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Republic of Estonia
Ministry of Economic Affairs and Communications

European Commission

REAL-TIME ECONOMY: E-RECEIPT SERVICE MODEL FOR THE CROSS-BORDER DATA EXCHANGE

STUDY REPORT

Full official name: “E-receipt service model for the cross-border data exchange”

within the project “Supporting productivity and competitiveness of Estonian SMEs through Real-Time Economy and single contact point digital solutions”

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Executive summary

Purpose of the report

The present report “E-receipt service model for the cross-border data exchange” is a part of the “Supporting productivity and competitiveness of Estonian SMEs through Real-Time Economy and single contact point digital solutions” project (REFORM/SC2021/092) granted to the Estonian Ministry of Economic Affairs and Communications.

The report aims to define a possible cross-border e-receipt service (delivery) concept for the public and private sectors. This concept would cover different aspects of the implementation of the **cross-border and interoperable usage of e-receipts** from the perspective of both enterprises and citizens. These also include the challenges and opportunities in regulatory and integration areas.

The ultimate cross-border solution shall define priorities that matter the most to businesses and citizens, including **reducing administrative burden**, especially for SMEs. It shall also include a real-time or near-real-time exchange of business data and employment of technology for productive dialogue between businesses and government. Working solutions also create more opportunities for **improved cross-border big data analytics, economic forecasting, and open government** while increasing the effectiveness of the policymakers.

Key recommendations

Below we propose an action plan to support e-receipt service model development. It covers stakeholder engagement, the legislative process and policymaking, as well as ensuring infrastructure readiness.

We recommend starting with identifying business cases for the quick win, planning the e-receipt ecosystem and exploring policy-making and legislative concerns.

Securing stakeholder buy-in

- **Developing an e-receipt ecosystem that is comprehensive, easy to use and valuable for different stakeholder groups** (private and public persons, as well as governmental bodies and SMEs).
- Promoting the **quick win business cases for e-receipt development**. Use cases include automation of travel expense claim process, warranty schemes and personalised marketing, as well as real-time reporting to the tax authorities.
- **Tackling the existing lack of trust and clarity** on ownership, accessibility and sharing of business data in order to strengthen the stakeholder "buy-in". The key to success is a clear communications plan that explains complex technical concepts in simple human language and shows how transparency and accountability can be ensured in practical development.
- **Increasing the incentives for SMEs** such as easier and reduced exchange of data when provided in an electronic format (cost of usage is currently one of the largest barriers to e-receipt development).
- Encouraging government agencies to use electronic business documents by **implementing e-orders, e-catalogues and e-receipts in their own procurement processes**. Governments have been leading the way with e-invoicing implementation and should continue to do so with e-receipts as well.
- Identifying and actively promoting business cases for **reusing data generated by e-receipts** for other purposes, primarily related to statutory reporting, with the goal of decreasing the administrative burden of enterprises.

Policymaking & legislation

- **Adjusting the legislative framework** in terms of changing the laws and regulations into "digitally friendly" versions that support the cross-border exchange of e-receipt data. For example, the legislation should actively promote the usage of e-receipts as a default option, as well as create incentives for developing supporting digital infrastructure. The minimal requirement to start from is equalling paper receipts and e-receipts in their status. The long-term goal should be mandatory usage of e-receipts.
- Legislative framework should take strategic considerations into account, such as **increasing mobility, ensuring green transition, sustainable social development** and compliance with **data privacy and data protection** requirements. Proper identification of the legal basis of the data which would enable the identification of individuals should be considered as well.
- **Addressing the data protection issues** affecting the processing of business data by increasing the clarity and information sharing between relevant stakeholders (such as creating dedicated information channels). Namely, **data protection agencies** (DPAs) in each Baltic Sea region country should analyse the current business practices related to using and sharing the business system data, considering that it includes personal data.

Technical implementation

- Strengthening the effort on improving **interoperability with the aim to ensure a high level of data portability and smooth data flows across borders**. Requirements brought by **New European Interoperability Framework** should be taken into account (starting from IMAPS, SIQAT and GIQAT assessments that are a part of the Interoperability Maturity Tools for Digital Public Services package). Adopting the five-corner model presented by Peppol can be beneficial.
- Agreeing on the **operating model for e-receipt** that would be generally accepted by interested parties to build the required ecosystem and architecture. Infrastructure unification should be a starting point. In parallel, it is important to perform the mapping of service providers and vendors and identify possible technical inconsistencies as a part of a gap analysis exercise.
- Supporting and integrating the development of a **unified and commonly used EU e-receipt standard** that will provide the countries and market players with the same understanding of the topic and common goals. E-receipt standards should promote smooth inbound and outbound integrations. In practice, we recommend focusing on addressing the blockers and challenges of the data flow setup. This would ensure more sustainable and scalable data infrastructures, as well as minimise the integration effort needed by the private sector.
- Further **developing or reusing any existing cross-border infrastructure for data exchange** to issue and transfer the e-receipts securely and reliably.

Summary

Successful uptake of e-invoicing already creates a strong basis and potential for the development of e-receipts in BSR. However, the adoption of e-receipts is still **not homogenous** across the region and different sectors. Multiple technical, regulatory and organisational challenges associated with the adoption of e-receipts are present. The main challenges identified are mainly connected to the fragmentation of service providers in the market, weak cooperation between parties and lack of joint cross-border standards.

However, these challenges are being slowly addressed. The standard on e-receipts is under development, and it will provide the ultimate guidelines for SMEs, governments and citizens. The report also provides **examples of solutions** and initiatives that are currently ongoing, rather on the national (country) scale, but they are inevitable for future cross-country adoptions. In addition to that, attention shall be paid to data privacy and GDPR compliance, as these were one of the main concerns of the interested parties.

Lühikokkuvõte

Aruande eesmärk

Käesolev aruanne „Aruanne piiriüleselt kasutatava e-kviitungi toimimismudeli kohta“ on projekti „Eesti väikese ja keskmise suurusega ettevõtete tootlikkuse ja konkurentsivõime toetamine reaalajamajanduse ja ühtse kontaktpunkti digilahenduste kaudu“ (REFORM/SC2021/092) üks tulemitest. Aruanne on koostatud Euroopa Komisjoni struktuurireformide toe peadirektoraadi tellimusel Eesti Majandus- ja Kommunikatsiooniministeeriumile.

Aruande eesmärk on luua kontseptsioon piiriülese e-kviitungi teenuse toimimiseks era- ning avalikus sektoris. Kontseptsioon käsitleb ühtselt ja piiriüleselt toimivate e-kviitungite juurutamisega seotud aspekte nii ettevõtete kui ka kodanike seisukohast, ning kirjeldab õigusraamistikust ning integreerimisest tulenevaid väljakutseid ja võimalusi.

Lõplik piiriüleselt toimiv lahendus peaks võtma arvesse ettevõtete ja kodanike peamisi vajadusi, näiteks halduskoormuse vähendamine, mis on olulise tähtsusega väikese ja keskmise suurusega ettevõtete jaoks. Lisaks peaks loodav lahendus võimaldama äriandmete vahetamist reaalajas või peaaegu reaalajas, ning tehnoloogia kasutamist ettevõtjate ning avaliku sektori vaheliseks tõhusamaks suhtluseks. Ühtlasi peaks toimiv lahendus looma rohkem võimalusi paremaks piiriüleseks suurandmete analüüsiks, majanduse prognoosimiseks ja avatud valitsemiseks, tõstes samal ajal poliitikakujundajate tõhusust.

Peamised soovitused

Järgnevalt pakume välja tegevuskava toetamaks e-kviitungi teenuse toimimismudeli edasist arengut. Soovituslike tegevuste seas käsitletakse osapoolte kaasamist, õiguslikke protseduure, poliitika kujundamist ning infrastruktuuri ettevalmistust.

Soovitame alustada kiire esmase edu andvate ärikaasuste tuvastamisest, e-kviitungi ökosüsteemi planeerimisest ning poliitikakujundamise ja õigusraamistikust tulenevate probleemkohtade edasisest uurimisest.

Sidusrühmade toetuse tagamine

- **E-kviitungi ökosüsteemi arendamine, et see oleks terviklik, lihtsasti kasutatav ning väärtustandev erinevatele seotud osapooltele** (kodanikud, asutused ning väikese ja keskmise suurusega ettevõtted).
- **Selliste ärikaasuste toetamine, mis aitavad saavutada kiire edu e-kviitungite arendamisel**. Sellised ärikaasutused on näiteks lähetusega seotud kulude hüvitamine, garantiid, personaliseeritud turundus ning reaalajas aruandlus maksuametitele.
- Äriandmete omamise, ligipääsetavuse ning jagamisega seotud **ebaselguse ning usalduse puudusega tegelemine**, et tugevdada sidusrühmade toetust. Et olla selles edukad, on tarvis selget kommunikatsiooniplaani, mis selgitab keerukaid tehnilisi kontseptsioone n.-ö. lihtsasti arusaadavas keeles ning kirjeldab, kuidas läbipaistvus ning vastutus on praktikas tagatud.
- **Väikese ja keskmise suurusega ettevõtetele mõeldud stiimulite võimendamine**, näiteks võimaldada lihtsamat ning vähemat andmete vahetust, kui andmed esitatakse elektroonilisel kujul (kasutamisega seotud kulu on hetkel üks suurimaid takistusi e-kviitungi arendustes).
- Riigiasutuste julgustamine elektrooniliste dokumentide kasutamisel, näiteks **rakendades e-tellimuste, e-kataloogide ning e-kviitungite kasutust hankeprotsessides**. Avalik sektor on olnud suunanäitajaks e-arvete kasutuselevõtmisel ning võiks seda taaskord olla ka e-kviitungite puhul.

- Selliste ärikaasuste tuvastamine ning toetamine, mille puhul **taaskasutatakse e-kviitungite põhjal tekkinud andmeid** teisestel eesmärkidel, peamiselt seotud kohustusliku aruandlusega, mille eesmärk on vähendada administratiivset halduskoormust ettevõtetel.

Poliitika kujundamine ning seadusandlus

- **Õigusraamistiku kohandamine** läbi seaduste ning regulatsioonide muutmise, et need oleksid n.-ö. tehnoloogia sõbralikumad ning toetaksid e-kviitungite piiriülest andmevahetust. Näiteks peaks seadusandlus toetama e-kviitungite kasutust vaikimisi võimalusena, samuti looma stiimuleid arendamaks e-kviitungeid toetavat digitaalset infrastruktuuri. Miinimumnõudena oleks tarvis alustada paberkviitungite ning e-kviitungite võrdsustamisest. Pikaajalisem eesmärk peaks olema e-kviitungite kohustuslik kasutus.
    - Õigusraamistik peaks arvestama strateegiliste kaalutlustega, näiteks **mobiilsuse suurendamine**, **üleminekut keskkonnasõbralikumatele lahendustele**, **jätkusuutlikku sotsiaalset arengut** ning vastavust **andmete privaatsuse ja andmekaitse** nõuetega.
- Äriandmete käitlemisega seotud **andmekaitse probleemidega tegelemine** läbi läbipaistvuse suurendamise ning informatsiooni jagamise asjakohaste osapoolte vahel (näiteks luues selle tarbeks vastav infokanal). Andmekaitseametid igas Läänemere regiooni riigis peaksid analüüsima senist praktikat äriandmete kasutamisel ja jagamisel, võttes sh arvesse, et see sisaldab isikustatud andmeid.

Tehniline rakendamine

- **Koostalitusvõime** edendamise tugevam toetamine, mis **aitab tagada kõrgetasemelise andmete ülekandmise ning sujuva andmevahetuse piiriüleselt**. Arvesse tuleb võtta Euroopa ühenduse koostalituse raamistiku nõudeid (alustades avaliku teenuse (IMAPS), struktuurilise (SIQAT) ja juhtimise (GIQAT) koostalitusvõime hindamistega, mis on osa digitaalsetele avalikele teenustele mõeldud koostalituse küpsuse hindamise töövahenditest). Samuti võib olla kasulik Peppoli viisnurkse mudeli (*five-corner model*) rakendamine.
- E-kviitungi ökosüsteemi ja arhitektuuri loomiseks **vajaliku toimimismudeli kokkuleppimine**, mis on ka üldiselt sidusrühmade poolt vastuvõetav. Infrastruktuuride ühtlustamine peaks olema lähtepunkt. Samaaegselt on oluline viia läbi teenuspakkujate ja -müüjate kaardistus, ning selgitada välja võimalikud tehnilised vastuolud.
- **Ühtse ning ühiselt kasutatava Euroopa Liidu e-kviitungi standardi** väljatöötamise toetamine, mis loob riikidele ning turuosalistele ühesuguse arusaama antud teema ning ühiste eesmärkide kohta. E-kviitungi standard peaks edendama sujuvat andmevahetust. Praktikas soovitame keskenduda andmevoo ülesehitusega seotud takistuste ning väljakutsetega tegelemisele. See tagaks jätkusuutlikuma ning laiemalt kohalduva andmeinfrastruktuuri ja lihtsustaks integratsiooni erasektoriga.
- **Andmevahetuseks mõeldud olemasoleva piirülese infrastruktuuri edasine arendamine või taaskasutamine** e-kviitungite turvaliseks ning usaldusväärseks väljastamiseks ja edastamiseks.

Kokkuvõte

E-arvete edukas kasutuselevõtt loob juba praegu tugeva aluse ja potentsiaali e-kviitungite arendamiseks Läänemere regioonis. Sellest hoolimata **ei ole e-kviitungite kasutuselevõtt** kogu piirkonnas ja eri sektorites **veel ühtlane.** E-kviitungite kasutuselevõtuga on seotud mitmeid tehnilisi, regulatiivseid ja organisatsioonilisi väljakutseid. Peamised tuvastatud väljakutsed on olulises osas seotud teenusepakkujate killustatusega turul, osapoolte vähese koostöö ja ühtse piiriülese standardi puudumisega.

Tuvastatud väljakutsetega tegeletakse juba aegsasti. Euroopa Liidu ülese e-kviitungi standardi loomine on töös ning see peaks tulevikus andma ühtsed suunised ettevõtjatele, kodanikele ning avalikule sektorile e-

kviitungite kasutuselevõtmiseks. Käesolevas aruandes tuuakse välja ka **näiteid olemasolevate lahenduste** ja algatuste kohta, mis on peamiselt kasutusel riiklikul tasemel, kuid mis on vältimatud ka piiriülesel rakendamisel. Lisaks käsitletakse andmekaitse ning andmekaitse üldmäärusega seotud nõuete täitmist, kuna seda peetakse sidusrühmade poolt oluliseks murekohaks.

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Glossary of Terms

Term	Definition
AI	Artificial intelligence
B2B	Business-to-business
B2C	Business-to-customer
B2G	Business-to-government
BSR	Baltic Sea region
DG REFORM	The European Commission's Directorate-General for Structural Reform Support
DPA	Data Protection Agency
ERP	Enterprise Resource Planning software
EU	European Union
GIQAT	Governance Interoperability Quick Assessment Toolkit
IMAPS	Interoperability Maturity Assessment of a Public Service
IXBRL	Inline eXtensible Business Reporting Language
MNE	Multinational enterprise
NSG&B	Nordic Smart Government and Business
OCR	Optical character recognition
PDF	Portable document format
POS	Point of Sale
SAF-T	Standard audit file for tax
SIQAT	Structural Interoperability Quick Assessment tool
SME	Small and medium-sized enterprise
RTE	Real-Time Economy
VAT	Value-added tax

1. Introduction to the project

1.1 Scope

The present report "E-receipt service model for the cross-border data exchange" is a part of the "Supporting productivity and competitiveness of Estonian SMEs through Real-Time Economy and single contact point digital solutions" project (REFORM/SC2021/092) granted to the Estonian Ministry of Economic Affairs and Communications.

The report aims to define a possible cross-border e-receipt service (delivery) concept for the public and private sectors. This concept would cover different aspects of introducing **cross-border and interoperable use of e-receipts** from the perspective of both enterprises and citizens. These also include the challenges and opportunities in regulatory and integration areas. E-receipts, their capture and storage (similarly as in the case of e-invoices and their recognition as a legal alternative to traditional invoices) shall be sufficient to satisfy legal and tax requirements in countries[1] interested in the general uptake and cross-border exchange. E-receipts shall be therefore fully legally recognised[2], satisfying all the necessary requirements. They should enable processing in a data-driven and automated manner, making digital business transactions and their added value possible for small and medium-sized enterprises (SMEs) in all economic sectors.

The purpose of this analysis is also to provide an overview of the current usage and exchange practices of the e-receipts in different business transactions (B2B[3], B2C[4], B2G[5]) and to provide an outlook on possible cross-border exchange model solutions and recommendations to boost the potential collaboration in Baltic Sea region (BSR) countries.

The concept areas analysed are meant to be a high-level presentation and an overview of the necessary steps and prerequisites to be taken into consideration when creating a common road for the integrated, cross-border exchange model in BSR. The report focuses on the description of the **concrete use case**, separated into transaction types between different subjects. Each of these provides an overview of the possible opportunities that may arise from the adoption of the common cross-border e-receipt exchange model, as well as a list of potential challenges that might arise in the process. The analysis provides the possible solutions to tackle the aforementioned bottlenecks encountered. The presented report also covers compliance of the potential solutions with the GDPR requirements.

The ultimate cross-border solution shall define priorities that matter the most to businesses and citizens, including **reducing administrative burden**, especially for SMEs. It shall also include a real-time or near-real-time exchange of business data and employment of technology for productive dialogue between businesses and the government. The working solution creates more opportunities for **better cross-border**

[1] Overview of countries and specific requirements to fully legalise the e-receipts can be found at: https://www.spendesk.com/blog/e-receipts-digital-receipts/

[2] Meaning e-receipts shall possess the same rights and obligations as paper receipts, considering the requirements and rules being obliged by the issuer.

[3] Business to business, representing e-receipts mainly from retailers to businesses.

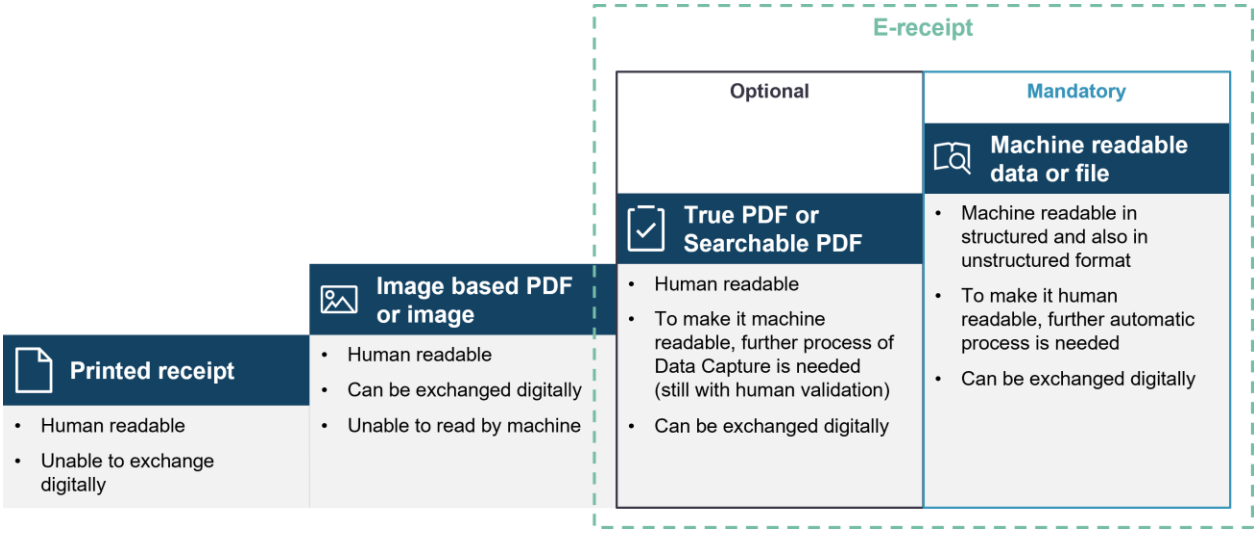
[4] Business to customer, representing mostly the transactions between the retailers and customers, where the provision of the purchase after the transaction, i.e., a receipt is mandatory to present.

[5] Business to government, meaning the receipts transmitted from businesses to public sector agencies or bodies.

big data analytics, economic forecasting and open government while increasing the effectiveness of the policymakers as well.

From the perspective of this document and the scope of the study, an **e-receipt is a machine-readable data set** issued by a retailer's information system and is **not human-readable**. E-receipt is not any other representation of typical receipts formats, such as true or searchable PDF, nor printed paper. These formats are not machine-readable, and to adapt them to the e-receipt service model, **further processing is needed** (e.g., OCR[6], data capture).

Figure 1: The definition of e-receipt



Source: PwC

On the other hand, these non-machine-readable formats are vital as a companion for e-receipt to be readable by humans when attached. Otherwise, the software solutions on the senders and receivers' side must process each e-receipt to make it human-readable. These typically extract the data from e-receipt in real-time to provide a more user-friendly appearance. This human-readable version of an e-receipt has no typical appearance similar to the printed version.

1.2 Executive summary

This report focuses on analysing the e-receipt cross-border service solution, identified as one of the main priority blocks of the RTE initiative. The aim is to define the possible approaches for designing the cross-border service of exchange of e-receipts. These recommendations keep in mind the effort to facilitate decreasing the administrative burden for SMEs through **real-time exchange of business data** and **developing needed technical infrastructure**. This report highlights the initiatives of selected countries and plans for future development, as well as looks into the current main obstacles and recommendations.

RTE is a strategic initiative which enables the data-driven, automated, seamless and secure business to government, but also business-to-business data exchange, where with the advanced use of technology, it is now feasible to speed up the processes required to promote its competitiveness and benefits for the economies as a region and country-wise. Wide-scale deployment of e-receipts can help to **save human resources, time, money and the environment**. BSR countries are set to identify the

[6] Optical character recognition, a process which converts printed text into digital image files.

enablers that support standardised and uniform data exchange processes and define the required preconditions for businesses and individuals to use them.

There are already many existing solutions in place, such as e-invoices and e-receipts. However, these applications operate mainly as a part of the offerings of the private service providers, they are fragmented, and their interoperability could be more robust. Flattening these differences and enabling the seamless business data exchange between them enables further expansion in the market.

Lack of a common standard for the e-receipts, insufficient incentives for SMEs, missing cross-border networks and outdated legislation in some cases has hampered and slowed down the uptake of cross-border e-receipt service. The standard is currently being developed based on the **European Union e-invoice standard solution**. This would provide parties with guidance on the expectations from the e-receipt service, data modelling, identification questions and data retention, and provide knowledge to solve possible issues. Currently, there is no universal service or solution that would enable the seamless exchange of e-receipts in the market.

To continue with the already ongoing uptake and to achieve the widespread, universal cross-border adoption of e-receipts in BSR, the focus shall lie in the following identified areas:

- **Adjusting the legislative framework** in terms of changing the laws and regulations into “digitally friendly” versions (e.g., enabling the usage of digital alternatives such as e-receipts, enabling digital procedures),
- **Tackle the existing lack of trust and clarity** on ownership, accessibility and sharing of business data,
- **Addressing the data protection issues** affecting the processing of business data by increasing the clarity and information sharing between relevant stakeholders (such as creating dedicated information channels),
- **Increasing the incentives for SMEs** such as easier and reduced exchange of data when provided in an electronic format,
- Agreeing on the **operating model for e-receipt** that would be generally accepted by interested parties to build the required ecosystem and architecture,
- Supporting and integrating the development of a **unified and commonly used EU e-receipt standard** that will provide the countries and market players with the same understanding of the topic and common goals,
- Further **developing or reusing any existing cross-border infrastructure for data exchange** to issue and transfer the e-receipts securely and reliably.

1.3 Methodology and activities

The preparation and completion of this report involved various activities to define the structure and desired outcome of the possible cross-border use of an e-receipt solution across BSR. There are covered both technological and regulatory questions. The focus is set on the following activities:

- **Analysing the primary data and resources**, obtained from the gathered relevant documents and prior reports in the RTE programme.
- **Secondary desk research and analysis**. The secondary resources include mainly the market studies (such as the E-commerce report 2021[7], prior analyses of the Nordic Smart Government & Business[8] (NSG&B), feasibility studies, etc.).

[7] European E-Commerce Report 2021. https://ecommerce-europe.eu/wp-content/uploads/2021/09/2021-European-E-commerce-Report-LIGHT-VERSION.pdf

[8] Nordic Smart Government and Business. https://www.nordicsmartgovernment.org/

- **Conducting interviews with domain experts**. The interviews were conducted in order to collect additional information about the existing state of usage of e-receipts, legal regulations in place, as well as an outlook. Information was also collected through discussions with GDPR experts and private service solution providers. Interviews were organised **as interactive stakeholder engagement sessions**, based on an open dialogue and information exchange. The vital part of the study preparation was also a virtual workshop organised in January 2023 together with Jan Andre Mærøe, an e-receipt expert from Nordic Smart Government & Business[9] in order to exchange opinions on the outlook for e-receipt development.

1.4 Current state of e-receipts in BSR

This section describes the most up-to-date and available information on e-receipt usage and adoption across BSR. The aim of this analysis is to highlight current and planned solutions and propose, based on those, a basis for future cross-border e-receipt usage solutions.

1.5 General evaluation of the current state per involved country in BSR

E-invoicing appears to be the most mature RTE building block in BSR. **Nordic countries (Sweden, Norway, Denmark, Finland) and Estonia are leaders** (both in the EU and globally) in the area of the implementation of e-invoices (on average, more than 40% of invoices are sent electronically in these countries).[10] Successful uptake of e-invoicing in this region already stipulates a potentially strong basis for the development of e-receipts in the BSR. **However, the adoption of e-receipts is still not homogenous across the region and different sectors.**

There are multiple technical, regulatory and organisational challenges associated with the adoption of e-receipts.

The main challenges identified are mainly connected to the **fragmentation of service providers in the market, weak cooperation between parties and lack of joint cross-border standards**.[11]

The absence of semantic interoperability of e-receipts is one of the key current challenges. Different e-government services owned by public authorities and companies in different member states are unable to exchange data unambiguously due to **differences in the semantics of data being transferred**. As there is no universal **e-receipt standard in place[12]** describing the e-receipt obligatory datasets and providing the benchmark guidance, it is not possible to enable intersystem communication or develop any universal solutions in the field.

So far, SMEs have had the possibility of automating their internal accounting and auditing processes using ICT. The gap to be addressed is the **automated data exchange** of such information between the SMEs and the relevant government agencies, such as tax and customs authorities. SMEs should be able to exchange e-receipts digitally with support from relevant controlling institutions to make the process of real-time structured machine-readable data effortless through the automated exchange.

[9] Nordic Smart Government and Business is currently preparing a study on the e-receipt pilot focused on B2B e-receipts sent via Peppol infrastructure. More on https://nordicsmartgovernment.org/ereceipt-pilot

[10] DIGINNO Feasibility Study Showcase D: Borderless Real-Time Economy (RTE) Spearhead: eReceipt 2019, p. 7.https://likta.lv/wp-content/uploads/2019/08/eReceipt-Feasibility-Study_22.08.2019_final.pdf

[11] Yrityksen digitalous, eKuitin kustannus- ja vaikuttavuusselvitys, pp. 18–19, (October 31, 2022). https://vkazprodwordpressstacc01.blob.core.windows.net/wordpress/sites/10/2023/03/eKuitti-kustannukset-ja-vaikuttavuus-loppuraportti-2022-julkaistava-1.pdf

[12] In the course of the project, the European e-receipt standard is being drafted based on an EU e-invoicing standard and shall be completed by the beginning of 2023 (developed by the CEN/TC 434 working group).

E-receipt stakeholders shall also pay attention to the raising importance of **data privacy and GDPR compliance** as well as implementations of security measures into their infrastructures, as it still can hinder the development of cross-border services.

Furthermore, besides the technical challenges, one of the main concerns in place is the **lack of interest in e-receipts usage and relevance**, both between private and public bodies. The **cost of usage** of the e-receipt services is also a barrier to further deployment.

E-receipt ecosystem should be comprehensible, easy to use and valuable for the users.

Uptake of the usage of e-receipts and their increased visibility might be achieved when this service will be known as comprehensible, easy and valuable to use. **Comprehensibility** means that companies and private citizens will have a clear understanding of the reasons for use and the preference for this type of receipt, with defined targets and possible incentives for single users/SMEs.

Furthermore, the proposed solution, from a technical and practical point of view, needs to be **user-friendly and valuable for different stakeholder groups**. The users (private and public persons, as well as governmental bodies and SMEs) shall see the direct **benefits of usage**. Such benefits can include, for example, automated accounting services and personalised financials for private persons, near real-time tax reporting of expenses and easier VAT refund procedures. The solution can bring further added value to the life of private persons also in the area of providing information and feedback on financial habits and spending over time, etc.

The **usefulness** shall be also defined from the public sector's point of view. For instance, e-receipts may contain valuable datasets that to some extent may be used automatically by the state. It has been estimated that the **expected positive outcomes, as in the case of the usage of e-invoices, will outweigh the challenges and obstacles that might be encountered when implementing and using e-receipts**.[13]

1.6 E-receipt cross-border solutions and initiatives already implemented

This report provides a comparative analysis of the selected metrics to evaluate the state of the adoption and status of the development of an e-receipt building block as a part of RTE across the selected countries. The metric categories are developed in order to provide an approximate general overview of recent and planned developments. The categories were selected based on the vision of RTE and previous track records in Real-Time Economy development, such as usage of e-invoices or maturity of the eGovernment system in each country.

Currently, **every country in BSR is at a different stage of adoption and usage of e-receipts**. Some countries are further than others in the adoption of solutions and ongoing initiatives. For example, they have already defined country adoption milestones of RTE blocks, national initiatives, etc. Others are more focused on the development of single solutions used by public bodies, enterprises and citizens.

[13] DIGINNO Feasibility Study Showcase D: Borderless Real-Time Economy (RTE) Spearhead: eReceipt 2019, p. 66. https://likta.lv/wp-content/uploads/2019/08/eReceipt-Feasibility-Study_22.08.2019_final.pdf

Figure 1: Matrix of the e-receipt adoption progress and status per country (BSR)

	Estonia	Finland	Sweden	Denmark	Latvia	Lithuania	Poland
E-receipts are operational in the market (at least partially, from private providers)	✓	✓	✓	✓	✓	✓	✓
RTE initiatives, public marketing and dedicated communication channels are in place	✓	✓	✓	✓			
e-Receipt institute defined (at least generic)	✓	✓	✓	✓	✓	✓	✓
Legislation in place (advanced) - e-Receipt is legally valid voucher, prohibited automatic issuing of paper receipts, standard created etc.		✓	✓	✓			
Milestones defined for future adoption of e-Receipts, RTE strategy	✓	✓	✓	✓		✓	✓
Solutions in place from private service providers	✓	✓	✓	✓	✓	✓	✓
Solutions in place from public provider (state)							
Business case for e-receipts, estimations performed	✓	✓	✓	✓			

Source: PwC

From the **legislative point** of view, there is already basic regulation in place. However, oftentimes, the widespread adoption of e-receipts is hindered by other laws and requirements that were implemented beforehand. **Digitalisation is also often happening faster than legislation can adapt.**

This is the case in **Estonia**, where the Consumer Protection Act states that upon payment for the sale of goods or provision of services in the minimum amount of 20 euros, the trader shall always provide to the buyer the document certifying the sale of goods/provision of services. Even though this act does not directly restrict or prohibit the use of e-receipt, **this requirement still motivates the sellers to print out the receipts to be certain that the transaction is carried out according to law**. Nonetheless, there are already ongoing initiatives that are trying to prevent and remove this and other similar uncertainties in legislative acts.

In **France**, as a part of the **Anti-waste law**, the legislation passed starting from April 2023[14] will **prohibit systematic printing of register and payment terminal receipts, unless expressly requested by the customer**. The measure is focused on consumer receipts[15], meaning that the bank card receipts, ATM receipts, vouchers and promotional or discount tickets will no longer be printed automatically either. In the BSR countries, a similar approach and its viability is currently being discussed.

Furthermore, there are already initiatives and tailor-made solutions that focus on more specific legislative acts on the usage of e-receipts. **Finland** is one of the forerunner countries. At this moment, it is mandatory to issue a payment receipt to the buyer. Namely, in accordance with the Legislation on the obligation to give a receipt (Laki kuitintarjoamisvelvollisuudesta käteiskaupassa 658/2013), which came into force in January 2014, it is obligatory for businesses to provide a receipt to all their customers for cash purchases or through

[14] Retail Detail, France delays ban on sales receipts due to inflation. https://www.retaildetail.eu/news/general/france-delays-ban-on-sales-receipts-due-to-inflation/#:~:text=A%20general%20ban%20on%20the,or%20air%20conditioning%20is%20on

[15] Similar solutions are also applied in the USA and UK.

a method of payment similar to cash[1617]. However, the act further stipulates that the receipts may also be issued in an electronic format. Therefore, the **status of the e-receipt** was elevated to equal to the paper receipt. The law also describes the necessary details to be included on receipts.[18]

Similarly in Poland, the regulations allow the issuance of a purchase receipt in electronic format, but the method of its distribution to the customers and lack of cohesive technical specifications is an underlying concern. As in other BSR countries, the e-receipts are addressed by large retail chains and players on the market via their own **customised solutions, such as loyalty cards and applications, which are usually not interoperable** with each other.

Polish Ministry of Finance is building a central, nationwide customer registration platform (**Receipt Hub**[19]), responsible for linking an anonymous customer with receipts issued by the cash register and distributing the receipts to the customers. One of the applications of the integrated solution will be the mobile application run by the Ministry of Finance (e-receipts application named **e-paragony**). The planned launch date of the application[20] is set for September 2023.

Another strategy to promote and start the systematic use of e-receipts in some countries is to **create milestones with e-receipt adoption thresholds.** Finland and Estonia have promising commitments in this area.

Finland has announced plans to make approximately **20% of business-to-business receipts structured by the end of 2023**. Namely, Finland has set a plan that by 2025, as much as 80% of business-to-business receipts would be in a structured form[21]. These goals were addressed with the aim of achieving cost savings for businesses.

Estonia's Real-Time Economy Vision 2020-2027[22] stated the goal of the creation of **technical and regulatory facilities by 2027** to increase the quality and availability of business data and enable further data exchange. The plan includes **measures to promote the use of e-receipts**, providing incentives for businesses to switch to e-receipts and support the standard integrations with other service providers. It is expected that infrastructure will be formed mainly by the private sector, aligned with standards and regulations of the unified platform.

Developing a **future vision and a business case** for how the e-receipt usage uptake can positively affect relevant parties such as accounting firms, SMEs and larger companies can be valuable in general widespread acceptance. In a study conducted by Eurocard[23], it is stated that none of the companies

[16] Vero, Legislation on the obligation to give a receipt. https://www.vero.fi/en/businesses-and-corporations/cooperation-and-services/tax-auditing-and-shadow-economy/kuitinantovelvollisuus-harmaan-talouden-torjunnassa/legislation_on_the_obligation_to_give_a/

[17] Vero, Legislation on the obligation to give a receipt. https://www.vero.fi/en/businesses-and-corporations/cooperation-and-services/tax-auditing-and-shadow-economy/kuitinantovelvollisuus-harmaan-talouden-torjunnassa/legislation_on_the_obligation_to_give_a/

[18] Additional information is available in the Finnish Tax Administration guidelines. https://www.vero.fi/en/businesses-and-corporations/cooperation-and-services/tax-auditing-and-shadow-economy/kuitinantovelvollisuus-harmaan-talouden-torjunnassa/play_fair_dont_forget_the_receip/kuitti/

[19] Podtaki, e-paragony. https://www.podatki.gov.pl/e-paragony/

[20] Podtaki, Aplikacja e-Paragony. https://www.podatki.gov.pl/vat/kasy-rejestrujace/aplikacja-mobilna-e-paragony/

[21] Valtiokonttori, The Benefits of an E-receipt for business use by 2025. https://www.valtiokonttori.fi/en/uutinen/the-benefits-of-an-e-receipt-for-use-by-businesses-by-2025/

[22] Ministry of Economic Affairs and Communications, Republic of Estonia. https://realtimeeconomy.ee/sites/default/files/2022-04/Real-Time%20Economy%20Vision%202020-2027%20%28in%20English%29.pdf

[23] Eurocard: It is not hard to be smart – a report on digital receipts (2021). Survey was conducted in 235 organisations across all Nordic countries. https://eurocard.com/doc/com/ECCI0W-reportdigitalreceipts-EN.pdf

included in the survey had **ever made calculations or estimates** on how much time and money is spent on handling paper receipts. This might explain why many companies are not having advanced processing of electronic data in place.

Developing a business case for e-receipts can be based on different matrixes, i.e., time and financial resources saved in handling documents in sales and procurement processes, using e-receipts instead of paper or PDFs (Portable Document Format) for handling the employee expenses and environmental reporting.

In **Finland**, the calculations have been already done for environmental business case examples and labour cost-saving examples[24]. These estimations proved that there are "**potential savings on the retailer side to amount to over 800 million EUR in Finland alone**"[25] since e-receipts provide **faster checkouts** in the shops and therefore they effectively **reduce labour cost and processing time**.

In **Sweden**, it was estimated that the production of paper receipts consumed **up to 60,000 trees per year and it costs 3.9 billion SEK yearly** to process paper invoices and receipts.[26]

In **Estonia**, estimations show that possible real-time data exchange solutions (such as e-invoices, e-receipts, data-driven reporting, e-waybills and similar) could save the **business sector more than 200 million EUR per year**[27]. Furthermore, it is estimated, that there is a possibility to **save approximately 14 million working hours per year**, which is a full-time work of approximately 7,000 people[28].

Currently, the active solutions for e-receipt are mainly provided by private service providers operating in the market, with large retail chains having their separate systems and solutions in place. These solutions are provided mainly on a national level. While e-receipts are still not the **main focus of all retailers or payment providers**, there already exist several active providers and start-ups, especially in the Nordics[29]. Solutions developed currently have been more focused on users/buyers that have been identified via loyalty programmes or customer cards of some specific stores or by various purchase operations. These solutions are not interoperable with each other (oftentimes in a form of a mobile application with various e-receipts saved, that cannot be merged and stored in one unified application and therefore do not bring further added value to the user). Further development of the concrete and unified solution shall focus on **expanding the idea not solely based on payment method type of transactions, but also including payments by cash**[30]. Banks are also relevant players on the market with significant prospects, having already existing relationships with customers and can offer start-ups or retailers the possibility to integrate e-receipts into their banking applications.

[24] Expert interview, conducted on 31.1.2023.

[25] Auto-ID Lab: Digital Receipt Study Drivers and Barriers to Adoption of Digital Receipts, p.26. Study originally published by Valtiokonttori Statskontoret State Treasury (2019). https://cocoa.ethz.ch/downloads/2019/11/None_Digital-Receipts-Study-A4_v12.pdf

[26] Eurocard: It is not hard to be smart – a report on digital receipts (2021), p. 4. https://eurocard.com/doc/com/ECCI0W-reportdigitalreceipts-EN.pdf

[27] Ministry of Economic Affairs and Communications, Republic of Estonia, p. 4. https://realtimeeconomy.ee/sites/default/files/2022-04/Real-Time%20Economy%20Vision%202020-2027%20%28in%20English%29.pdf

[28] Ibid.

[29] Such as kivra (Sweden), receiptHero (Finland), Storebox (Denmark, Sweden, Norway), Telia / Omniva (Estonia), Maxima (Latvia), and more.

[30] Expert interview, conducted on 31.1.2023.

2. Use cases per transaction type

2.1 B2B

Use case 1: Travel expenses reporting

SMEs store their business documents for a vast number of purposes. In achieving the goal of an RTE incentive to simplify the life and business operations of SMEs and citizens, it is crucial to **process business data in a digital, unified, and structured format.**

SMEs represent approximately 90% share of the total number of businesses[31] in the Nordic region, which means that the possible outcomes of a well-performing e-receipt service model may positively affect many companies which have a **relatively high burden** of administrative tasks compared to their size. Areas, where effective receipt management could improve business performance, are mainly **sales tracking and overall reporting, bookkeeping, returns of goods, exchanges, taxes and economic forecasting**, and claiming of **personal and travel expenses**.

The vast benefits have driven the demand and introduced several innovative technologies helping companies to be more efficient in their receipt management process. Some companies have developed their internal applications; others still use the method of scanning actual receipts. Companies in the Nordics are already very digitised as of today, since approximately **81% of them[32] are requiring the digitalisation** of received receipts. However, almost half of the companies do not support their employees with any dedicated tool, meaning that they still are expected to photograph or scan the receipt.[33] On the other hand, companies that provide their employees with easy-to-use, often digital solutions to this process experience **190%[34] higher satisfaction**.

Use case: Employees, travelling for a business trip abroad, are required to store and further process the received receipts from personal and travel expenses for reimbursement by the company

As described in the figure below, reimbursement of travel expenses is no different from any other business processes occurring daily in SMEs. The submitting of the expenses by employees and subsequent processing creates a significant administrative burden for companies (these procedures are also referred to as "**unproductive work**"). These administrative tasks have a further negative impact on the productivity and growth of the companies.

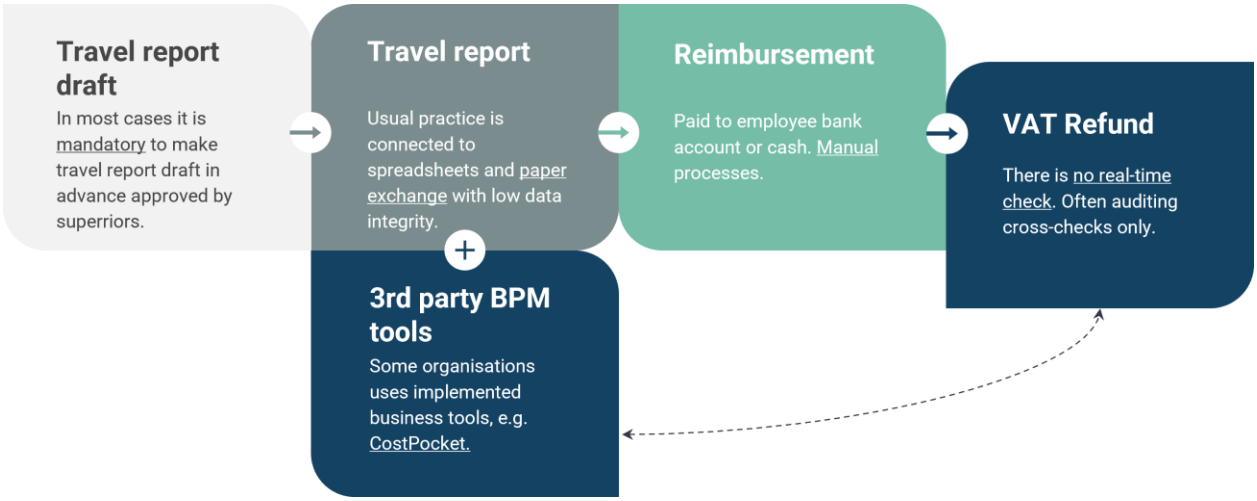
[31] European Commission, Discover the Nordic Smart Government, BLSI Breakfast, "When APIs meet Policymaking", Key Takeaways, (May 2022). https://joinup.ec.europa.eu/collection/better-legislation-smoother-implementation/news/nordic-smart-government-may-2022-breakfast-key-takeaways

[32] Eurocard: It is not hard to be smart – a report on digital receipts (2021), p. 6. https://eurocard.com/doc/com/ECCI0W-reportdigitalreceipts-EN.pdf

[33] Eurocard: It is not hard to be smart – a report on digital receipts (2021), p. 6. https://eurocard.com/doc/com/ECCI0W-reportdigitalreceipts-EN.pdf

[34] Ibid. p. 7.

Figure 2: The example of a typical process of reimbursement of travel expenses inside an SME



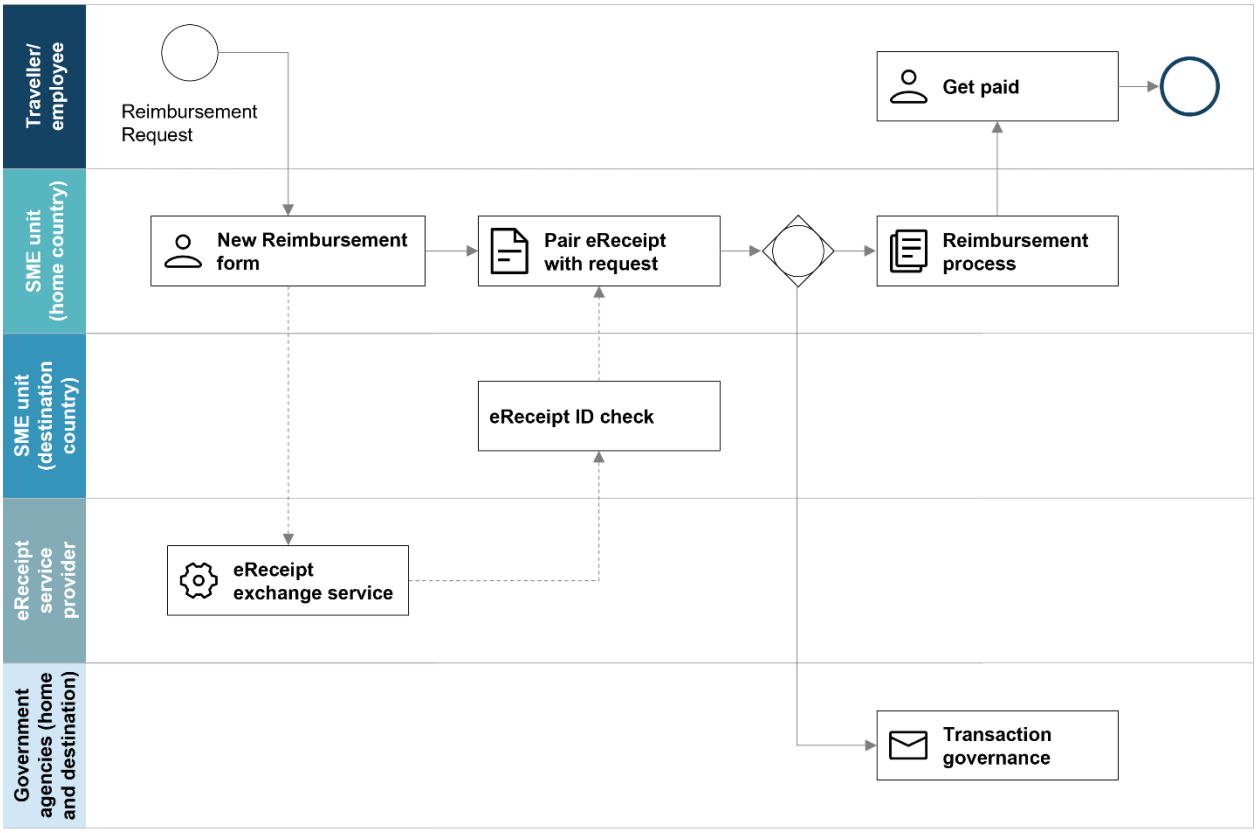
Source: PwC

The process model below describes the **desired business model when processing travel expenses** using an e-receipt service model. Employee (requester) who has completed the business trip starts an online reimbursement form, where he or she will attach the e-receipts saved in his device/online account/e-wallet. In the background, the e-receipt service provider will check and match the outstanding receipts by the ID number or any other identification method, and pair these with the e-receipts saved by the requester. The reimbursement process will run checks internally, together with possible transactions to government agencies or tax authorities. At the end of this process, the requester is notified and will automatically get paid the outstanding amount into their bank account.[35] This process happens in parallel with clearance and tax controls and reporting processes that are running on the company's side.

The following figure showcases the added value of employing the e-receipt service provider for managing daily situations where receipt handling is needed. In the example below, the e-receipt service provider acts as a point of contact for managing the established e-receipt service model and incorporating it into a third-party process, which is a VAT refund. The level of incorporation of the e-receipt service model to work with third-party processes as a vital intermediary depends on how far the integration should go in terms of the benefits it can provide with its details and the work that needs to be done.

[35] eReceipt Guidelines. https://teknologiateollisuus.fi/sites/default/files/file_attachments/2018_ekuitti_eng_sisus_vedos_6.pdf

Figure 3: Example of processing of e-receipts within digitalised travel expenses business process



Source: PwC

Cross border application – Opportunities

Many citizens have a much wider geographical coverage in their spending. According to the user data published by Denmark's commercial payment management vendor, there is a 70/30 split between domestic and non-domestic transactions[36]. **If there is no common cross-border solution to cover this part of payments, a significant amount of transactions end in paper receipts.**

Visa Economic Empowerment Institute[37] states in their **Imagining an open future for payments initiative**, that the flow of payments dramatically shifted to eliminate the administrative burden and to create even higher demand for digital payments. There are the following estimates on the uptake of e-receipts usage and digitalisation of paper receipts:

- In 2023, the private sector will focus on **strengthening and modernising existing payment infrastructure** rather than investing in new experimental opportunities with no apparent economic

[36] Visma Acubiz, Digital receipts in a B2B context. https://www.acubiz.com/digital-receipts-in-a-b2b-context/
[37] Imagining an open future for payments, Visa Economic Empowerment Institute, p. 2.

outcome[38]. Low-risk and high-value improvements will be made to the existing infrastructure. At the same time, the investments in cryptocurrency capabilities of payment systems will continue, however, with a healthy level of caution and enhanced resilience.[39]

- Migration from cash and checks to the digital environment will continue. The Future of Payments Survey from 2022 found that **approximately 74% of respondents prefer digital payments to cash**[40].

Considering the tendencies of increasingly connected international businesses and transactions associated with travelling, it is unlikely that the travel expense claim process will become obsolete. However, for the claim process to perform seamlessly, updates are needed to match the required level of digitalisation.

After the e-receipt standard is published, including the necessary data per every submitted e-receipt and clarity on procedures, **companies will have a unique opportunity to reinvent themselves**, with the aim to increase the effectiveness of internal processes and employee satisfaction.

Cross border application – Challenges

One of the main challenges that are in place while processing and submitting travel expenses is that **businesses require the digitalisation of the receipts**. However, they do not provide **their employees with any viable solution** for submitting and then effectively managing these receipts. The procedure for submitting travel expenses is still manual, involving scanning, filling out online forms and fiscal management by the employee.[41]

Among the companies handling physical receipts – 1 in 5 employees participating in the survey[42] said, that **more than 20% of the expense claims have issues or errors with the physical receipts**, while **only 1 in 20 respondents using an application has more than 15% error rate**. For companies using direct receipts (machine-readable receipts uploaded directly to the company's records), the error is 0% by nature.[43] In addition to that, the average time spent on receipt management (internal processing in companies, e.g., by travel desk or accounting departments) in the Nordic region was estimated to be **8 minutes per receipt[44].** Assertively, the time spent on processing the receipts depends on the level of automation and digitalisation in the receipt management process of the company.

From a broader perspective, this closed-off processing also leads to the fragmentation of available datasets and the decrease of integration opportunities in the future.[45]

[38] Retail Banker International, Over 100 banking and payments experts share sector forecasts for 2023.https://www.retailbankerinternational.com/analysis/100-banking-payments-experts-share-forecasts-for-2023/

[39] Retail Banker International, Over 100 banking and payments experts share sector forecasts for 2023. https://www.retailbankerinternational.com/analysis/100-banking-payments-experts-share-forecasts-for-2023/

[40] Fidelity National Information Services, A Worldpay & Stylus White Paper, (2022).https://discover.fisglobal.com/rs/975-BCU-707/images/Future-of-Payments-Stylus-Whitepaper.pdf

[41] Eurocard: It is not hard to be smart – a report on digital receipts (2021). https://eurocard.com/doc/com/ECCI0W-reportdigitalreceipts-EN.pdf.

[42] Eurocard: It is not hard to be smart – a report on digital receipts. Survey was conducted in 235 organisations across all Nordic countries. (2021). https://eurocard.com/doc/com/ECCI0W-reportdigitalreceipts-EN.pdf.

[43] Eurocard: It is not hard to be smart – a report on digital receipts (2021). p. 7. https://eurocard.com/doc/com/ECCI0W-reportdigitalreceipts-EN.pdf.

[44] Ibid.

[45] Eurocard: It is not hard to be smart – a report on digital receipts (2021). p. 21. https://eurocard.com/doc/com/ECCI0W-reportdigitalreceipts-EN.pdf.

GDPR perspective

GDPR applies to B2B transactions **similarly to B2C transactions** since the scope of the collected data is broad. The GDPR does not make any exceptions for data that is collected under the context of a B2B transaction or interaction, therefore it does not exempt any personal data processing activity from the GDPR rules simply because it is completed in the context of business-to-business.[46]

The rules applied for the collection and processing of personal data gathered from consumers (B2C) should apply to B2B transactions as well. This includes, but is not limited to, establishing a data privacy compliance programme, creating and maintaining documentation, running audits, and providing the staff with regular GDPR and data privacy training. Larger companies have implemented a set of GDPR-compliant policies and procedures for their B2B customers, including **data protection impact assessments[47], data minimisation and data security measures**.

2.2 B2C

Use case 2: Warranty schemes and personalised marketing

E-receipts issued by the companies are allowing them to establish an essential digital two-way communication channel with their consumers, mainly due to software solutions provided by individual retailers. **Both e-receipts and warranty schemes** addressed to consumers **are frequently connected with other services**: personalised promotions, loyalty schemes, information on products, etc. One of the main aims of customer service software seems to be the creation of **personalised marketing** platforms that would enable retailers to inform customers quickly and in a customised manner about products and campaigns.

The most common use case where both sides are involved, the seller (business entity) and the consumer, is when a customer wants to return the purchased goods and is asked to provide the receipt (proof of purchase). **Private digital guarantee schemes are becoming a standard for white and brown goods**.[4849] The growing number and adoption of digital guarantee schemes indicate that consumers see e-receipts as a favourable improvement in secure receipt storage.[50] From the perspective of warranty rights enforcement, these systems are important for the customer, as they make it possible to prove the purchase even if paper receipts are lost or fade away over time [51]. However, the schemes do not assure strategic and

[46] Regulation 2016/679 (GDPR).

[47] GDPR. Data Protection Impact Assessment. https://gdpr.eu/data-protection-impact-assessment-template/

[48] White goods are referring to the major home appliances such as washing machines or refrigerators. Brown goods are referring to consumer electronics such as TVs, computers, radios or game consoles.

[49] European Parliament, Directorate-General for Internal Policies, Policy Department A: Economic and Scientific Policy. European Digital Guarantee, p. 8, (November, 2016).
https://www.europarl.europa.eu/RegData/etudes/STUD/2016/595327/IPOL_STU(2016)595327_EN.pdf

[50] European Parliament, Directorate-General for Internal Policies, Policy Department A: Economic and Scientific Policy. European Digital Guarantee, p. 8, (November, 2016).
https://www.europarl.europa.eu/RegData/etudes/STUD/2016/595327/IPOL_STU(2016)595327_EN.pdf

[51] European Parliament, Directorate-General for Internal Policies, Policy Department A: Economic and Scientific Policy. European Digital Guarantee, p. 9, (November, 2016).
https://www.europarl.europa.eu/RegData/etudes/STUD/2016/595327/IPOL_STU(2016)595327_EN.pdf

long-term viability since they are connected to private businesses. Thus, it is extremely challenging to benefit from such solutions and constructively develop them for wider use.

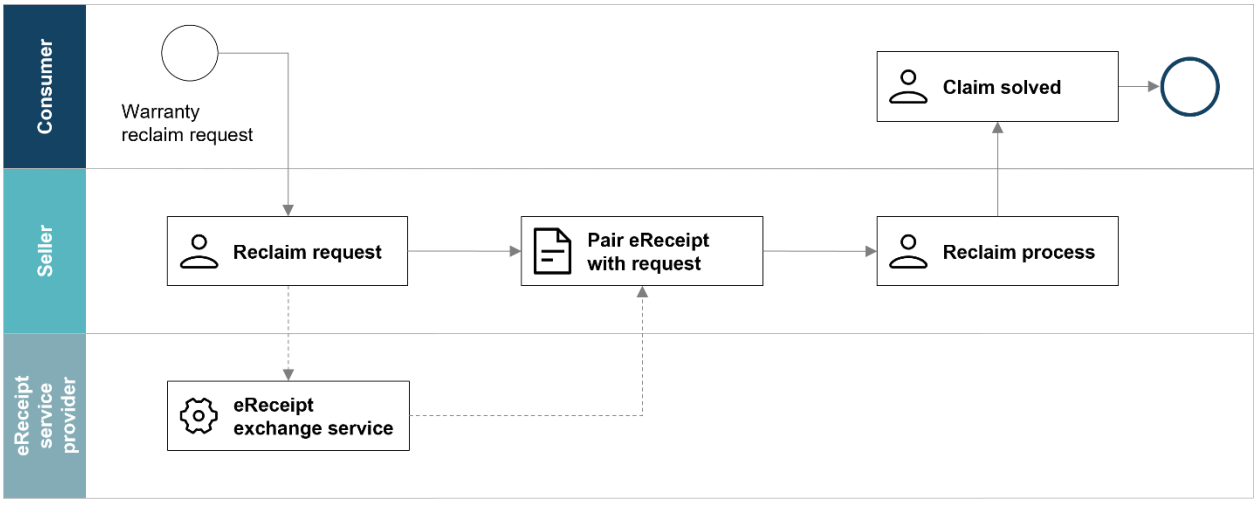
These private services might also be discriminatory to a certain extent. Citizens of other countries might lose their access to such a digital warranty scheme when returning to their place of residence, as the solution is usually based on geographical location.[52] Another bottleneck identified is that customers are often charged by businesses when the proof of purchase is lost, in order to find the customer's purchase data again. These could be also addressed by digital storage of the e-receipts.

Public e-receipt solutions, such as nationwide platforms or state-run applications, were mainly created due to legislative or fiscal reasons, not necessarily influencing consumer rights enforcement.[53] However, as in the case of the e-receipt platform being developed in Poland (e-paragony), the development was also focused on customer protection and promotion of further value-added services.[54] This application works in such a way that the buyer downloads and installs the application on their smartphone. The application, at the buyer's request, connects to the e-receipt distribution system once to download the generated, unique identifier that the customer will use at the checkout when requesting an electronic receipt. No data is provided to obtain the identifier. When a buyer makes a purchase and wishes to receive an e-receipt, they present the identifier in the form of a bar code to the cashier, the cashier scans it with a reader, and the cash register sends the receipt to the distribution system. Within a few seconds, the customer can download their receipt from the system using the application function.

Use case: Customer wants to return the purchase made with an e-receipt provided.

Digitalised e-receipt services can help make the **processes of returning the goods purchased lean, efficient** and accessible for consumers and sellers (SMEs).

Figure 4: Example of the adoption of e-receipts within product warranty enforcement



[52] European Commission implemented the Geo-blocking Regulation in 2018. https://digital-strategy.ec.europa.eu/en/news/commission-publishes-its-short-term-review-geo-blocking-regulation

[53] European Parliament, Directorate-General for Internal Policies, Policy Department A: Economic and Scientific Policy. European Digital Guarantee, p. 33, (November, 2016). https://www.europarl.europa.eu/RegData/etudes/STUD/2016/595327/IPOL_STU(2016)595327_EN.pdf

[54] https://www-podatki-gov-pl.translate.goog/e-paragony/?_x_tr_sl=pl&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=wapp

Source: PwC

In the figure above, the e-receipt service provider is represented as a point of contact for handling the e-receipt business dialogue in a standardised way. It is a high-level example of everyday situations where a receipt is needed, and their integration with e-receipt service models may create beneficial synergy. All the aspects established for this purpose provide benefits beyond the former intentions and can also offer a validation service for the warranty claim process. Thus, the claims process results in the e-receipts being returned to the service provider to close the case and act as an independent part of the reclaiming process.

Cross-border application – Opportunities

Regulating e-receipt schemes with the provision of warranty at the EU level could serve as a **means of convenience for consumers**. Namely, it would facilitate the enforcement of consumer rights and provide consumers with more information on the matter, keep information in one place connected with the sale of a product[55], guarantee the seamless flow of services and remove user discrimination exposure.[56]

With such information at hand, whether about consumers, SMEs or multinational enterprises (MNEs), valuable data streams are available to be used for various opportunities. The information included does not need to be only related to the warranty and rights, but also can be used for the **enforcement** of such rights. Another set of data included in the digital warranty service can be the digital **product log (passport) information[57]**, such as materials included in the product as well as proper instructions on repairing, upcycling or recycling the product. Data can be also used in order to prevent and predict possible future bottlenecks when developing a cross-border e-receipt service model.

E-receipts could also provide consumers with product information and **instructions for use** in selected languages, facilitating the cross-border exchange of goods and eliminating language barriers.[58]

Cross-border application – Challenges

To provide the customers with e-receipts and integrated warranty solutions, the **compatible infrastructure** must be built on the SMEs' side that allows capturing user identifiers and sending e-receipts to the web.[59] This may require further financial investments and time for implementation. Therefore, the **motivation for retailers to invest in e-receipts is relatively low**, unless the receipts are distributed through retailer-

[55] Yrityksen digitalous, eKuitin kustannus- ja vaikuttavuusselvitys, p. 16, (October 31, 2022). https://vkazprodwordpressstacc01.blob.core.windows.net/wordpress/sites/10/2023/03/eKuitti-kustannukset-ja-vaikuttavuus-loppuraportti-2022-julkaistava-1.pdf

[56] European Parliament, Directorate-General for Internal Policies, Policy Department A: Economic and Scientific Policy. European Digital Guarantee, p. 9, (November, 2016). https://www.europarl.europa.eu/RegData/etudes/STUD/2016/595327/IPOL_STU(2016)595327_EN.pdf

[57] Towards Digital Receipts: White Paper on Drivers and Concerns Towards Digital Receipts.https://cocoa.ethz.ch/downloads/2019/12/None_GS1-Sweden_Auto-ID-Labs_Digital-Receipt-White-Paper_v1.0.pdf

[58] European Parliament, Directorate-General for Internal Policies, Policy Department A: Economic and Scientific Policy. European Digital Guarantee, p. 31, (November, 2016). https://www.europarl.europa.eu/RegData/etudes/STUD/2016/595327/IPOL_STU(2016)595327_EN.pdf

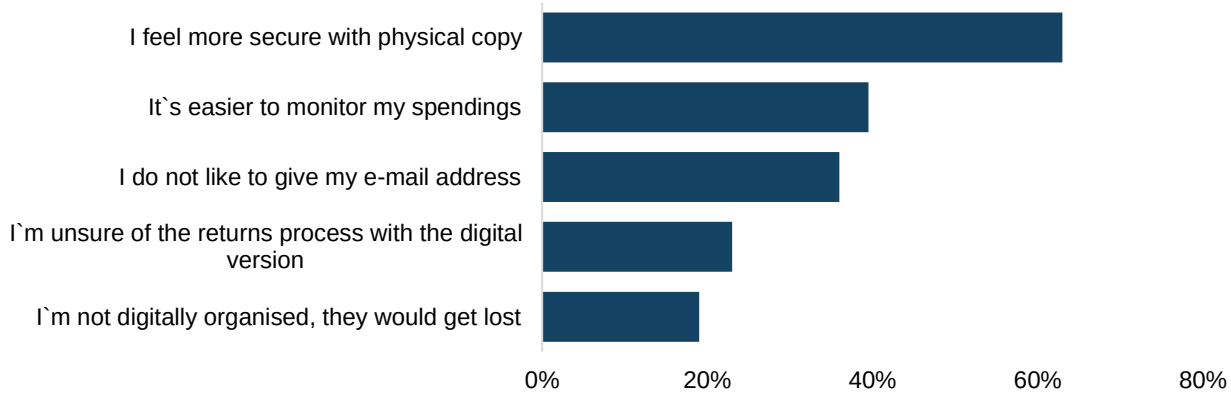
[59] GS1, White Paper on Drivers and Concerns Towards Digital Receipts, p. 7, (December 2019). https://cocoa.ethz.ch/downloads/2019/12/None_GS1-Sweden_Auto-ID-Labs_Digital-Receipt-White-Paper_v1.0.pdf

controlled mobile applications or via customer emails.[60] Furthermore, digital receipts **do not create direct revenue** but should be approached as a long-term investment to improve benefits for consumers.[61]

The use of e-receipts and exercising the warranty scheme based on digital solutions require a **change in consumer behaviour**, since a lot of consumers still seem to favour paper receipts over digital receipts.[62] Changing the habits of the population is a slow process and requires time.

According to the private survey done by commercial digital payment system provider **PassKit**[63], there are several reasons why consumers **prefer paper receipts** to digital versions:

Figure 5: Example of reasons to prefer paper receipts to digital ones by consumers



Source: PassKit[64]

While observing the awareness and the natural need for digitalisation and getting rid of paperwork among the population, the answers will be very similar to those in this survey. Generally, arguing against these arguments is a task of digitalisation initiators. E-receipts have many advantages that should address these arguments and concerns, naturally eliminating paper usage habits. These are:

Note: Maintaining these arguments is done mainly from the consumer perspective, thus every mention of a digital version of an e-receipt is meant as a human-readable format. For more details on the definition of e-receipt digitalisation, please see Article 1.4.

Argument: I feel more secure with a physical copy. Digital format is prone to loss and physical degradation. It is always securely stored in the cloud and can be accessed anywhere and anytime, even offline.

Argument: It is easier to monitor my spending. Digital format also brings more productivity in receipt processing from the perspective of the consumer. Thanks to a standardised and structured format, they can automatically control their spending.

Argument: I do not like to give my e-mail address. E-receipt infrastructure that handles the digital format of receipts always treats privacy as the highest priority, and personal data are always as anonymised as

[60] GS1, White Paper on Drivers and Concerns Towards Digital Receipts, p. 7, (December 2019). https://cocoa.ethz.ch/downloads/2019/12/None_GS1-Sweden_Auto-ID-Labs_Digital-Receipt-White-Paper_v1.0.pdf

[61] GS1, White Paper on Drivers and Concerns Towards Digital Receipts, p. 7, (December 2019). https://cocoa.ethz.ch/downloads/2019/12/None_GS1-Sweden_Auto-ID-Labs_Digital-Receipt-White-Paper_v1.0.pdf

[62] GS1, White Paper on Drivers and Concerns Towards Digital Receipts, p. 6, (December 2019). https://cocoa.ethz.ch/downloads/2019/12/None_GS1-Sweden_Auto-ID-Labs_Digital-Receipt-White-Paper_v1.0.pdf

[63] PassKit. https://passkit.com/

[64] PassKit. https://passkit.com/

possible. It also provides the possibility to opt out of using an e-mail address, for example, by paying by card and identifying oneself with an anonymous ID.

Argument: I am unsure of the returns process with the digital version. Digital format brings more productivity due to the inherent speed and efficiency benefits of digital communication. All situations where the receipt is requested retroactively are more effective and faster when done digitally. It also allows retailers to be more productive and client-oriented.

Argument: I am not digitally organised, they would get lost. Digital literacy is a common area for every initiative changing habits from paper to digital. It is crucial to understand the slow, yet necessary process of transforming the mindset and habits of stakeholders around the world. The higher the quality of digital services and the more benefits they offer, the higher the level of digital awareness they create among users, consumers and recipients of services.

GDPR perspective

The General Data Protection Regulation (GDPR)[65] is a set of rules that governs how businesses process and store personal data. The cross-border processing of e-receipts must comply with the GDPR regulation and the guidelines of the European Data Protection Board (EDPB). In B2C transactions, the GDPR requires businesses to obtain **explicit consent from customers** before collecting and processing their personal data, as well as in cases of further interaction, such as sending newsletters and other similar marketing communications. Businesses must also ensure that customers are aware of their rights to access, rectify and delete their personal data.[66] Additionally, businesses must ensure that the data they collect is not shared with any third parties without the customer's explicit consent.

In the case of direct marketing, businesses must comply with specific GDPR rules such as unticked consent to further contact (preferably double opt-in including, including confirmation of customer consent by e-mail). GDPR further enables consumers to request their own transaction data as a data stream for the integration of their e-receipts, e.g., in a three-corner model. Consumers can access data through the GDPR, and with data portability, **consumer transaction data can be merged with their consent into three- or four-corner operating models**, e.g., to provide more transparency to the consumer.[67] [68] Data portability in this context means that the personal data, that the customer had provided to one company, can be transmitted (considering whether the data was provided in a machine-readable format and collected in the context of a contract or on the basis of consent). GDPR compliance, together with the European Data Protection Board guidelines and e-receipts processing are tied together. Thus, the consumer can share their data with third parties to receive value-added services. This regulatory development accelerates the progress of e-receipt due to data interoperability and accessibility.

One of the previous recommendations[69] by NSG was also to provide **further legal and factual clarification of the GDPR requirements** to reduce the uncertainty of SMEs and citizens. Oftentimes, SMEs face

[65] Regulation 2016/679 (GDPR).

[66] Regulation 2016/679 (GDPR).

[67] eReceipt guidelines, p. 10, (2018).
https://teknologiateollisuus.fi/sites/default/files/file_attachments/2018_ekuitti_eng_sisus_vedos_6.pdf

[68] Yrityksen digitalous, eKuitin kustannus- ja vaikuttavuusselvitys, (October 31, 2022).
https://vkazprodwordpressstacc01.blob.core.windows.net/wordpress/sites/10/2023/03/eKuitti-kustannukset-ja-vaikuttavuus-loppuraportti-2022-julkaistava-1.pdf

[69] Nordic Smart Government: Roadmap for the realisation of the Nordic Smart Government ecosystem, p. 84.
https://nordicsmartgovernment.org/sites/default/files/2022-09/Samlet-NSG-roadmap-og-appendix.pdf

ambiguity as to whether the transfer or disclosure of personal data is legitimate, since the GDPR is partially equivocal and only limited legal practice and guidance is currently available.[70] These factual clarifications, as recommended, could be provided through cooperation with the **data protection agencies** (DPAs) in each BSR country by analysing the current business practices related to using and sharing business system data that might involve personal data.[71] **Denmark** is already compliant with this recommendation. Denmark issued a set of guidelines[72] for businesses on e-receipts and GDPR compliance.

2.3 B2G

Use case 3: Tax reporting to the respective authority (near real-time)

E-receipts and tax reporting to the respective authorities work by allowing businesses to store and manage e-receipts, which can then be used for tax reporting purposes. E-receipts can be used to **track** sales, purchases and other **transactions.** They can also be used to **generate reports for tax filing purposes**. Additionally, e-receipts can be used to automate the process of filing taxes, as well as to ensure accuracy and compliance with tax regulations.

SMEs and businesses are generally required to report taxes to the designated tax authorities in certain time periods of the year. In the future, these periodic reports shall not only reflect the fiscal data and the situation of the previous year (or a selected period). Instead, by transmitting the data in **(near) real-time**, the companies and public authorities would get additional value from using the services (e.g., recognising current trends more accurately, taking better preventive measures and decision-making).

In 2022, the European Commission proposed a series of measures to modernise and improve the EU's VAT system for businesses. In the **2022 Report on the VAT Gap**[73], it was estimated that in 2020, member states lost 93 billion EUR in VAT revenue. One of the key proposed actions was the transition to real-time digital reporting based on e-invoicing for businesses that operate cross-border in the EU. However, the introduction of digital reporting requirements generates significant costs[74] for businesses, since the information has to be transmitted for each transaction, and the deadline for data transmission is generally two business days after the issuance of an invoice or after the date the invoice should have been issued. E-receipts could be an additional enabler in this process. This burden might disproportionately affect SMEs, given their smaller size. The implementation of the proposed suggestions should follow the one-in-one-out principle[75].

Use case: SMEs are required to report and pay taxes to the tax authorities.

[70] Nordic Smart Government: Roadmap for the realisation of the Nordic Smart Government ecosystem, p. 72. https://nordicsmartgovernment.org/sites/default/files/2022-09/Samlet-NSG-roadmap-og-appendix.pdf

[71] Nordic Smart Government: Roadmap for the realisation of the Nordic Smart Government ecosystem, p. 84. https://nordicsmartgovernment.org/sites/default/files/2022-09/Samlet-NSG-roadmap-og-appendix.pdf

[72] Datatilsynet, De registreredes rettigheder. https://www.datatilsynet.dk/hvad-siger-reglerne/vejledning/de-registreredes-rettigheder-

[73] https://taxation-customs.ec.europa.eu/taxation-1/value-added-tax-vat/vat-gap_en

[74] European Commission: VAT in the Digital Age, Executive Summary, p. 15. https://taxation-customs.ec.europa.eu/system/files/2022-12/VAT%20in%20the%20Digital%20Age_Final%20Report%20Executive%20Summary%20EN.pdf

[75] Under the one-in-one-out principle, the new burdens from legislative proposals by Commission are offset by reducing existing burdens in the same policy area, so that negative impacts for businesses are limited.

Cross border application – Opportunities

Digitalisation of taxes and optimisation of the VAT reporting process are the areas with substantial potential for innovation where the use of e-receipts provide an additional incentive. Several countries in the region, such as Estonia, Finland, Denmark or Norway, have **upgraded and digitalised the process of VAT declaration** and reporting[76], as well as the cross-border extension of VAT declarations in the EU legal framework. The most advanced transactional data-based VAT reporting process with a high level of automation is developed in Estonia, also with the ability to process documents worth more than 1,000 EUR. In the future, all countries in the European Union will be obliged to provide VAT reporting in favour of all parties involved. It significantly reduces the administrative burden and allows SMEs to manage their VAT operations from a single place, not even visiting any other portal, e.g., tax authority. There are the following opportunities associated with VAT reporting:

- Increased efficiency of VAT collection rates,
- Decreased reporting time and effort for filling out tax forms,
- Tax fraud prevention and mitigation,
- BSR is well-positioned to integrate and pilot automatic cross-border reporting.

Cross border application – Challenges

The main challenge identified in the cross-border application of VAT reporting is the **fragmentation of VAT regulations and country-specific rules**.[77] To reach the desired outcome of real-time (or near real-time) reporting, countries need to focus on **prioritising the digitalisation of VAT reporting.**

The existing rules (or lack thereof) generate two main problems:

1. The growing number of different reporting mechanisms used across EU member states translates into a fragmented regulatory framework, which results in legal uncertainty and additional costs for companies operating in multiple member states and VAT service providers. This often results in barriers to trade and inefficiencies.
2. Secondly, the partial adoption of EU reporting requirements and the outdated tool for reporting intra-Community transactions do not allow Member States to effectively tackle VAT fraud. This gap concerns both intra-EU transactions and fraud at the national level.

Another challenge is that the implementation of digital tax standards requires a strong underlying IT development and operating environment. The constant alignment of IT solutions with changes in tax legislation is **very costly**, especially for SMEs. Since tax legislation might change frequently, it needs to be ensured that IT solutions and existing architecture will be coherent with the current directives. Future infrastructure shall be more flexible, and future minor developments in tax should not be so costly. A good example is the Estonian development of data-driven reporting[78] - one unified standard and taxonomy where one minor change in the software can be easily upgraded.

A possible solution can also be the **introduction of digital VAT reporting in EU member states**. This could be encouraged for those member states with a significant VAT gap with the support of the Commission. Another option is to include a new provision requiring taxpayers to record transaction data in

[76] European Commission, VAT in the Digital Age, Final Report, p. 18, (2022). https://taxation-customs.ec.europa.eu/system/files/2022-12/VAT%20in%20the%20Digital%20Age_Final%20Report%20Volume%201.pdf

[77] [77] European Commission, VAT in the Digital Age, Final Report, p. 84, (2022). https://taxation-customs.ec.europa.eu/system/files/2022-12/VAT%20in%20the%20Digital%20Age_Final%20Report%20Volume%201.pdf

[78] https://realtimeeconomy-bsr.eu/data-based-reporting

a pre-determined format (e.g., as e-invoices or e-receipts). The tax authority could have access to such records upon request or obtain the data through transactional data of VAT reporting regularly submitted by businesses.

Automated VAT reporting & Data monetisation

A pilot project for automated VAT reporting was launched by the Finnish Tax Authority in 2019 as part of the RTECO[79] project of Technology Industries of Finland, where financial statements are sent from an accounting programme to the Finnish Trade Register in the digital iXBRL[80] format[81]. The financial statement data in the Finnish Trade Register can be retrieved for further use by various operators, and at the same time, the data is provided in a machine-readable format, making it significantly easier for further processing matters. iXBRL has already been implemented for financial reporting in other countries, including Sweden[82]. In the future, an increase in efficiency and time savings is expected within the company's business processes if the need for manual data entry in preparing reports is minimised.

Another recent project regarding automated VAT reporting has been deployed in Norway, starting from January 2022[83]. The new digital VAT return is submitted directly from the enterprise resource planning (ERP[84]) system based on the standard audit file for tax (SAF-T[85]) using standard VAT codes. Furthermore, the European Commission has informed about the upcoming legislative work regarding the initiative of **VAT in the digital age**.[86] The initiative aims to tackle revenue losses from VAT-associated fraud and reduce the administrative burden and related costs for businesses by applying technological solutions.[87]

The following issues will be addressed under the three identified areas[88]:

- **Requirements for digital reporting, including e-invoicing** – as governments introduce new digital reporting requirements for businesses, unnecessary compliance burdens are generated for businesses operating on a cross-border level. This increases the risk of fragmentation and slows down the operation of the single market. In addition, no compulsory rules for the use of e-invoicing have been introduced yet,

[79] Real-time economy ecosystems.

[80] Inline eXtensible Business Reporting Language (information is displayed in a uniform manner according to standards and classifications. This reduces the risk of essential information being left out of the financial statements).

[81] Finnish Patent and Registration Office, IXBRL financial statements. https://www.prh.fi/en/presentation_and_duties/current_information/projects/ixbrl_financial_statements.html

[82] Implementation guidelines for annual reports in iXBRL format. https://bolagsverket.se/download/18.65d9a418074ef72984b5/1655360028077/implementation-guidelines-annual-reports-ixbrl-1-6.pdf

[83] SNI, Digital VAT return to be introduced in Norway in 2022. https://snitechnology.net/digital-vat-return-to-be-introduced-in-norway-in-2022/

[84] Enterprise resource planning.

[85] Standard audit file for tax; an international standard for the electronic exchange of reliable accounting data from organisations to national tax authorities or auditors.

[86] The European Commission, VAT in the digital age, (January 20, 2022). https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13186-VAT-in-the-digital-age_en

[87] The European Commission, Call for evidence for an impact assessment, p. 1, (January 20, 2022). https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13186-VAT-in-the-digital-age_en

[88] The European Commission, Call for evidence for an impact assessment, pp. 1-2, (January 20, 2022). https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13186-VAT-in-the-digital-age_en

- **Fair VAT treatment for online and traditional economic transactions** – ensuring a unified approach across the EU countries to apply VAT rules regarding the provider, nature of services, place of supply and reporting to meet business needs,
- **Single VAT registration in the EU** – a one-stop-shop platform to be improved to avoid multiple VAT registrations across the EU for cross-border transactions.

The overall application of such a platform is needed to better control cross-border VAT rules to enable a common solution for the EU. The main goal is to establish a fair fiscal environment that guarantees tax equality and neutrality and takes measures to combat VAT fraud.[89]

GDPR perspective

Some private companies collect data that could significantly **improve the capacity of governments** to make better policy decisions and increase social welfare.[90] B2G data sharing can result in substantial benefits for society and cost savings for governments. The current volume of B2G operations at the regional level in the BSR and the wider EU is relatively small and sub-optimal from the perspective of effective social welfare.[91]

The **Data Strategy**[92] (further described in *Section* ***Tõrge! Ei leia viiteallikat.***) introduces the **obligation to make private sector data available to public bodies and EU institutions, agencies or bodies** upon request in situations of exceptional need (e.g., in case of public emergency).

However, **much of the potential** of private sector data and insights to be used by public sector bodies to tackle social and environmental challenges **remains untapped**. Recent developments (referred to as 'B2G data sharing for the public interest[93]') are based on **an emerging consensus on the need to unlock privately held data and maximise the power of data** to drive transformative change.

Due to the limited scale of these types of transactions, B2G data-sharing collaborations are not yet sufficiently visible, nor is it a scalable and easily replicable process to be addressed using e-receipts.

[89] The European Commission, Call for evidence for an impact assessment, p. 2, (January 20, 2022). https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13186-VAT-in-the-digital-age_en

[90] European Commission, The economics of Business to Government data sharing, Publication, (February 17, 2020). https://joint-research-centre.ec.europa.eu/publications/economics-business-government-data-sharing_en

[91] European Commission, The economics of Business to Government data sharing, Publication, (February 17, 2020). https://joint-research-centre.ec.europa.eu/publications/economics-business-government-data-sharing_en

[92] European Commission, European Data Strategy. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-data-strategy_en

[93] European Commission: Towards a European strategy on business-to-government data sharing for the public interest, p. 15, (2020). https://www.euractiv.com/wp-content/uploads/sites/2/2020/02/B2GDataSharingExpertGroupReport-1.pdf

3. The road to the common solution

3.1 Integrations Overview

This section covers integration opportunities from the perspective of establishing a high-level dialogue on **e-receipt data interchange between enterprises, government and citizens.** The opportunity to open and share effective yet isolated processes around e-receipts creates two different perspectives on how the operating model can develop interconnected data systems.

Inbound integrations are the mandatory part of data interchange and create a viable data source as part of the e-receipt data model. **Outbound integrations** provide specific opportunities to monetise data, add more value to the services for all parties involved, improve the user experience for businesses and citizens, and create more opportunities for governments to govern more effectively.

Considering integration readiness and effectiveness, **choosing a suitable service model** is crucial. It depends on the balance between achieving the RTE goals for SMEs and consumers while maintaining efficiency and compliance. Within each point of contact for connecting infrastructure points and its purpose, a healthy balance between the benefits and the workload needed to be done to achieve it should be included in a detailed analysis.

From the perspective of the e-receipt service model and its integration opportunities, especially within tax and following reporting needs, **Peppol's five-corner model will be beneficial**. Governments see this newly developed network as an opportunity to take control of tax liabilities, especially in a cross-border environment. By adding a fifth corner to the network, users must communicate with tax authorities and include all VAT information. The result is substantial legal compliance and more effective reporting.

Integration principles

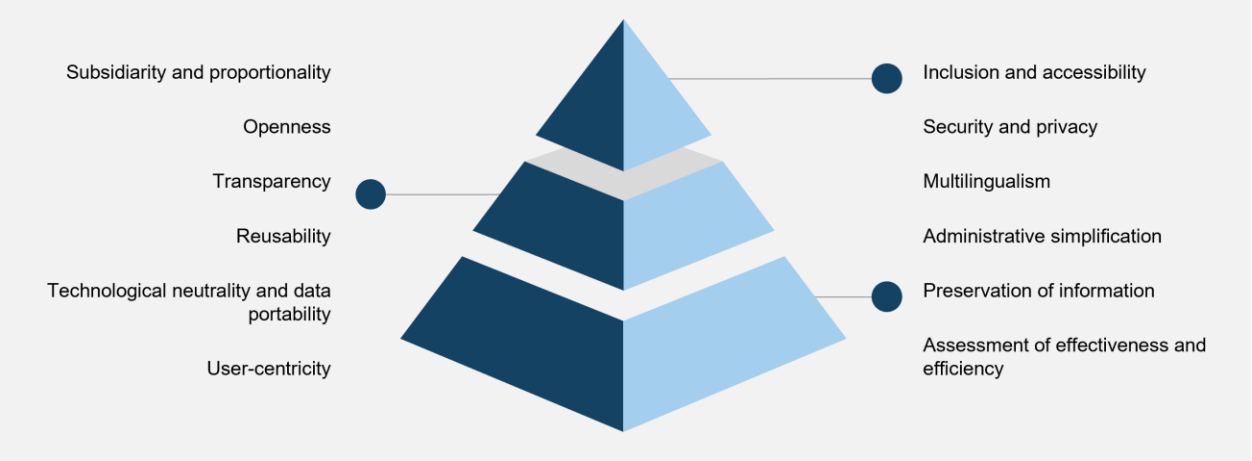
An adequate and lean infrastructure can be achieved by applying the following main principles:

- Build as close and as lean as possible on open existing standards,
- Use high data visibility for better decision-making, improved security and confidence
- Enforce data integrity and protect user data,
- Effectively communicate transformation needs with a focus on a clear description of **added value**.

The **New European Interoperability Framework**[94] promotes **seamless data flows** mainly for its public administrations. However, it is a vital source of principles for handling the data between businesses and cross-border. It contains the following examples:

[94] European Commission, New European Interoperability Network, (2017). https://ec.europa.eu/isa2/sites/default/files/eif_brochure_final.pdf

Figure 6: Data integration principles according to the New European Interoperability Framework report



Source: New European Interoperability Framework report[95]

Infrastructure readiness

As there are several ways to achieve the same functionality of integrated business data exchange models across countries, it is necessary to **propose more options** to create **as lean infrastructure as possible**. The aim of this report is to highlight the possible ways, where the current and future approaches may lead the design of a cross-border e-receipt exchange infrastructure.

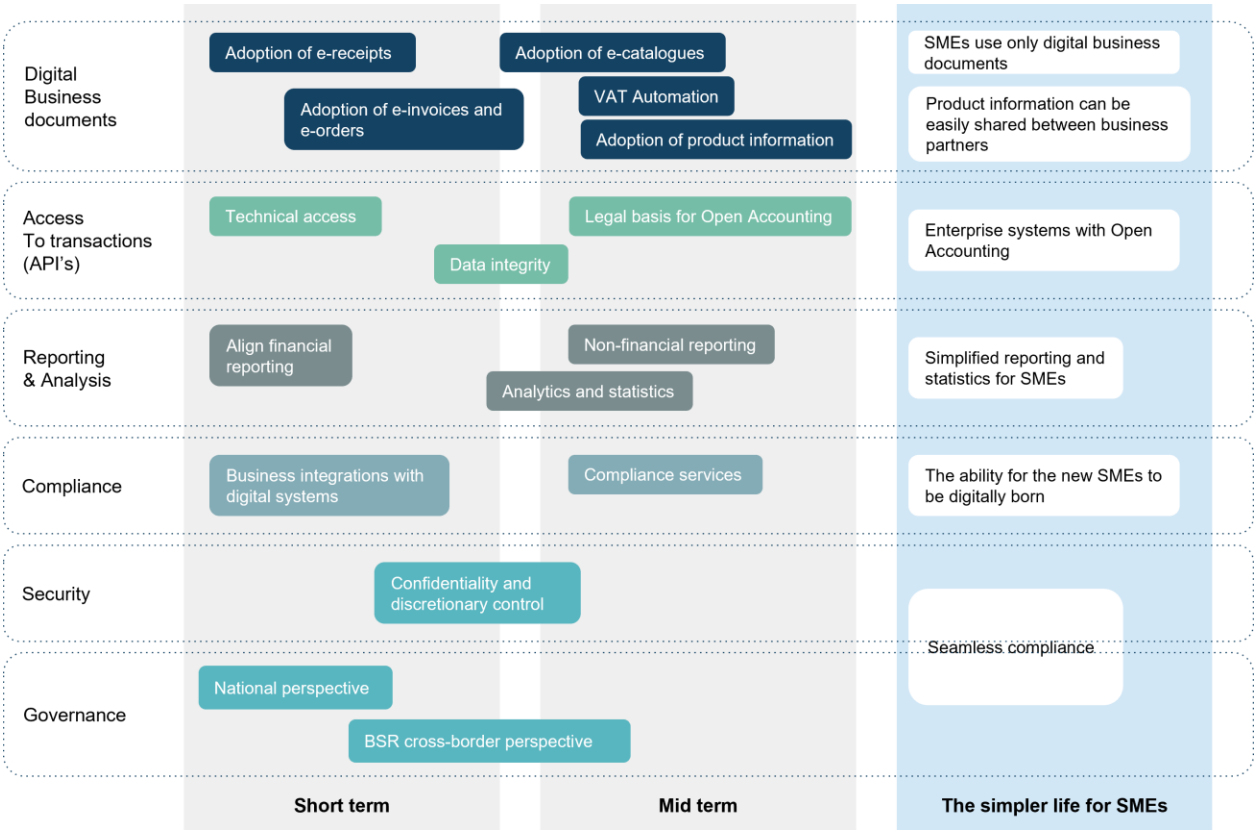
Detailed architecture decisions must be taken as part of the future process dialogue, involving relevant stakeholders from the BSR (and beyond) in the co-creation activities. At this stage, defining the **playbook for choosing the right approach to the integration architecture service models** is crucial.

The establishment of an e-receipt business dialogue between all parties involved is **part of the bigger perspective** of integrating other building blocks within the RTE ecosystem. As a result, the relevant stakeholders and key parties shall have **a clear description of what must be done, and in what time frame and have** a **clear definition of the expected results.**

The scheme below showcases a high-level view of the steps needed to be developed by SMEs and their business tool vendors in short-term and mid-term perspectives. These are crucial to achieving **infrastructure readiness**.

[95] European Commission, New European Interoperability Network, (2017). https://ec.europa.eu/isa2/sites/default/files/eif_brochure_final.pdf

Figure 7: The timeline of a high-level integration perspective



Source: Nordic Smart Government & Business[96]

When considering the readiness of the infrastructure for the exchange of business data related to e-receipts, an important area is also the integration with the Peppol network standards and adherence to its guidelines. As Peppol is well established within e-invoices Electronic Data Interchange, it enables trading partners to exchange standard-based electronic documents over the secured network. Currently, it is broadly based on a four-corner model, which ensures the credibility of service providers as intermediaries between senders and receivers of business documents. One of the main goals of RTE is to increase the efficiency of tax collection and minimise possibilities for tax fraud. The Peppol network is based on these interests. **Its newly developed five-corner model ensures even more credibility for business data exchange by adding another layer of verification involving tax regulators**. Following the implementation of Peppol's five-corner model, tax authorities require additional validation steps. In addition to the standard validation requirements on the side of the receipt issuer (corner 1), sending service provider (corner 2), receiving service provider (corner 3) and the recipient (corner 4), **corner 5 is added to serve as a real-time digital tax control**. This node of the validation process receives data from corners 1 and 3 for the purposes of real-time validation. As a result, integrating the Peppol five-corner model will sufficiently increase the level of compliance and will help achieve many goals of the RTE and e-receipt service model. Evaluating the relationship between the importance and the amount of work needed to achieve these goals is crucial in several ways. For consideration, one of them is the integration into the Peppol network.

[96] Nordic Smart Government & Business, Architectural Overview report, (2020).

Readiness for e-receipts adoption by SMEs

The adoption of e-receipts by SMEs means the need to complete specific infrastructure tasks.

Standardised content of the e-receipt. It is essential to understand SMEs and their operations, and that an e-receipt is a standardised and structured set of information. By its nature, an e-receipt should be created primarily in a machine-readable format since it is **exchanged entirely through software solutions between business units exchanging digital information**. For this reason, the content of an e-receipt needs to be strictly standardised. In some cases, it is vital to add a human-readable version of the receipt to simplify the business process and make it more user-friendly.

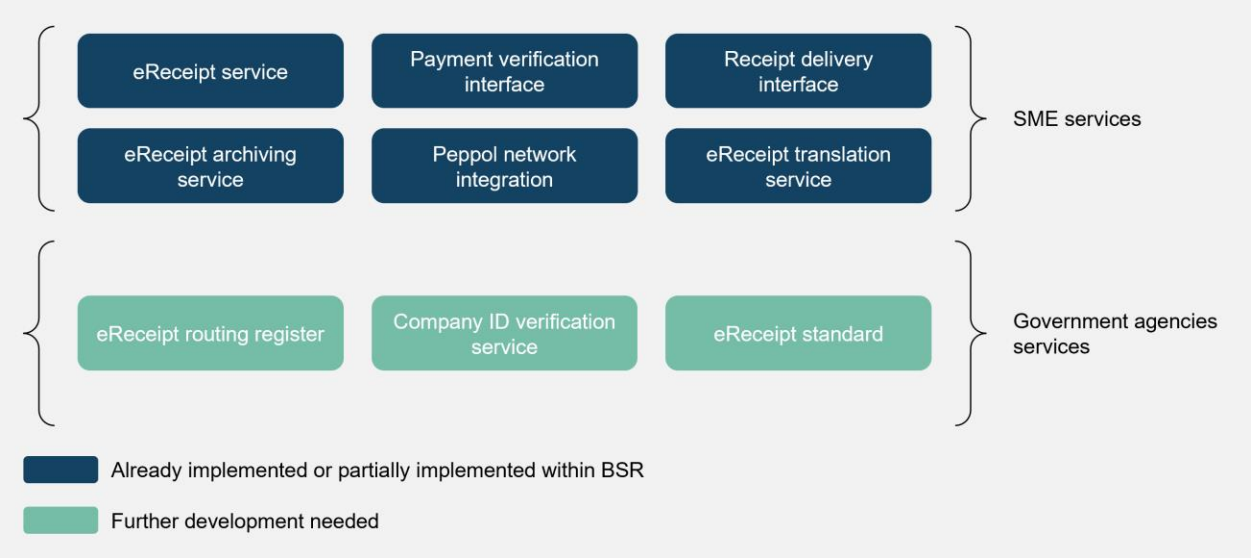
Connectivity to the Point of Sale (POS). POS providers are generally very eager to integrate into any infrastructure for data exchange. However, it must be done in a strictly structured way and often involves significant public investment in building long-term infrastructure for cashless transactions.

ERP and business tools readiness. The implementation of e-receipt modules or their parts required for the automatic handling of e-receipts is mainly the responsibility of service providers and vendors of business information systems. However, developing these functionalities in enterprise information systems and tools must be **orchestrated using a general playbook** common to all counterparties involved, regardless of their geographic location. This includes the retailer's information systems as natural points of contact for handling and issuing receipts. From the e-receipt service model perspective, these systems are no different from any other information system. They are considered part of the SME area and share common RTE goals.

Cross-border integration. Definition of how the national networks will be mapped and aligned with the standards adopted in the region. For example, in the future, the state of the Peppol infrastructure will differ between national and cross-border operations in terms of their integration points of contact.

Adoption of e-receipts by mobile payments systems. Although the mobile payment uptake is slower than expected and often lies within technology-oriented buyers, **the implementation of e-receipts for mobile payment systems is very feasible**. The following scheme describes an example of SMEs' readiness for possible technical applications.

Figure 8: Possible technical applications required from the perspective of e-receipts readiness



Source: Nordic Smart Government & Business[97]

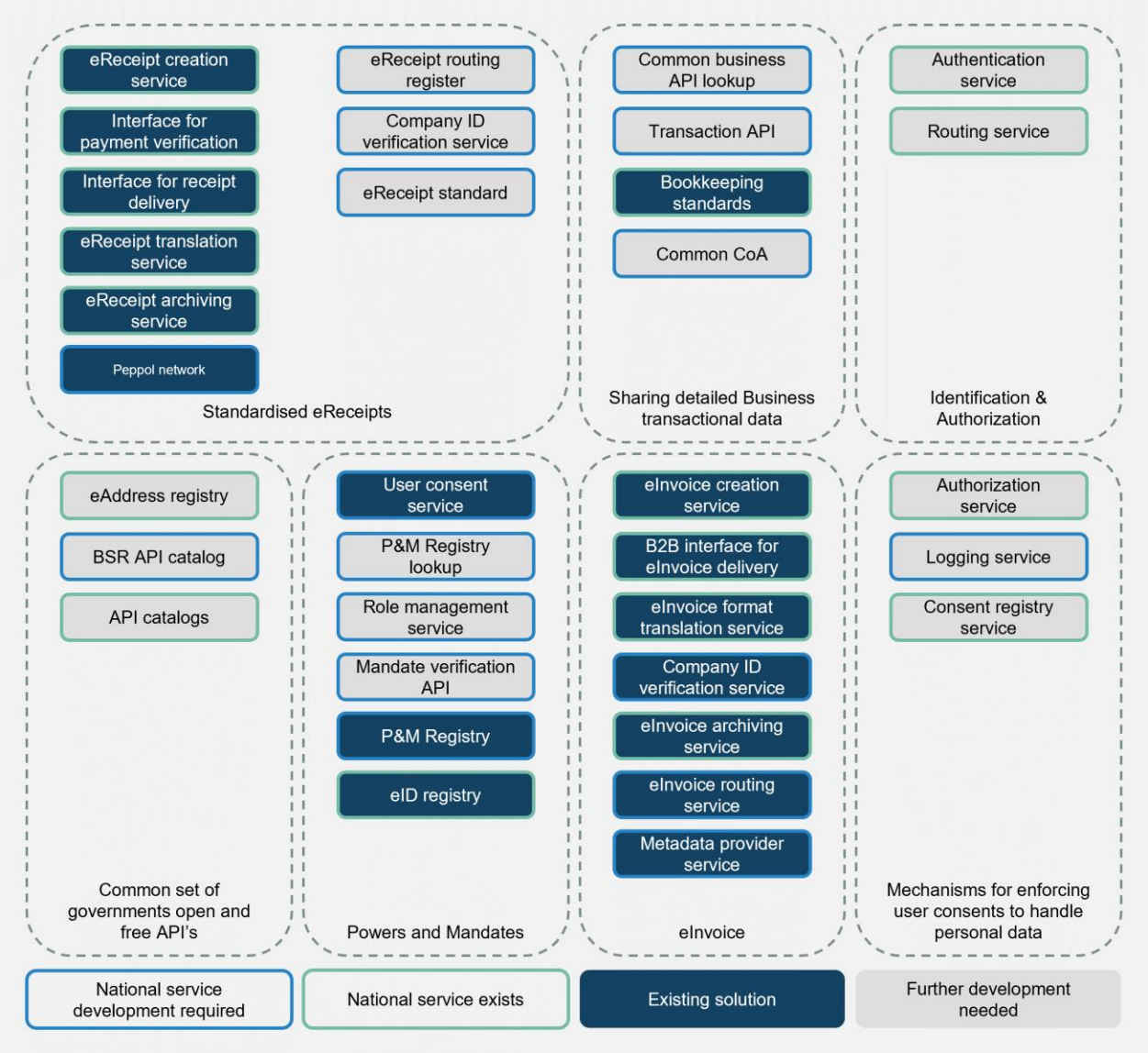
Several providers have already implemented some of these steps and it is necessary to strategically **define and evaluate their interoperability and portability.** E-receipt standardisation already follows this strategic approach. However, there is still a lack of strategic development and action plan in the implementation of the e-receipt service model across the authorities and the stakeholders.

Example of national readiness according to Nordic Smart Government & Businesses (Finland)

National readiness includes the steps needed to prepare the services of government agencies and SMEs for e-receipts adoption. It includes infrastructure for handling e-receipts, their standardisation and development of services for SMEs, as well as sharing business transaction data, identification and authorisation services, a common set of governments' open and free APIs, management mandates (e.g., user consent service, role management service, e-ID verification against a registry), e-invoice adaptation and user data protection.

[97] Nordic Smart Government & Business, Architectural Overview report, 2020.

Figure 9: Example of national readiness according to Nordic Smart Government & Businesses (Finland)



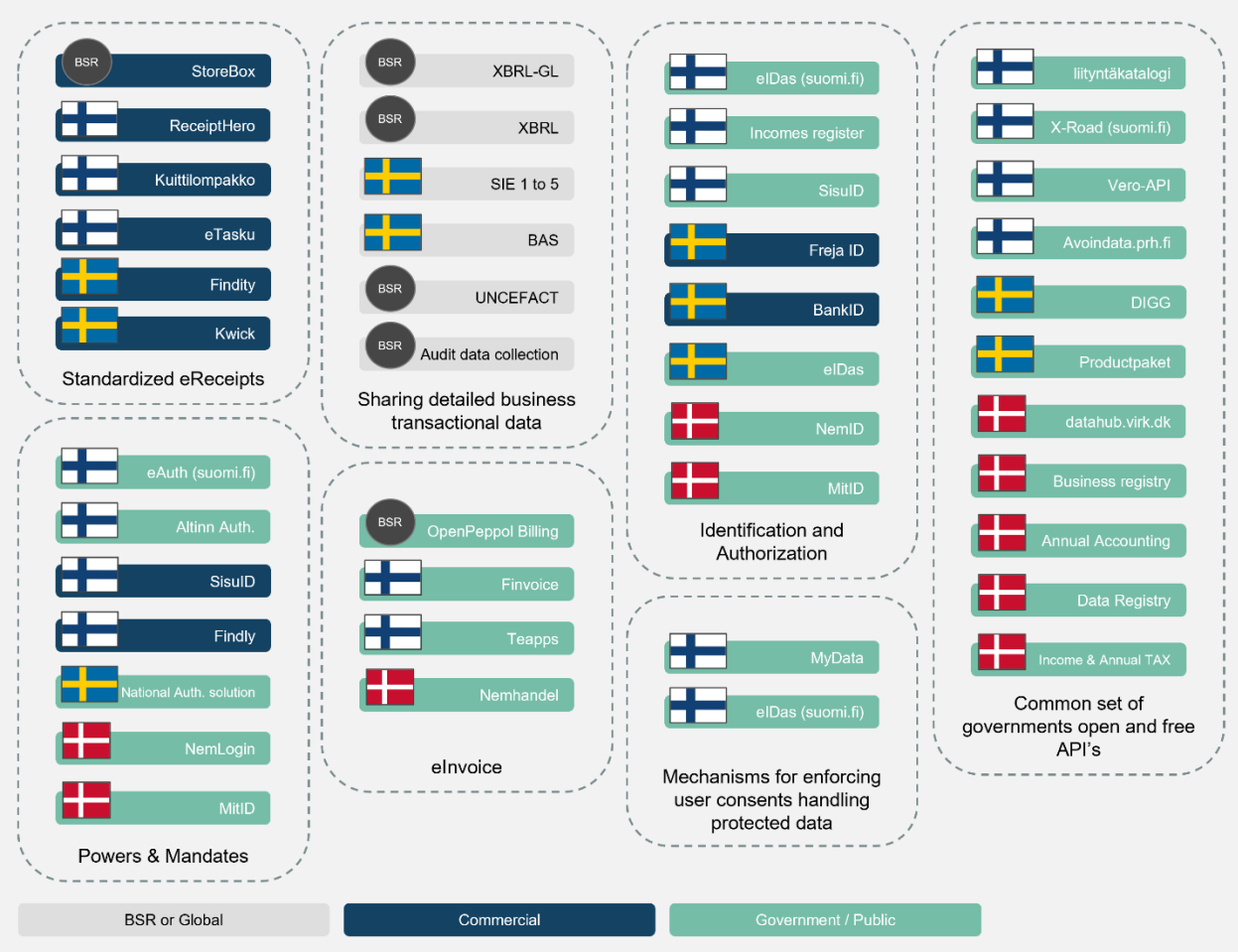
Source: Nordic Smart Government & Business[98]

[98] Nordic Smart Government & Business, Architectural Overview report, 2020.

Preparing the country and the government for adopting e-receipts means developing and improving services and functions for processing e-receipts and **balancing differences between countries within the e-receipts operating area.**

This process is not solely the responsibility of a single government body but is distributed among multiple governments, public or commercial services and business solutions. These independent solutions already follow the common goal of developing the RTE ecosystem. However, it is important to focus on the **infrastructure unification**. It is possible to build on these principles and already adopted approaches in a standardised way. The next step is to map **service providers and vendors**.

Figure 10: Example of service providers mapping in connection with readiness areas according to Nordic Smart Government & Businesses (Finland, Sweden and Denmark)



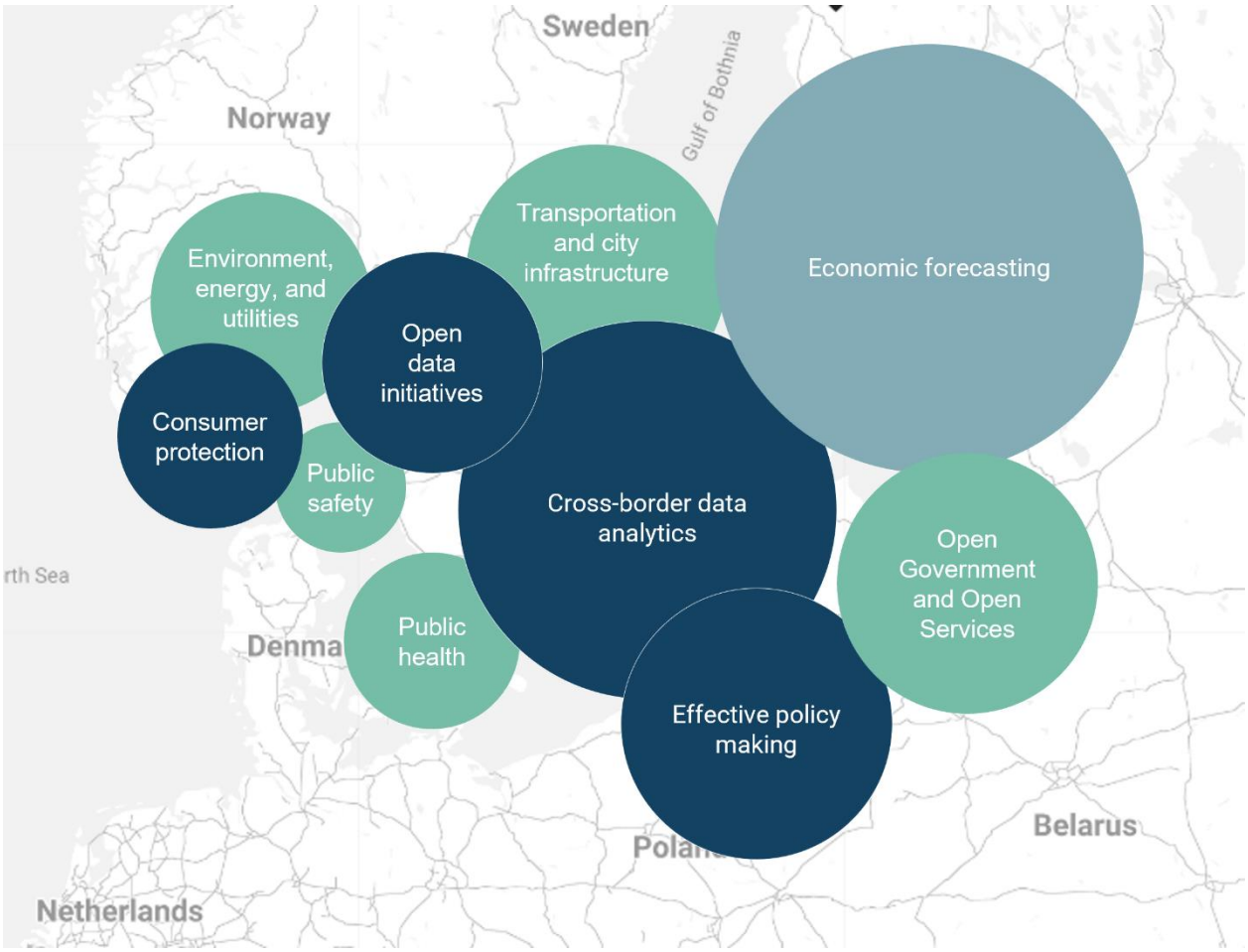
Source: Nordic Smart Government & Business[99]

Outbound integrations

[99] Nordic Smart Government & Business, Architectural Overview report, 2020.

Outbound integrations are defined as opportunities to use the data received and processed by the e-receipt service in favour of all counterparties involved and beyond. This approach should create new value-added integrations with services that are not primarily used for e-receipt handling. Outbound integrations are optional in pursuit of achieving the RTE goals. However, building on these parallel processes, such as preparing SMEs' and government agencies' information systems for the adoption of e-receipts, and monetising data is vital. It directly connects the intent to bring value-added services and tools to achieve the expected outcome of making life easier for businesses, citizens and governments. This approach opens up a wide range of opportunities and can be divided into the general areas described below.

Figure 11: Examples of opportunities where e-receipt outbound integration may improve efficiency and service quality



Source: PwC

The main priorities of governments in the BSR countries are **mobility, green approach and social sustainability**. Utilising an e-receipt service and payment methods may cover the selected areas where these priorities are focused, from the environmental impact of not printing paper receipts to market basket analysis. In all these areas, the data gathered from the exchange within the e-receipt service is a necessary prerequisite for the successful development of the RTE ecosystem.

Businesses use their data to create value. **Business decisions based on data analytics are becoming increasingly demanding**. This approach is very valuable for every data owner as it is vital for governments, especially in common economic areas, such as the EU and, more specifically, the BSR.

The **cross-border market experienced a 45-fold increase in a decade and is** estimated to reach 2.7 trillion USD in 2022 worldwide. To keep up with this pace, government analytics initiatives can only be implemented in an environment where the data can flow freely across borders and blocking issues are addressed at both legislative and infrastructure levels. Also, poorly deployed cybersecurity policies may play a negative role. According to the Information technology & Innovation foundation, these recommendations[100] should be considered. An analysis of the blockers and challenges associated with the separation of data flows in favour of the advantages of outbound integrations should be included in further discussion as part of a separate analysis of each outbound integration opportunity.

- Promote **efficient data flows** through the rapid adoption of modern data processing and AI technologies,
- Promote **international interoperability** in privacy and data protection,
- Encourage international organisations to focus on **addressing digital trade barriers.**

Using e-receipt handling data to forecast economic activity

Payment systems trace economic activity, which can be considered a vital source of analysing economic activity. The e-receipt service model operates on similar principles as payment systems regarding the value of data. Unlike payment systems, **e-receipt services aim at more specific areas** according to the needs and the nature of situations where receipts are used, e.g., retail market.

The RTE ecosystem enables **current and short-term forecasting**. For example, it is possible to make GDP predictions by applying analytics to a large set of data from payment systems. The e-receipt service resources may contribute to improving forecasting accuracy.

Context with the European Commission's Data Strategy and SME Strategy

The European Commission's **Data Strategy**[101] stipulates that **data sharing is currently insufficient** and that most data remains unavailable for innovative reuse. It identifies several obstacles to data sharing, including legal fragmentation between EU member states, lack of trust and imbalances in market power between businesses, lack of data interoperability and common storage spaces, and tools for empowering individuals to exercise their data rights.

The Strategy aims to promote B2B and B2G data sharing through a **wide range of initiatives**, including **standards to promote interoperability, the creation of data pools, improved data portability rights**, etc. It acknowledges the need to protect and empower individuals and firms to exercise their data rights. The European Commission proposes **new ways of data governance**[102] to facilitate data sharing between sectors and Member States. This will accelerate the process of developing the BSR as an interconnected region. This will contribute to **economic growth, provide control to citizens and trust to companies**.

Similarly, the European Commission's **SME Strategy for a sustainable and digital Europe** notes[103] that SMEs are not currently fully benefitting from the data available. Many of them are not aware of the value of the data they generate and are not sufficiently protected or equipped for the upcoming data-agile economy.

It is estimated that **only 17% of SMEs have effectively integrated digital technologies into their businesses**, compared to 54% of large companies. The main reasons for this are the **uncertainty of the**

[100] Information technology & Innovation foundation report on Cross-border data flow barriers. https://itif.org/publications/2017/05/01/cross-border-data-flows-where-are-barriers-and-what-do-they-cost

[101] European Commission, European data strategy. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-data-strategy_en

[102] Ibid.

[103] European Commission: An SME Strategy for a sustainable and digital Europe, p. 4, (2020). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0103&from=EN

digital business strategy they want to adopt (if any), the problems associated with the **use of large data repositories**, and the uncertainty associated with the use of AI-based tools and applications.

Estonia is an excellent example of an incentive to reduce administrative burdens, increase efficiency and reduce the number of printed documents. The main goal of their **e-receipt initiative** within the state-owned parcel operator Omniva is to gradually reduce the use of paper receipts in Estonian trade and service sectors. It includes the creation of an E-receipt portal, which enables users to manage **their receipts and documents related to retail purchases, such as warranty letters and product manuals**, in a single web environment.

3.2 Legal aspects and recommendations for the cross-border use of e-receipts

The way to a common solution and widespread use of e-receipts in the BSR lies, besides technical implementation, also in **effective legal and regulatory ratification** at the national and EU level. Various challenges in the cross-border application of e-receipts have already been identified, such as:

- **Restrictions related to the processing of personal data**, as personalised receipts would include data that can identify a private person,
- **Other existing laws can be "behind" the ongoing technological development** or indirectly hinder the development and real deployment of e-receipts,
- **A lack of clarity on the overall vision and goals** of using e-receipts (nationally and internationally),
- **No clarity on the benefits of use**, with few incentives for enterprises and citizens to cross thresholds and increase the dialogue between governments and enterprises (together with citizens),
- **No legal and regulatory elevation of the status of e-receipts**, similar to e-invoices (no EU Directive, no approved standard and no unified data content).

In order to tackle these challenges, various **recommendations and strategies** are already being developed, such as:

- **Proper identification of the legal basis of the data** that would enable the identification of individuals,
- **Increasing the importance of clear legislation,** highlighting the standard on e-receipts and clarifying cross-border use regulations,
- Government agencies should promote the use of electronic business documents by **implementing e-orders, e-catalogues and e-receipts in their procurement processes**. Governments have been leading the way in introducing e-invoices and should continue to do so with e-receipts,

The default option should be to use e-receipts, without the need for other arrangements or agreements prior to the transaction. This shall apply to all cross-border transactions in the Nordics.

Attention shall also be paid to **data protection,** since the data processed by e-receipt solutions may include **sensitive personal data** (e.g., information on consumer habits and health) and **trade secrets**.

In the near future, the focus is likely to shift towards **mandatory use** of e-receipts. Finland has already proclaimed the goal of introducing it in 2025[104], meaning that from now on, the state would not accept any other receipts from supplier companies than electronic ones. These initiatives are the building blocks for the general, **cross-entity and cross-border use and exchange of e-receipts**.

[104] Valtiokonttori, Vähemmän puhetta ja enemmän tekoja eKuitin hyväksi, (October 14, 2019). https://www.valtiokonttori.fi/blogi/vahemman-puhetta-ja-enemman-tekoja-ekuitin-hyvaksi/

Annex I. Key recommendations – summary