VAT Fraud: Possible technical and ontological solutions

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Abstract

Customs authorities wants to make sure that value added tax (VAT) is paid. By definition all imported products are subject to VAT. Governmental controls imposed by Customs authorities provides a partial solution to implement the VAT regulations. But these controls are abused by the fraudulent and government faces VAT loses. In this paper we have discussed VAT frauds scenarios and possible prevention approaches.

Keywords: Auditing, Value added tax, Process mining, REA

1 VAT Fraud in EU

In this paper we will consider VAT frauds related to the abuse of the VAT rules on cross-border transactions within the EU. It is possible to sale goods in EU and charge VAT to the member state. VAT fraud makes use of the free circulation of goods in EU region. Few Member States publish estimates of the size of the problem, it is believed that in some countries it has reached levels of up to 10% of VAT receipts. For example recently Lex van Almelo [1] discusses some numbers in their report stating that Tax gap in EU amounts to 193 billion Euro per year while in 2003 it was only 100 billion Euro. The National Audit Office reported in 2007 that Denmark and the Netherlands were often used by fraudsters as the location for apparently legitimate transactions in a larger chain in which the tax is being stolen in other Member States (The European Union Committee, 2007). In a typical VAT supply chain where there is no fraud a VAT-registered business which buys and sells goods charges VAT from customers (called output tax) while the suppliers charge VAT from the business (called input tax). Beside paying VAT to suppliers the business has to pay VAT to government too, but the VAT paid to the government is refunded by producing documents showing that the VAT is already paid to the supplier.

Supposedly the first version of *missing trader intra-community* fraud in the EU was about the smuggling of gold across the Luxembourg border, where the tax rate for gold was 0%, the gold is sold in a country with VAT and the smuggler disappears. Where he sold this gold with VAT in another Member State, and then disappeared. For investment in gold, a special scheme was adopted in the EU VAT system in 1993 to handle fraud in the market (Ainsworth, 2010). The main reason for VAT frauds is the transitional VAT system for taxing intra-community supplies with its zero-rating for exporting in EU Member State.

VAT frauds can be divided into following categories,

- Acquisition fraud: The simplest missing trader fraud is the one where a fraudster imports some goods. These are zero-rated in the country of origin, and VAT is due in the country where they have been imported. But fraudster charges basic price and VAT. Later fraudster become missing trader and does not pay VAT to the Government. At the end due to zero-rated goods, the Government has VAT losses.

- Carousel fraud: Carousel is another version of VAT fraud where missing trader purchases goods from a supplier located in another EU state. Then sells the goods to a business and charges VAT. Later on the missing trader disappears without paying the VAT. This starts a chain process where the buying

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[1] `http://www.accountant.nl/Accountant/Archief/Accountant/2014/Mei+2014/Stop+carrouselfraude.aspx`

business sells the goods to a second business and charges VAT. It pays the excess VAT received from the second business to the government. Same type of fraud exist between the second business and third and any subsequent business. The last business in the chain sells the goods to a broker. After exporting goods in EU, broker reclaims the VAT on next purchase. At this time fraud is revealed that VAT is not being paid by the missing trader.

- Contra-trading fraud: In case of acquisition fraud and carousel fraud reimbursement claims opens up the fraud but contra-trading fraud can be called as evolution of previous two where trader does not claim for reimbursement. In contra-trading detection is even more difficult. A contra-trading fraud is, where 'broker number one' does not submit a claim to obtain a refund of the VAT charged to it. Instead, he uses a 'clean' deal chain to offset the VAT. This means that he imports goods from another EU state, and no VAT is payable on that transaction. This VAT charge and import goods strategy continues until one broker or may be an innocent party down the supply chain submits a claim for a refund of input tax. This type of fraud is a combination of two frauds (a) carousel (b) a scheme where the input and output VATs neutralize each other.

2 Solution Directions

VAT fraud occurs across the EU. There are debates and discussions going on to minimize or overcome this problem. In the following, we summarise the possible solutions and guidelines proposed by various researchers and government agencies. These solutions are ordered with respect to the level of effort required.

1. **Indicators:** Sometimes enterprises become part of a VAT fraud unknowingly. Tax office Netherlands provides some guidelines that may indicate VAT fraud where you need an extra eye to save yourself from fraud, summary of them is as follows,

   - Type of goods: goods such as expensive cars, precious metals, perfumes, parts of computer equipment are mostly used for VAT frauds.
   - Speed of transaction: the transactions follow each other in rapid succession while suppliers and customers are changing rapidly with less or no inventory record.
   - Supply chain: There are a lot of unnecessary and unexplained links in a chain, each of them have competitive profit.
   - Payments: The company suddenly makes a big turnover, payment are made on behalf of an offshore banking, payment platform, or to a third party while goods are mostly handled by freight forwarders.

   Indicators are guidelines provided by fraud detection and prevention authorities to target the fraud transactions, companies and possible area. These indicators can be added as internal controls to the business. Detection is possible by indicators but prevention needs some procedural improvements.

2. **Procedural solutions:** To minimize and overcome VAT fraud, EU committee (The European Union Committee, 2007) discussed possible procedural changes, these are

   - Extended verification: In this process more checks are implemented to identify, prevent and disrupt potentially bogus businesses and transactions while focusing on risk-based controls.
   - Disruption of criminal activity: Steps are also taken to disrupt the activities of fraudulent traders. Since whole fraud is a chained process so the interruption in the chain can help to capture criminal gangs behind the fraud, and it is likely that most of these gangs are also involved in other criminal activity including money-laundering and smuggling.
   - Cross-border co-operation: Due to free circulation of goods in EU more and more information is required across the borders and exchange of information can help to reduce fraud for example by verifying the customer's records, their business history in another Member State,

- Reverse charge: In this method the VAT is usually reverse-charged to the client. This means that client pays the VAT. Place of business has a direct relation with reverse charge mechanism as VAT rules prescribe that the place of supply is the place where the supplier's business is established. According to certain VAT rules that the place of supply must or may be somewhere else. Hence, the VAT liability may shift from one country to another. This is commonly referred to as a reverse charge mechanism.

- Scrutiny of new VAT registrations: Newly registered firms need to be closely supervised such as by on-site visits and examination of business plans until they demonstrate that they are reliable enough.

- Real-time logging of trades and verification of counter-parties: Another suggestion to overcome fraud is to concentrate on monitoring transactions in real-time (or near real-time) with an objective of uncovering non-economic transactions as they occur.

- Collection of VAT in real-time: Collect the VAT as soon as the transactions are made. Traders are required to transfer an amount equal to the VAT charged to their customers.

Real-time processing of VAT transactions is a way to overcome fraud because quick reaction is needed to catch the chain of fraudulent transaction. Real time processing of transaction requires not only technological support but improvements in procedures as well.

3. **Technical solutions:** Technology development made flow of money quite easy and quick and if a company aims to fraud then money can move at lightning speed through national and international banks. Three main technology solutions are under discussion, in the following we will provide a summary of them(for details see e.g. (Ainsworth, 2010)).

- RTvat: Essentially moves the point of taxation from the invoice date to the settlement date. The proposal is that each Member State establish a national server system that is separately owned and operated by a national Public/ Private Partnership. For example If business A purchases goods from business B for 100 Euros with a VAT rate of 20 percent, A would pay 120 Euros. Instead of requiring the seller to collect, hold, and remit 20 Euros in VAT, the use of RTvat can automate the payment system and can send it directly to the tax authority. Thus, seller receives 100 euro and VAT clearance notification.

- VLAN: A Locator Number system requires less procedural changes and little technological support. It was formulated and proposed by Dr. Michael Cheetham at the House of Lords hearings, May 25, 2007. Business would need to secure a VLAN (when selling supplies) or validate an opposing trader's VLAN (when purchasing supplies). Tax authorities would maintain a software that can facilitate automated requests for VLANs and make automatic validation requests.

- D-VAT: Based on the introduction and implementation of certified tax software. Responsibility of the software is to (a) calculate the correct tax and VAT for each transaction, (b) preparing invoices for these taxes, (c) linking each VAT input or output amount to the correct VAT return, and (d) completing the VAT return procedure accurately. If most of the companies use this software, then tax processing can be automated.

Among the suggestions mentioned above, some are in the process of implementation such as reverse charge mechanism has applied to supplies of mobile phones or computer chips if the supply is valued at 5,000 Euro or more since June 2007. In 2010, services were also included in the reverse charge mechanism. In August 2012 the EU considered Quick Reaction Mechanism (QRM) that would enable member states to respond more swiftly and efficiently to VAT fraud.

2.1 Proposals for Smart Auditing Based Solution

Some solutions discussed in previous section are in line with proposals of *smart auditing framework* proposed in Bukhsh and Weigand (2013) and shown in Figure 1. We laid the foundation of our framework on
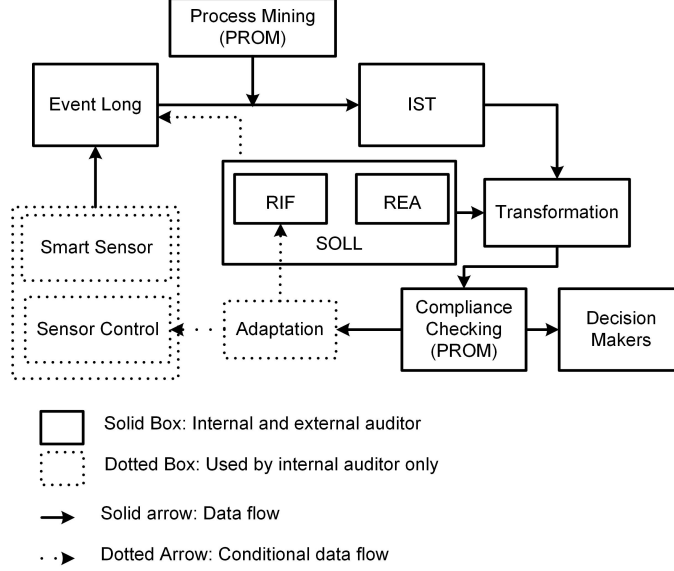
Figure 1: Smart Audit Framework

traditional approach of auditing where audit reports are being obtained by comparing IST and SOLL models. Tsunami of data require efficient methods to process it. To gain this efficiency we have suggested the use of the intelligent techniques for producing IST model. For producing SOLL model we have benefited ourself by ontologies and business norms. We need to develop our knowledge base on the basis of the audit report for future references. In our proposed framework we have satisfied this need by introducing another adaptation module which is again a non-traditional approach of audit. Audit is being performed by using process mining and REA ontological concepts. In our proposed framework we also suggested the use of these techniques but with a difference that we are processing the output of these techniques again by applying some ontology rules and regulation. The concept behind that is sometime generalized rules of business are not mentioned or skipped in the business norms. Then the ontological concepts step will help us to produce the more refined audit report.In the following section we can show the possible solution based on *smart auditing framework*.

- Certified Status: Certification of the trading companies is an idea inspired from D-VAT. In addition to Weigand et al. (2013) we have discussed auditibility levels. Where Level 3 is risk-based approach and aims at undesirable to happen, in order to reduce the risk and uncertainty. By checking risk and uncertainties a company can be certified. It would be difficult to be certified as authorize company but in return the certified company will have fewer checks that may lead to quicker trade. Such certification can be introduced especially for the import/export companies. For example, if a company is trust worthy then: (a) it is authorized to sale products with VAT to other parties (b) it can claim the VAT reimbursement. If company is not a certified company, then it cannot ask for VAT from other parties (similar to reverse charge mechanism). For an uncertified company it is possible to ask for reimbursement but due to uncertified status company may have to go through detailed checks from authorities. Thus, will cost extra time and effort for company and authorities but in-parallel authorities can identify false companies.

- Third party solution: VAT management problems discussed in Bukhsh and Weigand (2011) is a concrete example of the payment and claim of the VAT. Solution suggested from smart audit perspective is in the form of third party. Third parties can be Customs broker or any other trusted agency which is handling company's data. Usually companies are not willing to share their data [2]. To

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[2]`www.nlip.org` and `http://www.cassandra-fp7.eu/`

show themselves compliant with laws and regulations, open and accountable, they need to share data. Technical solution D-VAT is also based on data sharing with the help of a software instead of a third party. We have proposed simplified import export procedure with the help of third party (see Bukhsh and Weigand (2011)). Data shared either by third party or by D-VAT will in return increase the reliability of the company. For shared data analysis we can use intelligent techniques as suggested in *smart auditing framework*. We can see benefits of using D-VAT approach over the third party as: (a) data will be handled by software (e.g D-VAT is based on third party concept) then it will be under the company's control. (b) Data handling for import and export procedure will be faster by using D-VAT. (c) Documents needed during import/export can be submitted and verified in-advance thus do not go through inspection at ports. If D-VAT system is installed in all the companies in a chain then authorities can see whole supply chain and can find suspected companies. But how to motivate and/force companies to install D-VAT is still under discussion by Tax authorise in EU.

- Indicators as Internal Controls: Indicators mentioned by tax administration can play a key role to identify the fraud. Especially from internal audit perspective if these indicators are added as internal controls to the business then innocent companies can save themselves to become a part of a fraud. For example, internal control can be applied to the goods of high value and less volume such as digital cameras, camcorders, iPods, Play-stations and some other goods. All the indicator cannot be applied by a company itself unless it has complete history of production (to be purchased) or company (selling the product). There exist possibilities to have the history of product/company (a) If companies share data either by D-VAT or by third party solution (b) VLAN: a proposed technical solution can provide complete history of product but to have an insight of the company will be difficult. (c) RFID: another solution to track the products. Thus, use of indicators as internal controls are dependent on the availability of data.

- REA ontological concepts for VAT and Excise Payment: REA as an accounting model help us to provide more indicator to find and catch fraud. It provides an extension to the concept of event as economic events (REA) which are core for the fraud activities and REA dualities concept help to figure out frauds. Such as any business in a supply chain of goods with import and export is liable to pay the VAT or claim for it (Representation of excise in REA is shown in Figure 2).

First indicator REA provides is to identify and separate the economic events and then identify and check dualities for example whenever there is a liability in the form of VAT to be paid then money is paid to liability acquittal. As mentioned earlier data is needed for indicators to work, same applies here. As soon as a business purchase goods it is liable to pay VAT but if we cannot find any economic event relating to payment of tax or exchange of tax then we have reasonable grounds to suspect about company. For such analysis REA mostly need real-time data, technical solution D-VAT can help to have real-time data for internal and external auditor to identify existence of duality between VAT payment and money.

3   Summary

In the information systems field, we have witnessed substantive research on the topic of compliance and monitoring. However, tools on the operational level are not sufficient. We have Smart Computing paradigm and introduces a *smart auditing framework*. The *smart auditing framework* uses normative auditing knowledge into account. Normative structure of REA and possible business norms has been analysed as well. Use of business norms and ontologies for compliance checking leads to the foundation of adaptive auditing system.

Thus, from the above discussion we can conclude that business can perform following checks in order to avoid being unwittingly liable. (a) the legitimacy of company e.g, their trade history (b) the existence and condition of the goods. (c) adapt the business rule set from VAT fraud's perspective, e.g consider the check suggested by the Tex authorities(adaptation module in *smart audit framework*). From government's point
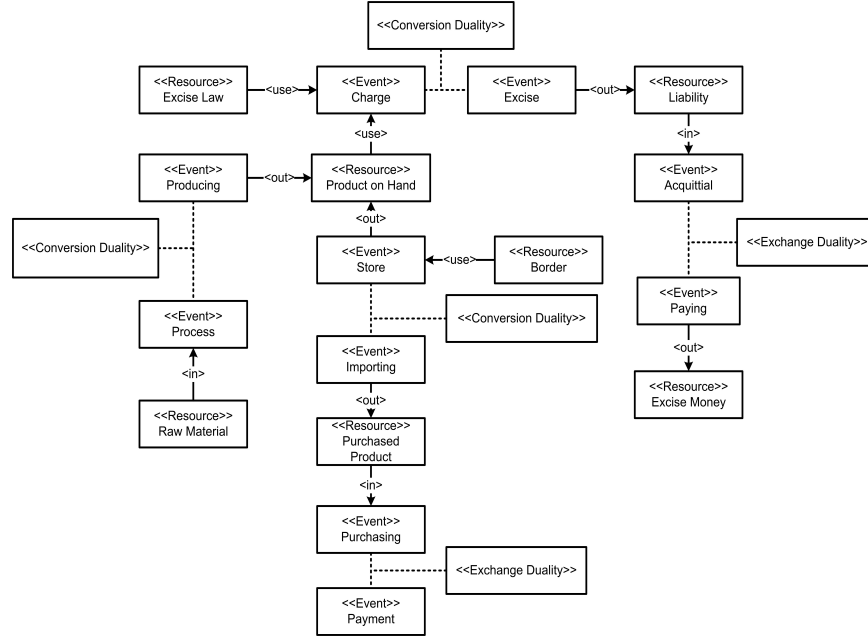
Figure 2: REA model for Excise Management

of view fraud can only be detected once fraudulent companies ask for VAT reimbursement but in case of contra-trading fraud it is still an open question that how to find and overcome theft of VAT.

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