COMMUNICATIONS REGULATORY AUTHORITY
OF THE REPUBLIC OF LITHUANIA

OVERVIEW 2020
OF TRUST SERVICE MARKET

03-05-2021 No. (65.4E) ND-6
Vilnius

Abbreviations

IDPC	–	Identity Documents Personalization Centre Under the Ministry of the Interior of the Republic of Lithuania
EITSET Law	–	Law of the Republic of Lithuania on Electronic Identification and Trust Services for Electronic Transactions
eIDAS Regulation	–	Regulation (EU) No. 910/2014 of 23 July 2014 of the European Parliament and the Council on Electronic Identification and Trust Services in the Internal Market, Repealing Directive 1999/93/EC
EU	–	Europe Union
ISDC	–	Information Society Development Committee
RL	–	The Republic of Lithuania
GRL	–	The Government of the Republic of Lithuania
OCAL	–	The Office of the Chief Archivist of Lithuania
Trusted list	–	A list of information on qualified trust services provided by qualified trust service providers established in Lithuania
per cent	–	percentage
Project „Connected Lithuania“	–	A project "Connected Lithuania: an Efficient, Secure and Responsible Lithuanian Digital Community" (www.prisijungusi.lt)
RRT	–	Communications Regulatory Authority of the Republic of Lithuania
SK	–	Estonian company „SK ID Solutions AS“
SSIFB	–	State Social Insurance Fund Board Under the Ministry of Social Security and Labour
SIRIP	–	State Information Resources Interoperability Platform
SECR	–	State Enterprise Centre of Registers
STI	–	State Tax Inspectorate Under the Ministry of Finance

The review was prepared by the Communications Regulatory Authority of the Republic of Lithuania.

The overview is available in PDF format on RRT websites *www.rrt.lt* and *https://www.elektroninisparasas.lt.*

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SUMMARY

CHANGES IN THE MARKET OF QUALIFIED TRUST SERVICES

At the end of 2020, the qualified trust service providers established in Lithuania and supervised by RRT provided 5 out of 9 possible types of qualified trust services. It is the largest range of services provided in one country in the entire Northern Europe and the Baltic region.

At the end of 2020, the following Lithuanian trust service providers provided qualified trust services and were supervised:

- **2 service providers issuing qualified electronic signature certificates:** IDPC and SERC.
- **2 service providers providing qualified electronic time stamp creation services:** the joint stock company *BalTstamp* and SECR.
- **1 service provider issuing qualified electronic seal certificates**: SERC.
- **1 service provider providing qualified validation services for qualified electronic signatures**: *Dokobit, UAB*[1].
- **1 service provider providing qualified validation services for qualified electronic seals**: *Dokobit, UAB*.

The following information (Table 1) is provided on the most popular trust services, i. e. the change in the number of qualified electronic signature certificates issued to the Lithuanian residents by the providers (including non-Lithuanian providers) of qualified electronic signature certificate issuance services during the last three years.

Table 1. **Dynamics of the number of qualified electronic signature certificates from the end of 2018 to the end of 2020**

Service providers	Number of valid qualified electronic signature certificates		
	at the end of 2018	at the end of 2019	at the end of 2020
IDPC	609 614	621 018	613 419
SECR	78 813	56 999	47 032
Total (Lithuanian providers):	688 427	678 017	660 451
SK	237 737	877 031	1 462 371
Total:	**926 164**	**1 555 048**	**2 122 822**

Source: RRT

The total number of valid electronic signature certificates issued by the Lithuanian trust service providers at the end of 2020 decreased by 2.6 per cent, however the total number of issued and valid qualified electronic signature certificates for the Lithuanian residents in 2020 increased by 36.5 per cent, as 1 462 371 qualified electronic signature certificates for the Lithuanian residents were made by SK, a service provider established and supervised in Estonia (Fig. 1A).

At the end of 2020, out of the total number of valid qualified electronic signature certificates issued to the Lithuanian residents (2 122 822), number of valid qualified electronic signature certificates with the Smart-ID application amounted to 1 139 766 (54 per cent), with identity cards, civil servant certificates and internal service system official certificates - 613 419 (29 per cent), with SIM cards - 325 802 (15 per cent) and with other smart cards or USB cryptographic keys - 43 835 (2 per cent).

[1] Order No. (1.9E) 1V-513 of RRT Director of 12 May 2020 “On Granting the Status of a Qualified Trust Service Provider to Dokobit, UAB and Its Entry on the Trusted List”.

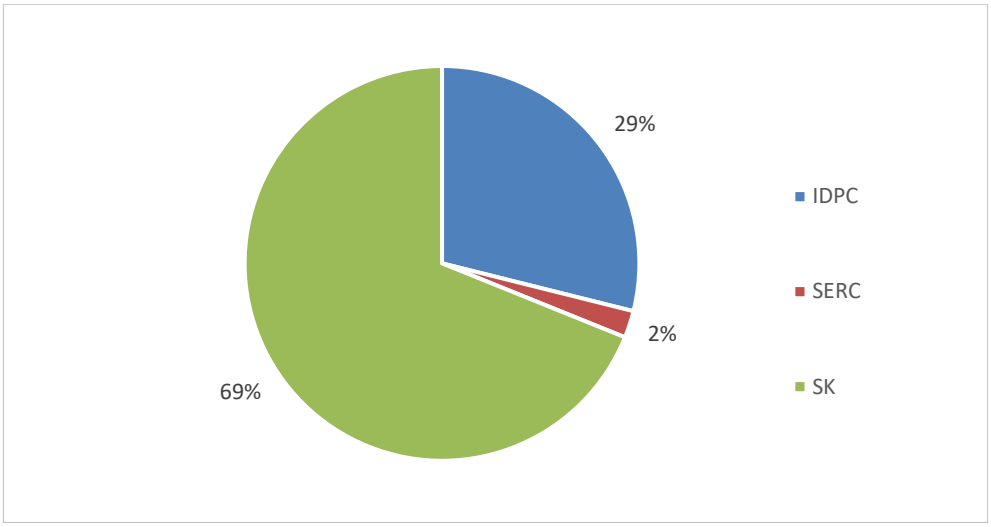


Fig. 1A. **Distribution of valid qualified electronic signature certificates issued to the Lithuanian residents by service providers at the end of 2020 (percentage)**

Source: RRT

The largest share of the market for electronic signature certificates in Lithuania (almost 69 per cent of all qualified electronic signature certificates, or 99.8 per cent of certificates for signing with mobile devices) was occupied by the trust service provider SK, established in Estonia, not in Lithuania. Considering the provisions of the Article 17 of the eIDAS Regulation, this service provider is supervised by the Estonian supervisory authority, therefore RRT cannot apply supervisory actions due to the activities of this service provider.

By the way, although the number of qualified electronic signature certificates issued by the Lithuanian service providers decreased in 2020, however, the other qualified trust services are increasingly provided by the Lithuanian service providers every year. The volume of one of the most popular services creation of qualified electronic time stamps – increased more than 1.5 times in 2020 compared to 2019. In 2020 Dokobit, UAB started providing validation services for qualified electronic signatures and qualified electronic seals and it performed 27 410 verifications of qualified electronic signatures and qualified electronic seal certificates that year. With the growing importance of digital transactions, a qualified electronic seal should become an increasingly attractive solution for businesses to validate online transactions.

USE OF QUALIFIED TRUST SERVICES

With the relocation of many different activities to virtual space during the pandemic, the use of electronic signatures has become very relevant and its use has grown rapidly. Qualified electronic signatures are mainly used in the public sector for the provision and receipt of electronic services. According to the data of electronic service providers, the number of used qualified electronic signature certificates increased in most major electronic service systems, and the number of electronic documents signed with a qualified electronic signature increased in all major electronic service systems. Number of qualified electronic signatures created in 2020 also increased significantly in all electronic document creation, signing and verification systems (for more details, see the section headed *Use of Qualified Electronic Signature Certificates* (*Electronic Service Providers*).

The results[2] of a representative survey of the Lithuanian population carried out by RRT in February - March, 2021 showed that in 2020 more than a third of the Lithuanian population used an

[2] The survey was conducted by the market and public opinion research company *Rotelas*. The survey was conducted from February 18 to March 7, 2021 using the CATI (telephone survey) method. 1 036 Lithuanian residents over the age of 18 were questioned. The error of results does not exceed 3.1 percentage points

electronic signature, and the use of a qualified electronic signature increased almost 6 times in the last six years. According to the previous surveys, in 2014 only 6 per cent of the surveyed population used a qualified electronic signature, in 2017 - 14 per cent, in 2018 - 18 per cent, in 2019 - 23 per cent and in 2020 - already 35 per cent.

In 2020, compared to 2019, the largest increase was in the use of qualified electronic signatures among young people under 30 and among people over 50 (even by 14 percentage points each). The Lithuanian residents who in 2020 used a qualified electronic signature, mostly (74 per cent) used it to sign banking transactions in electronic banking systems, less often - to perform operations in State Social Insurance Fund Board (SSIFB) or information systems of other state institutions (62 per cent), to sign working electronic documents (46 per cent) and personal electronic documents (44 per cent).

The Lithuanian residents who in 2020 used a qualified electronic signature, mostly signed using the *Smart-ID* mobile application (more than every second user - 51 per cent of respondents) and SIM card (almost every second user - 48 per cent of respondents). Less often they used an identity card (13 per cent of respondents) and another smart card or USB cryptographic key (9 per cent of respondents) to sign.

Although, according to the survey results, the use of qualified electronic signature certificates is growing in Lithuania, many Lithuanians still do not use a qualified electronic signature (61 per cent of all respondents) and some do not know about it at all (26 per cent of respondents, not using an electronic signature). Also, a relatively large part of the Lithuanian population (54 per cent) is still unaware that identity cards can be used for signing with a qualified electronic signature.

The two main assumptions identified by the Lithuanian population that would encourage them to start using a qualified electronic signature are the same as in 2019:

1. if there was more information on the practical benefits of such a signature (27 per cent);
2. if there was more information on the reliability and legal validity of the electronic signature (25 per cent).

Therefore, in order to encourage the Lithuanian population to use trust services, the main focus must continue to be on the supervision of the trust service providers to ensure the provision of compliant to all requirements secure and reliable services, as well as on the promotion of electronic signature benefits and trust services, especially among the smaller income earners or the elderly. It is expedient to publicize as widely as possible the possibility of signing with an electronic signature using means issued by the state - identity cards, especially among the people on lower incomes or the elderly and the rural population.

It is expected that the Lithuanian population, which lacks information about the electronic signature and the possibilities of its use, will be encouraged by the activities carried out under the project “Connected Lithuania”, which is implemented from 2019 and will be continued in 2021 by RRT, together with the ISDC, the association "Langas į ateitį" (*Window to the Future*), Martynas Mažvydas National Library of Lithuania and the Ministry of the Interior of the Republic of Lithuania, and will start using the qualified electronic signature or use it more often and for more diverse purposes.

TRUST SERVICES AND SUPERVISION OF SERVICE PROVIDERS

Trust Services and their Regulation

Since July 1st, 2016 in Lithuania, as in the other EU countries, the eIDAS Regulation has been in force. It defines regulated and supervised services: electronic signature, electronic seal and website authentication certificates, and electronic time stamp creation, electronic signature and electronic seal validation, electronic signature and electronic seal long-term protection and electronic registered delivery services. Together, these services are referred to as **trust services** in accordance with Article 3 (16) of the eIDAS Regulation.

On April 26th, 2018 the Law on Electronic Identification and Trust Services for Electronic Transactions (EITSET) of the Republic of Lithuania was adopted, the purpose of which is to create a legal basis for the effective operation of the electronic identification and trust service market in the Republic of Lithuania in order to protect market participants' interests. In order to help market participants to implement the provisions of the eIDAS Regulation and the EITSET Law, RRT prepared a description[3] of the procedure for granting the status of qualified trust service providers and qualified trust services and their entry on the national trusted list and for submission of reports on the activities of qualified trust service providers, as well as a description[4] of the procedure for verification of personal identity and additional specific features by issuing qualified electronic signature, electronic seal, website authentication certificates and a description[5] of the procedure for submitting reports on violations of security and (or) integrity of trust services.

In response to the review of the eIDAS Regulation carried out by the European Commission and assessing the experience already gained in the supervision of trust services, in 2020 the RRT experts prepared proposals for possible improvements to the eIDAS Regulation, which were submitted to the Forum[6] of European Supervisory Authorities for Trust Service Providers (FESA). The Expert Group of European Union Agency for Cybersecurity (ENISA) of the Article 19 was also provided with the suggestions for possible improvements to the eIDAS Regulation regarding the security requirements for the trust service providers. This is expected to make a useful contribution to improving the EU regulation in this area.

Supervision of Trust Service Providers

Implementing the provisions of the eIDAS Regulation, the Government of the Republic of Lithuania approved the Resolution No.144 of 18 February 2016 "Regarding the Appointment of the Trust Service Supervision Authority and the Body Responsible for Compiling, Maintaining and Publishing a National Trusted List", where RRT was designated as the trust service supervision authority and the body responsible for compiling, maintaining and publishing the trusted list.

RRT, as set out in the Article 17 of the eIDAS Regulation, supervises the qualified and non-qualified trust service providers established in Lithuania in order to ensure that the trust service

[3] Order No. 1V-588 of RRT Director of 21 June 2018 "On the approval of the specification of the procedure for granting status of qualified trust service providers and qualified trust services and incorporation thereof in the national trusted list and provision of activity reports of qualified trust service providers

[4] Order No. 1V-1055 of RRT Director of 26 October 2018 "On Approval of the Description of the Procedure for Verification of Personal Identity and Additional Specific Features by Issuing Qualified Electronic Signature, Electronic Seal, Website Identification Certificates".

[5] Order No. 1V-594 of RRT Director of 4 June 2019 "On Approval of the Description of the Procedure for Reporting on Violations of the Security and (or) Integrity of Trust Services".

[6] The purpose of FESA is to promote cooperation between supervisory authorities of trust service providers, to coordinate their activities and to develop common positions. In carrying out its activities, FESA cooperates with the European Commission, ENISA, the standardization organizations (ETSI and CEN) and provides them with its suggestions on how to ensure the smooth implementation of the eIDAS Regulation.

providers and the trust services they provide comply with the requirements set out in the eIDAS Regulation.

In 2020 RRT assessed the notification of *Dokobit, UAB* on the intended provision of qualified trust services and other activity documents and, taking into account that the activity processes of this service provider were adjusted in accordance with RRT comments, confirmed that the company and its trust services comply with eIDAS Regulations. By the order of the Director of RRT, a decision was made to grant a qualified status to *Dokobit, UAB* and its electronic signature and electronic seal validation services.

In 2020 RRT also assessed the changes in the provision of two qualified trust services (on the development of qualified electronic time stamps of SERC, and on the creation of an electronic resident identification certificate and a qualified electronic signature certificate of IDPC) and, after the service providers adjusted the activity processes according to the RRT comments, approved that these changes to the provision of qualified trust services comply with the requirements of the eIDAS Regulation.

While performing the supervision of the qualified trust service providers, in 2020 RRT addressed the issues related to the security of electronic signature creation devices distributed by the trust service providers and the reliability of cryptographic algorithms. After reviewing electronic signature creation devices, RRT analyzed the information received from the trust service providers and devices certification bodies, evaluated the experience of the other EU countries and submitted proposals to the European Commission for updating the list of qualified electronic signature creation devices prepared and maintained by it. RRT also compiled, maintained and published a trusted list, and provided consultations to the interested parties on the issues of the trusted list. In 2020 the RRT specialists provided consultations 136 times to individuals and legal entities and methodological assistance to the trust service providers on the development of electronic time stamps, use of electronic signature and other issues related to trust services.

RRT actively participates in the activities of the international organizations FESA and ENISA, cooperates with the supervisory authorities of trust services of the other countries and the European Commission. The representative of RRT holds the position of a member (secretary) of the FESA Board and in 2020 organized two meetings for the FESA members, the first of which took place in Luxembourg. During this meeting, Slovenia was granted the status of a member of FESA, the main focus was on the revision of the eIDAS Regulation, the formation of the FESA position and its presentation to the representatives of the European Commission. During the second meeting, held remotely, the following issues were discussed: the revision of the eIDAS Regulation (with the participation of a representative of the European Commission), the impact of Brexit on the British membership of FESA and mutual recognition of trust services, the standardization of trust services (with the participation of an ETSI representative), the main aspects of ENISA activity in the field of trust services (with the participation of an ENISA representative) and other ongoing issues of the supervisory authorities (provision of signing services, requirements for advanced electronic signatures, remote person identification). In 2020 RRT also actively participated in remote meetings of the working group set out by Article 19 of the eIDAS Regulation organized by ENISA: during periodic meetings of the working group security incidents in the Lithuanian trust services market were presented, and during a meeting of the working group on shadow attacks related to electronic signatures in *pdf* format documents the communication plan was discussed with electronic signature validation service providers. This working group was also provided with technical information related to the aspects such as the use of the SHA-1 algorithm in the formation of a qualified electronic signature and with the identification methods used by qualified trust service providers to issue a qualified certificate.

In order to increase the confidence and interest of the Lithuanian population in trust services and the use of a qualified electronic signature, in 2020 RRT together with the association INFOBALT

organized 2 remote events for the representatives of the Lithuanian businesses and institutions on the issues of trust services and eIDAS Regulation. It is planned to organize such events in 2021 as well.

Contributing to the promotion of the use of trust services, RRT created and administers a thematic website ***https://www.elektroninisparasas.lt.*** This website publishes all information about trust services in Lithuania and their maintenance. Here you can find:

- the information on the qualified trust service providers supervised in Lithuania and the qualified trust services provided by them,
- a Lithuanian trusted list,
- trusted lists published by the EU Member States
- a tool for verifying electronic signatures, electronic seals, website authentication certificates and electronic time stamps *https://tikrinti.elektroninisparasas.lt*,
- instructions for signing by an electronic signature,
- technical standards for trust services,
- EU and Lithuanian legislation, answers to frequently asked questions,
- details of RRT contact persons,
- distance training system *https://mokykis.elektroninisparasas.lt* (hereinafter - training system).

Those who start or are already using electronic signatures in the training system can find useful information about electronic signatures, electronic stamps and practical ways of using them, as well as the detailed instructions on how to sign an electronic document with a certain software. In this system, it is possible to take a test in order to test the acquired knowledge, and to participate in the discussions of the distance learning system on topical issues of electronic signature, to receive answers from the RRT specialists. In 2019 the platform of this training system was updated and in 2020 the content of this system was renewed, as well.

RRT also provides a tool for verifying electronic signatures, electronic seals, website authentication certificates and electronic time stamps *https://tikrinti.elektroninisparasas.lt*, which allows the current and future users of trust services and the providers of these services to obtain structured and detailed information about the certificate uploaded to the site. Consumer interest in this tool is growing every year: in 2018 this tool was used 1136 times, in 2019 - 1347 times, and in 2020 - 1434 times. In 2020 the functionality of the verification tool was expanded and an additional module was installed.

The website *https://www.elektroninisparasas.lt* also publishes a national trusted list - a list for automatic processing, which provides information about the Lithuanian qualified trust service providers and the services they provide.

In 2019 the website was used by 7589 users, and in 2020 this number amounted to 14 050. The number of users of this site in 2020, compared to 2019, increased by 85 per cent. This was due to the increased volume of the electronically provided services during the COVID-19 pandemic and growing interest of the users of these services in electronic signatures and other trust services. In 2020 modernization work of the website *https://www.elektroninisparasas.lt* was performed, therefore the users now are able to access information of interest to them faster and easier. In this website (as well as the website *www.rrt.lt*,administered by RRT) training material created in 2019 on electronic signatures and trust services continued to be advertised intensively with the purpose to reach the widest possible range of the Internet users. During the implementation of the project “Connected Lithuania”, the content of this website was supplemented with 2 educational videos and 4 instructions on the topic of electronic signature. In addition, by implementing other activities of this project in the field of trust services, in 2019 50 thousand smart card readers were bought and presented to the Lithuanian libraries so that the partners of this project would distribute them to potential users of electronic signature during the thematic trainings, thus encouraging as many

residents as possible to use electronic signatures. The RRT specialists also contributed to the activities of the other partners of this project, aimed at informing the Lithuanian population about trust services, electronic signature and safe use of the Internet.

In 2020 RRT participated in the *GovTech Lab* series of challenges organized by the Science, Innovation and Technology Agency. *GovTech Lab* aims to encourage the development and application of innovative technological solutions in the public sector. In order to find a solution that would help partially automate processes of supervision of the trust service providers, RRT raised the challenge “How to Perform the Supervision of Trust Service Providers in an Innovative Way?”. The team of Novian Systems, UAB worked with this challenge raised by RRT. In 2021 preparations are being made to test the possibilities of applying the results of the challenge to RRT.

CHANGES IN THE MARKET OF QUALIFIED TRUST SERVICES

At the end of 2020, the qualified trust service providers established in Lithuania and supervised by RRT provided 5 out of 9 possible types of qualified trust services. It is the largest range of services provided in one country in the entire Northern Europe and the Baltic region.

At the end of 2020, the following Lithuanian trust service providers provided trust services and were supervised:

- **2 service providers issuing qualified electronic signature certificates:** IDPC and SERC.
- **2 service providers providing qualified electronic time stamp creation services:** the joint stock company *BalTstamp* and SERC.
- **1 service provider issuing qualified electronic** seal certificates: SERC.
- **1 service provider providing qualified validation services for qualified electronic** signatures: *Dokobit, UAB*.
- **1 service provider providing qualified validation services for qualified** electronic seals: *Dokobit, UAB*.

The following information (Fig. 1) is provided on the most popular trust services - i.e., qualified electronic signature certificate creation services - the change in the number of qualified electronic signature certificates issued by the Lithuanian providers during the last three years .

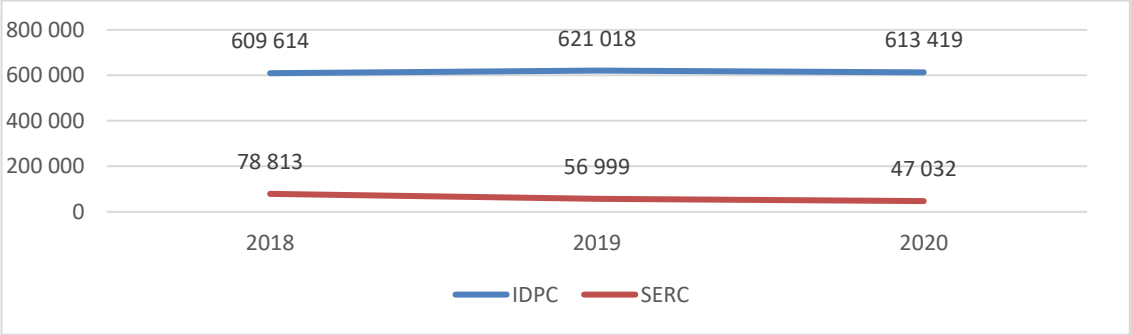


Fig. 1. **Dynamics of the number of qualified electronic signature certificates, issued by the Lithuanian qualified trust service providers from the end of 2018 to the end of 2020**

Source: RRT

At the end of 2020 IDPC created 613 419 qualified electronic signature certificates valid at that time: 581 294 valid citizen's certificates, that were entered on identity cards, 23 143 certificates, that were entered on civil service certificates and 8 982 certificates that were entered on certificates of the officers of internal service system.

At the end of 2020 SERC created 47 032 qualified electronic signature certificates valid at that time. Compared to previous years, this number is declining every year. In Lithuania, qualified electronic signature certificates can be purchased together with SIM cards from mobile service providers. It should be noted that at the end of 2017, the number of qualified electronic signature certificates issued by SERC increased. In spite of this, in 2018 the major Lithuanian mobile service providers, acting as intermediaries in issuing qualified electronic signature certificates, decided to change the provider of these services from SERC to SK. Therefore, from 2018 the number of qualified electronic signature certificates issued by SERC was significantly decreasing every year, and in 2020 even 99 per cent of the market of qualified electronic signature certificates, issued to the Lithuanian residents together with SIM cards, was taken over by the Estonian service provider SK (in 2019 - 98.4 per cent).

Summarizing the data of 2020 on valid qualified electronic signature certificates received from IDPC and SERC and the data available to RRT from the previous year, it is seen that, compared to 2019, the number of valid electronic signature certificates issued by the Lithuanian trust service providers in Lithuania in 2020 decreased by 2.6 per cent at the end of the year (in 2019 678 017 valid qualified electronic signature certificates were issued, and in 2020 - 660 451).

However, the total number of qualified electronic signature certificates issued to the Lithuanian residents and valid at the end of 2020 increased by 36.5 per cent (1 555 048 certificates were valid at the end of 2019, and 2 122 822 at the end of 2020), as even 1 462 371 qualified electronic signature certificates for the Lithuanian residents were issued by SK, a service provider established and supervised in Estonia (Table 2, Fig. 2).

Table 2. **Dynamics of the number of qualified electronic signature certificates from the end of 2018 to the end of 2020**

Service providers	Number of valid qualified electronic signature certificates		
	at the end of 2018	at the end of 2019	at the end of 2020
IDPC	609 614	621 018	613 419
SECR	78 813	56 999	47 032
of which: with SIM cards	32 575	4 236	3 197
with smart cards or USB cryptographic keys	46 238	52 763	43 835
Total (Lithuanian providers):	**688 427**	**678 017**	**660 451**
SK	237 737	877 031	1 462 371
of which: with SIM cards	163 638	258 701	322 605
with *Smart-ID* application	74 099	618 330	1 139 766
Total:	**926 164**	**1 555 048**	**2 122 822**

Source: RRT

The number of qualified electronic signature certificates issued by SK to the Lithuanian residents is significantly increasing every year. At the end of 2020, the certificates issued by SK accounted for as much as 69 per cent of all valid qualified electronic signature certificates issued to the residents of Lithuania (for comparison: in 2019 - 56 per cent, in 2018 - 26 per cent). In 2020 this Estonian company continued to issue qualified electronic signature certificates for individuals along with SIM cards and the Smart-ID application.

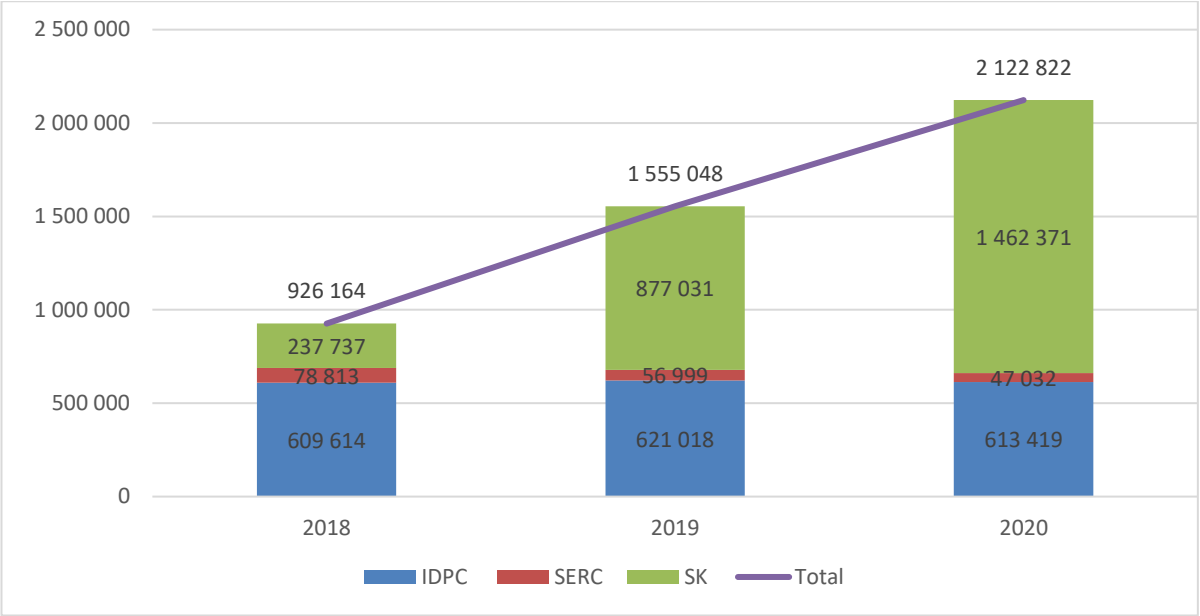


Fig. 2. **Dynamics of the total number of valid qualified electronic signature certificates from the end of 2018 to the end of 2020**

Source: RRT

At the end of 2020 1 139 766 certificates, out of the total number of valid qualified electronic signature certificates issued to the population of Lithuania (2 122 822), were issued with the Smart-ID application, 613 419 – with identity cards, civil service certificates and the certificates of the officers of internal service system, 325 802 – with SIM cards, 43 835 – with other smart cards or USB cryptographic keys (Fig. 3).

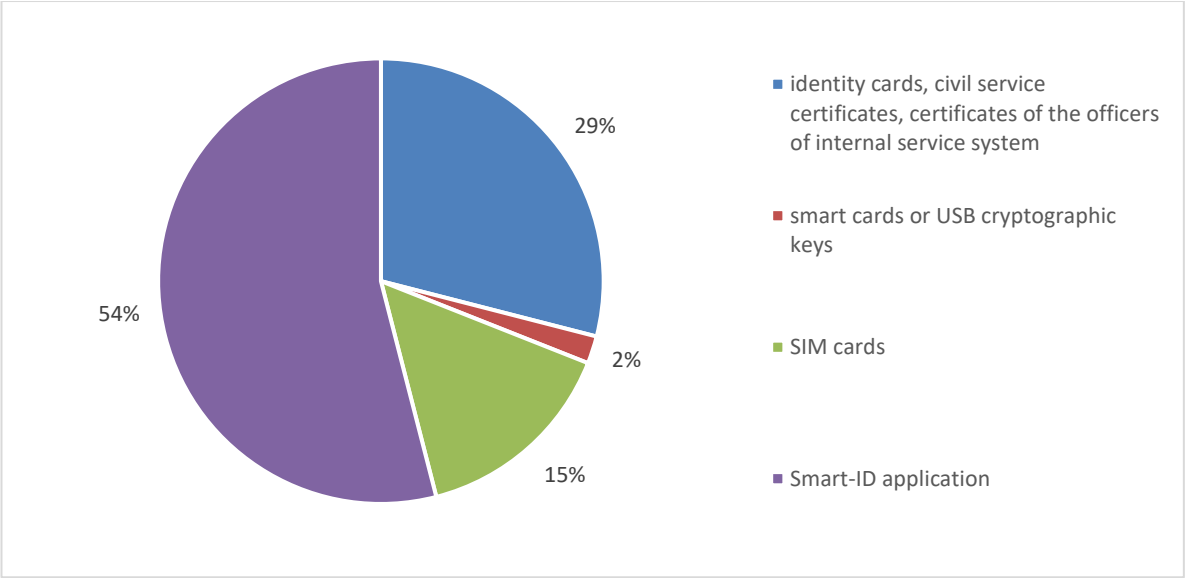


Fig. 3. **Distribution of valid qualified electronic signature certificates issued to the Lithuanian residents by the type of media at the end of 2020 (percentage)**

Source: RRT

In 2020 the number of mobile electronic signature users (using qualified electronic signature certificates issued together with SIM cards and with the Smart-ID application) continued to grow the fastest (Fig. 4).

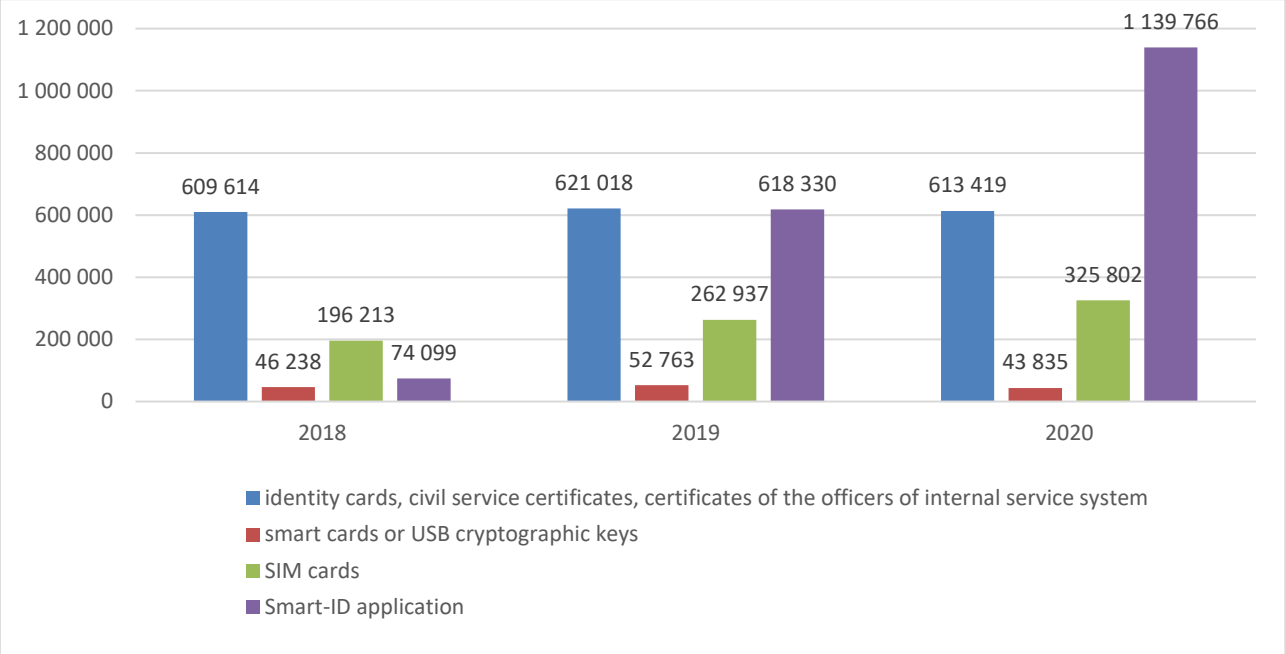


Fig. 4. **Dynamics of distribution of valid qualified electronic signature certificates issued to the Lithuanian residents by data carrier type from the end of 2018 to the end of 2020**

Source: RRT

The following information (Table 3) is provided on the dynamics of the number of qualified electronic signature certificates issued together with SIM cards and with the Smart-ID application. During 2020 the total number of mobile electronic signature users increased by more than 66 per cent - a total of 1 465 568 users used mobile electronic signatures (881 267 at the end of 2019 and 270 312 at the end of 2018). The number of certificates issued together with SIM cards increased by almost 24 per cent, and with the Smart-ID application – by more than 84 per cent.

Table 3. **Number of qualified electronic signature certificates issued together with SIM cards and Smart-ID application from the end of 2018 to the end of 2020**

	at the end of 2018	at the end of 2019	at the end of 2020
SIM cards	196 213	262 937	325 802
Smart-ID	74 099	618 330	1 139 766
Total:	270 312	881 267	1 465 568

Source: RRT

In 2020 total 325 802 qualified electronic signature certificates were issued together with SIM cards, of which 3 197 were issued by SERC and 322 605 by SK. In addition, SK issued 1 139 766 qualified electronic signature certificates with the Smart-ID application. Thus, of all the means of signing with a qualified electronic signature issued to the residents of Lithuania, the largest part (69 per cent) consists of the means that the user has in his mobile / smart device. Most of such measures (99.8 per cent) were issued to the Lithuanian residents by SK and only a very small part (0.2 per cent) by SERC.

In summary, it should be noted that at the end of 2020, the largest share of the electronic signature certificate market in Lithuania (68.9 per cent of all qualified electronic signature certificates, or 99.8 per cent of certificates for signing with mobile devices) was occupied by SK, a trust service provider established in Estonia, not in Lithuania. Although the services of this service provider are also provided to the Lithuanian population, in accordance with the provisions of Article 17 of the eIDAS Regulation, this service provider is supervised by the Estonian supervisory authority, therefore RRT cannot apply supervisory actions due to the activities of this service provider.

Although the number of qualified electronic signature certificates issued by the Lithuanian service providers decreased in 2020, however, the other qualified trust services are increasingly provided by the Lithuanian service providers every year. During 2020, compared to 2019, the volume of qualified electronic time stamp creation services increased more than 1.5 times.

Qualified electronic time stamp creation services in 2020 were provided in Lithuania by 2 providers: the joint stock company BalTstamp and SECR. In 2020 a total of 91 980 297 qualified electronic time stamps were created (in 2019 - 59 611 852 and in 2018 - 35 098 008). The joint stock company BalTstamp created 26 155 000 (in 2019 - 37 108 280, in 2018 - 35 000 000), and SERC - 65 825 297 (in 2019 - 22 503 572, in 2018 - 98 008) qualified electronic time stamps (Fig. 4A).

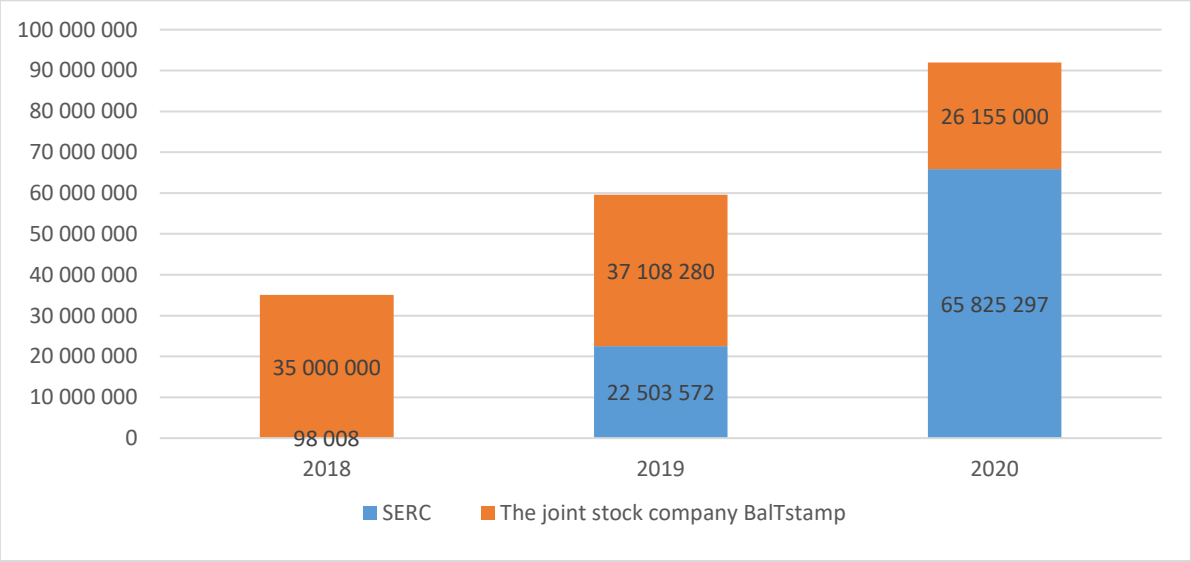


Fig. 4A. **Qualified electronic time stamp creation services, provided by Lithuanian qualified trust service providers in 2018–2020**

Source: RRT

SERC has been granted the right to issue qualified electronic seal certificates upon the status of a qualified trust service provider issuing qualified electronic seal certificates. At the end of 2020 SERC had issued two qualified electronic seal certificates (in 2019 - one qualified electronic seal certificate).

In 2020 Dokobit, UAB started providing validation services for qualified electronic signatures and qualified electronic seals and verified 27 410 qualified electronic signatures and qualified electronic seal certificates that year.

USE OF QUALIFIED TRUST SERVICES

This review discusses in detail the use of qualified electronic signature certificates, as well as provides a brief overview of the services for the creation of qualified electronic seal certificates, the creation of qualified electronic time stamps, the validation of qualified electronic signatures and qualified electronic seals (the remaining 4 qualified trust services defined in the eIDAS Regulation are not yet provided by the Lithuanian service providers).

It should be noted that, for technical reasons, a service provider does not usually have the opportunity to determine how many people use the available qualified electronic signature certificates, therefore the data on the practical use of electronic signatures can be obtained only by conducting surveys of the electronic service providers and residents.

Use of Qualified Electronic Signature Certificates (Electronic Service Providers)

E-Government Gateway

ISDC manages the SIRIP platform, which ensures the possibility to order public and administrative electronic services provided by the Lithuanian state and municipal institutions through the Electronic Government Gateway portal *https://www.epaslaugos.lt.* According to the data provided by the ISDC in 2020 2 882 orders for electronic services were formed on the SIRIP platform and signed with a qualified electronic signature. Compared to 2019, when the total number of orders reached 2 475, the number of orders signed with a qualified electronic signature increased by 16 per cent (Fig. 5).

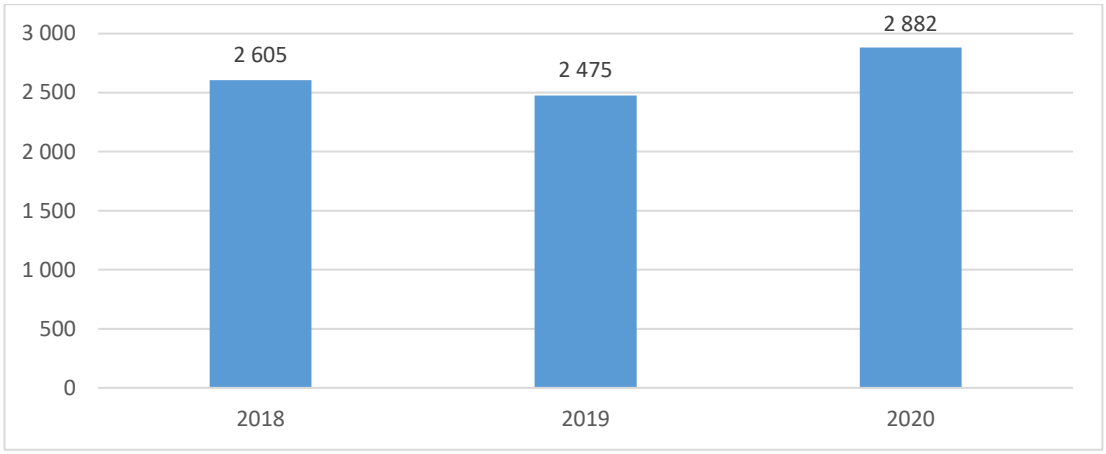


Fig. 5. **Dynamics of the number of electronic service orders formed on the platform SIRIP and signed with a qualified electronic signature from the end of 2018 to the end of 2020**

Source: RRT

The platform SIRIP provides the possibility to sign electronic documents with a qualified electronic signature and without ordering electronic services, as well as to view the received documents signed with an electronic signature. On this this platform more and more electronic signatures are created every year, the number of electronic document verifications increases as well. The number of such verifications in 2020 was almost 9.5 times higher than in 2019, and more than 15 times higher than in 2018 (Fig. 6).

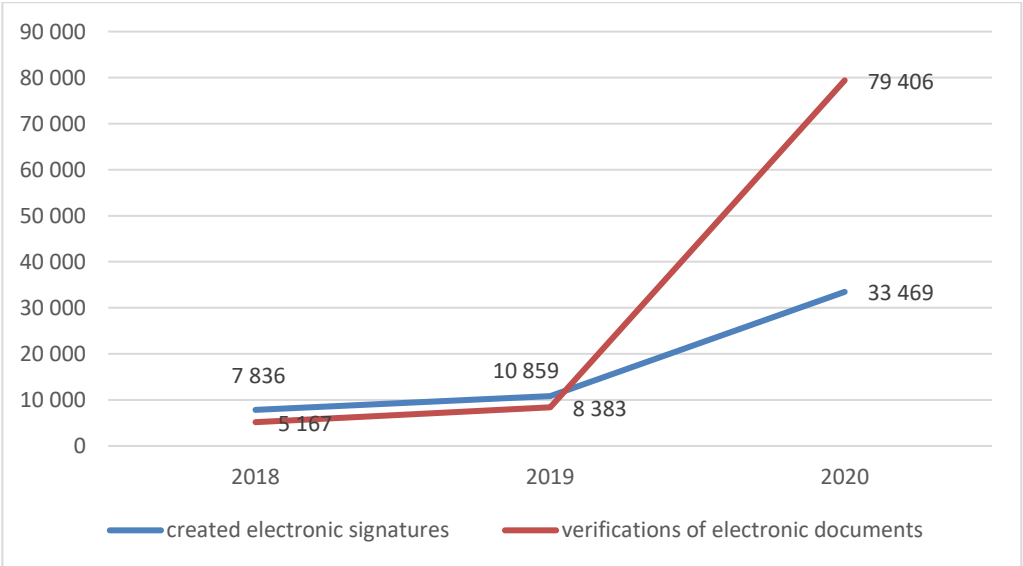


Fig. 6. **Dynamics of the number of qualified electronic signatures created on the SIRIP platform and verifications of electronic documents performed from the end of 2018 to the end of 2020**

Source: RRT

SSIFB, SERC and STI

In order to assess the changes in the use of electronic signatures in three organizations whose electronic service systems are most widely used by the electronic signature users - SSIFB, SERC and STI - RRT, as in previous years, requested from these organizations statistical information on the use of qualified electronic signature certificates in their electronic service systems.

According to the SSIFB data, the number of unique qualified electronic signature certificates used in its electronic service systems slightly decreased in 2020 compared to 2019 (Fig. 7), but the number of signed electronic documents increased by almost 12 per cent (Fig. 8).

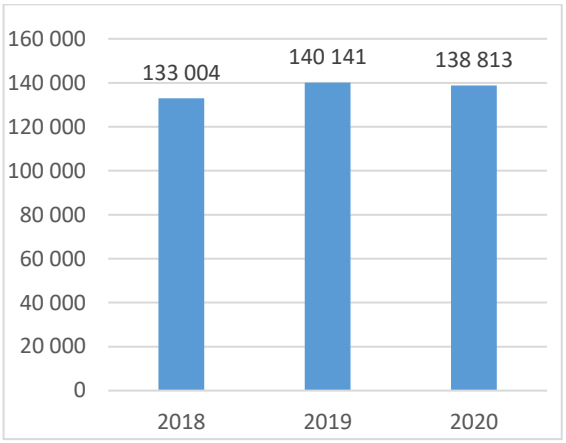


Fig. 7. **Dynamics of the number of qualified certificates used in SSIFB electronic service systems in 2018–2020**
Source: SSIFB

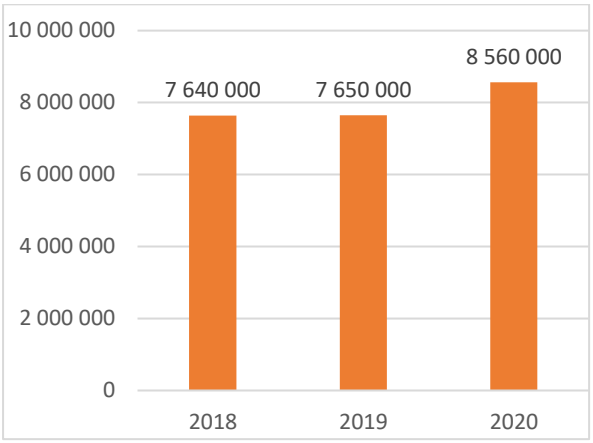


Fig. 8. **Dynamics of the number of electronic documents signed in SSIFB electronic service systems in 2018–2020**
Source: SSIFB

According to the data provided by SERC, during 2018-2020 in the electronic service systems of SERC, the number of unique qualified electronic signature certificates used for signing documents (Fig. 9) and signed electronic documents (Fig. 10) increased. In 2020, compared to 2019, the number of unique qualified electronic signature certificates increased by 21 per cent, and the number of signed electronic documents - even by 41 per cent.

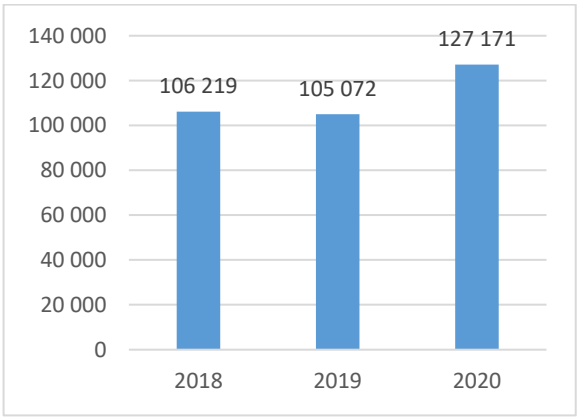


Fig. 9. **Dynamics of the number of qualified certificates used in SERC electronic service systems in 2018–2020**
Source: SERC

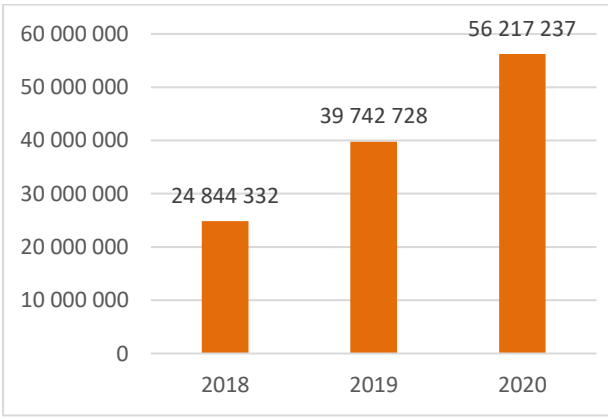


Fig. 10. **Dynamics of the number of electronic documents signed in SERC electronic service systems in 2018–2020**
Source: SERC

According to the STI data, during 2018-2020 the number of electronic documents created and electronically signed in its information systems (EDS and WODMS) has been growing every year: in 2020, compared to 2019, it increased by almost 27 per cent, and compared to 2018 - even 3.6 times (Fig. 11).

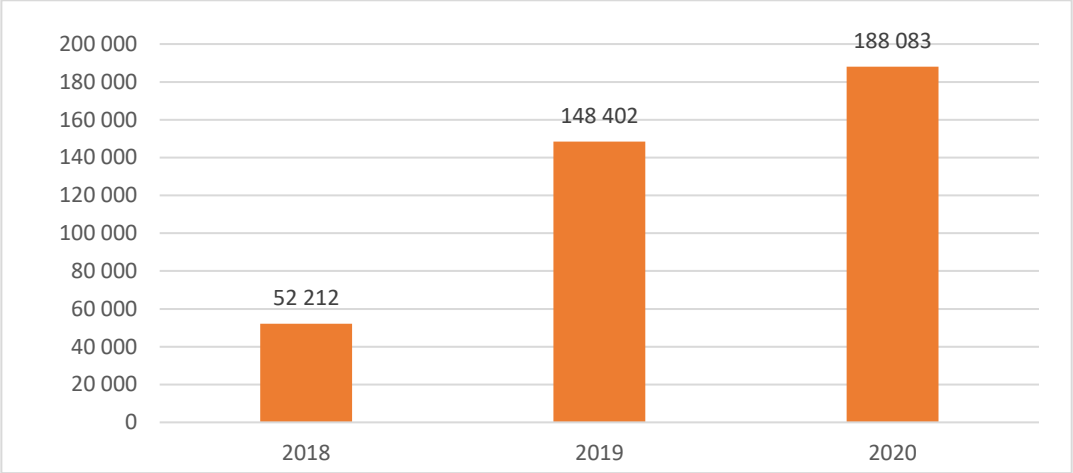


Fig. 11. **Dynamics of the number of electronically signed electronic documents in the STI information systems during 2018–2020**

Source: STI

OCAL, UAB MIT-SOFT and SERC GoSign

In order to assess the activity of using electronic signatures on a larger scale (not limited to public sector systems), RRT asked the administrators of electronic document signing systems to provide statistical information on the use of qualified electronic signatures in the electronic document creation, signing and verification systems administered by them.

Using the electronic document creation and verification tool of ADOC V1.0 specification operated by the OCAL 220 353 electronic signatures were created in 2020, 125 403 - in 2019, 82 055 - in 2018 (Fig. 12). In 2020 the number of qualified electronic signatures created by the tool operated by the OCAL was 76 per cent higher than in 2019 and almost 2.7 times higher than in 2018.

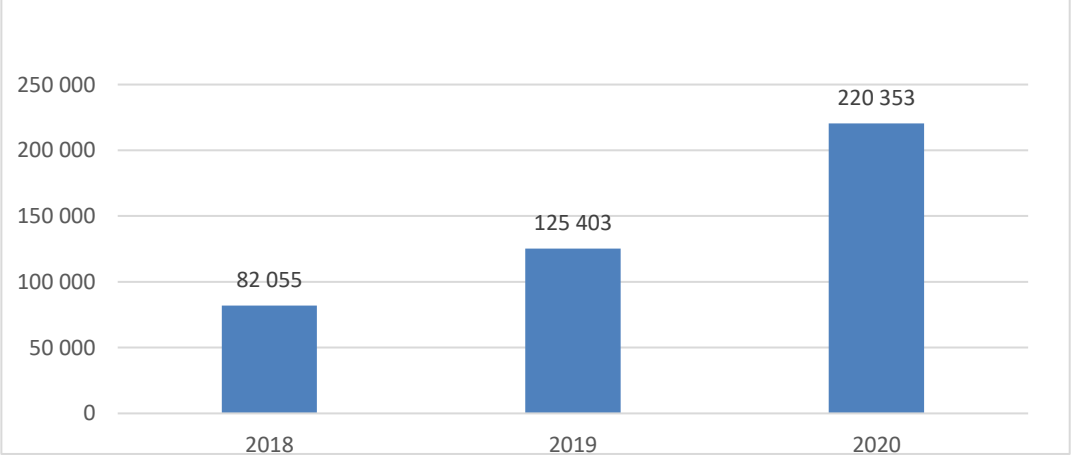


Fig. 12. **Dynamics of the number of qualified electronic signatures created by the measure managed by the OCAL in 2018–2020**

Source: OCAL

In the electronic document signing systems administered by UAB MIT-SOFT 14 463 527 qualified electronic signatures were created in 2020, 9 838 977 – in 2019, 10 857 536 – in 2018 (Fig. 13). The number of qualified electronic signatures created in 2020, compared to 2019, increased by 47 per cent.

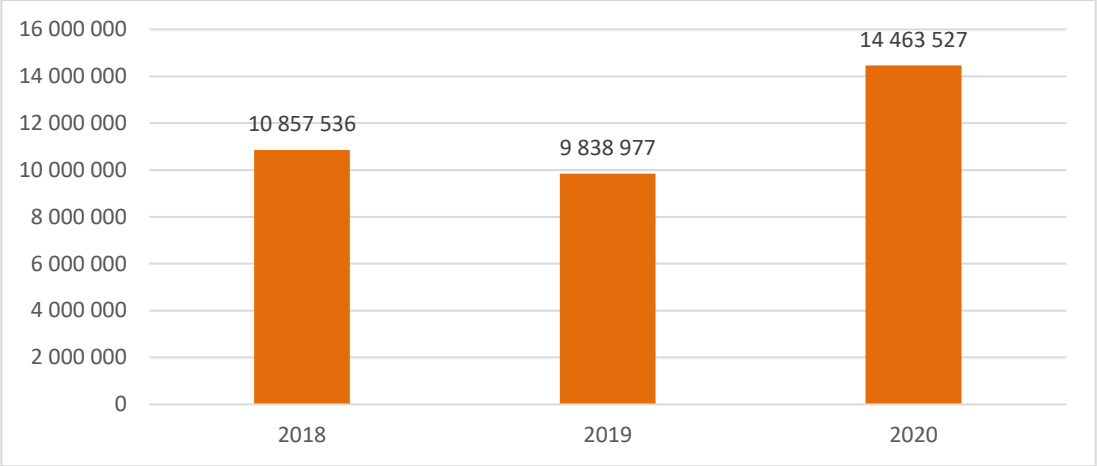


Fig. 13. **Dynamics of the number of qualified electronic signatures created in the electronic document signing systems administered by** UAB MIT-SOFT **in 2018–2020**

Source: *UAB MIT-SOFT*

In 2020, compared to 2019, the number of unique persons[7] signing with a qualified electronic signature in the *GoSign* electronic document creation, signing and verification system administered by SERC increased more than 2.5 times (Fig. 14), and the number of electronic documents signed with a qualified electronic signature increased more than 3.3 times (Fig. 15).

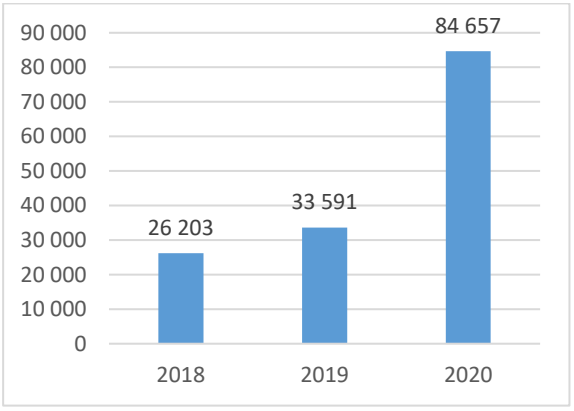


Fig. 14. **Dynamics of the number of people who signed a qualified electronic signature in the *GoSign* system in 2018–2020**

Source: SERC

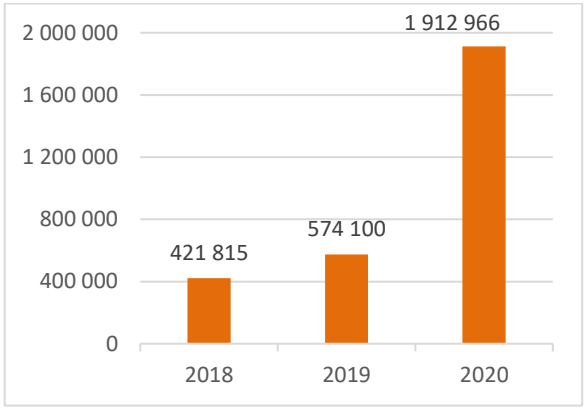


Fig. 15. **Dynamics of the number of qualified electronic signatures created in the *GoSign* system in 2018–2020**

Source: SERC

Summarizing the data received from the electronic service providers, it can be seen that in 2020 the use of qualified electronic signature certificates increased in most major electronic service systems, and the number of electronic documents signed with a qualified electronic signature increased in all major electronic service systems. The number of qualified electronic signatures created in 2020 increased significantly in all electronic document creation, signing and verification systems. With the relocation of many different activities to cyberspace during the pandemic, the use of electronic signatures has become very relevant and its use has grown rapidly.

[7] Unique person - a system user who has signed a qualified electronic signature certificate and is, distinguished by the personal code contained in the electronic signature certificate.

Use of Qualified Electronic Signature Certificates (Population Survey)

As the representative survey[8] of the Lithuanian population, which was conducted in February-March 2021 at the request of RRT, showed, 35 per cent of the adult population of Lithuania in 2020 used a qualified electronic signature (for comparison: in 2019 – 23 per cent, in 2018 – 18 per cent, and in 2017 – 14 per cent of the population). During 2020 the share of those who were using a qualified electronic signature increased by as much as 12 percentage points. According to the study of 2014 commissioned by ISDC on the use of electronic signatures of the Lithuanian residents, in 2014 only 6 per cent of the Lithuanian population used a qualified electronic signature (Fig. 16).

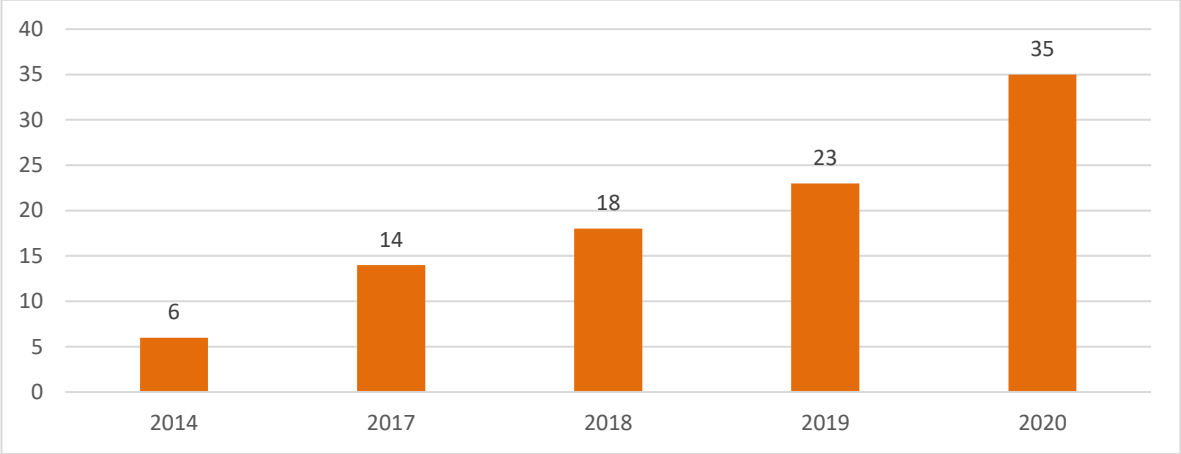


Fig. 16. **Dynamics of the number (percentage) of the use of qualified electronic signatures by the Lithuanian population in 2014, 2017–2020**
Source: RRT

Thus, the use of a qualified electronic signature has increased almost 6 times in six years. In 2020 the largest increase in the use of qualified electronic signatures during this period is visible. A particularly significant increase occurred at the beginning of 2020, as a result of the COVID-19 pandemic in Lithuania and all around the world, when most institutions and companies started working remotely, the volume of electronically provided services increased, more and more people worked and managed various affairs online, and companies have become interested in various, less popular trust services and their application possibilities[9]. During 2020 the number of people using qualified electronic signatures continued to grow rapidly.

[8] The survey was conducted by the market and public opinion research company *Rotelas*. The survey was conducted from February 18 to March 7, 2021 using the CATI (telephone survey) method. 1 036 Lithuanian residents over the age of 18 were questioned. The error of results does not exceed 3.1 percentage points.

[9] In order to promptly assess how the restrictions applied during the quarantine period and the resulting increase in the volume of telework and other telework activities affected the use of electronic signatures, CRA in April 2020 initiated an additional population survey. The survey was conducted by the joint Lithuanian-British market and public opinion research company the Gallup Organization *Baltic Surveys.* The survey was conducted in 5-8 April 2020. 507 Lithuanian residents aged 18 to 74 were interviewed using the CAWI method. The data of this additional survey showed that already in the first weeks of quarantine the use of qualified electronic signatures increased. The share of people using the qualified electronic signature among the population aged 18 and over increased by 6 percentage points in April compared to February. In February 2020 there were 23 per cent of qualified electronic signature users, and in April 2020 - 29 per cent.

According to the data of a representative survey of the Lithuanian population conducted in 2021, last year the qualified electronic signature was mostly used by the respondents under 50 years of age (over 40 per cent) those with the highest family income (more than 1000 euros) per month (62 per cent), city residents (58 per cent), those who have a university degree (65 per cent) and use the Internet on a daily basis (47 per cent). Although the use of qualified electronic signatures has increased among people of all ages, in 2020, the share of the users of qualified electronic signatures mostly increased among young people under 30 and among people over 50 - even by 14 percentage points. People aged 18–29 (45 per cent) used qualified electronic signature the most (Fig. 17). In this age group 31 per cent used a qualified electronic signature in 2019, and 28 per cent - in 2018. In the age group of 30–49 years, the number of the users of qualified electronic signatures made 41 per cent. (In 2019 - 36 per cent, in 2018 - 29 per cent). Although the number of the users of electronic signatures was the lowest among people over the age of 50 (26 per cent), the use of qualified electronic signatures by this age group in 2020 doubled (in 2019, 12 per cent used a qualified electronic signature, in 2018 - 7 per cent of all people of that age).

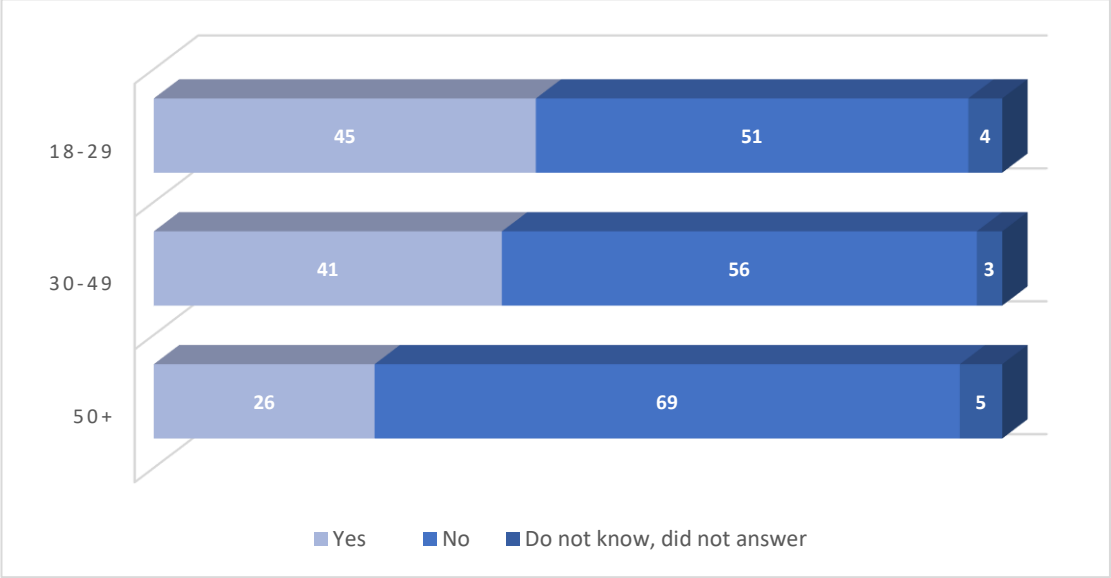


Fig. 17. **The use of qualified electronic signature by the Lithuanian population by age groups in 2020 (2021 survey data in percentage)**

Source: RRT

In 2020, compared to 2019, the share of the users who use electronic signatures every day or almost every day increased by 5 percentage points and the share of those who use electronic signatures at least once a week – by 8 percentage points, but the share of those who use electronic signatures only once a week decreased by 7 percentage points and those who used only once a year – by 4 percentage points (Fig. 18).

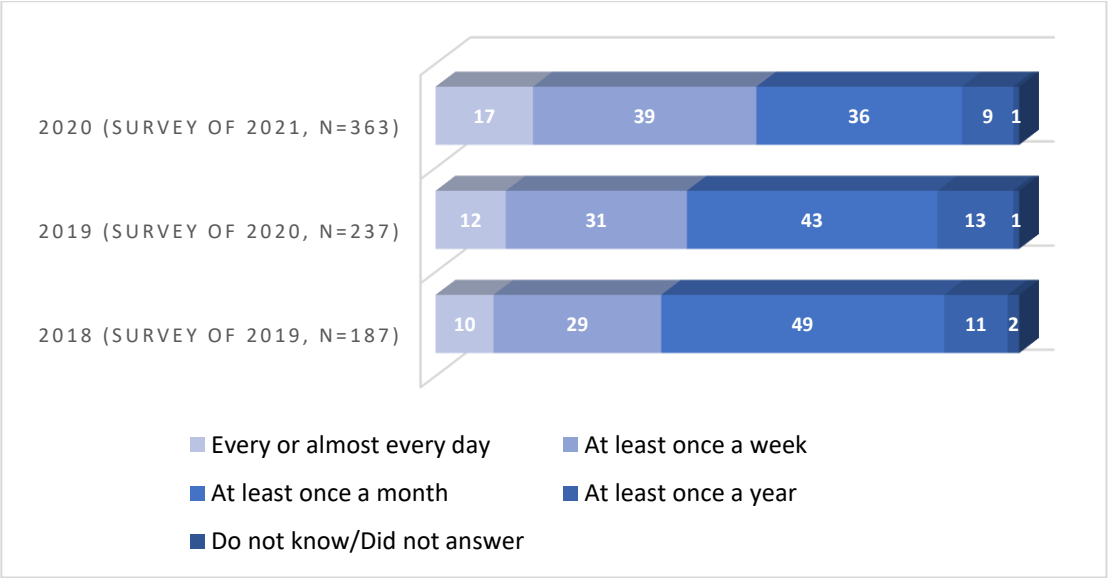


Fig. 18. **Frequency of the use a qualified electronic signature of the Lithuanian population in 2018–2020 (percentage)**

Source: RRT

In 2020, compared to 2019, the share of those who used electronic signatures every day or almost every day among the population aged 30-49 increased by 10 percentage points (19 per cent of all users in 2020, 9 per cent – in 2019), among young people it increased by 8 percentage points (18 per cent of all users in 2020, 10 per cent – in 2019) and decreased by 2 percentage points among people over the age of 50 (15 per cent of all users in 2020, 17 per cent – in 2019). Almost half (48 per cent) of respondents over the age of 50 used an electronic signature at least once a week. Use of electronic signatures by this age group at least once a week compared to 2019 (22 per cent of respondents) more than doubled, and the use of electronic signatures at least once a month in 2020 decreased to 21 per cent of the respondents (in 2019 – 44 per cent).

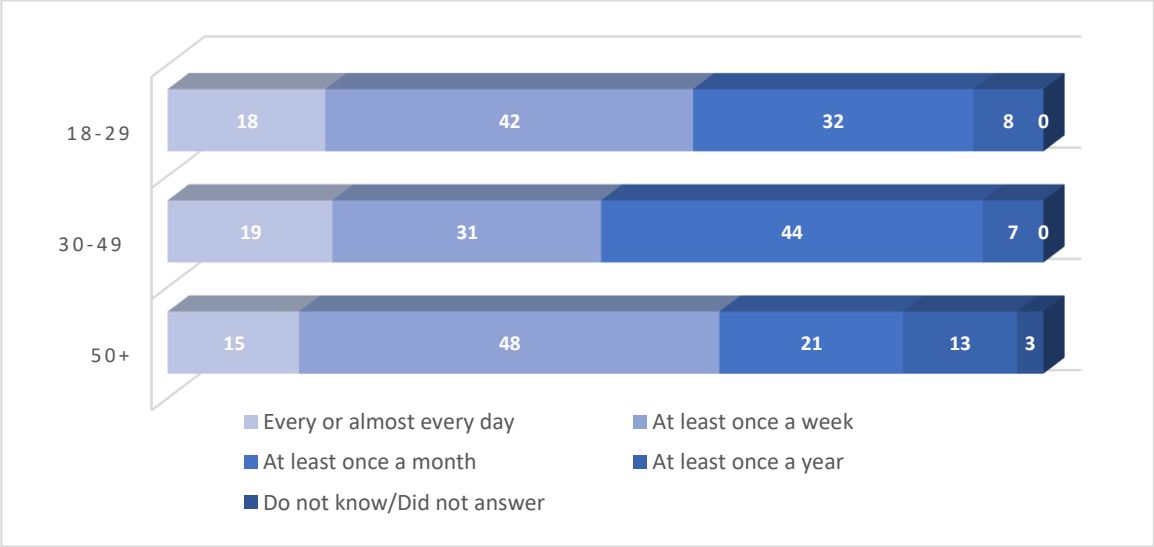


Fig. 19. **Frequency of the use a qualified electronic signature of the Lithuanian population by age groups in 2020 (2021 survey data in percentage)**

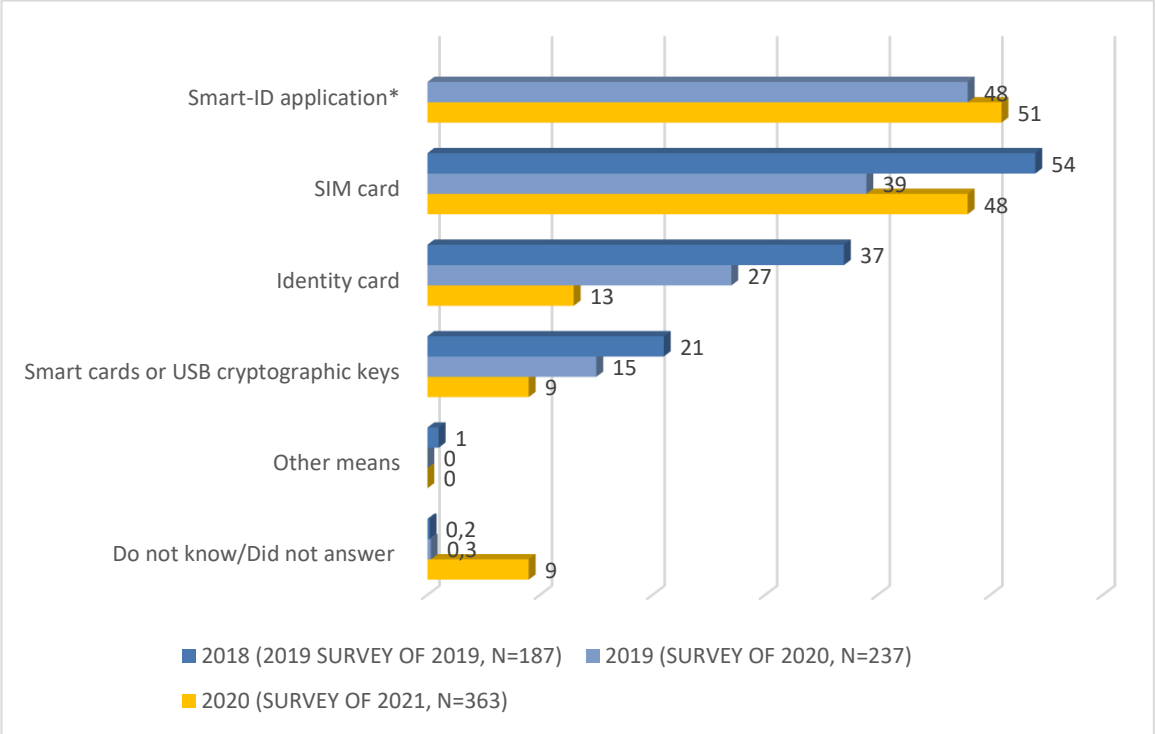
Source: RRT

The Lithuanian residents who in 2020 used a qualified electronic signature, mostly signed using the *Smart-ID* application (more than every second user - 51 per cent of respondents) and SIM

card (almost every second user - 48 per cent of respondents), less often used an identity card (13 per cent) and another smart card or a USB cryptographic key (9 per cent) (Fig. 20).

The *Smart-ID* application was mostly used by the people of all ages (about half of the respondents in each group), those with the lowest income, higher university education, and city residents.

The use of the SIM card as an electronic signature tool in a mobile phone was more common for the users of electronic signatures of age 18–29 (61 per cent of all users of this age) and people living in rural areas (58 per cent of those who used electronic signatures). The ID card was used more by residents over the age of 50 (17 per cent among all the users of this age) rural residents (39 per cent) and users of electronic signature with higher university education (23 per cent). The residents aged 30-49 (16 per cent of respondents in this age group) from the cities (11 per cent), and those with a university degree (18 per cent) signed an electronic signature using a smart card or a USB cryptographic key.



*In the survey of 2019 the *Smart-ID* application was not included in the answer list.

Fig. 20. **Tools for creating a qualified electronic signature, which were used by the Lithuanian population for signing electronically in 2018–2020 (2019–2021 survey data in percentage)**

Source: RRT

The Lithuanian residents who in 2020 used a qualified electronic signature, mostly (74 per cent) used it to sign banking transactions in electronic banking systems, less often - to perform necessary operations in SSIFB or other state information systems (62 per cent), to sign working electronic documents (46 per cent) and personal electronic documents (44 per cent). Qualified electronic signature in 2020 was used less frequently when it was necessary to apply to public authorities with requests or complaints (37 per cent), but compared to 2019 those who used it for this purpose in 2020 increased almost 4 times (in 2019 - 10 per cent, in 2020 - 37 per cent of the respondents). Over the past year, the use of electronic signatures for performing necessary transactions in SSIFB or other state information systems has doubled (31 per cent - in 2019, 62 per cent - in 2020), while the number of bank transactions in electronic banking systems increased by 24 percentage points over the year (50 per cent of the respondents in 2019, 74 per cent - in 2020) (Fig. 21).

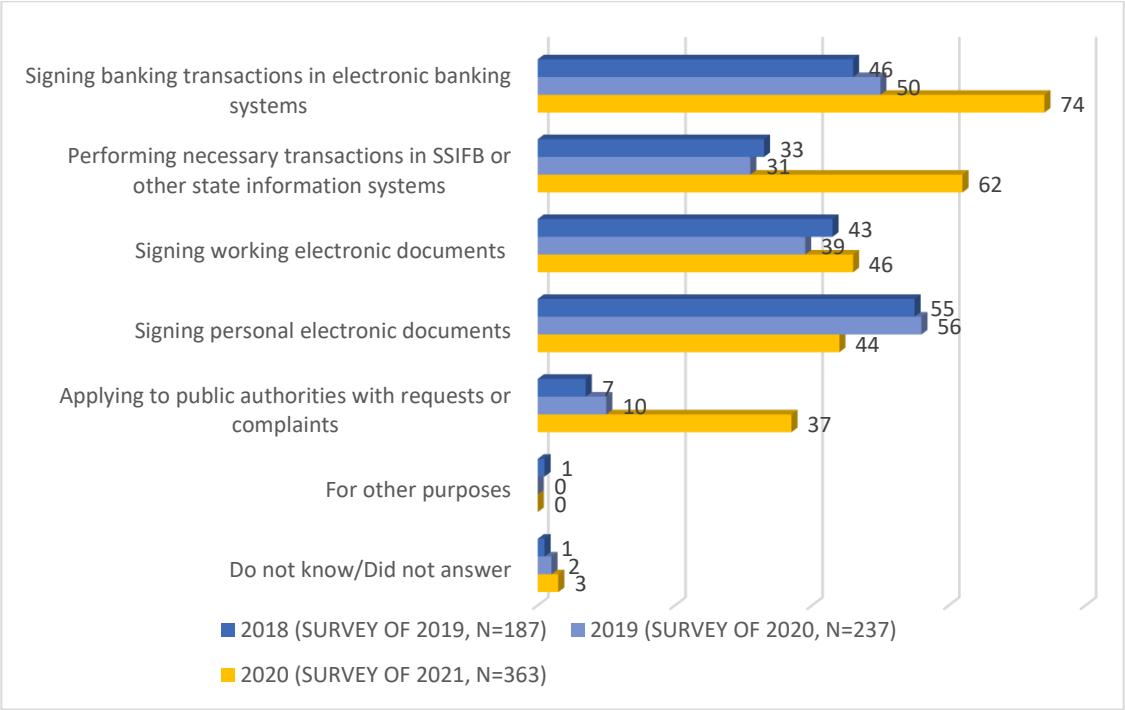


Fig. 21. **For what purposes the Lithuanian population used a qualified electronic signature in 2018–2020 (2019-2021 survey data in percentage)**

Source: RRT

The Lithuanian residents who in 2020 did not use a qualified electronic signature, indicated the two main reasons for this - they have nowhere to use it (38 per cent of all who did not use it) and do not know anything about an electronic signature (26 per cent). Almost a fifth (17 per cent) of the respondents who did not use such a signature last year indicated that they could not use it because they did not have appropriate tool to do so, and a tenth (10 per cent) of the respondents thought that it would be too difficult for them to use such a signature. 9 per cent of the respondents who did not use an electronic signature did not have an opinion on this issue (Fig. 22).

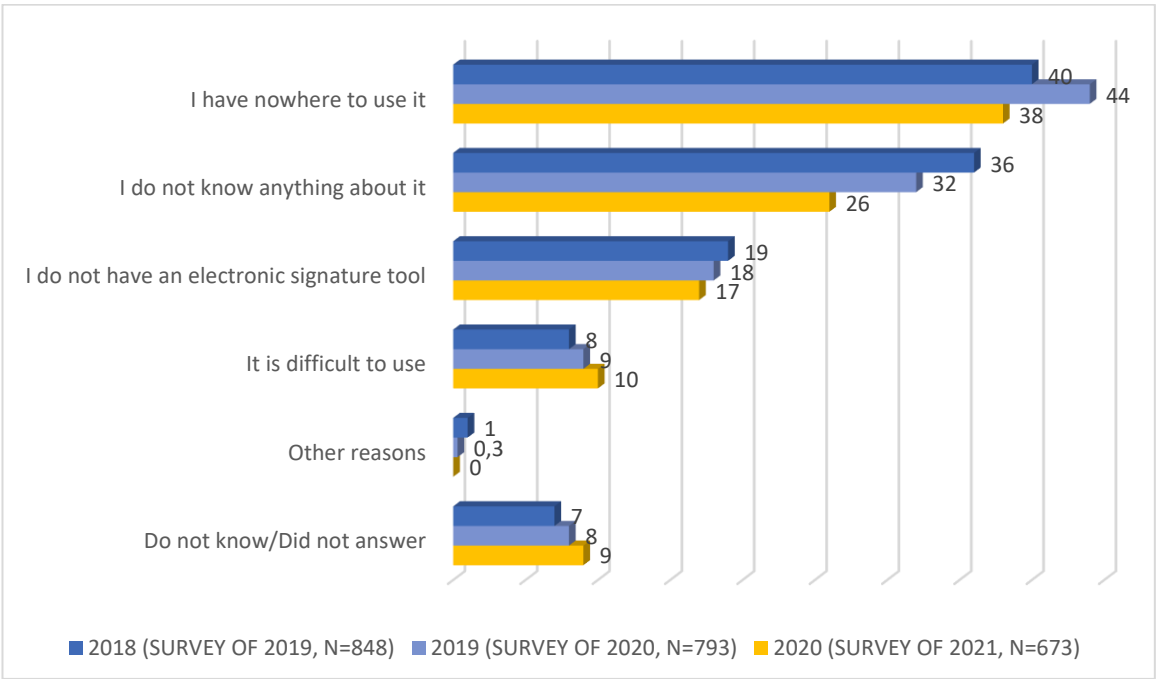


Fig. 22. **The reasons why the Lithuanian population in 2018–2020 did not use a qualified electronic signature (survey data for 2019–2021 in percentage)**

Source: RRT

The motives for not using a qualified electronic signature have not changed over the year. Of all respondents who did not use a qualified electronic signature, the reason they had nowhere to use it was more often given by the residents under 50 (42 per cent) and by the city residents (43 per cent). The people over age of 50 (34 per cent), the respondents with the lowest family income up to € 600 per month (35 per cent), rural residents (37 per cent), the people not using the internet (47 per cent) and the people with incomplete secondary education (60 per cent) did not know anything about electronic signature.

The Lithuanians usually indicated two assumptions that could encourage them to start using a qualified electronic signature (or encourage them to use it more often than now): if there was more information about the practical benefits of such a signature (how it works, where it can be used, etc.), 27 per cent of them would use a qualified electronic signature, and 25 per cent would use it if more information on the reliability and legal force of an electronic signature were available. It should be noted that in 2019 these two reasons were also cited as the most popular. Other assumptions: if there were more public services available electronically (14 per cent) and if there were more private sector services available electronically (9 per cent). 35 per cent of the respondents did not have an opinion on this issue. These are the people under the age of 30, the residents of cities and villages, and the people with incomplete secondary education (Fig. 23).

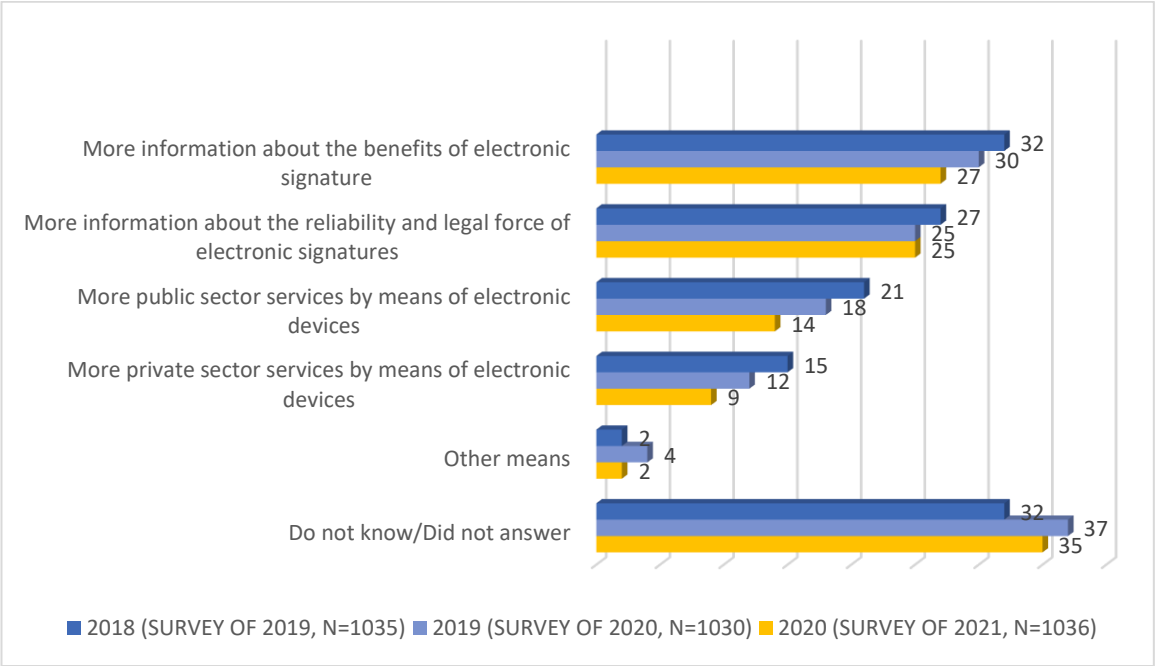


Fig. 23. **Measures to encourage the Lithuanian residents to use a qualified electronic signature (survey data for 2019–2021 in percentage terms)**

Source: RRT

The majority of the respondents who have already used a qualified electronic signature would like to get more public services that could be obtained electronically (25 per cent of them could be encouraged more to use electronic signatures). 24 per cent of the respondents would like to receive more information about the reliability and legal force of such a signature, and 21 per cent would like to obtain more general information about the practical benefits of this signature. 16 per cent of the respondents would like to get more private sector services.

The two main reasons that would encourage people who do not use electronic signatures to start using it are: more information about the benefits of such a signature (32 per cent) and more information about the reliability and legal force of electronic signatures (27 per cent). Even 40 per cent of the respondents who did not use an electronic signature did not answer the question (Fig. 24).

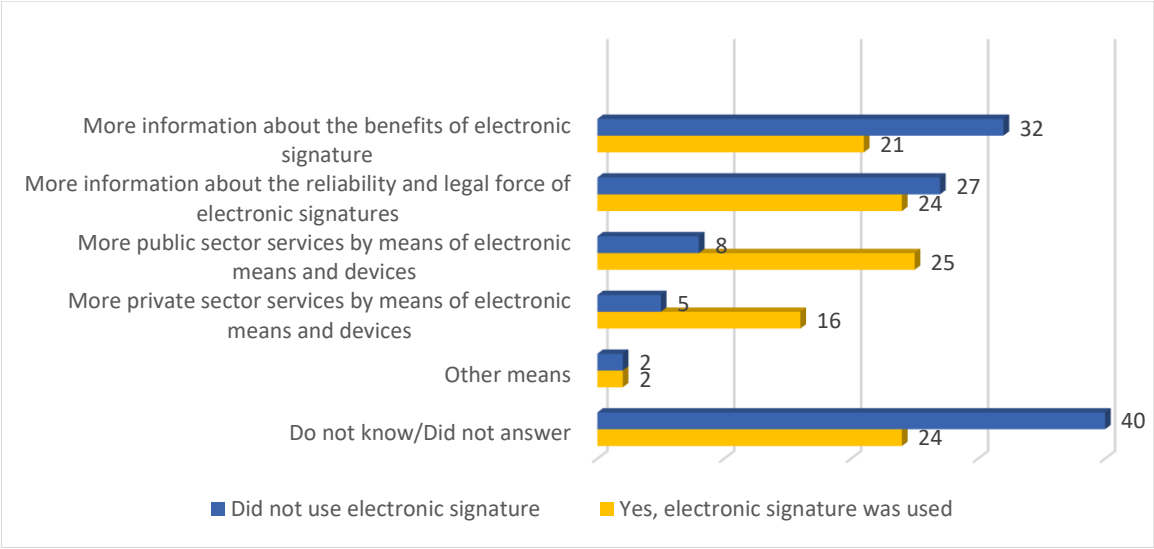


Fig. 24. **The measures to encourage the Lithuanian residents who do not use a qualified electronic signature to start using it, and those who use a qualified electronic signature to use it more often (2021 survey data in percentage terms)**

Source: RRT

It should be mentioned that the Lithuanian residents who lack information about electronic signatures and their use are encouraged to start using a qualified electronic signature or to use it more often and for more diverse purposes by various activities carried out under te project “Connected Lithuania”, which from 2019 is implemented by RRT together with ISDC, association "Langas į ateitį" (*Window to the Future*), Martynas Mažvydas National Library of Lithuania and the Ministry of the Interior of the Republic of Lithuania. During the implementation of this project, 2 educational videos and 4 briefings on the topic of electronic signature have already been created, 50 thousand smart card readers have been purchased and distributed by the project partners to the potential users of electronic signatures during the thematic trainings. RRT will continue to prepare and distribute training materials on trust services and electronic signatures and participate in the activities of the project partners what concerns the issues of trust services and electronic signatures.

The survey also showed that more than a third (38 per cent) of the respondents know that identity cards issued since 2009 can be used to sign with a qualified electronic signature, more than half (54 per cent) of the respondents said that they do not know about it, and 8 per cent of the respondents did not answer this question. The share of the population informed about such a possibility increased by 2 percentage points over the year, while the share of those who did not know about such use decreased by 1 percentage point. Thus, awareness of the possibility of using an identity card for signing with a qualified electronic signature slowly but gradually increases (Fig. 25).

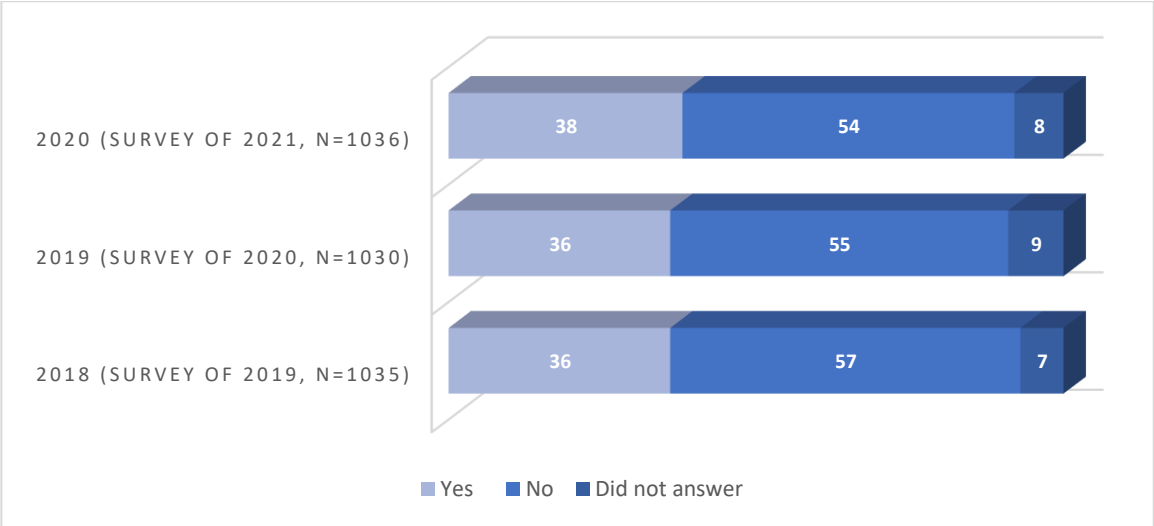


Fig. 25. **Are the Lithuanian residents aware that identity cards issued since 2009 can be used for signing with a qualified electronic signature (2019–2021 survey data as a percentage)?**
Source: RRT

The fact that identity cards issued since 2009 can be used to sign with a qualified electronic signature is best known to the people under the age of 50, who report a family income of more than EUR 1 000 per month (58 per cent), and the city residents (58 per cent), and the people with higher university education (67 per cent). The people over the age of 50 (34 per cent) and the rural population (23 per cent) are less aware of this possibility. In the group of the people over 50 years of age who knew about such a possibility, there was an increase of 13 percentage points (in 2020 - 34 per cent, in 2019 - 21 per cent of the respondents). The identity card for signing with an electronic signature was used more by the people over the age of 50 (17 per cent of all users of electronic signatures of this age), rural residents (39 per cent) and the people with higher university education (23 per cent).

It is believed that older rural residents were encouraged to learn, that identity cards can be used for signing with a qualified electronic signature, as well as to start to use them by the activities carried out under the project “Connected Lithuania” , when the smart card readers purchased under this project were distributed by the project partners to the potential users of electronic signatures during various events.

The full research report can be found on the RRT website *https://www.elektroninisparasas.lt.*

Development of qualified electronic time stamps and other trust services

With the growth of the use of electronic signature, the demand for one of the most popular qualified trust services - the creation of qualified electronic times tamps - increases as well. During 2020 the Lithuanian qualified trust service providers created 1.5 times more qualified electronic time stamps than in 2019. Electronic time stamps facilitate the verification of the validity of an electronic signature after the expiry of a qualified electronic signature certificate and can be used in cases where it is necessary to ensure the integrity of the data and to know when the data existed. Demand for these services is likely to continue to grow as the use of qualified electronic signatures increases.

Although qualified electronic seal certificates have not been widely used in Lithuania recently, it is likely that in the future, with the growing importance of digital transactions, electronic seal will become an increasingly attractive solution for companies having to approve online transactions, and its use will increase.

Dokobit, UAB acquired the right to provide validation services for qualified electronic signatures and qualified electronic seals only in 2020. However, 27 410 verifications of qualified

electronic signatures and qualified electronic seal certificates were already created last year. These services are particularly attractive in cases where it is necessary to verify electronic documents signed in various formats with electronic signatures and to have a reliable confirmation of the validity of these electronic signatures.

CONCLUSIONS

- With the entry into force of the eIDAS Regulation, the possibility of providing 9 types of qualified trust services have been made available in all EU countries. In 2020 the Lithuanian trust service providers, using this opportunity, provided 5 types of qualified trust services: qualified electronic signature and electronic seal certificate creation services, qualified electronic signature and electronic seal qualified validation services and qualified electronic time stamp creation services. It is the largest range of services provided in one country in the entire Northern Europe and the Baltic region.
- In 2020 in Lithuania, as in 2019, the services of creating qualified electronic signature certificates were actively provided not by Lithuanian companies, but by the trust service provider SK registered and supervised in Estonia, which currently holds the largest market share of this service in Lithuania (68.9 per cent of all qualified electronic signature certificates, or 99.8 per cent of the certificates for signing with mobile devices).
- In 2020 the number of mobile electronic signature users continued to grow the fastest, and now the majority (69 per cent) of qualified electronic signature users in Lithuania have chosen such a tool.
- The volume of one of the most popular services - the creation of qualified electronic time stamps - in 2020, compared to 2019, increased more than 1.5 times.
- Having assessed the data of the surveys of electronic service providers and the residents, it can be noticed that the use of electronic signature continued to grow steadily. 35 per cent of the population had used an electronic signature in 2020.
- In order to encourage the Lithuanian population to use trust services, the main focus should be on:
    - the supervision of trust service providers, ensuring the provision of all compliant, secure and reliable services;
    - promoting the benefits and reliability of electronic signature services, especially among lower-income or older people;
    - promoting the possibility of signing with an electronic signature using the tools, i. e. identity cards, issued by the state, especially among lower-income or elderly people and the rural population.
- It is expected that the Lithuanian population, which lacks information about the electronic signature and the possibilities of its use, will be encouraged by the activities carried out under the project “Connected Lithuania”, which from 2019 is implemented by RRT, together with the ISDC, the association "Langas į ateitį" (*Window to the Future*), Martynas Mažvydas National Library of Lithuania and the Ministry of the Interior of the Republic of Lithuania, and will start using the qualified electronic signature or use it more often and for more diverse purposes.

Director Feliksas Dobrovolskis