

# How is Transformation Created?

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Agility

More than 400 teams including all of technology organization work with agile principles

Transformation



New Technologies

93 processes developed with Robotic Process Automation

Transformation



AI Solutions

With 62 projects 115 new machine learning and deep learning models integrated

Transformation



Awareness

108 education or informative activities in relation to external fraud

Transformation

# Data and Technology

5,175 21 min 10 customers

Related Material Topics	Value Drivers	Indicators	2020	2021
<p><b>#3 BUSINESS ETHICS, CULTURE AND CUSTOMER PROTECTION</b></p> <p><b>#4 EASY, FAST &amp; DIY</b></p> <p><b>#5 CYBERSECURITY (CYBER ATTACKS, DATA THEFT, FRAUD...)</b></p> <p><b>#6 RESPONSIBLE USE OF DATA (DATA PRIVACY, RESPONSIBLE AI)</b></p> <p><b>#11 FINANCIAL HEALTH AND ADVICE</b></p>	<p>INCREASE THE AGILITY AND STRENGTH OF OUR TECHNOLOGICAL INFRASTRUCTURE AND PLATFORMS</p> <p>SPEED UP OUR SOLUTION PROCESSES WHILE MINIMIZING ERRORS THROUGH AI, MACHINE LEARNING AND BIG DATA INTERPRETATION, WHICH ARE IMPORTANT IN THE DAY-TO-DAY OPERATIONS OF THE BANK</p> <p>MAKE EFFECTIVE USE OF DATA ANALYTICS IN VARIOUS ASPECTS INCLUDING OFFERING THE RIGHT PRODUCT TO OUR CUSTOMERS, PRICING, RISK MANAGEMENT ETC.</p>	Programs for raising awareness of customer privacy and information security	9	17
		Cybersecurity training hours per FTE*	1,18	0,97
		Employees participating in cybersecurity training*	82%	70,9%
		Training or information provided on external fraud (Number)	95	108
		Number of UGI Smart Assistant Interactions	12.8 million	26.4 million
		Number of queries answered by Bilge (The Wise) and Kobilge (for SMEs) Employee Chatbots**	321 thousand	484 thousand
		Value-added projects using Big Data and Machine Learning	41	62
		Projects using Data Science Suite	-	15
		Number of Scenarios Activated Under Complex Event Processing Platform	56	104
		Number of Customer Behaviors Processed by the Complex Event Processing Platform	18 billion	25 billion
Number of RPAs in Production Medium	44	42		

Note: "Data breaches regarding customer privacy" included in previous reporting periods are being followed up with the utmost care in terms of measurement and content under numerous criteria as per the regulatory framework, but are excluded as data. Information about the implementations is presented below.  
 \*Calculation methodology has been updated for accurate measurement of training effectiveness. The number of trainings was increased, affiliates were added, trainings with 100% cyber security content were included in the measurement.  
 \*\* The indicator was redefined as total employee chatbots to incorporate the newly added Kobilge.



With its **continuous and uninterrupted investments** in technology, Garanti BBVA has erected its digital transformation strategy on offering a **full-scale and integrated banking platform** encompassing **simple, accessible and personalized** banking transactions and services. In this context, it is always a priority for the Bank to listen to customers' needs and respond to them in a prompt manner. While continuing to constantly invest in Information Technology systems guaranteeing **information security**, Garanti BBVA also takes precautions against all risks that could prevent **secure and uninterrupted service**, and measures the results within the context of **customer satisfaction** on digital platforms.

For Garanti BBVA, **digitalization** is a key material topic given focus by both internal and external stakeholders. Therefore, technology is an integral part in the decision-making mechanism, which supports **process efficiencies** and continuously drives the Bank forward. **With a single source of data and common understanding**, technology is used within Garanti BBVA as an enabler for top-down **fast decision-making** and strong communication. It is reflected in the way the Bank does business like CRM applications and segmentation, **innovative products and services, and a paperless banking environment**.

In our day, **digital transformation** and advancing technology made data acquirable, storable, and most importantly, processable, at every point of customers' contact with the Bank. **AI and machine learning** that can be embedded in any work process allow offering **smarter, differentiated and customized** experiences for customers.

As the increased prevalence of digitalization brings about a rapid change in the ways of doing business, needs and risks, organizations are required to quickly adapt and constantly update their Business Continuity Management Systems in order to provide uninterrupted service. To further increase the resilience of its business continuity system, Garanti BBVA keeps investing in its **business continuity and service resilience teams**. Efforts to this end include updating the Business Continuity Management System, executing disaster drills, restructuring end-to-end monitoring system and **supporting it with AI and**

**machine learning algorithms**, and setting up service resilience engineering teams.

Continuing to work towards ensuring **regulatory compliance** and fulfillment of the requirements of certifications and standards besides business continuity, Garanti BBVA takes part in, and extends support to, several initiatives of the Sectoral Cyber Incident Response Team managed by the Banking Regulation and Supervision Agency (BRSA), Banks Association of Türkiye (TBB), Information Technologies and Communication Authority (BTK) and Türkiye Informatics Industry Association (TUBISAD) to support their **cybersecurity** efforts.

At Garanti BBVA, agility means adaptation of the **agile methodology to generate business**. Currently, the Bank operates through **more than 400 teams** employing agile disciplines, the most notable within them being **100% of the technology organization**. While the agile journey contributed **substantial improvement** to Garanti BBVA on the technology front, **service levels and quality**, it also secured a considerable increase in employee satisfaction. End-to-end **coherence** is secured between the technology organization and business lines. Teams charging ahead together toward a shared goal are able to progress and deliver results **rapidly**. As planning, decision-making and prioritization take place in the internal processes of teams, the organization's **motivation** increases, and conversion into **competent, autonomous and responsible teams** takes place. Improvement activities underlying the agile philosophy molded according to feedbacks from the projects that arise with the transformation will remain as the most important agenda for Garanti BBVA in the period ahead. While teams working with agile working principles will be created in business areas that are yet to initiate agile transformation, work is ongoing to increase the maturity level in those where transformation is in progress.

Garanti BBVA believes that acquiring/**co-innovating** with **fintech startups** is essential for Banking-as-a-Service (BaaS). This is crucial in terms of imposing startup culture into ways of doing business. Therefore, Garanti BBVA acts in accordance with the notion of supporting new entrepreneurships, products and projects in all areas. The Bank believes that the market

can be transformed and external disruptions can be turned into opportunities, by collaborating with various third parties. Connected with the innovation ecosystem and entrepreneurs through the open **innovation concept**, Garanti BBVA collaborates with BBVA in the **Open Talent** competition and supports all kinds of innovation entrepreneurs from many countries.

Garanti BBVA's approach to **internal innovation** can be described as one that is **inclusive** and **facilitative**. The primary objective is to ensure **conveyance of all employees' creative ideas and suggestions to the right recipients** by offering various channels. In this context, the employees can either communicate just a concept for it to be implemented by related teams, or they can take the ideas they share to advanced stages and **present their solution suggestions to the Senior Management personally**. Methodologies developed specifically for each channel pave the way for the conversion of bright ideas into real products in the most sensible and profitable manner. This allows **simple but valuable improvements**, along with execution of **initiatives targeted at the bank of the future**.

**Garanti BBVA was able to continue all its work efficiently with the effect of having completed the agile transformation before the pandemic, its strong digital infrastructure and a single team culture.**

The pandemic has acted as a significant accelerator for digital transformation. During the pandemic, Garanti BBVA's unchanged priority has been the health of its customers, employees and their families, and guaranteeing business continuity. Garanti BBVA has been **one of the first companies to switch to location-independent working** which was enabled by its robust digital infrastructure. The Bank was able to sustain all its activities efficiently with the help of the **agile transformation** that had been finalized prior to the pandemic, its **robust digital infrastructure and one team culture**. Always turning a careful ear to its employees' expectations, the Bank aimed to deliver a **sustainable best employee experience**. Combining the **productivity** of teleworking and **face-to-face communication necessary for bonding socially**,

the **hybrid working model** began to be implemented successfully at the Bank, and it will become a major working model in the future, as well. Supporting its employees' **development** and their work-life **balance** and successfully offering them **flexible models**, Garanti BBVA will keep reflecting all its learnings and experiences in its business models, and keep working to bring the age of opportunity to everyone.

While quickly updating its remote access infrastructures according to current needs, Garanti BBVA also upgraded them to capture the general **security** principles. In line with these developments, the potential impact of DDoS attacks upon an organization's productivity (due to the risk of lost connection of tele-working employees making it impossible for them to do their jobs) has become much more remarkable. Thanks to the **pioneering investments** for **protection against DDoS attacks** in earlier years, Garanti BBVA was able to manage these risks successfully also in 2021.

Garanti BBVA carries out activities ensuring continued awareness of **compliance with laws and corporate standards**, and development of processes that guarantee **management of IT/information security and IT related risks**, in order to **effectively manage reputational risk** across the Bank. In terms of governance, the **Information Security Committee** headed by the CEO coordinates all efforts within the Bank to guarantee information security, and monitors policies, procedures, and regulations. In line with the new regulation that went into force in 2020, Information Systems Security team operates within an organizational structure whereby it reports its activities directly to the CEO.

**Garanti BBVA Cyber Security Center is positioned as a structure that can meet the needs of the future by working 24/7.**

Adopting an "enterprise **external fraud** prevention" approach within the framework of **customer protection** principles, Garanti BBVA implements a customer-driven management of incidents of fraud involving card transactions, account transactions, POS transactions and loan product applications carried out

through any branch or non-branch channel. Garanti BBVA continues to develop its strategies for preventing external fraud based on a proactive approach giving the foreground to customer experience. Customer Security and Transaction Risk Management Department works to minimize the potential losses of the Bank and the customers, **employing data-driven and AI-supported decision-making processes** against incidents of fraud. The Department formulates **views and suggestions** on the Bank's **new product and process developments upon assessing the same with respect to external fraud risks**. It continues to collaborate with its stakeholders to increase anti-fraud awareness and initiatives across the banking sector and other associated sectors, against fraud events. **It also closely monitors the ecosystem risks resulting from increased digitalization that accelerated in the wake of the pandemic** and keeps developing its analytical approaches and solutions through greater use of data.

#### 2021 ACTIVITIES IN BANKING SOLUTIONS CREATING VALUE THROUGH USE OF AI AND DATA ANALYTICS

Using the **RPA (Robotic Process Automation) technology** that has become a critical step of digital transformation since 2019, focus is placed on automatizing recurrent, time-consuming operational transactions with low added-value, managing them more productively, and delivering a **better customer experience** with **minimum errors** and **high speed**. This allows allocation of employees working in fields such as operation and support service to **more important and higher added-value tasks**. On another hand, process development continues rapidly for **utilization of the robots used at full-time capacity** within the scope of RPA initiatives.

In 2021, the primary focus of RPA technology use was on handling especially new tasks that would require additional resources. Under the Abacus 2.0 program, a tracking platform was created to **fulfill the needs of the hybrid working model**. In 2021, an additional **42 processes were put into production with RPA and automated**. Based on the work carried out within the scope of RPA, nearly 250 processes were identified to date, and the number of **processes** developed using RPA reached **93 in total**.

In 2021, **115 new machine learning and deep learning models** were integrated into Garanti BBVA systems in **62 projects**.

While enhancing customer satisfaction by offering **smarter, customizable solutions** for customers through the use of **Artificial Intelligence and machine learning** applications, Garanti BBVA also achieves **operational excellence** for business processes that will make a differentiation in decision support steps. In this context, **115 new machine learning and deep learning models in 62 projects** were embedded into Garanti BBVA systems in 2021. In these projects, the power of Artificial Intelligence was utilized in a number of areas including **improving customer experience, implementing effective pricing strategy, preventing fraudulent transactions and smartening up credit decisions**. Differentiating from conventional methods, deep learning, self-learning modeling approach, and automation of workflows and processes allow **precise determination of customer needs and timely delivery to customers**.

To expand **data-driven decision-making culture** and to steer the future, AI and machine learning were given a wider place within the Bank. Based on the "No-code/Low-code" approach, the so-called **Data Science Suite** was introduced, which is a fully internally developed platform from its design to its production. **Facilitating use of AI** in business areas on the basis of DIY approach, the platform smartens up business decisions, while **shortening the time for products and services to be put into use and allowing faster fulfillment of customer needs**. The number of **people with data science competency** in the Bank **doubled**. Value was created with 15 additional projects quickly enforced in 2021, and significant wins were secured in operational processes thanks to automations in the integration of the projects into the existing system.

With the **chatbots developed using Turkish natural language processing (NLP) and voice processing technologies**, Garanti BBVA makes it easier and faster for customers and employees alike to reach information, and increases operational efficiency. **While smart assistants answer a monthly average of over 2 million queries from customers, they respond to 40,300 queries on average for employees on a monthly basis.** This helps the DIY approach gain further ground every day. The chatbot **BILGE** (The Wise) used by central customer service teams supports **more than 1000 employees** by responding to nearly **35,500 queries per month**. Put into use for employees servicing SME customers from out of branches, regional offices, head office and C-CSR teams, the chatbot **KOBILGE** helps approximately **1,600 employees** find the answers to **nearly 4.8K queries every month**. In addition to responding to **484 thousand queries in 2021**, **employee chatbots** track all queries by the employees and employee feedback, which allows employees to reach the information they need quickly at a single location.

Put into use for employees servicing SME customers from, the chatbot **KOBILGE** helps approximately **1,600 employees** find the answers to nearly **4.8K queries every month**.

Garanti BBVA takes a stance aligned with the **National Artificial Intelligence Strategy (NAIS)** published in 2021 by the **Presidency of the Republic of Türkiye Digital Transformation Office**. The Bank continues to train AI experts and to create employment in this field in a manner that caters to this vision, while attaching importance to making a difference with its innovative character, increasing national and international partnerships, and producing high quality solutions by bolstering its technical infrastructure.<sup>1</sup>

<sup>1</sup> National Artificial Intelligence Strategic Priorities: Strategic Priority 1: Training AI experts and increasing employment in the domain / Strategic Priority 2: Supporting research, entrepreneurship and innovation / Strategic Priority 3: Access to quality data and technical infrastructure / Strategic Priority 4: Regulating to accelerate socioeconomic adaptation / Strategic Priority 5: Strengthening international cooperation / Strategic Priority 6: Accelerating structural and labor transformation

Within the scope of its Principles of Responsible Artificial Intelligence, Garanti BBVA is committed to Human Rights and non-discrimination in the solutions it develops in the field of big data and artificial intelligence.

Espousing **responsible AI principles** when developing solutions on Big Data and Artificial Intelligence, Garanti BBVA **pledges** to be committed to Human Rights and not to discriminate, as stipulated also in the Garanti BBVA Code of Conduct. **None** of the analytical solutions employed in customer acquisition, pricing, recruitment and remuneration **uses data pertaining to gender, color, ethnical origin, disability, religion, sexual orientation or political affiliation**.

#### 2021 ACTIVITIES IN DIGITAL BANKING SOLUTIONS

**Digital Onboarding:** Users can now become Garanti BBVA customers end-to-end digitally, without the need for a branch visit, under the **"Become a Customer"** flow that blends various technologies such as video chat, NFC, ID scanning with optical image scanning, and biometric verification and was launched on 01 May 2021 upon being developed in line with the BRSA's **"Remote Authentication"** regulation. In addition, "Become a Customer by Money Transfer" flow was also put into use for those wanting to become Garanti BBVA customers with their devices without NFC. Users following application flow for card or loan products via [www.garantibbva.com.tr](http://www.garantibbva.com.tr) can complete the 'Become a Customer' flow and get a credit or debit card product beside becoming a Garanti BBVA customer.

**Users who are not Garanti BBVA customers can become Garanti BBVA customers in an end-to-end digital environment without the need to go to a branch.**

**Financial Health:** The Financial Health program launched on Garanti BBVA Mobil application presents completely **personalized insights** to help the customers better monitor their finances, be **prepared against unexpected situations**, and build on their financial planning skills by acquiring **saving-up capability**, as well as planning for today. Suggestion mechanisms are developed where necessary to improve customers' financial health; once they are achieved, new suggestions and plans are created to help keep them motivated.

In this context, **different financial insights** were developed. In 2021, My Status page offering **financial health tips** was visited by **3.5 million customers on average per month**. To help its customers save up, Garanti BBVA suggests **proactive monthly spending plans** to specific customers. With the spending plan, customers can view the suggested expenditure amounts in related categories and the savings potential, create a plan and track their expenses categorically. All Garanti BBVA customers can view their expenses on the basis of categories under the Earnings/Spending step on the My Status page, set their saving-up items and create a spending plan.

**In 2021, My Status page where financial tips are in offer was visited by an average of 3.5 million monthly customers.**

The **Smart Transactions** service, designed to let customers fulfill their daily financial obligations, is intended to let users perform their everyday banking transactions more easily and gain awareness with respect to their money management. Within the scope of Smart Transactions, customers are able to better manage their time and keep their money under control using the **"Regular Deposit Order"** rule. **"Spend and Save"** rule lets them save up a given portion of their expenses incurred with a credit card without spending effort for it. With the **"Regular Gold Saver"** rule, customers can save up the quantity of gold they wish every month regularly from their credit cards or checking accounts. **"Pay Bill"** rule allows automated payment of frequently paid bills and easy tracking of bills without allocating time to do it. With the **"Virtual Card Auto Top Up"** rule, the virtual card limit is topped up to the limit set by the customer every time they make a purchase

using the virtual card. Garanti BBVA keeps working to add new functions to Smart Transactions.

**Increased ATM functionality:** For increased accessibility and transacting volume purposes, cash withdrawal was enabled from all ATMs featuring the **TR Karekod** (Turkish 2D Code) symbol using Garanti BBVA mobile app and from all Garanti BBVA ATMs using the mobile app of any other bank. In addition, **shopping payment, FAST** (Instant and Continuous Transfer of Funds), **intra-bank money transfer, EFT and account QR** capabilities aligned with the TR Karekod standard were launched on Garanti BBVA Mobil. These features allow making payments and withdrawing cash using the mobile app without carrying a physical card, and making money transfers without the need for such information as IBAN, account no. etc.

With the aim of contributing to the protection of nature through **reduced paper consumption, preferred receipt** feature offered to the Bank customers after performing a transaction on ATMs is made available also for **non-Bank customers**.

**G-Matic - Lobby ATM Integration:** To reduce the density at counters in branches, customers were referred to the in-branch ATMs for cash withdrawals/deposits below TL 5,000, for which normally a queue number was required.

**LiveChat:** Used upon being transferred by Garanti BBVA Mobile's smart assistant UGI, **Live Chat** was made **available for use by all customers** in 2021. During the reporting period, **170 thousand customers** performed their transactions by receiving live support within the mobile app.

The annual number of UGI interactions reached **26.4 million**, and its correct understanding and accurate referral rate increased to **83%**. Today, **more than 650 thousand** customers a month actively communicate with UGI.

**UGI:** Since April 2016 when Garanti BBVA's smart assistant first said "hello", 6.3 million customers had more than 63 million interactions with UGI. Upon addition of texting capability in July 2020, the usage ratios of UGI surged by **70% on a monthly basis**, while the number of **yearly interactions** reached **26.4 million**. At present, more than **650 thousand customers** actively communicate with UGI monthly. Approximately **300 thousand messages** from an average of **75 thousand** users per month are provided fast and accurate solutions via the Bank's other chatbots on WhatsApp and Facebook Messenger. 8% of Garanti BBVA's monthly contacts with customers occur via live support assistants. Overall, Garanti BBVA progresses in line with its strategy of being the main center of customer experience by enriching its mobile app with live support.

#### New services bringing increased digital channel functions to corporate customers:

- The need for corporate customers' branch visits was minimized by enabling disbursement of **Commercial Loans** (Bank Overdraft Accounts, Spot, Discounts) via digital channels.
- **Forward transactions** can now be performed via Garanti BBVA Internet channel so that customers assigned a derivatives limit will be less affected by exchange rate fluctuations.
- Financial data (e.g. **trial balances and advance tax returns**) quarterly required from customers assigned a credit product can now be **uploaded** via Garanti BBVA Internet channel. Documents so uploaded are notified to customer portfolios for their further follow-up.
- **Accounts with other bank(s)** can now be defined via Garanti BBVA Internet, and the **balances and movements** in these accounts can be viewed on a single screen together with Garanti BBVA accounts.
- **Document approvals** required to be taken in connection with salary protocols can now be given digitally.
- Member Merchant owners can now view **card transaction objections** raised against them, take action therefor, and follow up the outcomes of these actions on digital channels.
- Non-resident banks can access their Vostro accounts and handle their own cash flows via digital channels.

#### New digital banking solutions for SME customers:

- In 2021, Garanti BBVA began offering e-loans using **new commercial loan pricing algorithm** through digital channels to its SME customers.
- Transition was made to **new income/limit estimation models** using data analytics and learning modeling techniques. The transition gave increased access to SME companies and partner customers to products and financing instruments that will support their financial health and cash flows.
- Additionally, the new commercial loan pricing algorithm put into use at all branches from 2021 allows **custom-specific pricing** with more viable models that consider customers' risk and collateralization assessments.

#### Utilization of smart algorithms in product and service provision to customers:

Looking at 2021 activities in relation to the **Ruler (CEP-Complex Event Processing)** initiative commenced in August 2018 with the aim of maintaining deeper and value-adding relations with customers, expanding the customer base, increasing product/service sales volume and accelerating customer digitalization, behaviors of Garanti BBVA customers on any channel or in branches can be detected both instantly and on the basis of trails on the system and the **best-fitting action can be** taken in real time. At present, through **104 scenarios** launched on the Ruler platform, behaviors of **an average of 8 million customers daily** can be processed through digital channels and branches, and **2 million customers can be contacted directly**. The platform **processed** approximately 18 billion customer behaviors in 2020, and **25 billion** in 2021, **up by 35%**.

At present, through **104 scenarios** launched on the Ruler platform, behaviors of **an average of 8 million customers daily** can be processed through digital channels and branches, and **2 million customers** can be contacted directly.

**ARK Platform:** The work on ARK Platform, which allows development of banking and affiliate applications using agile methodology, accelerates value creation by employing modern technologies, and reduces costs owing to the cost advantage of open system technologies, commenced in 2019, and the first application was taken into production on the platform by mid-2020. Upon the transformation initiated in 2021, **45 applications** were taken into production; through these applications, **12% of transaction load** of the existing architecture was **transferred to the platform**. In the period ahead, the transformation will continue to expand, and the platform will gain broader usage.

During 2021, 48% of the developer resource within the ARK Project was trained with new platform capabilities. Assigned System, Software, Architecture, Security, Design and Network teams were bolstered with **2,418 hours of training in total with the ARK Platform Design & Development program** within the frame of infrastructure configuration, maintenance and platform application developments. In addition, software developers from project teams that will begin to develop applications on the ARK Platform took part in the ARK Developer Onboarding and Analyst program, and received **a total of 14,861 hours of training** under the program that covered four subcategories, namely, **Front End, Back End, Batch and Big Data and API Development**.

#### 2021 ACTIVITIES IN ENTERPRISE SECURITY

Garanti BBVA secures **all IT assets including people, processes and technology**, so that the organization can focus on business targets without suffering an interruption due to security related issues by concentrating on Confidentiality, Integrity and Availability. The latest and the most advanced security systems are followed up in an effort to offer the most effective security solutions to protect customer data. Regular **penetration tests** and **vulnerability assessments** are performed to identify and eliminate security risks. Garanti BBVA follows the COBIT (Control Objectives for Information and Related Technology) framework, internal security policies, procedures, and ISO 27001 and PCI-DSS norms with specific scope.

Garanti BBVA provides **various security-building practices for its customers** in line with its approach determined by **security and privacy policies**. Besides password verification, the Bank uses tokenization, Sifrematik device for generating one-time passwords, SMS OTP, Mobile Notification, Voice Biometric Verification and "Contactless Customer Acquisition" methods upon the introduction of the new ID cards for the authentication of customers. Moreover, in case of a forgotten password, the Bank offers the option to set a new password by performing ID and face biometric verifications. To increase the security of digital channel usage, the Bank implements **additional security measures** on mobile applications. Transactions are automatically analyzed and if necessary, **additional verification is implemented to prevent fraud events**. Garanti BBVA also supports safe execution of external projects that introduce novelties to the sector, in addition to its internal practices.

In 2021, **17 programs** were organized to raise awareness of customer privacy and information security

In 2021, **17 programs** were organized to raise awareness of **customer privacy and information security**. With the increasing number of trainings and added affiliates, the **rate of employees who completed** the Information Security, Information Security in the Digital World and Phishing Attacks & Protection Methods **trainings within the scope of cyber security was 70.9%**, and the **training hour per full-time employee was 0.97**.

Garanti BBVA offers its customers **security information** regarding digital banking through its website and Alo Garanti BBVA telephone banking. Warning its customers against possible situations, Garanti BBVA also **explains additional security precautions that customers can take, particularly the "6 Golden Rules" for security**, such as creating and protecting passwords, situations when private information is requested, viruses spread via e-mails, fake prize notifications or requesting personal

banking information via SMS or by telephone, phishing attacks, suspicious money transfers and requests for information. Also, Garanti BBVA provides customers with information on the protection of mobile devices and computers on which they use Garanti BBVA's internet banking. Garanti BBVA furthermore advises to use utility programs such as anti-virus, spyware scanner and firewall. The Bank **sends SMS and e-mail messages** at certain intervals in order to inform its customers about current and widespread attacks.

Work is carried out within the frame of DevSecOps (**the notion of incorporating security applications within software processes**) in order to enhance secure software development process. Security assessment approaches are being developed, which are aligned with current software trends such as agile. Thorough work is undertaken within the frame of **alignment with the Personal Data Protection Law**, and new projects are being introduced to further upgrade data security practices. Initiatives are being carried out targeted at best practices in activities aimed at **raising increased awareness of employees and customers, data classification and data leakage prevention methods**, in addition to efforts spent for regulatory compliance. Its robust infrastructure allows Garanti BBVA to keep fulfilling the services requiring remote access that it offers to its employees and customers without compromising security. For outsourced services, the Bank takes steps guaranteeing that the suppliers match the same level of security with the Bank. **The Bank increases the efficiency of security operations by using RPA (Robotic Process Automation)**. Garanti BBVA keeps improving its information security processes by also utilizing the know-how and global experience made available by the BBVA Group. The Bank also extends support to global projects carried out by the BBVA Group in this context. Under the Information Security Regulation issued by the BRSA, Information Security Committee led by the CEO meets twice a year, resulting in faster attainment of information security targets.

**Investments in security infrastructure continued uninterruptedly against the cyber threats that evolved and increased in the wake of the COVID-19 process.** Through deployment of the new technologies acquired in the field, their integration with

other technologies, and feeding the information resulting from these developments as input into cyber incident management processes, existing preventive security capabilities were further upgraded. Automation capabilities within existing security infrastructure and processes were increased, and operations became more productive.

In view of the implications of increased digitalization during the pandemic, Garanti BBVA kept working towards preventing fraudulent attempts dynamically in line with its strategy, and building on existing data-driven initiatives. Basing its efforts in this vein on its customer-centric approach as always, the Bank aims to **prevent both the Bank's and the customers' potential financial and reputational losses**.

For providing its customers with a more secure experience, the Bank continued put into life development opportunities according to current needs. For this purpose, priority was given to **integration of new technologies, increasing analytical methods, process automation and personnel training**. Important steps were taken in relation to **data governance and stakeholder partnerships**. In particular, the initiatives completed in line with the goal of "alliance with customers" against fraudulent methods and risks that directly target customers and attempt to extract information using various methods are anticipated to contribute significantly to customer security and to frictionless transaction experience alike. Garanti BBVA continues to increase the channels and methods used for informing its customers about fraud trends and important considerations.

**108 Foreign Fraud training and information activities were carried out through announcements/alerts, virtual education and information meetings/emails and live broadcasts.**

As part of education and awareness initiatives in 2021, Garanti BBVA undertook **108 education and/or informative activities in total in relation to external fraud**, employing a variety of

methods including announcements/alerts, virtual education and information meetings/emails and live streaming.

## OUTLOOK

The solutions offered to problems in the banking sector constantly evolve into approaches entailing more modern methods. Deep learning and transfer learning algorithms will be used increasingly in different business areas. Processing visual data, extracting the embedded texts, and making sense of them with natural language processing will also become more and more common. With these, it will become even more important to understand how projections are produced, and the algorithms providing the explicability of estimations will be used at an increasing extent. In addition, value creation will be targeted through work to be performed using the graph theory and the technologies developing around it.

Another area of focus will be rendering the works carried out on data and analytics customized, automated, interactive and dynamic, and making the insights acquired usable by everyone across the Bank.

In 2022, it is planned to revamp the Branches-Abacus communication platform using RPA (Robotic Process Automation) and AI elements. While it is targeted to increase employee focus on high value-added tasks, work will be undertaken to offer error-free and speedy service to customers based on a holistic approach.

Using the DIY approach, it is planned to increase the users and usage of AI in Smart Assistant chatbots and to work towards enhancing employee experience in 2022.

On the part of the ARK Platform that allows developers to develop banking and affiliate applications using agile methodology, accelerates value creation by employing modern technologies, and reduces costs owing to the cost advantage of open system technologies, transformation is targeted to continue and further expand, and to transfer 18% of the transaction load on the existing structure to the new platform in 2022.

While upgrading of existing products within the constantly updated Digital Onboarding continues, it is also intended to make more users Garanti BBVA customers end-to-end digitally with the addition of different flows.

In 2022, Garanti BBVA will keep spending efforts to ally with customers on the back of process security approach and dynamic risk management against the evolving and increasing fraud risks in the ecosystem, and continue to work towards providing a convenient and frictionless environment to its customers for them to fulfill their financial needs. The Bank will continue to offer the setting for secure transacting of its customers with its fraud risk management systems bolstered with state-of-the-art technology, data governance models and analytical methods, and its competent team. It is anticipated that information sharing among different sectors and institutions will gain importance for preventing external fraud risks within the ecosystem.