, similarly to that mentioned by the accountants.

The negative points raised by the tax auditors referred to the resistance to change and increase of costs, also confirmed in the work carried out by Meni (2012). When questioned about what are the modes in which SPED, as a new supervisory model, could improve the relationships between companies, accountants and OF, it was found that these respondents believed also that this system can make relations closer and clearer, agreeing, in part, with previous affirmations regarding the stimulus to greater levels of organization and transparency, in addition to improvements in communications, reduction of errors, greater clarity and sharing of information, reduction of deadlines, simplification of processes, standardization of activities and greater agility and control. In the perception of these respondents, the essential thing is the question of GE, which reduces wear and

tear in the relationship between accountants and supervisors, provokes a reduction in the number of administrative processes and makes the taxpayer more responsible in the discharge of his/her obligations (main and accessory), as can be observed in the following replies:

With SPED there will be less bureaucracy and greater efficiency in tax supervision (ENTREV8).

There will be standardization of the information for the Union, States and Municipalities and agility in the processes (ENTREV4).

It will produce more complete and precise information (ENTREV9).

With the information via magnetic means the need for many contacts between the authorities and the taxpayer will be reduced (ENTREV20).

In general, they stress that the SPED eliminates the need for filling out various books and forms relative to tax and accounting obligations, simplifies processes and carries out standardizations such as reduction in bureaucracy, personnel and control and others. In consequence, it will facilitate relationships between the interested parties.

When questioned about the principal repercussions that SPED will have for companies, accountants and OF, one of the first factors to emerge was the increase in the competitiveness of companies with a reduction of evasion and the demand for technology and expertise for the processing and analysis of electronic data information caused by the new processes introduced by this system. In addition, the respondents pointed out (i) the greater possibility of detecting errors, the reduction in costs and in fraud, higher productivity, as well as (ii) improvements in technological, economic and social resources.

Among the comments made by the tax auditors, the idea is prominent that SPED 'widened' the boundaries of the formal economy, in the official registration of entry and exit of merchandise, in the transit of products without accounting registration with significant impact on the underground economy. In addition to routine inspections, other respondents stressed the need for carrying out other types of visits to companies to orientate them and help them to know and use better the prevailing method, concluding that "the system still needs to work for some time to analyse its applicability and the settings, for it to be a really efficient instrument" (ENTREV6). It is worthwhile remembering the arguments of Silva and Krüger (2013) for whom the new demand determined by the authorities requires ever larger investments on the part of companies and accounting professionals, starting with the capacitation and training of personnel up to technological and business modernization (including even the change of systems) – all implying additional costs because of SPED. Taken together, the results indicated some converging perceptions among the accountants and others diverging with them. So it is that it was observed that both groups understand that: SPED caused cultural changes, mainly in the substitution of paper by digital files; companies tend to be more supervised; the sharing of information between the OF and companies tends to increase; the OF have become more efficient in identifying in combatting tax fraud; SPED has contributed to a reduction of evasion; the system has proportioned improvements in the discharge of accessory tax obligations; SPED is a secure means for the transmission of information to the OF; the accountancy profession has gained value with the advent of SPED.

In the perception of the OF, companies are prepared for SPED, while with the accountants the opposite is true. Divergent perceptions were also seen, regarding the possibility of cost reductions with the setting up of SPED, expanding that perceived by Silva and Krüger (2013) and Muraro *et al.* (2014). This is because, while the OF thought that there had been a reduction, for the accountants this did not occur. One of the principal causes was the need for additional investments in information technology equipment, training of personnel and contracting of specialists. Going

beyond the observations of Eckert *et al.* (2011), other divergences pointed out refer to the fact that, for the OF, the utilization of SPED has strengthened the control of the authorities through digital files and eliminated stages in the collection of data files – which has permitted a reduction of tax evasion and an increase in collection, a view which contrasts with that of the accountants.

In general, it was also found that the accountants, companies and the OF are still not totally prepared for the new reality and have a lot to learn about SPED. Among other questions, it was possible to deduce that: the companies may be obliged to organize themselves and standardize their processes; the accountants need to prepare for the new reality introduced by SPED; and the OF will be able to have more access to business information, more swiftly and interactively, improving the efficiency and effectiveness of their processes.

6 FINAL CONSIDERATIONS

Some countries, faced with a need to combat evasion, have taken advantage of the new TIC to create the so-called GE. In Brazil this process occurred in 2007 with the institution of SPED. However, several years having passed since the start of this process, little is known about the perception of the various players involved, regarding the positive and negative aspects proportioned by the system for the Government and for organizations. In spite of the importance of the theme that involves SPED, by virtue of the magnitude and complexity of the organizational changes brought in its train, as also of the strategic role of this system for the Government and society, the understanding of the impacts caused by it on the method of taxation of Brazilian companies is still an incipient question in the literature, especially the Brazilian literature, where there are still very few studies on the matter.

Recognising and exploiting this gap in the research, the work described in this article is intended to analyse the perception of accountants and Federal and state supervisory bodies in the metropolitan region of Belo Horizonte, Minas Gerais, of the adoption of the Public Digital Bookkeeping System (SPED). To reach the proposed objective, an exploratory and descriptive study was carried out with quantitative and qualitative approaches. The data collection was undertaken by means of a survey type of research, based on a semi-structured questionnaire composed of closed and open questions.

The results of the research helped to perceive the importance of the SPED, which has stood out as one of the main organizational and business innovations in recent years in Brazil because it has promoted technological changes in relation to company tax and accounting bookkeeping, in the method of organizing and controlling company information and in the manner of supervision of the Government.

The results, although they cannot be indiscriminately generalized, showed that there were some divergent perceptions between the accountants and the OF and others which were convergent.

In the perception of the OF, companies are prepared, while the view of the accountants is contrary to this idea. Divergent perceptions were also found, relative to the possibility of reduction of costs with the implementation of SPED. While the OF thought that there had been a reduction, for the accountants this was not so. One of the main reasons was the need for additional investments in Information Technology equipment, training of personnel and contracting specialists.

For the OF, the use of SPED strengthens the control of the supervision through digital files, eliminating stages in the collection of data files, which permitted a reduction in tax evasion and an increase in collection. It was found also that accountants, companies and OF were still not totally prepared for the new reality and had much to learn about SPED. Among other matters, it was possible to deduce that: (1) companies may be obliged to organize and standardize their

processes; (2) the accountants need to prepare for the new situation brought about by SPED; and (3) the OF will be able to have access to information, swiftly and interactively. This suggests that these trainings and capacitation have not yet been sufficient, and that new investments may be required in this sense, as also to increase and improve company technical, technological and managerial capacity, to accompany the evolution of the system.

It was observed that the OF and accountants had converging perceptions in relation to other questions. In this sense it was found that: (1) SPED provoked cultural changes, mainly through the substitution of paper by digital files; (2) companies tended to be more supervised; (3) the sharing of information between OF and companies tended to increase; (4) the OF were more efficient in identifying and combatting tax fraud; (5) SPED contributed to the reduction of evasion; (6) the system proportioned improvements in the discharge of accessory tax obligations; (7) SPED is a secure means for transmitting information to the OF; and (8) the profession of accountancy has gained in value with the advent of SPED. In general, this demonstrates the power and the role played by the new TICs in the improvement of the transmission, systematization and supervision of data and information.

In spite of the dearth of investigations on the theme and keeping in mind the limitations imposed by the regional scope of the work, we recommend for future research, that they augment the geographical base to include other states or expand the study into a national or supra-national one. It is worth mentioning the opportunity to study the differences of perception of other players interested/involved in the discussion such as the businesspeople, either through case studies or in the form of large-scale empirical investigations.

The conclusions of this research expand the knowledge of the theme and help fill the gap in the research, showing that SPED can be considered a landmark of the so-called 'digital era', as it has increased the tax efficiency of the government and produced significant organizational impacts for it, requiring companies to innovate in their corporate and business processes. Additionally, it was perceived that the accountants and the OF need to prepare better for the use of SPED, which is an organizational and business innovation that has come to stay—already having caused and possibly causing in the future significant economic, social and managerial implications.

Summing up, SPED represents a technological advance. It has modernized the system of tax supervision, provoked innovation in the accounting and tax bookkeeping practices. It is promoting cultural change, it has demanded the learning of new methodologies and techniques, it has proportioned transparency in the information rendered by companies, and strengthened the control of the supervisory bodies through the use of digital files, and will be able to reduce tax evasion and increase collection by the Government.

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