

# The Evolution of the Electronic Tax Documents in Latin America

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**Abstract:** *with the advance in information technologies, the companies have modernized its way of trading their goods and relating to their customers. In view of the evolution and dynamics of the commercial relation, the tax authorities of the countries had to keep up with the progress and evolve: one of the answers adopted were the electronic documents for purposes of tax control of commercial operations. This article aims at tracing a comparison among the several models adopted by countries in Latin America.*

**Keywords:** *Electronic tax document, digital signature, Latin America, tax modernization, comparison of models.*

## 1 Introduction

Much has been commenting in the last few years, particularly in the last decade, on the tendency of modernization of the tax authorities of the countries in view of the advances in information technologies.

In fact, with the massification of Internet and the use of the personal computer, there have been remarkable advances in the form of relationship among companies, such as, for instance, in the relation between vendors and purchasers. The electronic commerce has become an indispensable practice for survival and economic feasibility of the companies, with a strong tendency of growth in its use.

In order to keep up with this progress, the tax authorities had to modernize and evolve the ways of control theretofore existing.

However, the way how the Tax Authority obtains data from commercial operations performed by the companies for purposes of control and demand of taxes has been historically based in the system of registration in books and paper documents, both upon the issue of documents and their recording.

Only more recently and, in a more consistent manner, starting in the last decade, one could see the first movements of the tax authorities of the countries to change this scenario.

In this regard, it is found that in many countries of the world their tax authorities have recently changed the form of issue of tax documents, starting

to adopt some model of electronic document, aiming at a better tax control and leveraging the capacity of operation of the Tax Authority.

This article has as purpose to present, in a brief manner, the models of electronic documents adopted by countries in Latin America, aiming at comparing the main technological characteristics and strategies adopted and identifying the tendencies in the region as regards this important subject.

## 2 Phase of Implementation of Electronic Tax Documents in Latin America

For the analysis of the phase in which the tax modernization in Latin America is, as regards the adoption of electronic tax documents, five countries in the region were chosen for this study: Chile, Brazil, Ecuador, Colombia e Mexico.

For each of these countries, the following main aspects of the subject were evaluated: the phase of implementation of the electronic document model, whether its adoption is required or not and, in summary, the main concepts of the operating model adopted.

### 2.1 Chile

The Chilean project of electronic documents started in 2003, with a group of companies selected by the Internal Tax Service (SII) for this implementation. The beginning milestone for availability of the system to any company that wished

to use the electronic form of electronic documents was the date of September 01, 2003.

In the beginning, the model adopted by this country opted for using the electronic format in several documents of sale, starting with the documents related to: invoices, credit and debit notes and dispatch forms, as well as purchase invoices.

In 2005, the model was extended to export documents (invoices and credit and debit notes) and settlement invoice, and in the same year the Electronic Credit Transfer Public Registry was made available, which permits to record the assignment of credits contained in electronic invoices.

The books of registration of purchases and sales, and the accounting books have also their form of use changed to the electronic media and, on a monthly basis, the participants of the system deliver their purchase and sale books in this format. In 2006, the accounting book was incorporated in this model.

The companies the main turnover of which refers to services provided to a known customer base have been able, since the beginning, to issue the electronic "boleta" (a kind of sale document to the final consumer, which does not permit the recovery of credit), and this document does not have to be sent to SII, but only have its daily total recorded in the sale book. In 2008, the "boleta" of sale of general products was incorporated to the model.

As an incentive for adhesion to the electronic system, Chilean SII opted for dispensing the establishments participating in the electronic system from the compliance of accessory obligations to which the taxpayers not participating in the system are subject. Among the dispensed accessory obligations, we can mention as an example the *timbre de cunho* of the paper invoices book.

The adhesion to the electronic model of documents in Chile is voluntary to the companies that are payers of the Value-Added Tax (VAT), and even the one that adheres to the system may opt for issuing the document in the electronic form or in the traditional form in paper. It is up to the companies, therefore (and, indirectly to the market), the strategy of migration to the electronic model.

In order to operate with electronic documents, each company must test its system in an appropriate environment with SII and have its solution certified.

After the authorization by SII, the company will start to issue its electronic documents as follows: request, by the Internet, of authorization to issue a certain range of numbering for each kind of document; the authorization for that request is made through a file, that is made available for download to the company in the SII website; the company

generates the electronic document in XML (eXtended Markup Language) format, respecting the standard layout and structure; digitally subscribes this documents and sends it through the Internet to the SII.

Only after confirmation of the sending of the electronic file related to the electronic document to SII, the company may provide for the leave of the good from the establishment, and must further forward this same file to its customer.

SII shall then send a file by e-mail to the company with the result of the processing of the electronic document.

Once the numbering range for which the company obtained authorization ends, it requests to SII a new authorization to issue new electronic documents.

For each commercial operation, a graphic representation of the document is issued to follow up the transit of the good. As the document that has legal validity is the electronic document and not this graphic representation, it does not have to be stored by the taxpayer to be submitted to the Chilean tax authorities.

In case the company's customer, which is the addressee of the electronic document, is not a participant in the system as the issuer of electronic documents, it shall receive a graphic representation and must record the purchase through this auxiliary document, and must further store it for purposes of possible inspection.

Although the electronic document is transmitted to SII, the custody of the document is the responsibility of the issuing company and its customer, for the term of 6 years.

The justification for this requirement of custody of the electronic document results from the fact that it is more than a document of registration of the operation of interest of the tax authorities, but is a commercial document, therefore, to be used by both parties involved in the commercial operation.

The Chilean model further contemplates the consultation of the electronic document on the Internet, which results in a true guarantee to the customer of the commercial operation.

It can check in the SII website whether the document was correctly registered with that entity, as well as it can check the validity of the file received.

As regards this subject, the Chilean legislation does not rule the way of sending of the electronic file to the customer of the good, defining only a minimum platform in which this must occur. the electronic mail.

If the company issuing the electronic document however has other resources to make the

electronic document available to its customer, such as download on its Internet web page, delivery of the digital file in media, such as CD or DVD, or further another medium, it may use it, provided that its customer so accepts.

Finally, it is important to highlight that the Chilean government has made available to small and medium size companies, since September 2005, a free application for issue of their electronic documents. These companies must only have a certificate and digital signature and Internet access, besides SII authorization as an electronic issuer.

Currently, Chile has over 15,600 companies issuing *facturas electrónicas*, and 76% of this total refers to micro and small companies. The monthly volume of electronic tax documents issued reached in August 2009 the total of 406,315.

## 2.2 Brazil

The Brazilian project is inserted in a larger work of modernization of the tax authorities called “Public Digital Bookkeeping System” – SPED.

The purpose of SPED is the transformation to the digital form of the tax bookkeeping, the accounting bookkeeping and the issue of tax documents made by the companies.

In spite of the initial perspective of priority development of the bookkeeping projects, coordinated by the Federal Revenue Service of Brazil, the first project of SPED to be implemented was the development of a new model of electronic tax document called *Nota Fiscal Eletrônica* - NF-e (Electronic Tax Invoice).

The NF-e project was initially based on the technological and implementation strategy model found in the Chilean model, and its beginning occurred in 2005, counting on the participation of 19 voluntary companies representing several economic sectors. The first NF-e with legal validity was issued on September 14, 2006.

In spite of the continental dimensions of the country and its political division into 26 States and a Federal District, the Brazilian project succeeded by counting on the coordination of the States and participation of the Federal Revenue Service and voluntary companies.

The model of NF-e adopted privileged the construction of a solution based on a standard model applicable throughout the country, thus simplifying the use of the document by the companies and the exchange of information among State tax authorities.

The first electronic document created aimed at replacing only one kind of tax document in paper, the Tax Invoice for sale of goods between companies.

Any company could register for the voluntary issue of NF-e, and its operating model contemplates the following steps:

1) the company generates an electronic file in XML format, respecting its unique and standard structure;

2) to this file, the digital signature of the company is attached;

3) the file is transmitted through the Internet to the tax authorities of the State in which the company is established.

Considering, however, the different economic realities of each State, and aiming at a national standardization of the rule, the States that do not have resources to receive and authorize the NF-e from its taxpayers can use the computing structure of another State or of the Federal Revenue Service of Brazil, which would be in charge of authorizing the NF-e in name of the State so proceeding;

4) the tax authority then validates the form of the electronic file received, not concerning about validating, at this time, the tax aspects of the commercial operation and, returns to the taxpayer a file containing an authorization of use of this document.

It is important to highlight that the authorization of use is made for every NF-e, at the time on which the tax authority receives the electronic document, without the prior granting of a numbering range. In case the form validation is not positive, a rejection answer will be returned, which will permit the company to repair the possible formal inconsistencies appointed.

5) with the authorization of use in hand, the company shall print a graphic representation of the electronic document, called DANFE - Auxiliary NF-e Document, used to accompany the transit of the good. This document has a unidimensional bar code that identifies in a unique manner the NF-e, and permits its consultation on the Internet;

6) the issuer of NF-e must obligatorily send or make available the electronic file of NF-e to its customer, since it is the tax document that has legal validity;

7) the addressee of good must check for the validity of the NF-e received and must store the file of NF-e. In case is does not have conditions to receive this file nor is an issuer of NF-e, it may opt for storing the DANFE instead.

In the beginning of the project, up to April 2008, the adhesion by the companies to NF-e was voluntary and its use in all operations was not required.

As the time went by, differently from what occurred in the Chilean model, the Brazilian tax

authorities started to impose the requirement of its issue for several economic segments aiming at a higher tax control and modernization of the tax authorities of the country through the massification of use of NF-e.

The massification strategy was made by economic sector, so that all competitors of the sector would be subject to the same rules. Once the company is required to use NF-e, it is forbidden to use the paper tax document, and its customer must refuse the good if the document is not the electronic one.

The requirement of issue of NF-e is nationally standardized in all Brazilian States and was divided into 8 phases, each of which with a growing number of companies. Up to the end of 2010, all the industry and wholesalers in Brazil must issue NF-e.

Considering this strategy, the small and medium companies were made available a free of charge program for issue of NF-e. This program was developed by the State of São Paulo and made available to the taxpayers of the entire country, considering the standardization of the business rules and the layout of the file. Currently, it is estimated that over 40% of the taxpayers issuing the NF-e of the entire country issue their electronic documents through this application.

With the development of the project, in 2007 the creation of a new type of electronic document started, focused on the provision of cargo transportation service.

The so-called Electronic Transportation Bill - CT-e aims at replacing for paper tax documents used by the carriers of cargo and goods, and has the operating and technological model similar to that of the Electronic Tax Invoice, presenting, however, a specific and distinct layout.

This project is in its pilot and model stabilizing phase, and its massification is expected to occur in 2010.

The Brazilian figures of issue of Electronic Tax Invoices are very expressive and will be a strong appeal for enlargement by the incorporation of the required sectors from the entire industry and wholesalers. The total volume of issue of NF-e in Brazil reached in August 2008 the record of over 350 million NF-e authorized throughout the country by over 35 thousand accredited companies.

### 2.3 Ecuador

The Ecuadorian model of electronic tax document contemplates the issue, in a digital manner, of the following types of tax documents. Invoices,

sale notes, credit notes, debit notes and withholding vouchers.

Each taxpayer interested in issuing the electronic document must submit a request to the Internal Revenue Service (SRI), which shall authorize or not the company to issue electronic documents, according to the structure, organization and business conditions of the company.

Once such authorization is received for issue of electronic documents, a pair of public and private keys will be generated for the company, and its public key will be registered with SRI.

Every electronic document issued by the company must be digitally signed based on this public key registered with SRI.

The milestone of the Ecuadorian project dates back 2002, more specifically focused on the subject of digital signature and public and private keys accepted in that country than on a new kind of electronic document.

In this regard, differently from the Chilean and Brazilian models, there is not an electronic document itself from the structural point of view, but a generic document digitally signed.

In Ecuador, there is a distinction between "format" and *trama de dados* ("data set"). As regards the format, there is no standardization imposed by the Ecuadorian government, and it is up to each company to adopt the format of electronic file that best fits it.

Periodically (the period is defined according to the need and planning of SRI), the companies must provide detailed information on its operation to SRI, and this submission must occur in XML format, respecting the standard structure - this set of information is called *trama de dados* (data set).

Such information must be separately sent by kind of documents, taxes, etc.

Through this model, therefore, there is no prior sending of information to the tax authority nor the obtaining from it of a numbering range, in which the company could issue its electronic documents.

There is, however, an additional obligation: The company must inform on the SRI website, according to the conditions established by the tax authority, the range of numbers issued in each type of electronic document.

In principle, the company that is authorized to issue electronic documents must use them in all its operations, but they are permitted to keep paper printed forms for use in contingency situations.

This is not mandatory, once the strategy adopted is based on the expectation that the market itself shall take care of motivating the companies to modernize and adopt that form of document issue.

The Ecuadorian *factura electrónica* project is focused, in principle, on large companies, and the government does not make a tax document issuing program as it occurs in the cases of Brazil and Chile.

Finally, it is highlighted that the addressee of the electronic document may check for its validity on the SRI website.

## 2.4 Colombia

Although the electronic invoice has been contemplated in the Colombian tax statute since 1995, with definitions of electronic commerce in 1999, it was only in 2007, that the minimum rules, the concepts and the technical and tax concepts of this document were established.

The detailing of the content and rules was set forth in November 2008.

In Ecuador, the model of electronic document and the technology used are free, and the form is at the discretion of each company, from the issue to its storage.

There is no standard layout. However, for the issue of the electronic documents, the companies need to state on them, the information required in the tax legislation besides observing the following requirements:

1) assure the authenticity and integrity of the document along the entire invoicing process, specifically in the procedures of issue, delivery, acceptance and conservation, including the procedure of submission to the tax authorities, and

2) have ISO 9001 certification (or a substitute standard), as guarantee of the issue process for the involved parties.

The reference to the issue of electronic documents dates back to the Electronic Commerce Law of 1999, which defined the concepts of authenticity, integrity, originality and conservation, and the new rules that provide on electronic documents cannot oppose to them.

The way how the document is made available to the purchaser is free and there is no rule referring to a single model for printing its graphic representation.

It must be noted, therefore, that the tax authorities do not have to be previously aware of the commercial operation or to participate in the procedure of issue of the tax document. The Colombian Government requires the presentation of consolidated information by type of document issued, with detailing of taxes and the goods purchasers, to be delivered in the manner and under the conditions set forth by the National Tax and Customs Direction (DIAN).

In this case (and only at that time), the consolidation of the information has a proper and standard form for presentation, must be sent through the Internet to DIAN and must be digitally signed based on a certificate issued to the company by this entity.

For companies, the use of the electronic form is optional. However, the one opting for its use must inform DIAN of that decision, and must previously obtained, its quality certification.

Once the company is authorized by DIAN to use electronic documents, the company must request to that entity a numbering range for the documents that it can issue and, for purposes of tax control, it must inform in each electronic document, the resolution that authorized the numbering range to that company.

As it occurs in Ecuador, this is not about a new model of electronic document.

In Colombia, it is found that the focus is much more on the procedure of issue of the document, because the company needs a certification for that purpose, but there is neither standardization nor the creation of a typically electronic document.

## 2.5 Mexico

The Mexican model is similar to the Ecuadorian and Colombian models. We can say that there is a generic tax requirement for tax vouchers to the issued upon every operation performed, admitting that individuals or corporations having certificates with digital signature may issue these vouchers in the digital form.

The attachment of a “digital stamp” (kind of digital signature) supported by a certificate issued by the Tax Management Service – SAT. These are the requirements imposed to the taxpayers:

1) Proceeding before SAT of Digital Stamps Certificate;

2) Request of authorization for use of numbering range;

3) Use of the number in each digital vouchers issued through an electronic system;

4) Submission to SAT, on a monthly basis, by electronic means, of the information of the digital vouchers issued in the month next before;

5) Making available to the clients a printed document for the electronic voucher when requested; and

6) Compliance with the specifications as regards information technology determined by SAT.

The format of the document is XML, and there are information modules with specific layout that are defined and determined by SAT. This entity also specifies the layout and structure of the

consolidation file delivered on a monthly basis to SAT, as well as the technical requirements of digital stamps.

The electronic document may have addenda, containing information of commercial interest of the companies. It must be highlighted that, the digital signature is required to be attached only to the tax information called "original chain", and its use is not required on the entire electronic document.

This model of issue of electronic documents is optional to the taxpayers, but the one opting for their issue can no longer use the traditional paper document. The Mexican government studies the possibility of making their use obligatory for large companies and import operations.

It is up to the customer to decide whether to receive the digital file in XML form, only a printed copy of the file or both. There is no governmental rule as regards the form of communication between the company issuing the electronic document and its customer.

The company having funds for that purpose, may use their own systems for issue of electronic documents. As previously mentioned, there is no need of special authorization from SAT, other than having a digital certificate and request to SAT the numbering range for the document it shall issue.

For smaller companies, SAT authorizes them to use one or more service providers for the issue of documents.

In this case, the providers must be previously authorized by the Mexican government for the provision of these services, and the company may not use their own systems while they are using these services. It is estimated that, SAT will soon make available on its Internet portal a service of issue of electronic tax vouchers intended to small companies.

### 3 Comparison of Models

Based on the models of tax documents identified for each surveyed country, some comparative analyses can be made, firstly as regards the technical aspects involved and, secondly, as regards the strategy of implementation adopted in the projects by the countries.

Initially, it is possible to verify the convergence of standards in the countries analyzed in the region as regards some technical aspects, such as:

- Adoption of the XML standard for electronic files (Chile, Brazil and Mexico);
- Requirement of digital signature in the electronic document or in the monthly information provided;

- Use of Internet to send the electronic files.
- Use of a graphic representation of the electronic tax document (except for Colombia, where there is no specific rule);
- Absence of a rule on the form of sending the electronic file to the customer (except for Chile, for which the minimum requirement is the sending by electronic mail);

However, as regards, some other technical aspects, we could not identify consensus, such as in relation to:

- Sending of the electronic tax document before the realization of the commercial operation (required only in Chile and Brazil, while the other countries receive monthly information);
- Requirement of prior authorization of a numbering range for use in the electronic tax documents (only Chile and Ecuador);
- The Tax authorities' provision of a free application to issue electronic tax documents for companies (only Chile and Brazil);

As regards the process of implementation of electronic tax documents, it was found that Chile was the first country of the region, in 2003, followed by Mexico, in 2005, Brazil, in 2006 and more recently, Ecuador and Colombia, in 2008.

However, it is observed that only Brazil proceeded to the massification of use of the electronic tax documents based on the institution of the requirement of adoption by companies of certain economic segments.

In spite of the reception of the electronic information by the Tax Authorities, either before the commercial operation or even monthly, it was identified that for all surveyed countries, the continuity of the custody of electronic tax information as a responsibility of the companies.

### 4 Conclusion

Based on the models presented, we can observe that the difference among them occur at several levels of analysis.

- i) the effective replacement or not of paper documents with the electronic counterparts;
- ii) the effective participation of the tax authorities in the procedure of issue of tax documents by the company;

iii) the regulation of the State on the layout of the electronic file of the document and its legal validity;

iv) the requirement of adoption of the model by the companies;

v) the form of controls adopted.

As regards innovation, we can say that the model of electronic document adopted by Chile was the pioneer, as it defined a new and standardized type of document which effectively substituted the paper counterpart and was not limited only to apply the concept of digital signature to a pre-existing electronic document.

The Brazilian model is very similar to the Chilean model, once it also creates a new model of electronic document that effectively replaces the paper. All control is made by the tax authority in real time, as each commercial operation must be previously informed to the tax management and depends on its authorization for it to occur.

In both countries, the tax management defines a strict model of layout and structure that must be followed by the companies, and leaving to their discretion only purely commercial aspects such as, for instance, the form of communication between the companies and the provision of the tax document between the seller and its client. The two models also adopt the concept of digital signature, that must necessarily be attached to the document to give it legal validity.

Other countries, such as Colombia and Ecuador have adopted more flexible models, permitting the companies to define the electronic form of their documents without fixing the file layout form.

Ecuador is one country that opted in its electronic document model for almost not having any intervention or regulation in the form of issue, requiring only the use of digital certification but without the effective control of the issue of documents in real time or through the provision of a numbering range. In this country, the first step contemplates periodical statements by its taxpayers, after the occurrence of the operations, detailing them in terms of amounts, taxes and customers.

Colombia and Mexico have adopted intermediate lines between Ecuador and Chile/Brazil, once they do not participate in the time of issue of the document by perform some control through the authorization of the numbering ranges and later statement of the operations to the tax authorities.

We can say that Mexico is still closer to the models of Chile and Brazil, as it defined information blocks in XML format, as those countries did.

It is highlighted that Colombia does not require the use of digital certification in the documents, but in the summary statements of the operations to the tax authorities.

As regards the requirement, it is highlighted that, up to the moment, only Brazil imposed it to its taxpayers, adopting the strategy of massification of the model in a very extensive manner up to the end of 2010.

It is suggested that, in future works and research, a deepening is made in the technical comparison of the models in Latin America, in particular, analyzing the information required in the layouts aiming at evaluating the possibility of the electronic interchange of tax data between countries, favoring the foreign trade and the regional logistics, as well as, serving as reference basis for the implementation of projects of electronic tax documents for other countries in Latin America and Caribbean region.

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