



VOLUME 15 – NO 9 / SEPTEMBER 2023

Uganda Sees Strong Rise in Manufacturers and Importers Embracing Digital Tax Stamps

Since the introduction of its digital tax stamp, tracing, and reporting programme, Uganda has experienced continuous and sustained acceptance, implementation of and compliance with the programme.



Uganda's tobacco stamps (© SICPA).

When the system was proposed and adopted in 2019, it faced stiff opposition from manufacturers and the private sector, who were concerned that the system would increase the cost of doing business, while not providing enough revenue recovery to justify its adoption.

However, since its implementation, the system has shown the exact opposite. Participation has steadily and continuously increased. According to reports by the Uganda Revenue Authority (URA), participation has grown from just 200 registered taxpayers in 2020 to 1,100 registered manufacturers and importers at the end of the first half of 2023.

The last two years, in particular, have shown remarkable growth in on-boarding of new taxpayers. In 2022, URA reported a 21% increase in registered taxpayers as it on-boarded 364 manufacturers and importers. This was followed by an increase of 23.3% in the first half of 2023, representing the on-boarding of at least 209 additional manufacturers and importers.

To drive further adoption of the system, URA has increased the number of its inspections. The digital tax stamp is key, according to the authority. In addition, URA is offering and implementing an electronic fiscal receipting and invoicing solution, which is now used by over 1,060 companies.

The combination of digital tax stamps, increased enforcement, and additional systems and technology to aid with compliance and reporting has helped Uganda realise a 39% increase in overall tax revenue in excise duty and value-added tax collections.

Uganda has shown how a thoughtful combination of digital stamps, enforcement and technology can overcome concerns over system costs from manufacturers and the private sector.

The author of this article, Sven Bergmann, is the founder and CEO of Venture Global and advises brand owners, technology providers and governments on anti-counterfeit strategies, programmes and technologies. Send your comments to SBergmann@VentureGlobal.com.

Smartphone Report Released

Reconnaissance International is pleased to announce the release of its new publication – ‘Smartphones for Authentication’ – the only publication of its kind.

Smartphones are revolutionising the world of authentication, thanks to their ubiquity, connectivity, and computing power. As a result, they have given over 80% of the world's population (ie. those people currently owning smartphones) the power to read barcodes and validate security features not previously available to them.

Smartphones are thus accelerating the move towards more standardised, universal authentication methods and are giving rise to technologies that simply didn't exist before.

These technologies are based on the various embedded attributes of smartphones, including light sources, display screen attributes, biometric capabilities, fingerprint sensors, connectivity, and – of particular significance to authentication – camera systems.

The current and potential role of these technologies are covered at length in the new report, along with any drawbacks as far as the authentication sector is concerned.

The 60+ page publication also explores existing use cases of smartphone technologies within the authentication ecosystem, including in the individual areas of currency and payments, personal identity, product and document authentication, and tax stamps.

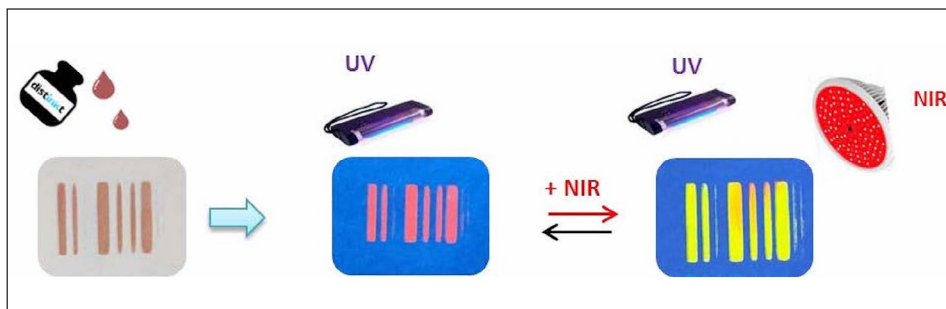
Emerging technologies and their potential role as authentication devices of the future are also covered, including the rise of artificial intelligence (AI) and the move towards wearable electronics and smart glasses.

Distinkt – A New Name in Nanotech Authentication

Nanotechnology has been a fertile breeding ground for authentication and brand protection devices – given that structures that can be controlled at the nanoscale (roughly the size of a few atoms or molecules) exhibit responses to light that are distinctive and near impossible to replicate. Now, a team of researchers and entrepreneurs has launched a new optical ink feature into the market.

Distinkt is a university spinout set up to utilise a patent filed by the Catalan Institute of Nanotechnology and Nanoscience, Autonomous University of Barcelona and the Spanish National Research Council. The patent is protected in the EU, USA, Japan, China and India.

To help launch the product, the researchers recruited a team of experienced entrepreneurs and MBAs in early 2022 to jointly form the company.



One of Distinkt's inks printed in polycarbonate substrate: when the ink is exposed to UV light it shows red fluorescence. Then, after irradiating with an NIR light source at 830nm, the ink turns from red to yellow fluorescence. After removing the NIR source, the ink turns back to the initial red emission in five seconds.

The technology uses tiny particles to create unique visual and covert effects. After five years of intense investigation, the team discovered a way to assemble materials so that they create a specific visual response when stimulated by near-infrared light. The dynamic luminescent inks are unique in their ability to transition between colours at a specified rate and to then revert back (or not) to their original state. The company claims that the method of activating and reading the inks is irreplicable.

The unique authentication capability of the product comes in the combination of the colour changes selected, the duration of the change and the reversibility of the change (or permanence). Additional levels of authentication are produced through the way the inks are activated by near-infrared LEDs. A further layer of protection is created by the software solutions written to read and trace the patterns created.

Sustainability and growth

The company provides an inexpensive and organic solution to visual authentication using readily available materials. It takes care to avoid harmful chemicals, rare earths or other materials which are in short supply or constrained by transport across national borders.

Distinkt is a young company in outreach mode. The company's initial strategy is to address two very different market sectors – brand protection (both industry and consumer brands) and government-issued documents such as banknotes, ID cards and tax stamps.

'The two markets are very different with different entry points and dynamics,' said Luca Venza, CEO. 'For the brand protection market, Distinkt can print directly onto consumer products (or industrial materials) with invisible ink solutions, or we can produce our own series of trademark labels, tags and QR codes for specific customers.'

'In the banknote, ID and tax stamp market, we can integrate our raw material with existing suppliers of UV or standard inks as an entry point to the market. We will build long term relationships with central banks and government suppliers,' he added.

Distinkt is now looking for industrial partners to embed its technology in practice. It has commercially available solutions ready for customers, as well as the ability to develop custom solutions when needed. Product turnaround is fast, with unique solutions available within three weeks to three months. Distinkt can integrate its technology into most off-the-shelf ink solutions and create its own inks and printed solutions.

The company is always on the lookout for potential corporate or venture partners for investment to accelerate its growth.

The management team comes with an impressive track record of success. It consists of a group of experienced MBAs and PhDs with experience in Global 100 companies and top university laboratories. Collectively, the founders have started eight companies, filed 10 patents, and successfully exited from three start-ups. They have led three major M&A acquisitions from both the sell and buy sides.

To learn more about Distinkt's technology, and meet with members of the management team, be sure to attend High Security Printing Asia 2023 in Colombo, Sri Lanka (4-6 December) where Chief Technology Officer, Àlex Julià, will be presenting a paper on 'New Generation of Dynamic Luminescent Inks Based on Nanotechnology to Prevent Counterfeiting'.

Àlex Julià, alex@distinkt.tech, CTO & Co-founder, +34 618256676

Luca Venza, Luca@distinkt.tech, CEO & Co-Founder, +34 608283306

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Tax Stamps and Track and Trace – Making Everything More Visible

Whether you use tax stamps or you don't use tax stamps, let's face it, illicit trade still exists. The difference is, tax stamps and associated track and trace and production monitoring systems help make illicit trade stand out more (like a sore thumb), plus they make it easier to trace illicit trade back to its origin, and identify at what point in the supply chain legal trade may have become illegal trade.

What's more, real-time production monitoring systems have been proven to reduce some forms of illicit trade, including under-declarations by taxpayers and round-tripping, as we will see in one of the following country cases.

But let's start with some country experiences that demonstrate how tax stamps shine a light on non-compliant product, even if it's just by their very absence.

Take the Philippines, for instance. They have been using tax stamps on cigarettes for a number of years now – extending to alcohol in 2022. While illicit trade remains a constant problem in the country, the stamps serve as an essential aide for the Bureau of Internal Revenue (BIR) to identify illicit product during their market inspections and nationwide raids.

During one such raid this year, for example, the Bureau confiscated several bottles of alcohol and boxes of cigarettes worth millions of pesos, with most products bearing Chinese characters (which is also a visible indicator of illicit product). But, in addition, all of the products were missing excise tax stamps, thereby providing irrefutable proof of non-compliance.

Furthermore, one store selling expensive wine had the excise stamp on the side of the bottle rather than placed over the opening of the bottle to prevent reuse. Such placement is against Philippine regulations, and, again, provides clear, visible proof of non-compliance that could be used as evidence for case filing.

The takeaway here is that if BIR officers had not been able to rely on tax stamps to determine clear, yes/no compliance, their task of weeding out illicit product would have been made that much more difficult.

The case of Pennsylvania

To the next example... all the way over in Pennsylvania, USA, where it was reported in September that an increasing number of charges of possession of unstamped cigarettes were being filed by state police.

By law, each Pennsylvanian may possess up to one carton of cigarettes not bearing state cigarette tax stamps. However, the purchaser is still responsible for paying Pennsylvania taxes on those out-of-state cigarettes.

The proximity to the Allegany Territory of the Seneca Nation of New York was given as the most likely answer as to where the cigarettes were being purchased from. Because the Nation is sovereign, cigarettes there do not include the New York tax of \$4.35 per pack (and therefore do not carry tax stamps), so prices are notoriously low.

A Pennsylvania (PA) police station commander, based at Lewis-Run station, 30 minutes away from the Allegany Territory, said the station was doing its job looking for illegal cigarettes, but that there was no real crackdown happening. 'When the guys are out, they are definitely looking at it. If there's a whole lot of cigarettes in a vehicle in plain view, they will inquire about it,' he explained.

According to the state Department of Revenue, possessing one to five cartons of unstamped cigarettes could incur a \$300 fine

and/or up to 90 days in jail. And selling one or more packs of unstamped cigarettes could incur a fine of \$100 to \$1,000 and up to 60 days in jail. The wrongdoers are also at risk of having their vehicle seized if they are carrying more than 10 cartons of unstamped cigarettes.

The case of Pennsylvania provides another example of how enforcement officials depend on the presence or absence of tax stamps to determine the legality of products.

More revenues and less roundtripping in Chile

For the final example, let's go to Chile, where a recent report by economics academics, working on behalf of Bloomberg Philanthropies, showed that Chile's tobacco traceability and production monitoring system, introduced in 2019, led to a 16% increase in tax collections between 2019 and 2021, thanks to the ability of the system to give the tax authority real-time visibility into the number of cigarettes being produced in each of Chile's tobacco factories.

This improved visibility is what reportedly led to a significant reduction in the illegal practice of 'roundtripping', where products are manufactured and designated for export, then exported in order to avoid domestic taxes, and subsequently smuggled back into the original jurisdiction, potentially avoiding several excise taxes.

The report further claimed that the drop in exports could also have been due to the presence of the unique traceability mark (as opposed to paper-based tax stamps) which is applied to all cigarettes intended for the domestic market, thereby making any illicit re-entry of these products more difficult.

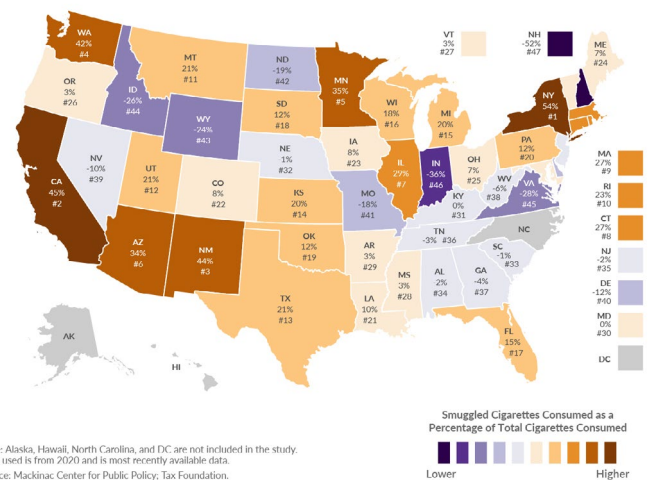
A full article on the Chile report is on page 4 of this issue.

These three examples show that having tax stamp, track and trace and production monitoring systems in place facilitate detection of illicit trade, and actually stomp out certain types of such trade, thereby increasing tax revenues.

But these systems need to be used in conjunction with robust enforcement and prosecution regimes, otherwise, in themselves, they're not going to be of much use... much like any other regulatory instruments which are in place but not enforced.

Cigarette Smuggling by State

Smuggled Cigarettes Consumed as a Percentage of Total Cigarettes Consumed, 2020



TAX FOUNDATION @TaxFoundation

Map from Tax Foundation illustrating smuggling levels per US state.

Economists in Chile Report Higher Cigarette Revenues and Lower Returning Exports

By Francisco Mandiola, Founder and Managing Director, FMA Secure

As a large number of Tax Stamp & Traceability News™ readers are already aware, tobacco and alcohol producers spend significant amounts of time and effort lobbying against the installation of tax stamp and traceability systems that are fully managed by national revenue authorities.



The producers' recurrent argument against such systems is that they are expensive and, more importantly, don't offer better performance with respect to controlling tax revenues than systems owned and operated by the producers themselves.

A recent study by economists Guillermo Paraje, Luca Pruzzo and Mauricio Muñoz, all from the Business School at Universidad Adolfo Ibáñez in Chile, says otherwise. Published in April of this year, in www.tabaconomia.uai.cl, the study draws some positive conclusions for those of us who agree that independent, high-security tax stamp and traceability systems provide the best mechanism for improving tax revenues and helping countries to reduce illicit trade.

Universidad Adolfo Ibáñez is a private Chilean university that was recently selected to work in Latin America as a partner of Bloomberg Philanthropies' initiative to reduce tobacco consumption on a worldwide basis. It is noteworthy that as of the publishing date of the study, the Chilean government had not publicly released its evaluation of the impact of its traceability system (called SITRAF – Sistema de Trazabilidad Fiscal) with respect to either increased revenues or illicit cigarette activity.

Following a lengthy tender process, Chile implemented SITRAF in May 2019, in compliance with the Framework Convention on Tobacco Control (FCTC), which it ratified in 2005. The goal of the programme was to help control the complete distribution and sales chain for tobacco products in Chile.

Tax on cigarettes in Chile is applied as a specific tax per cigarette as well as an ad valorem component. These taxes combined represent approximately 75% of the cigarette retail sales price.

Under SITRAF, each cigarette pack produced on domestic manufacturing lines is marked, directly at the factory, with a unique code printed with security ink, prior to being distributed. As for imports, they are marked at origin by foreign manufacturers, with a stamp that includes the same unique secure code and material security features. The quantity of packs marked is then transmitted in real time to the Chilean tax authority (SII – Servicio de Impuestos Internos).

Before SITRAF, the quantity of cigarettes and brands produced and commercialised were advised directly by the producer to SII, allowing little opportunity for the tax authority to verify the accuracy of the numbers reported and to reconcile them with taxes paid.

Recent tax revenues and cigarette quantities

Using 2019 = 100 as the base, Fig 1 of the study shows the evolution of tax revenues on cigarettes (black line) versus the number of cigarettes produced that were registered as tax-paying (red line). It is notable that, in 2020 and 2021, real tax collection increased despite a lower amount of cigarettes sold.

The increase in revenue in 2020 is significant, as despite an important reduction in the consumption (production) of cigarettes that paid taxes, it implies that there was a sharp increase in cigarette prices, something which could explain the increase in revenue, as the ad valorem component of the cigarette tax depends on quantity *and* price.

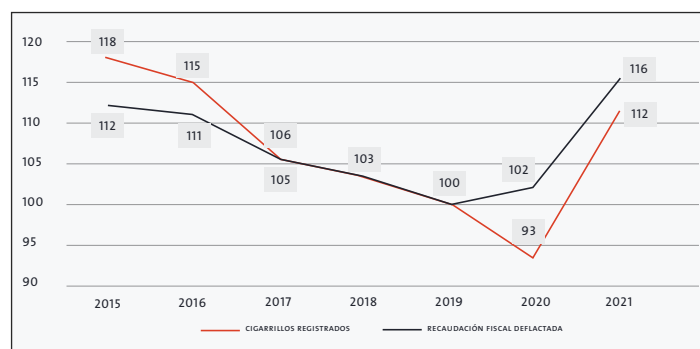


Fig 1 – evolution of tax revenues on cigarettes (black line) versus number of produced cigarettes registered as tax-paying (red line).

Another insight from Fig 1 is the marked growth in the number of cigarettes that effectively paid taxes in 2021, the first increase for this number since 2012. The study postulates two potential, non-exclusive, reasons for this increase: growth in tobacco usage and/or a reduction in illicit cigarette sales, possibly as a result of better enforcement of taxes paid.

However, given that tobacco usage in Chile remained relatively constant during 2020-2022, the finger points to decreased illicit trade as the reason for the growth in taxes paid.

Another clue is that Chile's tobacco exports, which are exempt from all in-country taxes levied on tobacco, have become visibly differentiated from those produced for internal consumption (which are now marked), making illegal re-entry of cigarettes destined for external sale more complex – something that was quite easy to do prior to SITRAF.

Furthermore, cigarette exports from Chile fell by 10% between 2019 and 2020, and by 38% between 2020 and 2021, when the traceability system was already in full force.

Evolution of real prices for legal cigarettes

A more complex scenario can be seen in Fig 2, which shows the average real price of cigarettes between 2015-2021, under three different parameters.

The red line shows the official government calculation of cigarette prices, based on the tobacco component of the consumer price index (IPC) as calculated by the National Statistics Institute of Chile (INE). This line indicates a constant increase in the real price of cigarettes which, in 2021, was 13% higher than that recorded in 2015.

The black line is the average real price of cigarettes estimated using the official sales prices published by SII throughout 2015-21, weighted according to brand sales reported by Euromonitor International, and adjusted for inflation using the IPC.

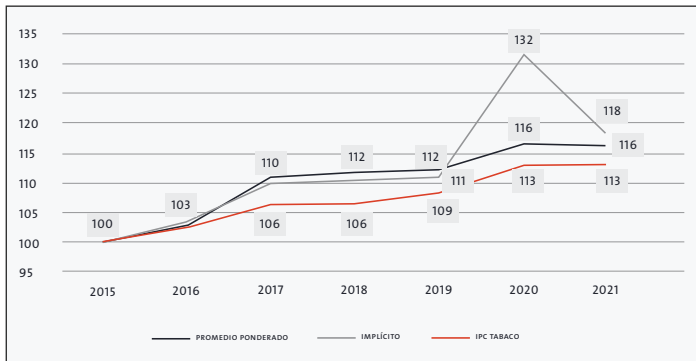


Fig 2 – average real price of cigarettes between 2015-2021, under three different parameters.

Finally, the grey line shows the evolution of the implicit real price of cigarettes obtained by taking into account the collection of the ad valorem component of the cigarette tax. We can clearly see that 2020 shows a significant increase, well above that recorded in other years.

In 2021, there is an inexplicable drop, which is odd given that nominal prices did not decline between 2020 and 2021 and the inflation rate was not high enough to explain this drop.

One theory could be that cigarettes of relatively cheap brands in the domestic market, which until 2020 were perhaps destined only for export, have been re-directed to the domestic market, lowering this price and probably displacing some of the more high-end brands that were previously sold illicitly in-country.

Evolution of real tax revenues

The final analysis by the economists, depicted in Fig 3, shows the evolution of total real tobacco tax collection (black line) and its specific and ad valorem components (blue and green dotted lines, respectively), between 2015-2021.

Fig 3 shows that between 2015-2019, total real collection decreased consistently, and that the specific component of tobacco tax collection was above, or equal to, that of the ad valorem component. However, beginning in 2020, the first full year of operation of SITRAF, total real tax collection increased, and the ad valorem component significantly exceeded the specific component.

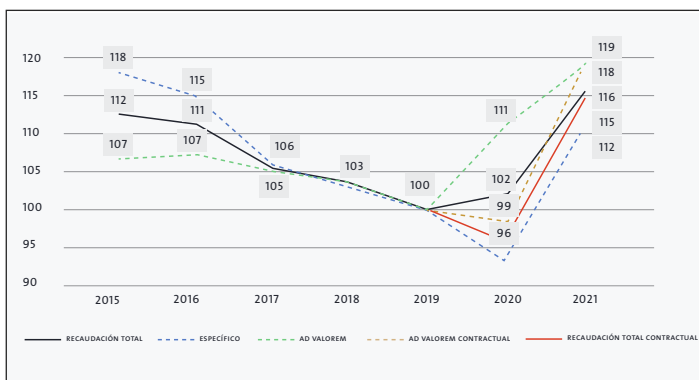


Fig 3 – evolution of total real tobacco tax collection.

As surmised earlier in this article, the increase in real prices implicit in the collection of the ad valorem component in Fig 3 for 2020 reflects, precisely, the accurate estimation of what is produced for domestic sales (and not the companies' self-reporting).

There are two additional lines in Fig 3 that are also key to understanding the cost-efficiency of a traceability system. The dashed orange line shows what the real tax collection of the ad valorem component would have been if the real collection of this component had behaved as it did until 2019, relative to the specific component. The solid red line shows the evolution of total real revenue by adding the specific component and the counterfactual of the ad valorem component.

Now, comparing the green dotted line with the orange dotted line gives an estimate of the increase in revenue obtained by the ad valorem component from the full operation of the new traceability system. Likewise, comparing the solid black line with the solid red line estimates the increase in revenue, but for the total real tax collection.

Finally, taking into consideration the differences between the latter two series and the total real tax collection obtained in 2021, it would be possible to estimate that, purely as a result of the change in the evolution of the ad valorem component of the tobacco tax, the SII would have collected an additional 75.7 billion pesos (constant 2022), equivalent to \$85.9 million, or 3.2% of the total collection in 2020 and 2021.

Conclusions

The points that drive home the study's positive evaluation of Chile's traceability system are:

- Real tax revenue from tobacco taxes increased by 16 percentage points between 2019 and 2021, which is attributed, at least initially, to a strong increase in the average real price implicit in the payment of the ad valorem component of this tax.
- In simpler terms, the SITRAF system's accurate reporting of data has made certain that the tobacco industry reports its real total production, and therefore, pays the respective tax. Higher collection of the ad valorem component indicates accurate control over the mix of brands/prices effectively produced and sold domestically.
- The increase in the quantity of cigarettes produced for the domestic market during 2021, which grew for the first time since 2014, is also striking. If this increase is due to better control by SII of the tobacco industry's numbers, then it points to the possibility that prior to the implementation of the new traceability system, the tobacco industry did not adequately report the value of its production destined for the domestic market or for export.
- The drop in exports could also be due to the current unique marking of cigarettes for the domestic market, which makes their illicit re-entry more difficult. It's not irrational to surmise that prior to SITRAF, demand for well-known brands could be satisfied with cigarettes produced domestically, under-declared to the tax authorities, exported, and re-entered illicitly for sale, so as to avoid the tax. As mentioned earlier, with SITRAF, the number of cigarettes produced is informed to the tax authority in real-time at the moment of production.

The study concludes that the SITRAF system has indeed increased fiscal control over the tobacco industry in Chile, and although there are no official announcements from SII on this matter, one would hope that these results should help to promote the implementation of a similar traceability system for alcoholic beverages. All that's missing for that to happen is for SII to say the word.

Interview with APO Production Unit

This month, we continue our interview series exploring the experiences of International Tax Stamp Association (ITSA) members, who offer personal perspectives on the tax industry, today's challenges and opportunities, and tomorrow's potential progress.



Jaime H Aldaba Jr.

Our eighth interview is with Jaime H Aldaba Jr, Executive Vice President and General Manager of APO Production Unit, Inc (APO), who has more than 25 years' experience in business development and operations management.

Q: Please would you introduce APO.

A: APO is a Philippines government-owned and controlled corporation registered with the Securities and Exchange Commission, operating under the Presidential Communications Office. It is one of three recognised government printers mandated to undertake printing of accountable forms and sensitive, high-volume documents required by the government.

Q: What makes your company stand out?

A: In 2015, my team was responsible for producing the new Philippine ePassport, a project that gained us international recognition and for which we were awarded Best Regional ID Document in 2016. Since that project, APO has become one of the few companies worldwide that handles all stages of passport production.

Q: What role does your company play in the tax stamp industry?

A: We also produce high security excise tax stamps for the Bureau of Internal Revenue (BIR), and these won Best Design, Best Innovation and Best Tax Stamp Programme at the Tax Stamp Forum in Miami, 2015. As the sole government printer of excise tax stamps, APO also assists the government in the

collection of excise taxes via a custom, end-to-end system for the production and monitoring of stamps and the proper collection of related taxes.

We have been printing tobacco stamps since 2013, and are currently working with the BIR to implement end-to-end physical and digital security solutions for liquor and sweetened beverages, all of which supports government efforts to regulate and monitor excise products, ensure tax compliance, and protect public health.

Q: What do you think is the most interesting aspect of tax stamps and/or the industry?

A: The most exciting element of our tax stamp work for me is how it feeds into the welfare and progress of a nation. For us, tax revenue collected with our stamps helps fund projects throughout the Philippine economy. The security features of our stamps also increase consumer confidence in purchasing excisable products, since their authenticity is easy to verify.

Q: What changes have you seen to the tax stamp industry during your time in it?

A: I feel that the most impactful change has been the incorporation of digital security features that make use of downloadable applications on smartphones – specifically the advanced track and trace features that allow hotspots or geo-mapping to detect fakes. These features make it easier for law enforcement to identify counterfeit products with the goal of tracking down the source of their distribution, and the public can feel safer knowing that these technologies are in place for their protection.

Q: What changes do you envisage happening within the industry in future?

A: I would love to see an increase in international collaboration and projects involving them. Governments and organisations from all over the world should seek expert solutions from established printers to implement cost effective tax stamp programmes. Along with growth, we could also benefit from a broader application of excise tax stamps to cover products that are highly counterfeited. This expansion should reflect government recognition of the importance of regulating and monitoring excisable products both for purposes of tax and guarding public health.

As we are in the information age, the industry will inevitably undergo a digital transformation. APO aims to respond by digitising and automating its operations, processes, and systems, plus streamlining

the workflow to further increase efficiency. The goal is to consistently deliver high quality tax stamps at a cost-effective price.

Q: What is one change to tax stamps or the industry you would like to see?

A: We would like to see the implementation of a global and enhanced track and trace system using digital solutions. A worldwide tax stamp system could monitor the trade of goods in the global market and ensure each product is equipped with a unique identification code (UIC). The global public would then benefit from the convenience of using a mobile app to authenticate products.

Implementing a worldwide tax stamp system would offer many benefits, not just to the tax stamp industry but to the global economy. It would strengthen the fight against counterfeit operations, as a UIC enables immediate identification of genuine products versus fraudulent ones. It would promote transparency and consumer trust in the global import and export markets and minimise double taxation.

Q: What do you see as the main challenges within the industry today?

A: Ultimately, counterfeiting will always pose the biggest threat to tax stamps. Counterfeit stamps result in lost revenue for governments and undermine effective tax collection efforts. Corollary to this, counterfeit products harm consumer safety and public health. Our greatest challenge lies in implementing robust and dynamic security measures and authentication technologies to prevent counterfeit products.

Another hurdle is the coverage of data and communications networks. Track and trace systems rely heavily on data transmission for real-time monitoring. In areas with inadequate service coverage, or undeveloped communications infrastructure, monitoring can be compromised. Delays in data transmission cause inaccurate tracking, and difficulties in verifying tax stamps using mobile apps.

Q: Why do you think the development of standards is important for the industry?

A: Part of the solution to our many challenges is the development of global industry standards for stamp production. These greatly increase quality and vastly enhance the reliability of tax collection. Such standards ensure that security features make our stamps more resistant to counterfeiting and tampering. In our industry we have to be prepared with alternative solutions and stay one step ahead of counterfeiters.

How Standards Help You

By Ian Lancaster, Project Leader for the revision of ISO 22382

As previously announced in Tax Stamp & Traceability News™, it has been five years since the international standard for tax stamps (ISO 22382:2018) was published by the International Organization for Standards (ISO), so in accordance with ISO procedures, this standard is now due to be reviewed.

At the Tax Stamp & Traceability Forum™, from 2-4 October, in Tbilisi, Georgia, there will be a workshop for anyone involved in tax stamps – issuers, suppliers and others – to air their views on how the standard can be improved through this review.

So it will be useful, ahead of that workshop, to examine what international standards are and why they are beneficial, giving context for this tax stamp standard.

There are several international organisations that write and publish standards. The ISO is the most eclectic, publishing standards across a very wide range of activity. It now has 345 technical committees (TCs), where each TC deals with a specific product, product family or management area. TC 1, set up in 1947, soon after the organisation was established, covers screw threads, while the newest, TC 345, works on standards for specialty metals and minerals.

Screw threads might seem like a mundane subject, but it demonstrates a fundamental purpose of international standards: to establish parameters or characteristics for a specific set of items so that there is international compatibility. Thus, a screw manufactured in one country, then shipped to another country where it is used to assemble a product, which in turn is shipped to another country, can, if necessary, be replaced in that third country by another screw from another manufacturer, using a screwdriver that fits both screws.

This is a simple example which nonetheless shows that a standard facilitates interoperability, and thus international trade. Exactly the same principle applies to more complex items or systems, such as biotechnology (TC 276) or vacuum technology (TC 112).

There are other, more specialist, organisations working on international standards, including the Institute of Electrical and Electronic Engineers (IEEE), the International Telecommunications Union (ITU), and GS1, which manages barcode and other standards for product identification. Several standards have been jointly developed between ISO and one of these organisations.

Compliance and guidance standards

Many of these standards are referred to as compliance standards; they are prescriptive, giving instructions to be followed to ensure interoperability, efficient practices and fair trade. They use words such as ‘must’ and ‘do’.

ISO TCs have also written numerous compliance standards which address issues such as management systems, sustainability and other ‘intangible’ systems and procedures. When first published, many of these were aspirational, including ISO 9000, quality management systems (and now a family of several standards), which was first published in 1987 (latest revision in 2018) and has become a ‘must-do’ for many companies and other organisations.

To show that an organisation complies with a standard, it has to be inspected by an approved body, which will issue it with a certificate of compliance with such-and-such a standard. Depending on the size and complexity of the organisation, this will cost a four- or five-figure sum (dollars/euros), and it might require a separate fee-paid inspection at several sites. And then there will be a three-yearly review visit, requiring another fee, to ensure that the organisation is still complying.

In the standards world, it is recognised that it is not always appropriate for an organisation to undertake this expensive process, so there are also guidance standards. These collate the thinking of experts in the field to guide the relevant organisations in best practice in the area of the standard. They use words like ‘should’ and ‘recommend’.

In fact, all standards – compliance and guidance – are the result of consensus by a group of experts. For a national standards body they will be drawn from that country; for an international standard, the experts will be drawn from around the world. This expert group works out the requirements – prescriptive or guiding – for the standards on a consensus basis. This way there should be no bias in the standard towards, say, a proprietary product or a particular country’s way of doing things.

So, a guidance standard is the distillation of many experts’ views on best practice in the field of the standard. The advantage to organisations working in that field is, firstly, to set out for them the best way of achieving the stated aim; secondly, it saves them time and money by providing a short cut to learning how to best achieve the given aim. Guidance standards also share the underlying aim of all standards of ensuring a level playing field, and encouraging efficient and ethical practices.

And so to tax stamps

There are many standards that can be applicable in the tax stamp field, including those covering management practices, sustainability and health and safety, but the two that are directly relevant are ISO 14298 and ISO 22382.

14298 is a compliance standard titled ‘Management of security printing processes’, first published in 2013 and updated in 2021. It prescribes the procedures and processes for a security printer in managing their business, ensuring the security of those processes. It does not cover the item that the printer is producing but is aimed at the peripheral processes (audit, waste control, supply chain, staff etc.) that contribute to the security of that item. In other words, a tax stamp issuer would do well to get their stamps from a printer that has 14298 certification, of which there are at least 150 around the world certified to one of three levels: fundamental, government or central bank.

Not surprisingly, ISO 22382, titled ‘Guidelines for the content, security, issuance, and examination of excise tax stamps’, recommends that revenue authorities or other tax stamp issuers source their stamps from printers that are certified to 14298 or a similar standard, such as the ANSI-NASPO security management standard.

While 14298 is a compliance standard for security printers, 22382 is a guidance standard for stamp issuers. Accordingly, it sets out what a group of experts – in this case, ISO TC 292 Working Group 4 – considers best practice in the topics around tax stamps, as shown in the title of the standard. WG4 covers authenticity, integrity and trust for products and documents, and I should declare that I am a member of WG4.

While it costs a security printer a five-figure sum to become 14298-certified, the only direct cost of 22382 to a stamp issuer is buying the standard; ISO’s price is 145 Swiss francs, but you can also buy it from your country’s national standards body.

Having bought it, then ask your key people to read it, digest it and get together to plan how to implement its recommendations. Doing so will save you time and money, whether you are introducing a tax stamp for the first time or upgrading an existing one. It will also help to ensure that you get the most suitable stamp for your requirements. Which, in turn, should see an improvement in your tax collection efficacy, leading to an increase in your tax income.

Smartphone Report Released *(continued)*

The author of the report is Dr Alan Hodson, an independent expert in printing and imaging technologies, who is active in the field of international standards for photography, printed electronics and wearable devices.

Report sections

The report is divided into the following sections:

- The broad landscape around smartphones for authentication: a political, economic, social and technical (PEST) analysis.
- Smartphone technology for secure applications: light sources, display screen attributes, biometrics, fingerprint sensors, connectivity.
- A dedicated section on smartphone camera systems (given the importance of optical attributes for authentication).
- A selection of case studies, including the effects of smartphones on cash use, a perspective on mobile identity, product and document authentication, and the reading of printed codes on tax stamps.
- Emerging technologies, including

innovation in smartphone camera systems, emerging fingerprint technologies, distributed systems, 5G wireless networks, AI, wearable electronics, and smart glasses.

- Asking the hard questions: has decision making shifted too far for us? Are we creating an unprecedented target for cybercrime? What about product life cycles and development paths? Where will this technology lead?

With regard to product and document authentication, in particular, the report examines the disparity between two categories of smartphone user: professional inspectors and consumers. It observes that the highest added value for smartphone authentication and traceability seems to lie in solutions that facilitate inspection by government officials and economic operators, due to the higher level of control that can be exercised in this area. For instance, whereas a system for inspectors only needs to work on one chosen model of smartphone, a system for consumers would be expected to work on an ever-changing plethora of smartphone makes and models.

As far as tax stamps are concerned, the report explains that while smartphone solutions are available to identify and check elements such as design and holograms, it is the barcode scanning ability of the smartphone – as well as its ability to connect to a central database – that is currently employed the most in the inspection of tax stamps.



The report is available to order from <https://estore.reconnaissance.net/product/smartphone-for-authentication/>, in PDF or printed format. Subscribers to this newsletter receive a 25% discount.

RECONNAISSANCE TAX STAMP & TRACEABILITY NEWS™

Publisher: Reconnaissance International Ltd.

Editor: Nicola Sudan (right).

Contributors: Sven Bergmann, Ian Lancaster, Francisco Mandiola, Francis Tuffy, Raeburn Ward.

Advisors: Aftab Baloch, Michael Eads, Chander S Jeena, Ian Lancaster, Francisco Mandiola, Astrid Mitchell.



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2.4 The Beacon, Beaufront Park, Anick Road, Hexham, Northumberland, NE46 4TU, UK
Tel: +44 (0)1932 785 680 www.taxstamptraceabilitynews.com

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ISSN 2632-4296

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