THE IMPLEMENTATION OF THE ELECTRONIC TAX DOCUMENTS IN BRAZIL AS A TOOL TO FIGHT TAX EVASION

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Abstract: This article presents, in a summarized manner, the concepts, operating model and the evolution of the implementation of electronic tax document projects in Brazil: “Electronic Invoice” – NF-e and “Electronic Waybill” – CT-e, as well as it discusses how the integration between both may help in the control and inspection of commercial operations in the country, and presents the current restrictions to make this system effectively operational.

Keywords: Electronic Tax Documents; Electronic Integration; Electronic Inspection; Tax Evasion; Electronic Invoice, Electronic Waybill.

1. Introduction

The Brazilian Tax Administrations are going through a modernization process through the massive use of information technology and the implementation of electronic controls, contributing to successive increases found in the collections of the States and the Federal Government.

The impacts of such modernization, besides permitting increases in collection for the Government, also started to be felt in private initiative, with the simplification of accessory obligations, reduction of costs and improvement in the business of the country, by reducing disloyal competition, based on the tax evasion.

It is exactly in this context of tax modernization that the projects of the Electronic Invoice (NF-e) and the Electronic Waybill (CT-e) are inserted, which aim at replacing the traditional paper tax documents used in the commercial operations among companies and in the cargo transportation services with digital documents with legal validity assured for all the purposes.

Besides the advantages in terms of reduction in direct costs, the standardization by the Government of these electronic tax documents contributes to the advance in Brazil of the electronic integration in the supply chains and to the integrated logistics, further favoring the B2B e-commerce.

In this article, a brief view of NF-e and CT-e projects is presented, analyzing their evolutions and their current stages. A short explanation on the Brazilian tax system is also made, highlighting the benefits that the integration of the use of these electronic documents will provide for the Tax Administrations of Brazil, such as: the possibility of an effective online control of the commercial operations by the Tax Authorities and the creation of a giant database of signs for the possible identification of tax frauds.

2. Brief history of Electronic Documents

With the advent of the Constitutional Amendment No. 42 of December 19, 2003, it was inserted in article 37 of the Brazilian Federal Constitution item XXII establishing a constitutional command for the tax administrations of the different levels to operate in an integrated manner [3].

“XXII – the tax administrations of the Union, the States, the Federal District and the Municipalities, activities that are essential to the operation of the State, exercised by the specific career servants will have priority resources for the realization of their activities and will act in an integrated manner, even with the sharing of records and tax information, pursuant to the law or by convention.” (underlines added)

In order to meet this constitutional directive, the State Treasury Departments and the Federal Revenue

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Service started, in 2005, a joint tax cooperation work intending to initially implement the Electronic Invoice for the replacement of the tax documents in paper in the commercial transactions with goods.

In March 2005, an entourage comprising representatives of the teams of the NF-e project of the Treasury Departments of the States of São Paulo and Rio Grande do Sul visited Chile to learn about the experience of that country that had implemented, since 2003, the so-called “Factura Electronica”. The Chilean experience of Factura Electronica, specially as regards the technological standards adopted and the strategy for implementation of the project, that has counted on the participation of the private initiative since its conception, were fundamental in the construction of the Brazilian model of the electronic invoice - NF-e.

The Brazilian challenge in the NF-e was no longer fundamentally technological as it could seem at the first sight, once the major lines in terms of technological standards had already been well outlined in the Chilean experience. The obstacle to be overcome was the construction of a single national standard of NF-e that were accepted by all State Tax Administrations and by the Federal Tax Authority.

Another relevant aspect is that the project of the Electronic Invoice arose inserted in a larger project for tax modernization called Public Digital Bookkeeping System - SPED. SPED contemplates, besides NF-e, the projects for Digital Tax Bookkeeping and Digital Accounting Bookkeeping , that aim at replacing the tax and accounting books with electronic versions with legal validity assured by a digital signature.

Within less than 1 year after the beginning of the project, more precisely in September 2005, the national legislation on NF-e was approved by the Adjustment SINIEF 07/2005 and the pilot-project started, counting on the participation of 6 States (São Paulo, Bahia, Rio Grande do Sul, Maranhão, Goiás and Santa Catarina), the Federal Revenue Service and the private initiative represented by a group of 19 voluntary companies from several economic sectors (fuels, beverages, medicines, automotive vehicles, steel industry, machine and equipment, food, cigarettes, power and telephone service).

In September 15, 2006, the first companies of the pilot project started to issue electronic invoices with legal validity, and in April 2008 a new phase of massification of the use of NF-e started based on the obligation by economic sectors, started by the chains of refining and distribution of liquid fuels and the manufacture and distribution of cigarettes.

With the success reached with the Electronic Invoice, in October 2006, another initiative of electronic tax document started, now focused on the cargo transportation sector, the project for Electronic Waybill - CT-e.

The national legislation of CT-e has also been approved within a record term, on October 25, 2007, through Adjustment SINIEF 09/2007. The pilot project started with 2 States (São Paulo and Rio Grande do Sul), besides 43 voluntary companies and transportation entities.

The assumptions and technological standards used in this project were the same already tested and used by the project NF-e.

On March 1st, 2009, the first transportation companies started the issue of a CT-e with legal validity in the State of Rio Grande do Sul, and on April 1st, 2009 in the State of São Paulo.

The massification of the project for other voluntary transportation companies is expected for the second semester of 2009, and the beginning of obligation for the year of 2010. Before this occurs, the transportation companies shall issue the CT-e on a voluntary basis, and may further use the tax document in paper.

3. Fundamental concepts of the Brazilian electronic tax document model

NF-e replaces a specific type of tax document in paper called nota fiscal (invoice) model 1 or 1-A, which, as a rule, covers the commercial operations between companies and that permits the transmission of credits of non-cumulative taxes ICMS - Tax on the Circulation of Goods and Services and IPI - Tax on Industrialized Products.

CT-e, in turn, replaces for all tax documents in paper used in the provision of interstate and intermunicipal cargo transportation services, subject to taxation by ICMS. It is important to highlight that the challenge of the development of CT-e was to gather, in one single electronic document, the tax documents in paper of 5 transportation modals: highway, railway, airway, waterway and pipeway, considering, for that purpose, the peculiarities and differences that existed among them.

3.1. Cultural change – use of digital file in replacement for paper

One of the main paradigm breaks resulting from the NF-e and CT-e refers to the fact that both are tax documents that exist only digitally. This is not about a mere scanning of a copy of a paper tax document, nor does it correspond to an additional requirement of
the Tax Authorities that, besides the normal paper copies of a tax document, a corresponding electronic copy be also generated. [8]

These electronic documents are already born as a digital file and only in this form it is valid to document, based on electronic information that comprise it, the operations and provisions covered by them.

So, even that it does not seem so, this new concept brought implies an important cultural change not only in the relations between the companies and the Tax Authorities, but also in the entire supply chain, once the valid document is no longer the paper, but the electronic document.

3.2. Legal validity of electronic documents

The guarantee of the legal validity for all purposes of NF-e and CT-e is based on the use of the digital certification subject to the Brazilian standard of public and private keys – ICP – Brazil and on the digital signature of the electronic tax document by the issuing company. [6]

Another innovative and relevant aspect of the concept, specifically of NF-e, consists in the granting of authorization to use the electronic tax document by the tax administration of the Federation Unit in which the issuing company is located even before the circulation of the good. The digital file that represents the NF-e must be sent, validated and authorized by the State Treasury Department.

The authorization of use of the NF-e before the circulation of the cargo and, therefore, the awareness by the Tax Authorities of the commercial operation that is about to occur, corresponds to a fundamental assumption for the operation and guarantee of security of the model of NF-e and CT-e.

In this regard, a commercial transaction that is about to occur and that is documented by an NF-e or CT-e is always taken to the prior awareness of the Tax Authorities. With this information on NF-e available on a real time basis, the Tax Authorities, not only in the Federation Unit that authorized the NF-e, but also the Tax Inspection of the destination State, Tax Stations in Interstate Borders and the Federal Revenue Service may monitor and follow up that given commercial transaction.

Also the company purchasing a good documented by NF-e may be sure of the authenticity and tax validity of that document by simple search on the Internet about the existence and status of the NF-e before the Tax Authorities.

The requirement of authorization of use of the NF-e previously to the circulation assures the so-called “subjective risk” that the selling company, for not knowing, whether it is going to be intercepted or not by the tax inspection during the path of the shipment or delivery spontaneously opt for declaring the transaction to the Tax Authorities, by sending the NF-e for authorization [8].

3.3. Assumption of minimum operating impact for the companies

In this new context of electronic tax documents, the Tax Authorities start to integrate the operating cycle of the company as long as in the provision of cargo transportation services and the transaction, no matter it is a sale, transfer or any other modality, must be previously informed and authorized.

However, it is important to clarify that one of the assumptions of the Tax Authorities in the projects of electronic documents, since their conception, was the assurance of minimum impact to the operating activities of the companies and, therefore, in no case could a problem in the system of the State interrupt the commercial transactions of a company in a regular situation.

The authorization system operates on a 24x7 uninterrupted basis, that is, a company accredited to issue a NF-e or CT-e may authorize the electronic document at any time, regardless of the time or day of the week, including weekends and overnight. It is important to highlight that in the process of authorization there is no manual interaction or verification by an inspection agent, and the entire processing carried out by the computers of the State Treasury Department is performed according to the validation rules previously established.

The authorization systems of the Tax Administrations of the Federation Units are dimensioned to make the process of reception of electronic documents, validation and granting of their authorization of use within a term not longer than 3 minutes.

The experience of the actual operation of the systems of the State Treasury Department has demonstrated that, in practice, these times are even shorter, in average, in the order of seconds or down to milliseconds. These times are possible not only due to the infrastructure made available by the Federation Units, but also by the communication technology adopted that favors the interchange and the processing of information in the Internet environment.

In case of a technical problem that prevents the transmission of electronic documents or the obtaining of its authorization of use, there are contingency alternatives set forth in the legislation so as not to interrupt the commercial activity of the company.
Another fundamental pillar on which the projects are built corresponds to the standardization, on a national basis, not only of the formats of the digital file and the fields that comprise the NF-e and CT-e, but also the validation to be made by the tax administration for the granting of the authorization of use of the electronic document.

The existence of these technical standards, besides permitting the interchange of information between the State and Federal Tax Authorities in a transparent manner, assures the simplification and reduction of costs for the company issuing electronic documents, specially for those that are multiregional, which when developing their issuing system for a certain State of the country, with minimum adjustments, will be able to issue and authorize electronic documents with the other Federation Units in which they have establishments.

4. Operating Model of the NF-e and CT-e

In a simplified manner, the company issuing a NF-e or a CT-e will generate an electronic file in the XML format containing the tax information of the commercial transaction or the provision of services, which must be digitally signed by the issuer, so as to assure the integrity of the data and its authorship. [7]

In figure 1, a simplified graphic diagram of the operating model of NF-e is presented.

Figure 1 -Operating Model of the NF-e

This electronic file, that corresponds to the NF-e or the CT-e, will be then submitted through the Internet to the Treasury Department of the Federation Unit where the company is located (step 1) which will make a validation of the file and, if there is no error, will make available to the taxpayer a protocol of Authorization of use (step 2). Without that Authorization of Use there can be no transit of the good and, as a general rule, the provision of the cargo transportation service.

The transmission of the file of the NF-e and CT-e to the Treasury Department represents a request for authorization of use, and is performed through the Internet by a secure communication channel between the computers of the company and the Treasury Department, with no human interaction, upon an open technology known as web services that assures the inter-workability between the applications.

The validation performed by the Treasury Department for authorization of use follows rules that are nationally standardized by the legislation. The Treasury Department that authorized the use of a NF-e immediately transmits the corresponding electronic file of the NF-e and the CT-e to the Federal Revenue Service, which is the national repository of electronic documents (step 3).

In case of the Electronic Invoice, in order to follow up the transit of the good, a simplified graphic representation of the Electronic Invoice is printed, called DANFE (Electronic Invoice Auxiliary Document), in common paper, and in one single copy, that contains printed, in highlight, the access key for consultation of the NF-e in the Internet (step 4). DANFE has a unidimensional barcode in format CODE 128-C containing the same information as the access key, which facilitates the verification of the NF-e by the Inspection Stations of the State Borders and also in the reception of the goods from the purchasing companies. With the printed DANFE and if the NF-e is authorized, the transportation of the good to the purchaser may start (step 5).

In the case of issue of CT-e, the provision of service is also accompanied by a printed paper in the same way as DANFE, called Auxiliary Document of the Electronic Waybill - DACTE.

The selling company must send or make available to its client (purchaser or taker of the transportation service) the electronic file corresponding to the NF-e or CT-e and the corresponding electronic file of its authorization of use (step 6). The good will be delivered to the purchasing company accompanied by DANFE or DACTE (step 7) and the purchaser (or service taker) must always verify the validity and authenticity of the electronic document by consulting it on the Internet page of the Treasury Department that authorized or on the page of the national environment through its access key (step 8).

The information of the access key of the electronic tax document required for the consultation may be obtained by the purchasing company directly form the electronic file of the corresponding NF-e or CT-e, or also of the corresponding printed DANFE or DACTE that accompanied the good or service.
Up to the end of April 2009, there were 25,000 issuers of NF-e throughout the country, and 9,000 only in the State of São Paulo. It is estimated that, by the end of 2010, the total number of NF-e issuers in Brazil is increased to about 500,000 companies. As a rule, the company required to use the NF-e, starting on the effectiveness of the obligation, is forbidden to issue the invoice model 1 or 1-A, and must issue NF-e in all its operations, not only in the sales of goods.

The success of the implementation of the obligation of NF-e in the sectors of fuels and cigarettes on April 01, 2008 in all Brazilian States, besides being a consequence of the stage of maturity of the NF-e project, may also be explained by the making available by the Treasury Department of the State of São Paulo of a free-of-charge issuer of NF-e to be used by companies throughout the country, and by the role performed by the so-called “SEFAZ Virtual” made available by the State of Rio Grande do Sul and by the Federal Revenue Service. The existence of such model permitted that even those Federation Units that had no conditions, for any reason, of developing its applications of authorization of NF-e up to April 01, 2008 could offer this service to its required taxpayers, by using the infrastructure of SEFAZ Virtual, which permitted to authorize NF-e in name of that State.

Figure 2 shows the evolution of the number of NF-e issued in the State of São Paulo, where it is already possible to note an exponential growth profile along the time.

5. Use of electronic document in the fight against tax evasion

5.1. Brief exposition on the Brazilian tax scenario

Brazil is a Federative Republic, formed by the indissoluble union of the States, Municipalities and the Federal District [3]. In all these are 26 Brazilian States and over 5,000 municipalities, and for purposes of implementation and supply of public services, each entity has political, legislative and budgetary autonomy.

As regards the tax revenue of these entities, the Brazilian Federal Constitution establishes the distribution of competences to institute taxes among the Union, States and Municipalities, as well as the general taxation principles.

The Brazilian tax system is considered to be extremely rigid, once it exactly determines which possibilities of institution and the limits in the power of taxing of each taxing entity.

In this regard, the main taxes under the competence of the Union, among others, are the tax on income and proceeds of any nature (IR) and on industrialized products (IPI).

On the other hand, the States are in charge of instituting taxes on operations related to the circulation of goods and on provision of interstate and intermunicipal transportation and communication services (ICMS) and on the ownership of automotive vehicles (IPVA).

5.2. Importance of ICMS and example of tax fraud to be fought

From all Brazilian taxes, ICMS is the main tax for States. It corresponded to 21% of the amounts obtained by the taxing entities in 2007, and among the taxes of the States, this percentage is still more significant, corresponding, in 2008, to 88% of the total obtained, which corresponded in 2008, to over R$ 220 billion in the entire country.

In summary, the main characteristics of ICMS are:
- It is a non-cumulative tax, that is, at every commercial operation there is no propagation of the tax charged in the prior phase;
- There are general national rules on ICMS, that must be observed by each State when instituting the tax on its territory;
- Each State is free to institute the rates applicable to the commercial operations within its territory (in the State of São Paulo, it may vary from zero to 25% of the value of the operation);
- The rates applicable on interstate operations are also fixed by the Federal Senate, and vary according to the origin and destination of the good (7% or 12%);
- It does not apply to operations that direct goods to a foreign country;
- It does not apply to incentivized areas, as the Free Trade Area of Manaus.
Considering the importance of this kind of tax as well as the amount of the taxes involved in each operation, it is the main source of income of the States and, naturally, the main tax to be controlled.

A simplified example of tax fraud related to this tax refers to the simulation of an interstate operation in which the good remains in the same state while the tax documents indicate an interstate commercial operation with lower tax burden. In this example, the company that trades a product at an internal rate of 18%, for instance, declares that it shall perform an interstate transaction to a region subject to a rate of 7%, and internalizes the good in the same State. Thus, the company saves 11% of the value of the transaction, bringing losses to the public treasury. The same reasoning applies to transactions of export or to incentivized areas, in which there is no incidence of the tax, and the good is delivered within the same taxing State. This State fails to collect the tax and the competitors of such tax-evading companies are in detriment as they will be competing under unequal conditions.

5.3. Integration of the information between NF-e and CT-e as an inspection tool
The adoption of an electronic document with legal validity such as NF-e and CT-e to document the commercial transactions and provisions of cargo transportation services in a logistic chain permits, besides the agility in the processes and planning of deliveries of goods, traceability and reliability of information, avoiding the re-typing of data and providing a higher level of transparency. Another indirect positive consequence of NF-e and CT-e is that, once the company declares its operations in real time to the Tax Inspection, the companies start to be more concerned about the quality of its information and, for that purpose, perform the review of its internal processes and its records, contributing to the reduction of mistakes and re-works also in the logistic chain. [8]
In the side of the Tax Authorities, NF-e represents an important tool to fight against tax evasion, as it permits the control, in real time, of the information on the commercial transactions performed by the companies and as it permits the integrated work between the Federal and State Tax Authorities, upon the interchange of information. These electronic documents have common information and CT-e has fields that may refer to NF-e, namely:
- NF-e necessarily has the information of the issuer and the addressee of the goods, as well as the detail of these goods.
- CT-e has information on the shipper and the addressee of the good, besides the information on the tax documents that cover the transaction with goods, information on the providers of transportation services involved and, finally, on the vehicle transporting the cargo.
Thus, it is possible to see several possibilities of integration between these electronic documents that assure a higher tax control of the transit of goods and consequent fight to the evasion. The following can be highlighted, for instance:
- Survey of the cargo transported by a certain vehicle – it would be enough to identify the last CT-e issued that refers to the vehicle at issue and identify, within the CT-e, which NF-es are associated. With the identification of the NF-es, it is possible to identify the goods transported in the vehicle;
- Real-time follow up of the commercial operations of a certain company, as it would be possible to identify the NF-e of that company and the corresponding CT-es that refer to them. As the CT-es have information about the vehicles that transport the cargo, they could be identified along the path to their final destination;
- Follow up of the acquisition of goods by certain addressees, using the same system described above.
- Establishment of standard behavior of taxpayers by crossing the information related to the transportation companies, shipping companies or addressee companies, besides the corresponding cargo, as all this information start to comprise the database of the Treasury Department.

5.4. Current limitations and evolution of the use of information of NF-e and CT-e
Initially, one must take into consideration that NF-e and CT-e are not enough, by themselves, to inhibit frauds and tax evasion. On the other hand, from the moment their information can be followed up and audited by the tax authorities, they are a fundamental source of information for the actions of inspection and survey of tax frauds.

We can consider that the issue of the tax document is the original and core information to be controlled; its use will be potentiated when vehicle or cargo tracking technologies are added (monitoring of the transit of goods), so that the information generated by the electronic document can be used in the real follow up of a certain transaction. Finally, it is necessary to implement systems for electronic confirmation of the reception of the good by the addressee or service taker (end of the transaction), permitting the closing...
of the electronic control of the cycle of the commercial transaction.

Thus, it will be possible that the State has a full view of the logistic chain, from the beginning of the operation with the issue of the tax document, monitoring of the path and transit of the vehicle or the good, up to its effective delivery at the end destination.

Add to this further information related to the tax and accounting bookkeeping that the companies will be subject to generate and present in electronic media to the Tax Authorities in the next few years. Then, crossing with the bookkeeping will be possible, which will contribute to verify the correction of the information stated in the tax documents.

Thus, the implementation of NF-e and CT-e cannot be considered as the end of the work – on the contrary, other aspects of the logistic chain need follow up and studies so as to permit an effective control of the operations by the Tax Authorities.

Another important consideration refers to the massification of the use of NF-e and CT-e. The NF-e is still in a phase of massification, and must reach, by the end of 2010, most companies that currently use the paper Invoice. On the other hand, the use of CT-e is still in pilot phase, and the massification of this document must start only in 2010 and will be expanded in the subsequent years.

This consideration is important as the full logistic control shall depend on the effective massification and use of NF-e and CT-e by the Brazilian companies. The implementation of the strategies of control will be of little effect, therefore, if its use is not mandatory or if the company may opt for the use of the electronic document or the paper document.

6. Conclusion

NF-e is today a reality in the daily routine of thousands of companies in Brazil within the most different economic sectors, replacing the paper tax documents with electronic documents in their commercial transactions. CT-e is in an initial phase of implementation, but, given the success of the implementation of NF-e, it will certainly very soon become a reality in the provision of cargo transportation services in the country.

NF-e is in the phase of free massification with an exponential growth dictated by the new sectors required to adopt it nationwide according to the schedule established by a Protocol executed between the Brazilian States.

The advantages of the adoption of the Electronic Invoice for the companies and for the Government are countless, contributing to the globalization of the adoption of this electronic document in the Brazilian corporate environment.

For the Tax Authorities, NF-e and CT-e correspond not only to a technologic improvement but also to an important change of paradigm and its form of action, represented by the joint construction of the project, counting on the participation of the private initiative; the integration among tax administration of the several levels of government and by making feasible an efficient form of inspection on a real time basis.

It is possible to expect that these two electronic documents shall supply the public entities with countless information on commercial transactions and provisions of interstate and intermunicipal cargo transportation services in Brazil. The information on transactions and provisions may be integrated and crossed in an electronic manner, and will start to comprise an immense database that will permit the States to fight against fraud and tax evasion.

Considering the current model of the Brazilian tax system, both the NF-e and CT-e are fundamental to permit the feasibility of the fight against tax evasion. The national standardization of the tax documents has already meant a lot for that purpose, and there is not doubt it was the initial step for an integrated action of the Brazilian Tax Authorities.

In spite of that important source of information, we must have in mind that the change in the form of issue of the paper to the electronic medium is not, by itself, the solution to evasion and frauds. These are certainly fundamental elements, without which it is impossible to structure the secure work of control of the logistic chain, but one cannot forget that this is only the beginning of a larger work that must add other studies and technologies. This is the case of the tracking of vehicles and cargoes, and the system for electronic confirmation of receipt of goods and electronic confirmation of the effectuation of the provision of service by the addressee or by the takers of the CT-e.

Finally, the effective massification and globalization of the use is identified as the fundamental factor for the success of NF-e and CT-e. NF-e will have its use fully massified up to the end of 2010, and CT-e, is expected, in the next 3 years.

Before this happens, the States will have to structure themselves to use such information and add it to other technologies and systems.

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