GS1 Japan

The Global Language of Business

The Grand Shrine of Ise, Mie

# GS1 Japan Handbook

## 2022-2023

# Message from the President

GS1 Japan celebrates its 50th anniversary this year.

GS1 Japan was established in 1972 as an organisation dedicated to improving the efficiency of distribution systems. In 1978, it became a member of the European Article Numbering (EAN) Association, an international distribution standards organisation currently known as GS1. GS1 has since promoted various GS1 standards, including Global Trade Item Numbers (GTINs)/barcodes, which became widely used when POS systems were introduced, and has worked closely with industries to improve supply chain systems and efficiency. Currently, the total number of GS1 Company Prefixes (GCPs) licensed to businesses in Japan is approximately 148,000.

In recent years, digitisation has rapidly advanced in every aspect of society, as well as in our everyday lives, and the COVID-19 pandemic has accelerated this trend even further. In response to this, digital transformation (DX) is being pursued in industries and society. By connecting the physical and the digital worlds with GS1 standards and providing support for DX in industries and society, we at GS1 Japan are committed to playing an active role in making contributions to the improvement of the efficiency of the entire supply chain and patient safety.

As a result of the remarkable growth of e-commerce, the distribution industry is now in need of accurate product information that is based on GTINs that can identify and manage products internationally without any duplicated numbers and which is used by retailers, wholesalers, and e-commerce operators to identify the vast number of products they deal in on the Internet.

In response to this, GS1 Japan made a major revision to its GCP license renewal system in August 2021, the first such revision since the identification system was launched in 1978, in order to manage GTINs and GCPs more rigidly.

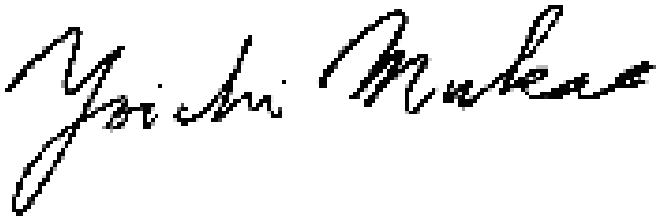
We have continued developing the GS1 Japan Data Bank (GJDB) in conjunction with global GS1 initiatives, including integration with the GS1 Registry Platform (GRP) that enables the international and centralised use of information such as GCPs and GTINs.

As more data has been added to the GJDB recently, we have started integrating it with a product database for the food and everyday essentials industry. We plan to launch industry data usage services in the future.

We will respond to the need for improved distribution efficiency to solve labour shortages, change the way we work, and meet rising demand for distribution, as well as for traceability and the management of best before dates/use by dates in order to address greater awareness of food safety and the Sustainable Development Goals (SDGs). We will do so by promoting the use of various GS1 standards, such as identification codes including Global Location Numbers (GLNs), 2-D symbols, the Electronic Product Code (EPC)/Radio Frequency Identification (RFID), Electronic Product Code Information Services (EPCIS), and the GS1 Digital Link.

In the healthcare sector, we will encourage the use of GS1 standard barcodes attached to prescription drugs and devices in hospitals, whereas in the construction sector, we will promote GS1 standards to support the DX that the sector seeks using GS1 standards.

As we celebrate our 50th anniversary, we hope to undertake collaborative work with user companies, GS1 member organisations, the GS1 Global Office, and other GS1 community members, and to grow alongside the entire GS1 community. We look forward to your continued support.



MUKAE Yoichi

President

GS1 Japan

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# 1 Sectors (Case Studies)

## 1.1 Application of the GS1 QR code by a processed food manufacturer for its internal traceability

GS1 Japan is implementing an activity that aims to disseminate the 'GS1 QR Code/GS1-128 Barcode Guidelines for Carton Boxes' (hereinafter referred to as the 'Guidelines'; https://www.gs1jp.org/standard/barcode/gs1-qr/carton). The Guidelines serve as a guide to bar-coding assembly packaging materials (e.g., carton boxes) for trade item groupings, including processed food products, daily necessities, and sundry goods. The Guidelines refer to the GS1 QR code and GS1-128 symbol as recommended bar code types while referring to a GTIN, production date, expiration date information (best-before date or expiration date for processed food products or the like, or validated date or use-by date for daily necessities or sundry goods), and lot number as recommended data items.

In line with the Guidelines, using bar codes on collective packaging materials for trade item groupings is expected to prevent errors—including misidentification of expiration date information, etc., which could occur during visual checks of that information, and erroneous input of the information, which could occur when input is manually performed—and reduce the time taken to inspect cargo, thereby reducing truck standby time. This will help to ensure traceability by enabling users to grasp the flow of goods by expiration date and lot.

This chapter presents the case of cheese, etc. maker Rokko Butter Co., Ltd. (hereinafter referred to as 'Rokko Butter') implementing this approach. Rokko Butter's Kobe Factory is applying GS1 QR codes printed in line with the Guidelines for in-house traceability.

### 1.1.1 Background of introducing the GS1 QR code

Rokko Butter took the new construction of its Kobe Factory as an opportunity to develop a plan for printing bar codes on carton boxes for their products, and managing such bar codes. The purpose is to control products to be palletised so that a pallet is loaded with identical products or products of the same lot to ensure traceability at the box level. The factory initially considered adopting GS1-128 symbols but ultimately decided to adopt GS1 QR codes, which have a smaller display size. GS1 Japan provided support to the factory when they introduced the GS1 QR code.

### 1.1.2 Applying the GS1 QR code

Rokko Butter's Kobe Factory links information about GS1 QR codes printed on carton boxes for their products with information about the RFID tags on the pallets loaded with the products (GRAIs). Doing so ensures traceability up to the distribution depot, as illustrated in the figure below.

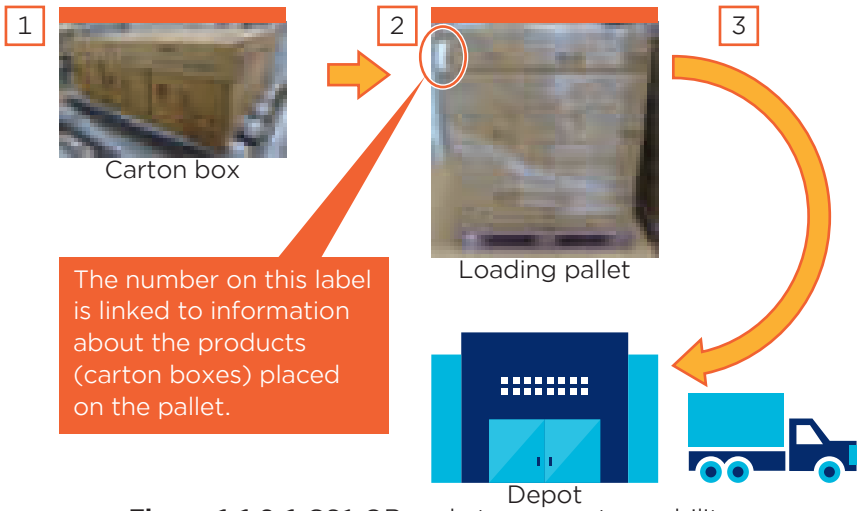


**Figure 1.1.2-1** GS1 QR code to ensure traceability

Currently, 30SKU is the only product covered by the printing of GS1 QR codes. However, the factory is considering printing these codes on additional products in the future. (Photo 1.1.2-1)

**Photo 1.1.2-1** Carton boxes bearing printed GS1 QR codes

### 1.1.2.1 Printing GS1 QR codes

Printing of a GS1 QR code and subsequent work are performed in line with the following steps:

1. A character string indicating a best-before date is printed on a carton box in which products have been placed. A GS1 QR code is then printed on the same box.
2. The GS1 QR code and data included in it are checked with a camera.
3. If any error (e.g., unreadable GTIN) is detected in step (2), the carton box is transferred to another line.
4. The carton box transferred to another line in step (3) is visually checked by a member of the staff. If no problem is identified, the box is returned to the original line.

A GTIN, best-before date, production date, lot number, and box number are encoded into a GS1 QR code. The box number refers to information about the number assigned to a specific carton box. These numbers enable identification of each box.

### 1.1.2.2 Linkage between product information and pallets

When products are palletised at an automated warehouse, a GS1 QR code printed on each carton box is read, and within the system, information about the load on the pallet is linked to information about the RFID tag attached to the pallet (GRAI). Then, the pallet is transferred to a storage area. Information about the location of the pallet in the storage area is also linked to the GRAI for management.

Products to be released from the factory are transferred from the storage area to the cargo handling site. A staff member at the cargo handling site reads the RFID tag on the pallet bearing the products via a hand-held terminal to check the load on the pallet against the product information linked to the pallet's GRAI. If the check reveals no problems, the staff member issues a product identification label, which is used for internal management, by using a hand-held label printer and attaches the label to the load. Information about the products on the pallet is linked to the number indicated on the product identification label. This number is used as a key to enable the management of the locations of the products at the distribution depot, the destination of the products to be released.

## 1.1.3 Conclusion

Although the scope at which Rokko Butter is applying GS1 QR codes is currently limited to the company's internal traceability, future dissemination of this technology will make the GS1 QR code a base for ensuring cross-enterprise traceability. It will also help to reduce workload in logistics operations, including the handling of incoming and outgoing products. In its endeavours toward improving visualisation and efficiency in the logistics field, GS1 Japan will continually strive to disseminate the Guidelines.

# 1.2 Healthcare

## 1.2.1 GS1 RFID tags can change in-hospital logistics for orthopaedic materials, workload reduction and safety improvement

Center Hospital of the National Center for Global Health and Medicine (hereinafter referred to as NCGM Hospital) is listed as a Japan International Hospital and offers comprehensive medical services with advanced medical care. It is well-known as a centre for global infectious diseases, including COVID-19. The hospital has been actively working to improve the medical safety and efficiency of its in-hospital logistics using GS1 standards, especially GS1 barcodes on medical devices. In FY2021, as a further initiative, they introduced the implementation of RFID source tagged with the GS1 EPC Tag Data Standard (TDS) for the management of orthopaedic implant products on a trial basis and verified its effectiveness.

### 1.2.1.1 Background to the initiative

#### 1.2.1.1.1 Complex and mixed workload in product distributions

Orthopaedic materials, such as artificial joints, plates and screws, are implanted in patients' bodies in arthroplasty or osteosynthesis, being chosen to fit each patient exactly. In order to be able to accommodate each patient, manufacturers generally offer products in a wide range of sizes and shapes, even in the same series or for the same application. Hence, the number of SKUs becomes generally large, and such products tend to be more expensive than other medical supplies.

To select the orthopaedic materials that best suit a patient, the materials to be used for the surgery are determined during it. For these reasons, dozens or even hundreds of products are shipped from manufacturers or dealers to medical institutions for each surgery as consignment units (Photo 1.2.1.1.1-1), and after the surgery, as the majority of products are not used for patients, they are returned.

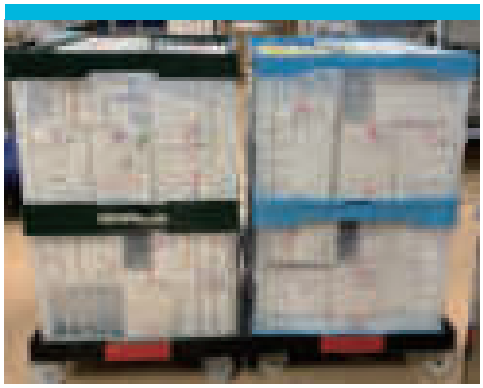

**Photo 1.2.1.1.1-1** Containers containing orthopaedic implant products for a single surgery (an example at Center Hospital)

The inventory management and inspection procedures demand long hours of work and patience for all stakeholders involved.

Actually, the hospital has also been carrying out inspections manually when both receiving and returning products. However, in order to ensure inspection accuracy, they had to rely on skilled staff for such long hours of work, which placed a burden on them.

#### 1.2.1.1.2 Progress in source tagging

As mentioned above, the logistics management of orthopaedic materials is burdensome for staff at manufacturers who also need to double check the products after the check by in-hospital medical staff, so some manufacturers have begun to attach RFID tags to their products to improve the efficiency of their own product management operations.

In response, the American Medical Devices and Diagnostics Manufacturers' Association (AMDD) decided to recommend a unified data format for RFID tags, in consideration of the comprehensive use of the tags throughout the supply chain, including logistics companies and medical institutions. Specifically, the GS1 EPC Tag Data Standard is used, where GTIN and the serial number are encoded in the EPC memory, while production information such as expiry date and lot number are written to the USER memory (Figure 1.2.1.1.2-1). The number of manufacturers who have started implementing GS1 standard RFID tags or who have switched their proprietary coding method to this standard is gradually increasing, leading to the standardisation of RFID tag specifications. This standardisation movement is beneficial for healthcare organisations because they can utilise source-tagged RFID, avoiding the need for work by downstream operators, including the organisations.

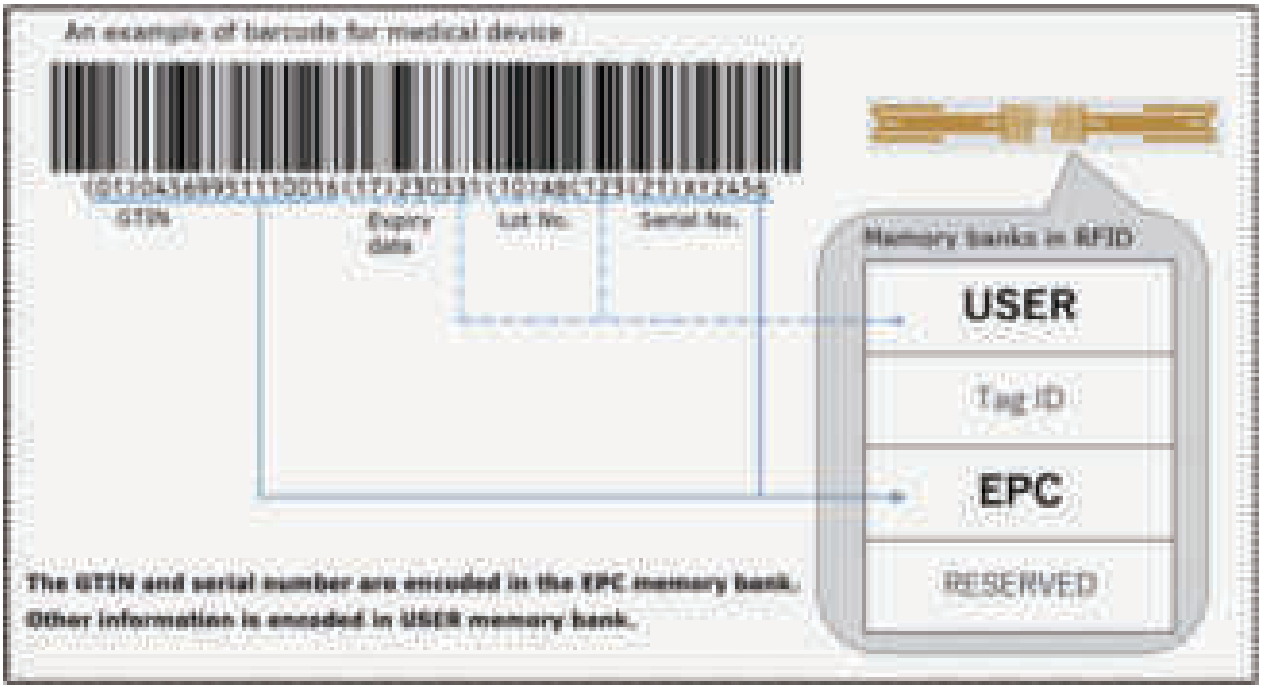


**Figure 1.2.1.1.2-1** Image of data encoding on RFID tag conforming to GS1 EPC tag data standard

### 1.2.1.2 Workflows utilising RFID

NCGM hospital has installed an RFID gate reader to study the efficiency of operations implementing GS1 standard source-tagged RFID tags. RFID tags are scanned before and after every surgery, following the procedures below.

Step 1) A set of orthopaedic materials for each surgery from the manufacturer is ordered.

Step 2) The Advanced Shipping Notice (ASN), which includes GTIN, serial number, lot number and expiry date of each product, is received from the manufacturer before the arrival of the products and is imported into the hospital's management system.

Step 3) The ordered products are received in containers. All the products are delivered with GS1 RFID tags attached.

Step 4) The containers go through the RFID gate reader (Photo 1.2.1.2-1). The RFID tag data are detected, and the GTINs and serial numbers are automatically cross-checked with the ASN data imported in step 2).

Step 5) After the surgery, the RFID tags on the used materials' packages are scanned using a handheld reader, and registering the necessary information in the electronic health record (EHR).

Step 6) All unused products are put in the container, and the RFIDs are scanned using the RFID gate reader for cross-checking with the ASN data for the return shipment.

**Photo 1.2.1.2-1** Container passing through an RFID gate reader

### 1.2.1.3 Advantages of RFID utilisation

It was discovered that this RFID utilisation is superior to conventional work with regard to the following points.

#### 1.2.1.3.1 Reduction of working time

Although this study has only just been started, a clear time reduction was observed in three cases for incoming product inspection. The work time was reduced by 89%; previously the average time was 13 and a half minutes, and it went down to

one minute and a half.(*1) Furthermore, the staff in charge of the work realised that their workload was significantly reduced. In fact, in-coming inspections, which used to be a manual operation requiring two persons, require only a single person when utilising RFID, and it is expected the work will be accomplished smoothly whether the person is skilled or not. However, even so two persons are still being assigned.

#### 1.2.1.3.2 Improvement of accuracy

The scanning accuracy of RFID is very high, so inspection errors are less likely to occur than in manual inspections. Moreover, the operators are proactively inventive enough to be able to achieve much better results; for example, in order to avoid or greatly reduce scanning errors they scan the container several times while changing its orientation and rearranging the placement of the products in the container (Photo 1.2.1.3-1).

**Photo 1.2.1.3-1** Products with RFID tags attached

(Products are secured with rubber bands in a somewhat uneven arrangement to avoid scanning errors)

#### 1.2.1.3.3 Improvement of medical safety

The impressive features of RFID utilisation, including higher accuracy and faster work, made it possible to scan large quantities of products while minimising the time required, in order to prepare for possible emergency surgery. Traceability is also improved as inspection records, which were previously written on paper by hand, are now acquired digitally and utilised in the hospital's computer system.

Furthermore, the personnel at the hospital gratefully confirmed that, in addition to the in-coming inspection workload being reduced, the workload for the processing of EHR is also reduced when utilising RFID. When going through several surgeries, the average registration time for the used materials has been shortened to just six seconds thanks to the RFID system, compared to taking three minutes 41 seconds for manual work, and 54 seconds for barcode scanning.

Another secondary but important benefit they reported is infection prevention, as RFID scanning is done at a distance without coming into contact with packages containing used products on which infected bodily fluid might remain.

### 1.2.1.4 Future plans

As it has become clear that utilising RFID can bring about considerable benefits, the hospital plans to move to an RFID workflow in earnest, expanding the range of target products, which are currently limited to products from a single manufacturer, to include products from other manufacturers as well. The hospital will make efforts to investigate the status of source-tagging by manufacturers, will discuss with them the standardisation of shipping data formats, and will further refine operational procedures of RFID workflow.

(*1): 'Guidelines for using GS1 barcodes and RFID in medical institutions', http://cmii.ncgm.go.jp/med_traceablity/achievements.html

# 1.3 Transport & Logistics

## 1.3.1 EPC/RFID construction site pilot: HASEKO Corporation

HASEKO Corporation, a Japanese construction company specialising in condominium construction, is piloting the supply chain visualisation of construction components using EPC/RFID at one of their construction sites. Construction workers are allocated to construction sites based on a strict construction schedule for each site, so ensuring that the required construction components are appropriately delivered to the relevant sites is crucial to facilitating problem-free construction processes.

### 1.3.1.1 Phase I pilot: RFID utilisation at a single construction site

In the pilot, a UHF-band passive RFID tag is attached to each construction component by its manufacturer. 'On-metal RFID tags' are used for some construction components made from metal substances. The SGTIN EPC scheme is used as an identification key scheme for these construction components. Each RFID tag also has a printed QR code that carries a hexadecimal string of binary encoding for the corresponding SGTIN EPC. The QR code can be used when RFID tag cannot be read for some reason. Figure 1.3.1.1-1 shows an example of an RFID tag.

Based on the unique identification keys encoded in the RFID tags, a cloud-based information system collects data on supply chain events such as shipment from the manufacturer, reception at the construction site, and installation in the building. Location information is essential for these events. A QR code containing proprietary location information is shown at each room or other location in the construction site, as in

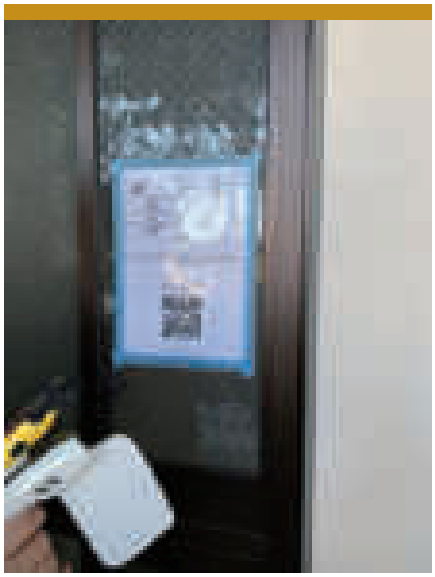

**Figure 1.3.1.1-2** QR code for location information at a room entrance

Figure 1.3.1.1-2.

The handheld terminal shown in Figure 1.3.1.1-3 is used to scan the SGTIN EPCs in RFID tags and location information in QR codes.

After scanning that data, the handheld terminal posts it in the information system as a supply chain event. After that, the information system can display the collected supply chain events in a web browser on a tablet. This web system and handheld terminal application has been developed by HASEKO Corporation to realise unified management of construction components.

Various kinds of construction components, including the drainage pipe connectors shown in Figure 1.3.1.1-1, are RFID-tagged in the pilot.

**Figure 1.3.1.1-1** RFID tag attached to a connector for drainage pipes

**Figure 1.3.1.1-3** Handheld RFID/ barcode reader used in the pilot

Some examples are shown below.

Figure 1.3.1.1-4 shows an RFID tag attached to the frame of a window. The RFID tag is attached to the lock component, which is made of resin. However, the RFID tag is surrounded by metal components, so its reading range is shorter.

**Figure 1.3.1.1-4**. RFID tag attached to the frame of a window

**Figure 1.3.1.1-5** Modular bathroom with an RFID tag attached to its roof plate

Figure 1.3.1.1-5 shows a completed modular bathroom. It is delivered to the construction site as a set of semi-finished products and then assembled in the relevant room at the site. An RFID tag is attached to each set of modular bathroom parts.

Figure 1.3.1.1-6 shows RFID tags attached to wooden planks for furniture, such as shelves. In contrast to the above-mentioned modular bathrooms, an RFID tag is attached to each of the planks that comprise a shelf. If any planks are missing from the construction site, the shelf manufacturer is requested to find them or deliver alternatives. This business practice strongly motivates the manufacturer to attach RFID tags to each of the planks for its shelf products.

**Figure 1.3.1.1-6** RFID tags attached to planks for furniture (e.g., shelves)

Those photos show the various construction components allocated to each room. The RFID tags are read by a handheld terminal to record their allocation and installation in the rooms. These RFID tags are also read when the

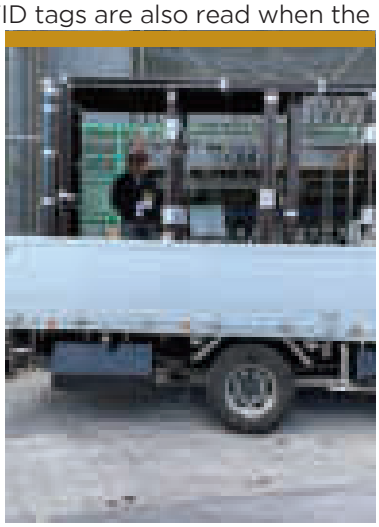

**Figure 1.3.1.1-7** Reading RFID tags when receiving construction components

construction components are received at the construction site. Figure 1.3.1.1-7 shows a worker reading RFID tags at the time of reception.

In contrast to the examples given above, some construction components are not RFID-tagged in this pilot. Typical examples of such components are electronic wires and air ducts. They are received at the construction site in a rolled form, cut to the appropriate length, and then installed in the rooms. In other words, variable measure components are not RFID-tagged in this pilot.

### 1.3.1.2 Phase II pilot: Wider supply chain visibility of RFID-tagged construction components

The phase I pilot examined the feasibility of RFID utilisation for various construction components at the single construction site. The supply chain visibility system, which collects and visualises supply chain events, has also been tested since the phase I pilot. Then, a phase II pilot, whose objective is the wider adoption of the supply chain visibility system to multiple construction sites, has been started. HASEKO Corporation runs many construction projects in parallel, so the system needs to be interoperable across these construction sites.

Foris Corporation, a HASEKO group member company producing furniture and joinery, is cooperating with the pilot as a construction component manufacturer. RFID tags are attached to doors, door frames and window frames at the time of their production in Niigatayokagu Inc., which produces some of Foris Corporation's products. These RFID-tagged products are shipped to multiple construction sites of HASEKO Corporation.

**Figure 1.3.1.2-1** Finished door products sorted according where they will be installed

The phase II pilot uses GLN in order to identify the construction sites for this interoperability purpose. GLN ensures the globally unique identification of each construction site, thus facilitates the seamless adoption of the supply chain visibility system at the multiple construction sites.

Although supply chain visibility is the main purpose of this pilot, using RFID at multiple construction sites reveals another advantage of RFID for manufacturers. Firstly, Foris Corporation receives purchase-orders from HASEKO Corporation based on its construction plan, then Niigatayokagu Inc. produces the products based on orders from Foris Corporation. In a storage area of the factory, finished products are sorted according to where they will be installed, as shown in Figure 1.3.1.2-1. However, sometimes products are stored in the wrong area due to human error. With RFID, such misplaced products can easily be located. These RFID tags are also read at the shipping area of the factory as shown in Figure 1.3.1.2-2, thus preventing errors when loading of the products by comparing the result of reading the tags and the corresponding shipping list.

**Figure 1.3.1.2-2** Reading RFID tags when shipping products from the factory

### 1.3.1.3 Future prospects

HASEKO Corporation now directly asks its group manufacturers and third-party manufacturers to attach RFID tags to their construction component products. HASEKO Corporation recognises that a harmonised approach in the Japanese construction industry will be important in allowing manufacturers to reduce the burden of adopting RFID if many construction companies implement it at their construction sites. GS1 Japan is continuing dialogue with HASEKO Corporation and the Japanese construction industry as a whole to support the realisation of a harmonised approach to digitalisation under GS1 standards.

## 1.3.2 Pilot and feasibility study on Japanese sake: Supply chain efficiency and value creation utilising EPC/RFID

GS1 Japan has strengthened its engagement with manufacturers of Japan's national beverage, sake, by conducting several EPC/RFID pilot studies aimed at improving sake supply chain efficiency for many years.

In 2020, the Ministry of Economy, Trade and Industry (METI) established a committee for sake supply chain efficiency. This committee conducted some pilots using EPC/RFID as part of its research project, in which GS1 Japan participated as well. Since RFID is an indispensable technology for promoting future supply chain efficiency, METI is also focusing on this technology.

There were three main objectives of this series of pilots, and two additional verifications were also conducted. These objectives were based on issues that had been identified when GS1 Japan conducted demonstration experiments with sake manufacturers in the past. To achieve each of these objectives, METI had four sake breweries cooperate in the pilot studies.

**Table 1.3.2-1** Pilot objectives and cooperating partner

| Objective | Cooperating sake brewery |
|---|---|
| (1) Labour saving in inventory management | Shata Shuzo Co., Ltd. |
| (2) Prevention of unauthorised resale | Asahi Shuzo Co., Ltd. |
| (3) Promoting communication with consumers | Sekiya Brewery Co., Ltd. |
| Additional verification: Temperature monitoring for overseas exports | NANBU BIJIN Co., Ltd. |
| Additional verification: Improving the efficiency of source tagging | Asahi Shuzo Co., Ltd. |

### 1.3.2.1 Labour saving in inventory management

Under the Liquor Tax Law, sake breweries are required to provide the government with detailed reports on their inventories from the production stage (even before the sake goes into the supply chain). Many manufacturers bottle their sake and store it in their warehouses, where a lot of time and manpower is spent on manual inventory management. Since sake bottles are heavy, it also takes a lot of time and effort to remove bottles from shelves located at the back of the warehouses in order to check the brand name.

With the cooperation of Shata Shuzo, we conducted a pilot using EPC/RFID with a view to reducing the workload associated with inventory management and enabling the quantity and location of each product to be determined more efficiently.

The procedure for this pilot was as follows.

- EPC/RFID tags were attached to the P-boxes (plastic containers for sake) and the pallets on which the boxes were stacked.
- When sake bottles were packed in P-boxes and stacked on pallets, information concerning the 'bottles and P-boxes' and the 'P-boxes and pallets' was linked.
- Information on the pallets was linked to their location in the warehouse.
- A system was employed to manage the above information, with the information being referenced based on the date, time, and place.
- The number of units and location for each type of product were determined through the above operations.

This pilot was conducted using only 300 bottles of one single brand. Although the experiment was limited in scope, Shata Shuzo was able to check the inventory for the location of sake bottles within their warehouse without having to remove bottles from the P-boxes.

The current management system relies on paper ledgers and human memory, which is a labour-intensive process that makes the work dependent on individual skills. Using an EPC/RFID-based information system for inventory management makes it possible for the quantity and location of products to be determined automatically, thereby resulting in significant labour savings.

### 1.3.2.2 Prevention of unauthorised resale

Since online marketplaces allow individuals to buy and sell goods freely, the unauthorised resale of rare Japanese sake for high prices has become a major problem. In many cases, such resold sake are poorly stored and have lost their taste, which may damage the brand. Therefore, to prevent the resale of sake, this pilot established a system that allows sake manufacturers to manage their own products individually. Using this system, the manufacturers can accurately monitor and ensure the number of bottles shipped by the manufacturer and the number of bottles handled by the distributors (sake dealers who purchase sake directly from the manufacturer).

Due to the limited time frame of the experiment and the impact of the COVID-19 pandemic, it was not possible to get the cooperation of actual wholesalers and retailers. However, various information (e.g., what brand of sake was shipped, when it was shipped, where it was shipped from, and where it was shipped to) was recorded using EPCIS standard. As a result, it was confirmed that EPCIS visibility data (what, when, where, and why) for shipping and receiving at each point in the sake supply chain can be handled without problem.

### 1.3.2.3 Promoting communication with consumers

Recently, an increasing number of sake manufacturers are operating directly managed sales outlets and restaurants so that they can communicate directly with consumers, promote the selling points of their sake, and see how consumers react to it.

In 2020, Sekiya Shuzo opened the restaurant Koji MARUTANI under its direct management in Hisaya-odori Park in the heart of Nagoya, where this pilot was conducted. Due to the COVID-19 pandemic, the restaurant had to minimise conversation between customers and waiting staff. Nonetheless, the restaurant wanted to give customers detailed information about the sake that they serve.

Therefore, a system that reduces the risk of COVID-19 infection but still communicates information on sake was created for this pilot. The system for this pilot worked as follows.

- EPC/RFID tags were attached to sake bottles stored in the refrigerator and NFC tags were attached to the glasses that were used to serve sake to customers.

- When the sake was poured into a glass, the SGTIN information from the EPC/RFID tag on the bottle was associated with the NFC tag on the glass.
- When the customer read the NFC tag on the glass by using a smartphone provided at the table, a website was displayed to provide the customer with detailed information about the sake.

**Figure 1.3.2.3-1** RFID tag attached to a sake bottle

**Figure 1.3.2.3-2** Reading the RFID tag on a glass of sake

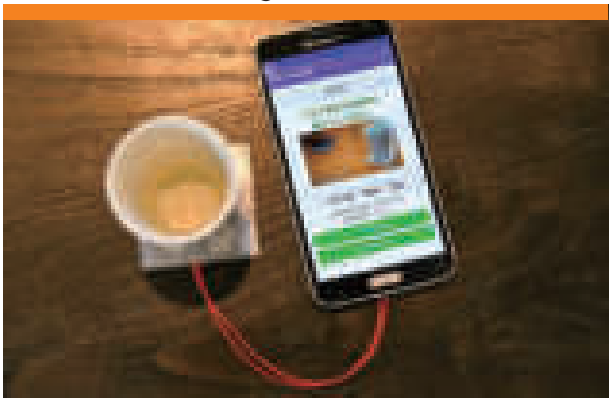

**Figure 1.3.2.3-3** Information of sake displayed on a smartphone

Source for Figures 1.3.2-1 to 1.3.2-3: SAKETIMES (https://jp.sake-times.com/special/press/pp_sakebar-marutani)

- The smartphone could also be used to reorder the same sake or direct the user to an e-commerce site.
- The NFC-tagged glasses were cleaned after serving and then reused.

As a result, customers were able to order sake without having to call the waiter, thereby reducing the amount of conversation between customers and waiting staff during the pandemic. At the same time, they were also able to access detailed information about the sake.

### 1.3.2.4 Additional verification: Temperature monitoring for overseas exports

In light of the increasing demand for quality control of sake during transportation, a system for continuous temperature control during the transportation of overseas exports was established in a pilot conducted with the cooperation of NANBU BIJIN.

In this pilot, the following system was used to monitor the temperature of frozen sake.

- RFID tags with temperature measurement and recording functions are attached to the surface and inside of the case containing the exported product.
- At each stage of the transportation process from the sake manufacturer to the consumer, the RFID tags could be read by the transporter's and consumer's smartphones to view the recorded temperature history.
- The manufacturer was able to check and analyse the collected temperature history to monitor the quality control status of the target product during transportation.

In this project, we used a hybrid type of UHF and NFC RFID tags in consideration of the reading equipment used at each site. When a reading environment for UHF tags becomes available in the future, it will be possible to take advantage of the superior characteristics of UHF tags, including the long-range reading of multiple tags.

### 1.3.2.5 Additional verification: Improving the efficiency of source tagging

In past pilot projects conducted by sake manufacturers and GS1 Japan, EPC/RFID tags were attached to sake bottles manually. However, since manual application is time-consuming, source tagging needs to be streamlined with a view to realising the actual implementation of EPC/RFID systems.

In a pilot conducted in cooperation with Asahi Shuzo, an actual labelling machine for source tagging was used.

This test was conducted together with a label printing company by placing EPC/RFID tags into a printing machine. The results confirmed the efficiency of the source tagging process, and the RFID-tagged labels were successfully attached without slowing the actual labelling process at the Asahi Shuzo factory.

#### 1.3.2.6 Conclusion

All of the sake manufacturers that participated in this study group advocated the importance and benefits of item-level management for sake products. Since the sake supply chain is less diverse and complex than the supply chains for the daily consumer goods sold at supermarkets, corner shops, and chain drug stores, the sake industry is well suited to EPC/RFID-based supply chain management with source tagging by the manufacturers. Furthermore, the practical application of this technology is feasible.

Going forward, the findings of these EPC/RFID pilot studies will contribute to improving the efficiency of the sake supply chain.

### 1.3.3 Wacoal Uses EPC/RFID to Improve Efficiency

#### 1.3.3.1 Outlines

Wacoal Corp., a Japanese apparel company which mainly manufactures women's underwear while also operating retail shops, has implemented EPC/RFID in both the company's shops and its distribution centres, and has greatly improved efficiency in both operations. The RFID tags attached to each item are encoded with a SGTIN (Serialised GTIN).

#### 1.3.3.2 Why Wacoal Started Using EPC/RFID

In FY2018, Wacoal began RFID-tagging new products on an individual item basis and replaced the tags on existing products in its own directly managed shops. The company started using RFID in actual operations in FY2019. For inventory that, instead of being sold via its directly managed shops, is sold through its wholesale partners, the company will gradually eliminate older items without RFID tags from its inventory and replace them with newer products with RFID tags.

Wacoal had been considering the introduction of EPC/RFID for some considerable time, but was unable to go ahead with doing so before 2017 due to cost issues. Therefore, with reference to a case study on ONWARD KASHIYAMA CO., LTD.,[(*1)] which had already implemented EPC/RFID, the company implemented a policy to reduce the cost of existing tags and absorb the cost of RFID tags by unifying as far as possible the tags with various layouts that were designed separately for each brand. The initiative was also boosted by the gradual decline in the price of RFID tags in the market, allowing the implementation of RFID to begin in FY2018.

Currently, more than 3 million items in total have been tagged, and about 200 reading devices have also been installed. This has helped improve operational efficiency at the company's approximately 80 directly managed shops and its distribution centres.

As mentioned above, SGTIN is encoded in the RFID tags. This is because the company intends to utilise the tags not only for its own internal operations, but also across its entire supply chain.

(*1) GS1 Japan Handbook 2019-2020 1.2.1 'Onward Kashiyama EPC/RFID Rollout' https://www.gs1jp.org/assets/img/pdf/GS1-Handbook_2019-2020.pdf

#### 1.3.3.3 RFID utilised operation

Wacoal is using RFID for the operations at both its shops and distribution centres, as shown in Table 1.3.3.3-1.

**Table 1.3.3.3-1** Business Operations Using RFID

| | |
|---|---|
| (1) Shops | Checkout, inventory counting |
| (2) DC | Receiving (of both new products from manufacturing sites and returned items from shops), re-check after picking, shipping |

Each operation workflow and the effects of the implementation of RFID are described below in detail.

##### 1.3.3.3.1 RFID Utilisation at Shops

1. Checkout

   RFID readers are installed onto cash registers, allowing all the RFID tags of the products being purchased by a shopper to be read at once.

   When the system was first introduced, the reading accuracy was 96%. However, after repeated efforts were made, such as adjusting the radio wave output of the antenna and the placement of products displayed close to the

cash register, as well as covering products in the stockroom that were accidentally read with a sheet to block radio waves, the current reading accuracy is nearly 100%. When the system was first introduced, the reading accuracy was 96%. However, after repeated efforts were made, such as adjusting the radio wave output of the antenna and the placement of products displayed close to the cash register, as well as covering products in the stockroom that were accidentally read with a sheet to block radio waves, the current reading accuracy is nearly 100%.

RFID has dramatically increased the speed of the processing of shoppers' purchases at checkouts and has shortened the time that people have to queue at the checkouts during busy times.

2. Inventory Counting

On both the sales floors and in the stockrooms, RFID tags on products are read by handheld readers to streamline operations.

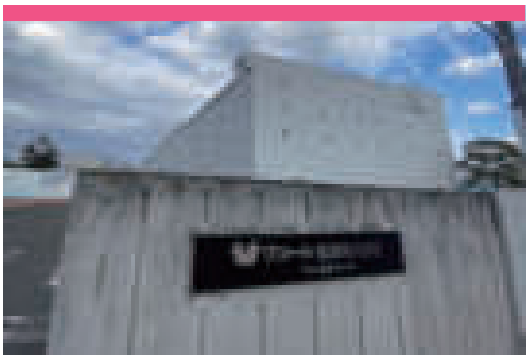

**Figure 1.3.3.3.1-1** Moriyama Distribution Centre

Although there are differences depending on shop size, the introduction of RFID has resulted in labour savings of 80-90% for inventory operations across all shops. For example, at one shop before the introduction of RFID, it took seven shop staff just over 96 person-hours over three days after closing. However, after the implementation of RFID, it took only two staff members 11.25 person-hours while the shop was open. The amount of person-hours needed for inventory operations was reduced by nearly 85 hours (about 90%).

Another major benefit of the introduction of RFID is not only the reduction in person-hours required for inventory work, but also the change to the timeslot when it is done; namely, from late at night to during the daytime. The previous barcode-based inventory method required that each item be picked up and scanned one by one, which meant that the work had to be done after the shop closed when no customers were there. After the implementation of RFID, there is no need to move items in order to scan them, so it is possible to do the work while the shop is open.

This eliminates the needs for late-night working, reducing the burden on the staff as well.

The company has created and used training videos to educate staff members on RFID-based shop operations, and in most cases they have been able to learn the work methods without any problems.

#### 1.3.3.3.2 RFID Utilisation at Distribution Centres

Currently, Wacoal's distribution centres are using RFID to check incoming goods, accept returns from shops, and check products after picking to improve operational efficiency and accuracy.

Wacoal has three distribution centres in Japan, with each brand having its own centre.

This article introduces the use of EPC/RFID at the Moriyama Distribution Centre. Currently, Wacoal's distribution centres handle a total of approximately 77 million pieces of merchandise per year, out of which the Moriyama Distribution Centre handles approximately 36 million pieces per year.

#### 1.3.3.3.3 Receiving Process

When new goods with RFID tags are received from the manufacturing site, the cardboard boxes containing the goods pass through an

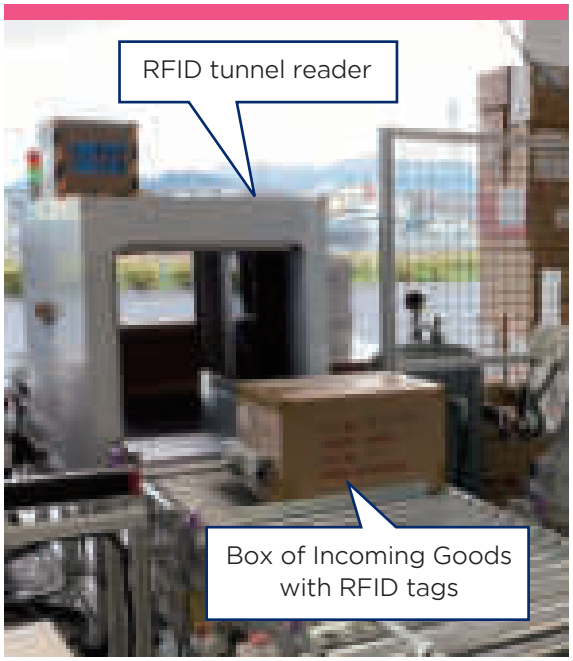


**Figure 1.3.3.3.3-1** Receiving Process

RFID tunnel reader, which reads the SGTIN of the products. Using RFID, the quantity of each product can be captured as well. To confirm that the received products and the quantity are correct, the read data is checked against the list received in advance from the factory.

Thanks to the implementation of RFID, it is no longer necessary to take the contents of each box out to check them, making the inspections of incoming goods more efficient and achieving personnel reductions.

Similarly, for products with RFID tags that are accepted as returns from shops, a sticker to identify the content of the box is automatically issued and affixed to each box after the RFID tags inside are read. Before the implementation of RFID, shops had to scan the barcode of each product to be returned and create a return statement in advance. But now, the quantity can be accurately confirmed by reading the RFID tags at the distribution centre, eliminating the need for shops to check the quantity and reducing the amount of labour required.

This has led to a reduction of about 4,000 hours of barcode reading at the shops and 2,000 hours of checking at the distribution centre, for a total of approximately 6,000 hours per year.

#### 1.3.3.3.4 Re-check after Picking

When re-checking after picking, an RFID gate reader (Figure 1.3.3.3.4-1) reads the RFID tags of the products in the containers and checks them against the list of products to be shipped. In addition, for greater work efficiency, the roller conveyor inside the gate reader has bumps to shake and move the products in the reader about, which makes the successful reading of all the tags in the gate easier.

**Figure 1.3.3.3.4-1** RFID Gate Reader

### 1.3.3.4 Future Plans for the Utilisation of RFID Tags

#### 1.3.3.4.1 Improving the Reading Rate

The read rate of RFID tags has been an ongoing issue since the implementation. Currently, as the tag manufacturer has selected inlays that match Wacoal's needs, the read accuracy at the shops is almost 100%, while the read rate at the distribution centre is 99.994%. The reading accuracy at the distribution centre is already higher than that for manual barcode reading (99%), but the company hopes to achieve 100%.

#### 1.3.3.4.2 Expanding the Scope of the Utilisation of RFID Tags

In order to maximise the use of RFID tags attached at the point of manufacture, Wacoal is considering starting to use tags in the following three areas as well.

1. Inventory Counting at Distribution Centres

   As mentioned above, Wacoal's distribution centres are currently using RFID to check incoming goods, accept returned goods, and check products after picking to improve the efficiency of each operation. However, if RFID could also be used for inventory operations at distribution centres, which handle very large volumes of goods, even greater operational streamlining could be achieved. The company has already conducted a pilot using RFID for inventory control of approximately 50,000 of the products handled at its Moriyama Distribution Centre, and based on the results of the test, it is estimated that the required person-hours could be reduced by more than 80% if RFID was used for all the products the centre handles. In the pilot, the centre is also, as one of the efforts to launch the actual utilisation of RFID tags, identifying issues that need to be considered, such as the need to identify the location of inventory and to know for which types of products is it difficult to ensure the reading accuracy of their attached RFID tags.

2. Inspection at manufacturing sites

   Currently, RFID is not yet utilised in Wacoal's factories. In the future, greater operational efficiency could be achieved by using RFID tags for outgoing goods inspections at the manufacturing sites.

3. Inventory management of closeout items

   Currently, in order to simplify the management

process when a regular item becomes a closeout item, another GTIN for the sale is reassigned for each product type with all sizes grouped together, and the EAN/U.P.C. symbol is used. However, Wacoal believes that item-level management using RFID for sale items as well will not only streamline the inventory check process, but also be useful in cases such as for searching for items when customers ask staff on the sales floor to check the inventory for an item in a certain size or colour. First, the company plans to allocate a GTIN to each SKU so that it can distinguish between sizes and colours in the same way it can for regular items, and accordingly attach RFID tags encoded with SGTINs.

#### 1.3.3.5 Conclusion

Before the introduction of RFID, the following is required: scan testing; giving consideration as to how to use RFID in accordance with business processes; and readers that are appropriate for each location. Wacoal has achieved significant improvements in its operational efficiency by creating an environment that maximises the use of RFID in both its shops and distribution centres by implementing operational innovations tailored to each business process and environment.

Currently, as many products still do not have RFID tags, their use is limited to within Wacoal. However, if all products are equipped with RFID tags in the future, it will be possible to use RFID tags outside of directly managed shops and distribution centres as well, further improving operational efficiency. Since Wacoal uses SGTIN for the identification of each item, the company will be able to use it across its entire supply chain, which involves other companies.

## 1.4 B2C

### 1.4.1 B2B2C service with GS1 QR code

#### 1.4.1.1 GTIN for product recall

SDG initiatives have been getting popular even in elementary schools, thus it has become increasingly important to communicate accurate product safety information not only to buyers, but also to users and others as part of the 'consumer right to know'. The Consumer Affairs Agency in Japan alerts consumers to recalled products on their website and Twitter. Reporting recalls to the Agency became mandatory, and this information, including GTIN and lot data, should now be registered to the Security Net (operated by METI) under the appropriate company gBiz ID (operated by the Digital Agency). Information of Lot number is indispensable in identifying the actual target, and if it is missing, finding the product is a heavy burden and give great pressure on the environment. This information is shared worldwide through OECD's recall portal website. Nowadays, GTIN is increasingly used to identify recall information as some other MOs do.

#### 1.4.1.2 Sharing recall information with consumers using GS1 QR code

While, currently, some foodstuffs are labelled with a one-dimensional barcode symbol if they contain allergenic ingredients, the level of accuracy required for safety information is even higher, and many changes have been made to the related regulations, besides, confirmation of possible changes to registration details after shipment is also becoming increasingly important. In notifying users of product recall information, telephone calls, TV commercials, and emails are used, but even so, it is difficult to reach all target groups, so the government has announced that it will use some new technology to notify them. One such service is beginning to be used to check product safety via cloud systems by scanning GS1 QRs. In order to help the users, scodt®, a smartphone app using GS1 QR code, was developed. This app is based on a system for the communication of risk.

It ensures that information is conveyed to the target user of a product in the event of a recall, and that the user can easily take the necessary action. (http://pl-taisaku.org)

The system is based on the patented 'Safety Check On-demand Technology (scodt®)', developed and filed by Yoshiaki WATANABE, and promoted by The Association for Product Liability (APL).

#### 1.4.1.3 Service Overview

The system works as follows:

After installing the app on their mobile device, users scan the GS1 QR code printed on the product label or product itself. This GS1 QR code provides three types of information: the GTIN, lot

number and product URL. Users can then check the following information on their mobile device;

• Product status (e.g., whether the product has reached end of life or not and whether it has been recalled or not)

- Basic product information
- Product instruction manual
- Certificate of product quality testing, etc.
- Product expiry warning
- Directing users to other related information.
- The responsibility of the retail distribution operator is increased to prevent recalled products from being put on the market, and are required to detect and sort recalled products before they are sold.

  Furthermore, it can be assumed that when target products are recycled, their management will be strengthened, and for that purpose, the utilisation of GS1 QR for individual products, e.g. sundries, hardware, and machinery, will be effective.

For further information on their services, please visit APL's website.

https://pl-taisaku.org/?page_id=2823 (only in Japanese)


**Figure 1.4.1.3-1** Free GS1 QR Code (scodt®)

## 1.4.1.4 GS1 QR code case studies

### <Trap products: Sakae industry>

Sakae Industry manufactures traps to catch all kind of animals from rats, marten and raccoons to bears. Sakae Industry was looking for a more effective tool to inform people about the correct installation of the traps (on site) because the traps need to be properly installed and used, otherwise there might be a risk for people nearby caused by escaping animals.

The company has devised a metal label with a GS1 QR code printed on it, which is attached to the body of the trap. This system frees users from needing paper instruction manuals at trap installation sites and ensures that the product information can be retrieved through a mobile device whenever and wherever required.

Animals are increasingly likely to invade human society as the population in Japan, especially in rural areas, decreases, and therefore services using GS1 QR code will continue to grow.

**Figure 1.4.1.4-1** GS1 QR code attached vermin control trap


**Figure 1.4.1.3-2** Applications of scodt®

### <Koji cosmetics: Sakura Koji Lab>

Sakura Koji Lab is a manufacturer that sells cosmetic products made from rice 'koji'. Because the ingredients in Sakura Koji Lab's products differ from those of common cosmetics, adequate information on their usage and features need to be provided to customers. As Sakura Koji Lab exports its products internationally, it needs to provide detailed product information to its international consumers. A GS1 QR code is displayed on each product's packaging, enabling users to check how to use the products via scodt®.

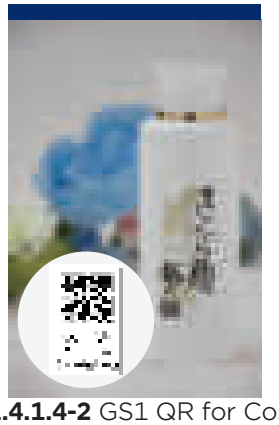

**Figure 1.4.1.4-2** GS1 QR for Cosmetics

### <Processed foods: Joan International>

Joan International (Joan) is an importer and distributor of olive oil.

Recently, both sellers and consumers are becoming increasingly concerned about food safety and security with the introduction of the mandatory notification of voluntary recalls in Japan.

The Italian olive farmer contracted by Joan grows their olives organically, and Joan prints the GS1 QR onto their product labels to convey this information to buyers and others.

The GS1 QR printed on the product also directs customers to the company's EC site, making it easier to inform customers of the product safety and increase their trust in the company, which has reportedly resulted in an increase in repeat purchases. Consumers can also scan the GS1 QR codes on the product packaging to obtain detailed information about the products' characteristics.

## 1.4.1.5 Responsibility for product safety

In the field of industrial products and cosmetics, it is expected that consumers knowing how to correctly use products will have a significant

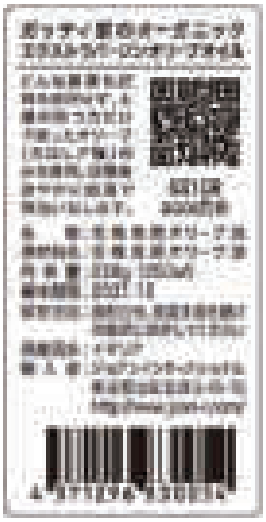

**Figure 1.4.1.4-3** GS1 QR for olive oil products

effect in preventing undesirable accidents due to mistakes or misuse.

Imports of food products have increased rapidly in recent years, but many of these products contain ingredients that are not authorised in Japan, and consequently recalls relating to the labelling obligations of imported food products have increased rapidly.

The Consumer Affairs Agency is strengthening regulations on proper labelling, and food recalls seem to be a major issue in the future.

The PL Research Society will be conducting research on issues related to food recalls and labelling from 2022 and will deepen its cooperation with the government. Furthermore, in 2022, 'Act for the Protection of Consumers who use Digital Platforms' came into force, imposing on digital platform operators the obligation to stop advertising such as labelling violations and to report offending operators. This means that existing internet operators will likewise have to 'not sell the offending product', increasing the risk of recalls at DIY stores and others, and furthermore product traceability in the disposal process after recalls, which has been neglected, will also be required. This will require more and more identifying brand owners and product lots for single products.

Much is expected of solutions using GS1 QR codes as a tool for users to use products correctly and safely.(within facilities or areas such as factories and warehouses).

# 2. Services & Solutions

## 2.1 GS1 Barcode Basic Guide

In July 2022, GS1 Japan released GS1 Barcode Basic Guide (hereinafter called "Basic Guide"), which provides basic information on GS1 standards including GS1 identification keys, GS1 barcodes and others. This Guide was developed with the support of major Japanese barcode solution providers.

The providers of barcode encoder/decoder, printer, or scanners and the system engineers of GS1 user companies including manufacturers, distributors, and retailers.

Background of compiling this Basic Guide is as follows;

In recent years, there has been a trend in Japan to use GS1 standard barcodes besides the EAN symbol to encode information such as expiration dates and lot/batch numbers along with GTINs, not only for medical devices and pharmaceuticals but also for raw materials and trade item groupings for general consumer goods. To assist with such utilisation, we have been promoting the application of 2D symbols that can encode attributes other than GTIN. However, unfortunately, there are some cases that barcode data are encoded incorrectly.

We, as it is published in the 2020 issue, previously released the GS1 AIDC Standard Conformance Check Guide (hereinafter referred to as the Check Guide) which consisted of two sections below.

1. Technical information on GS1 standard barcodes.
2. Functional checklists for barcode-related products to self-declare the conformity to the GS1 standard.

It was distributed at several exhibitions and well-accepted not only by system solution providers but also manufacturers, wholesalers and retailers, and they, from the actual point of use, gave us the precious comment or request on that. That was to add more basic explanations of GS1 standards in the Check Guide.

Thus, we decided to revise the material for all those who want to learn about GS1 standards, including user companies. We divided the Check Guide into two separate issues one is for technical information, and the other is for the check list. The technical edition is the Basic Guide which includes very basic of GS1 standards in addition to the information provided with the Check Guide, and it illustrates, for easy and quick references, important information related to GS1 standards like GS1 identification keys, GS1 Application Identifiers, GS1 standard barcodes, HRI, FNC1, barcode size, truncation, and more.

The Basic Guide can be downloaded from our website (only in Japanese).

www.gs1jp.org/standard/barcode/basicguide.pdf

**Figure 2.1-1** GS1 Barcode Basic Guide

## 2.2 GS1 Japan Data Bank (GJDB)

GS1 has announced a policy that is aimed at urgently creating and offering a centrally managed referable system for information that is interlinked with GS1 identification keys, such as GTIN and GLN, while also managing and operating GS1 Company Prefix allocations much more strictly.

Based on this policy, GS1 is launching a new database service called the 'GS1 Registry Platform', which stores thin information on GS1 Company Prefixes and GS1 Identification Keys, including GTIN and GLN, and provides essential information for identifying products and/or locations.

In principle, users need to be routed through the local GS1 MO (GS1 Japan in Japan) service to register for the GS1 Registry Platform, and the GS1 Japan Data Bank (GJDB) service provides the entry point for Japanese users.

Up and running since October 2019, GJDB employs a system that offers easy registration and management of GTINs and their associated information and allows the seamless release of the registered product data to the GS1 Registry Platform and domestic database systems.

Following GJDB initial release, brand owners can easily navigate the GTIN allocation, GTIN management, and barcode symbol generation/download processes. Further functional enhancements are planned for future releases.

### 2.2.1 Challenges related to product information in Japan

In Japan, there are a lot of brand owners of small and medium-sized enterprises (SMEs), and they are struggling significantly with the registration and management of product information.

In contrast, the wholesalers and retailers that handle the products produced by these SMEs are suffering from inefficiencies in product data exchanges.

#### 2.2.1.1 Challenges related to product information registration and management

Determining whether they can afford a product management system from the perspective of cost-effectiveness is a big decision for SMEs.

Therefore, companies who cannot acquire such systems mostly process their product information by keeping handwritten records or entering data in a spreadsheet.

However, if GTINs are allocated manually without sufficient knowledge of the GTIN structure (composed of three elements: a GS1 Company Prefix, an item reference, and a check digit), there is an increased risk of incorrect product information registration, which includes registering incorrect GTINs and allocating the same GTIN to different products (duplicate).

Incorrect GTIN allocation also causes problems for the brand owner's trading partners, including their wholesalers and retailers, as GTINs are the key to information throughout the value chain.

#### 2.2.1.2 Challenges related to product information exchanges

Retailers and wholesalers need to receive the correct product information in a timely manner, but they have been struggling to acquire this

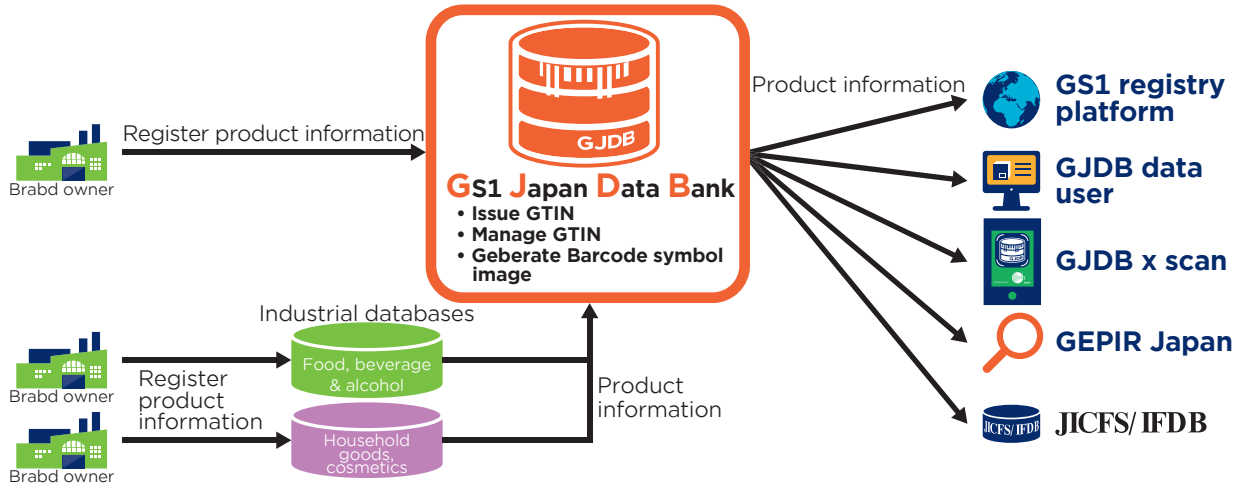


**Figure 2.2-1** Overview of the GS1 Japan Data Bank

information.

In Japan, a database that centrally manages all the product information that retailers need for reference has yet to be developed.

As a result, wholesalers and retailers have to ask the brand owners for the necessary product information.

The product information is transmitted from the brand owners in various ways, such as entering the data into the retailer's Web system or sending retailer-specific spreadsheets with the required data as email attachments.

Manual operations such as these impose an undesirable burden on the brand owners and involve cumbersome operations, which may result in entries containing erroneous information even for the same product or entries containing inconsistent information.

Product information is vital for order placement, logistics, and sales operations, so incorrect information affects the entire business.

## 2.2.2 Functions offered by GJDB

GJDB initial release has been prepared mainly to mitigate issues concerning product information registration and management or product information exchanges, including GTIN allocation. The initial release offers the following functions.

1. Easy allocation of GTINs
2. Easy management of GTINs
3. Easy generation of barcode symbols for GTINs
4. Seamlessly interlinked operations with domestic databases.

### 2.2.2.1 Easy allocation of GTINs

GTINs must be allocated correctly by using the setting item references according to the rules and then calculating the check digit.

This process can be a burden, especially for SMEs, but GTIN allocation has been made easy by the release of GJDB service, which requires only the following three steps.

**<Three steps of GTIN allocation>**

1. Select the relevant GS1 Company Prefix
2. Enter the basic product information
3. Press the 'Issue GTIN' button
4. Seamlessly interlinked operations with domestic databases.

### 2.2.2.2 Easy management of GTINs

The main reason for using GTINs is their global uniqueness.

Any reduplication of GTINs causes confusion for the stakeholders who handle the products, including wholesalers and retailers, and undermines the supply chain efficiency.

To avoid such confusion, each brand owner must make sure to allocate GTINs correctly without reduplication.

Brand owners do not need to worry about GTIN reduplication once they have registered all their

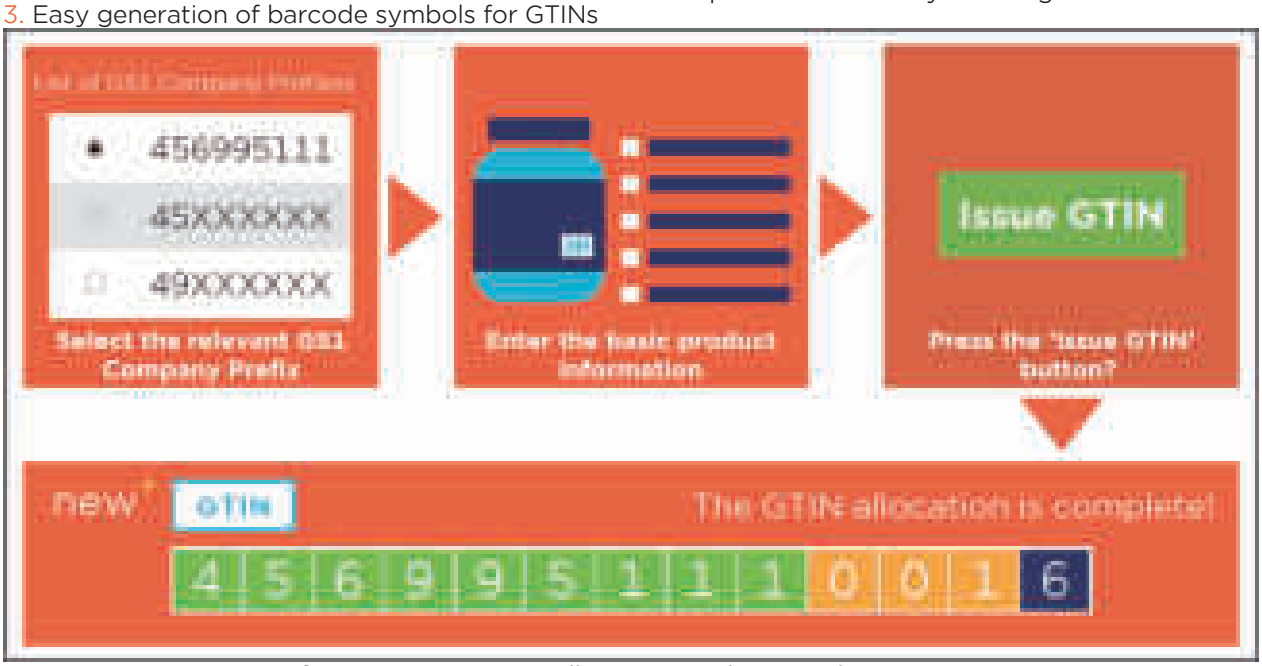


**Figure 2.2.2.1-1** GTIN allocation made easy (three steps)

products to GJDB because doing so will ensure that the GTINs are correctly managed.

Furthermore, the GTIN allocation status, including counts for the allocated GTINs (and the remaining unallocated GTIN count), for each GS1 Company Prefix is visualised using a coloured bar chart.

### 2.2.2.3 Easy generation of barcode symbol images for GTINs

Brand owners need to allocate GTINs for their products and then display their barcodes.

If the brand owner leaves this work to a printing company, they just need to provide the GTIN data. However, if the brand owner decides to carry out this process by themselves, they need to find suitable software to generate the symbol and then display it on the product.

SMEs that are familiar with the process should have no problem printing the barcode, but those that are not familiar with may find generating the symbol for the allocated GTIN difficult.

By utilising GJDB functions, brand owners can easily generate the necessary EAN/UPC symbols and download them in an electronic format after publishing the product information to GJDB and its connected database.

2.2.2.4 Seamlessly interlinked operations with the GS1 Registry Platform and domestic databases

Brand owners expect their products to be widely sold. Given this, they need to share accurate product data among their stakeholders and make sure that the data is well known to the parties concerned.

Currently, however, brand owners need to share product information in many different ways according to the relevant party's requested format, which can be a burden.

GJDB allows users to publish accurate product information globally as it has already been seamlessly integrated with the GS1 Registry Platform, JICFS/IFDB (2.4), GJDB × scan (2.3), and GEPIR (2.6).

## 2.2.3 Number of items registered in GJDB

As of July 2022, about 2,500,000 items have been registered in GJDB by approximately 25,000 brand owners. During the service launch period, we asked companies with newly allocated GS1 Company Prefixes to register their product information, but we are now expanding this to customers that had already been licenced GS1 Company Prefixes before the launch. Therefore,

**Table 2.2.3-1** Item counts by category

| Category | Item count |
|---|---|
| Food | 636,009 |
| Healthcare supplies | 14,374 |
| General merchandise, household items, and durable consumer goods | 272,743 |
| Cultural goods | 1,387,930 |
| Apparel and personal items | 231,582 |
| Other | 22,553 |
| **Total** | **2,565,191** |

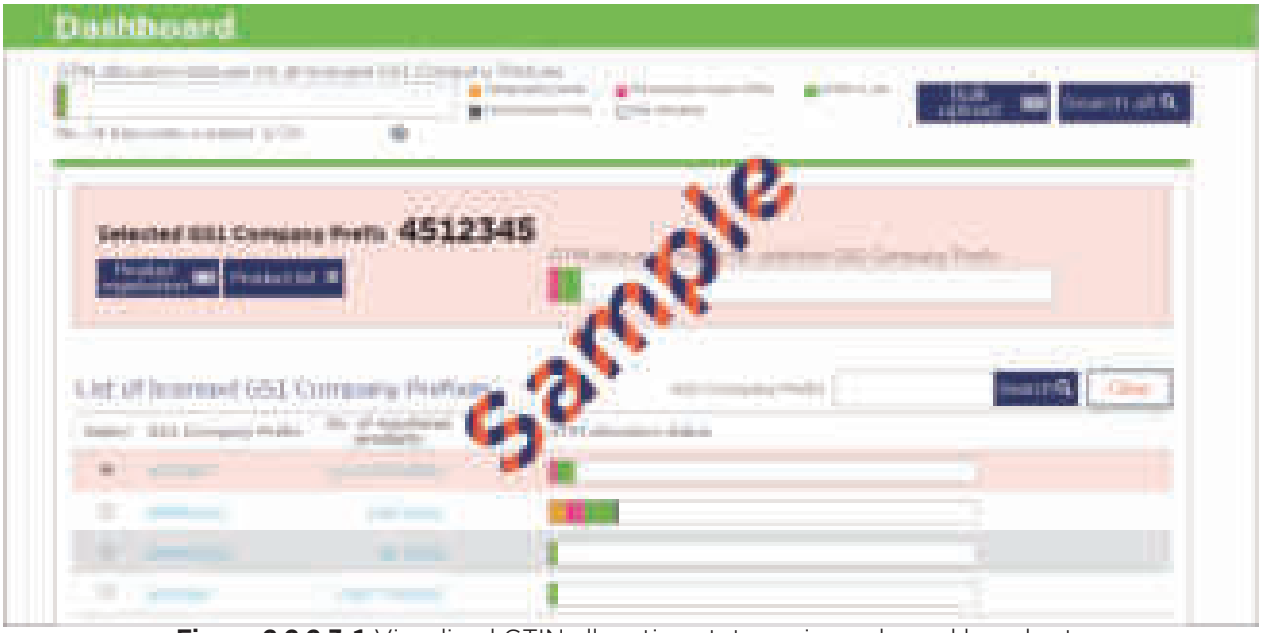


**Figure 2.2.2.3-1** Visualised GTIN allocation status using coloured bar charts

the number of items and brand owners is expected to increase further.

### 2.2.4 GJDB update history information

Since the release of GJDB in October 2019, we have made several updates to make product information registration easier and improve usability.

We will continue to update GJDB in order to incorporate features that meet the requirements of local users and the direction of the GS1 data services.

Table 2.2.4-1 below shows the update history for GJDB.

### 2.2.5 Future of GJDB

We aim to widen the product information coverage for GJDB by seeking the cooperation of product information databases in related industries and then gradually strengthen its features to facilitate the resolution of various issues associated with domestic product information exchanges.

Through these efforts, it is our sincere desire that GJDB will be a service that is the benefit of not only brand owners but also wholesalers and retailers who utilise product information in GJDB.

**Table 2.2.4-1** GJDB update history

| Date | Contents |
|---|---|
| Q1 2020 | • Enhancement of functions for those who register product information<br>Bulk upload/download, bulk update, and assistance for classification selection<br>• Launch of functions for those who browse product information<br>Product information search and browse functions |
| Q3 2020 | • Enhancement of function for those who register product information<br>Barcode symbol form patterns added<br>Support for migration of JICFS/IFDB data to GJDB |
| Q1 2021 | • Launch of daily uploads of GTIN data to GRP |
| Q1 2022 | • Launch of receiving product information from two industrial databases*<br>*One is Food, beverage and alcohol industry, and the other is household goods, cosmetics industry |
| Q2 2022 | • Launch of a dashboard that shows product information data quality report for those who register product information |

## 2.3 GJDB × scan

### 2.3.1 Overview

In January 2021, we launched a smartphone app called 'GJDB × scan', which allows users to display product information by scanning the barcode on the product package. It can be downloaded for free on iOS or Android devices.

GJDB × scan displays product information registered in GJDB (refer to 2.2) when a user scans the EAN symbol on the product package. It also confirms whether the GTIN is based on a valid GS1 Company Prefix that is licensed by GS1 Japan.

Users can also use this app to send feedback on the displayed product information and request the registration of product information.

These inputs are shared with the brand owners.

### 2.3.2 Features

GJDB × scan shows different results, depending on whether the GTIN is registered in GJDB or not as follows.

1. GTINs that are registered in GJDB

   If the GTIN is registered in GJDB, the app displays the product information shown below.

- Brand owner
- GTIN
- Product name
- Brand name
- Net content
- Product comments
- Last update date
- Product image
- Product website

The product information includes useful information such as a link to the product page on the brand owner's website, so users can access additional information that is not provided on the product packaging.

In addition, if a user finds that the registered product information is incorrect, they can send a message to the brand owner via the app so that the brand owner can correct their product information.

2. GTINs that are not registered in GJDB

If the GTIN is not registered in GJDB, the app displays only the GTIN and the brand owner's name.

In this case, just tap the Request product registration button to send a request to the brand owner.

This will prompt the brand owner to register the product information.

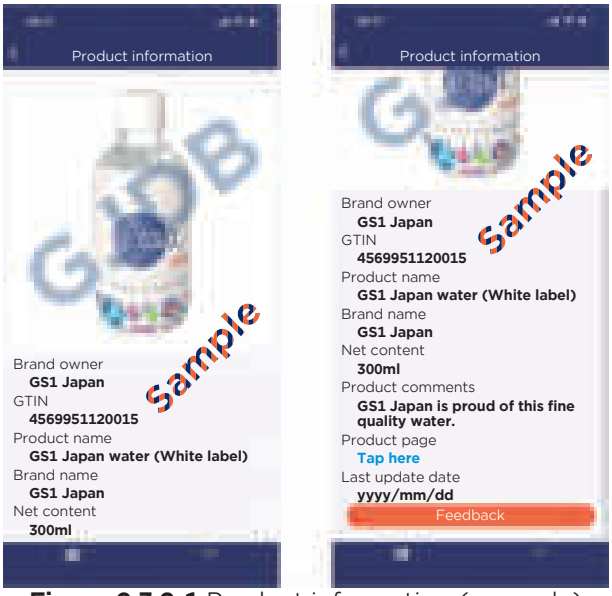


**Figure 2.3.2-1** Product information (example)

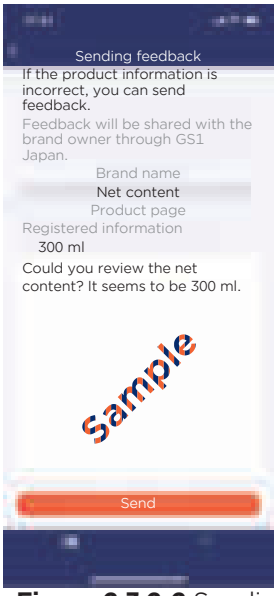


**Figure 2.3.2-2** Sending feedback


**Figure 2.3.2-3** Requesting product information registration

## 2.4 JICFS/IFDB (JAN Item Code File Service/Integrated Flexible Data Base)

Since 1988, GS1 Japan has been operating JICFS/IFDB, a product catalogue database, and has been collecting basic product attributes, such as GTIN, product names, product categories, weights, and quantities.

Product data are not only registered directly by product manufacturers, but also are collected from product information databases of various industries including alcoholic beverages and processed foods, household goods and cosmetics, consumer electronics, and OTC drugs.

Data is even collected from distributors. These data are then entered into the database after manually conducted maintenance according to the JICFS/IFDB standard and are made available to retailers, wholesalers, and other users via JICFS Database Providers (JDPs) (Figure 2.4-1).

Table 2.4-1 shows the number of the products registered in JICFS/IFDB.

Approximately 20,000 new products are registered in the database every month.

Most of the data registered in JICFS/IFDB were related to food or commodities, but in recent

years the amount of data on products such as stationery, toys, and durable consumer goods has been increasing, because there is growing market demand for GS1 barcodes marks on such products so that they can be identified with GTINs.

Similarly, more variations are seen in case studies on the use of product data in JICFS/IFDB.

In the past, these data were mostly used in the business-to-business field (B2B). In other words, to support retailers in creating master data to introduce a point-of-sale (POS) system or an electronic ordering system (EOS), to suggest shelf allocations, and to analyse POS data.

Recently, however, usage in the Business-to-Consumer field (B2C) is growing according to the increase of online shopping sites and consumer apps for Consumer Panel Survey.

Since many stores in online shopping malls register product information using their own codes and product names, products are sometimes repeatedly registered under different names and categories.

To solve this problem, several companies operating online shopping malls use GTIN for product information control.

Data collection applications for Consumer Panel

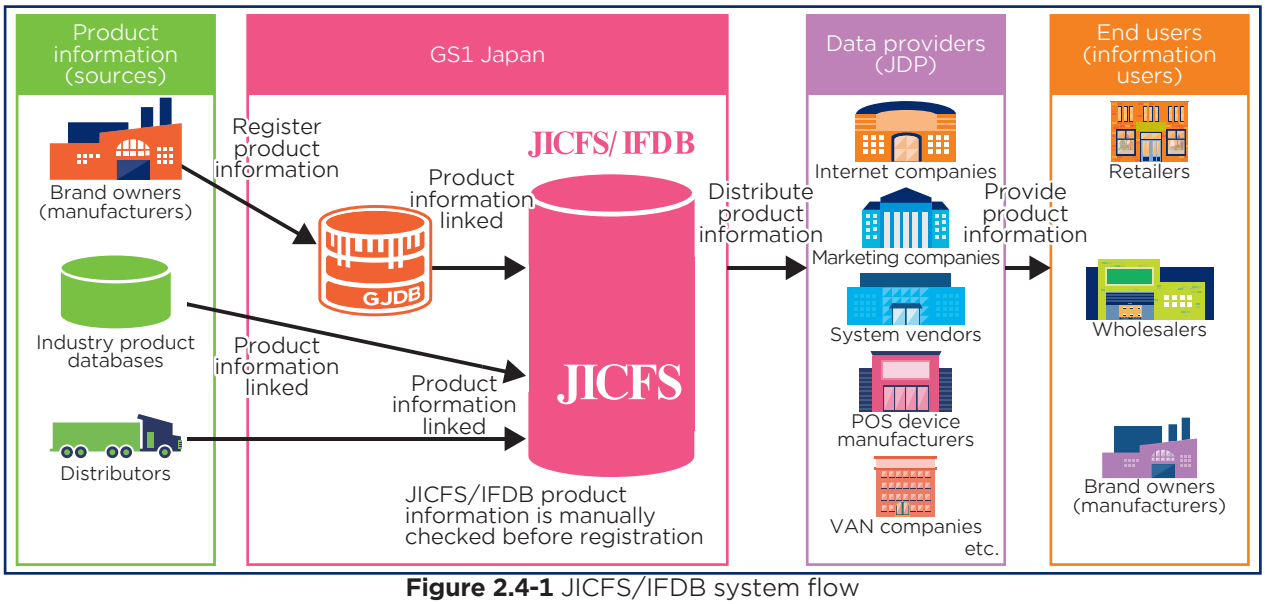


**Figure 2.4-1** JICFS/IFDB system flow

**Table 2.4-1** Number of Registered Products

| | 2022 | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 |
|---|---|---|---|---|---|---|---|
| Food | 1,921,582 | 1,842,309 | 1,766,776 | 1,688,487 | 1,628,262 | 1,544,912 | 1,465,218 |
| Commodity | 1,097,244 | 1,032,509 | 976,486 | 937,338 | 897,873 | 855,876 | 807,882 |
| Recreation and miscellaneous | 803,756 | 738,773 | 695,942 | 653,634 | 616,509 | 575,471 | 532,678 |
| Durable goods | 556,217 | 515,591 | 485,633 | 459,415 | 406,105 | 337,560 | 311,321 |
| Apparel, personal items & sporting goods | 556,732 | 480,251 | 430,390 | 397,709 | 367,305 | 331,360 | 301,951 |
| Others | 3,072 | 3,080 | 3,092 | 3,111 | 3,123 | 3,147 | 3,172 |
| Active item total | 4,938,603 | 4,612,513 | 4,358,319 | 4,139,694 | 3,919,177 | 3,648,326 | 3,422,222 |
| Inactive data | 3,104,154 | 3,104,154 | 3,104,154 | 3,104,154 | 3,104,154 | 3,104,154 | 3,104,154 |
| **Grand total** | **8,042,757** | **7,716,667** | **7,462,473** | **7,243,848** | **7,023,331** | **6,752,480** | **6,526,376** |
| Increase in number of items (year-on-year) | 326,090 | 254,194 | 218,625 | 220,517 | 270,851 | 226,104 | 243,731 |
| Rate of increase (year-on-year) | 104.22% | 103.40% | 103.02% | 103.14% | 104.01% | 103.46% | 103.88% |

**Table 2.4-2** JICFS Classification Code System <Example:110109:Salt>

| Food | Processed Food | Seasonings | Table Salt |
|---|---|---|---|
| (Broad category) | (Main category) | (Sub-category) | (Sub-sub-category) |
| 1 | 1 | 01 | 09 |

Survey use product information from JICFS/IFDB as data which assists users (consumers) in inputting merchandise information that they purchased into the application.

The product information in JICFS/IFDB includes the JICFS Classification Code System (Table 2.4-2), which indicates product categories.

These codes are used as search keys for extracting the necessary product groups, and as aggregate keys for grouping similar products together for data analysis.

The JICFS-classification is revised as necessary.

## 2.5 Verified by GS1

GS1 endeavours to gather GS1 identification codes, such as GTINs, as well as information about GS1 Company Prefixes. Currently, GS1 gathers information about GS1 Company Prefixes and GTINs through organizations worldwide that are affiliated with GS1. GS1 has launched a service called Verified by GS1, which is intended to make that information available to data users.

In addition to GS1, GS1-affiliated organizations worldwide have also launched Verified by GS1. Against this backdrop, GS1 Japan also launched the service in March 2022.

GS1 Japan provides Verified by GS1 on its portal site for business operators that are licensed to use GS1 Company Prefixes. The business operators can access Verified by GS1 via the portal site and search for any GTIN, thereby viewing information about it. They can submit up to 30 queries per day.

Figure 2.5-1 illustrates the Japanese version of Verified by GS1.

The Japanese version of Verified by GS1 references GS1's Verified by GS1. When the 'Brand name', 'Product description', 'Product image URL', or 'Country of sale' field shows information in both Japanese and another language, the information in Japanese is prioritised in the order of display and displayed on top, so that Japanese business operators can use the service easily.


**Figure 2.5-1** Verified by GS1 provided by GS1 Japan

GS1 Japan will continue to update the Japanese version of Verified by GS1, maintaining it in line with up-to-date information provided by GS1. In addition, GS1 Japan will encourage marketplaces and retailers to use Verified by GS1, thereby promoting its use across Japan.

## 2.6 GEPIR

GEPIR (Global Electronic Party Information Registry) is a unique, internet-based service that gives access to basic contact information on GS1 Company Prefix licensees. Since 2003, GS1 Japan has been providing GEPIR services in Japanese and English on the GS1 Japan website.

In 2007, a GLN location search function was added to GEPIR by GS1 Japan, followed by GTIN information display services in 2013. In March 2017, an upgrade to GEPIR version 4.0 was completed.

With GEPIR version 4.0, basic information on GS1 member companies can be searched by party name, GTIN, GLN, and other GS1 identification keys.

Currently, GEPIR is used by many companies, and is accessed more than two million times annually.

**Figure 2.6-1** Example of GS1 Japan search results

## 2.7 GPC Translation and OECD product recall portal

Global Product Classification (GPC) is a product classification developed and managed by GS1.

GPC is a required attribute when registering product information into the data pools of the Global Data Synchronisation Network (GDSN). As of May 2022, the development of 42 broad categories, including Food/Beverage/Tobacco, Kitchenware and Tableware, Beauty/Personal Care/Hygiene, and Pet Care/Food, have been completed and released on the GS1 website (https://www.gs1.org/standards/gpc).

Localisation has been progressing, with translations into 25 languages including Japanese available on the GS1 website.

Recently, there have been increasing demand to use GPC for other purposes than GDSN. The recall portal website managed by OECD has adopted GPC for its product categorisation.

The aim of this portal site is to facilitate the efficient sharing of international product safety information in multiple languages, as a response to current trends in global trading. The portal site started operation in October 2012 in English and French, with the participation of the U.S., Australia, Canada, and countries in the EU. Japan also joined in January 2015, providing product recall information on Japanese products, as well as adding a link to the Japanese-language version on the home page of the site.

We expect the more recall-related information is supplied by OECD members to this site, the more GPC utilisation will expand.

**Figure 2.7-1** The Global Recalls portal showing Japanese products subject to recall

## 2.8 Ryutsu BMS (Business Message Standards)

The use of EDI in Japan's retail sector started with the adoption of the Electronic Ordering System (EOS) using the **JCA Protocol**, a standard data communication protocol that was drawn up in 1980 by the Japan Chain Stores Association (JCA). Since the 1990s, EDI has also been adopted for business processes other than ordering.

Furthermore, **Ryutsu** Business Message Standards (Ryutsu BMS) were established in the 2000s based on Efficient Consumer Response (ECR) and Quick Response (QR) procedures with the aim of improving information sharing between retailers and suppliers.

**JCA Protocol**: The standard communications protocol for electronic ordering, this was established in 1980 by the Japan Chain Stores Association (JCA). The communication circuits available for this protocol are public circuits (2,400 bps) and DDX circuits (9,600 bps). It cannot transmit kanji characters and images. DDX circuits are packet type communication services that use telephone lines.

**Ryutsu**: This Japanese word refers to the entire supply and demand chain, which typically consists of three groups in the form of manufacturers, wholesalers, and retailers.

### 2.8.1 Development of Ryutsu BMS

Drawn up in 1980, the JCA Protocol became widespread as an EOS for retail businesses.

In the 1990s, the business procedures covered by EDI expanded from EOS to the shipping and receipt of goods, invoicing, and payments. However, from the late 1990s to the early 2000s, the system was found to have the following problems.

- Low speed
- Inability to deal with kanji characters and images
- Discontinuation of necessary communication equipment
- Difficulty in adding new data fields due to fixed length data format
- Differences in message formats from one retailer to the next

Concerned about this situation, two Japanese supermarket organisations agreed to cooperate and started developing a next-generation EDI in June 2005. With the support of the Ministry of Economy, Trade and Industry (METI), Ryutsu BMS was created as the new EDI standard in April 2007. Ryutsu BMS is now being increasingly adopted throughout the Japanese retail industry.

### 2.8.2 Outline of Ryutsu BMS

Ryutsu BMS defines the following.

1. Communication infrastructure

   There are three standard communication protocols for exchanging Ryutsu BMS messages.

   - Server-to-Server Protocols: ebMS and AS2
   - Client-to-Server Protocol: **JX Protocol**

     In addition, guidelines for secure internet communications have been prepared, and the use of a certificate authority that meets the requirements of the guidelines is recommended.

**JX Protocol**: A communications protocol for sending and receiving messages from a client terminal to a corresponding server on a TCP/IP network. Using the international SOAP-RPC standard, the protocol delivers functions that are equivalent to those of the J Protocol. The JX Protocol has become the standard communications protocol for exchanging EDI messages between clients and servers within Ryutsu BMS.

2. Standard messages

   There are two types of message collections .

   - Basic messages

     Intended for use at supermarkets, chain drug stores, and the like, 28 basic messages were published based on the Order to Cash business model.

   - Department store messages

     Japanese department stores have unique transaction models that differ from those used by other retailers. For example, they register a merchandise purchase when the merchandise has actually been sold. Therefore, department stores use 27 unique messages in their transactions.

- Message upgrade

  In Japan, the current input tax credit system will be changed in October 2023, and the 'qualified invoice based method' will be implemented.

  Ryutsu BMS has been modified and released to meet the requirements.

## 2.8.3 Efforts to promote Ryutsu BMS

GS1 Japan, together with the Supply Chain Standards Management and Promotion Council (see 3.2), has been taking various efforts to encourage the wider use of Ryutsu BMS.

- Trainings and seminars:

  GS1 Japan offers a wide range of training courses, from introductory courses to advanced implementation courses. Some of these courses are available as e-learning. We also hold seminars to introduce best practices to Ryutsu BMS users and solution providers.

- Promotional materials:

  Flyers, brochures, and videos have been made available to anyone interested in Ryutsu BMS. We also operate a dedicated Ryutsu BMS website that is constantly kept up to date.

## 2.8.4 User commitments to Ryutsu BMS

By 2020, about 600 retailers and 16,100 wholesalers and manufacturers had already adopted Ryutsu BMS.

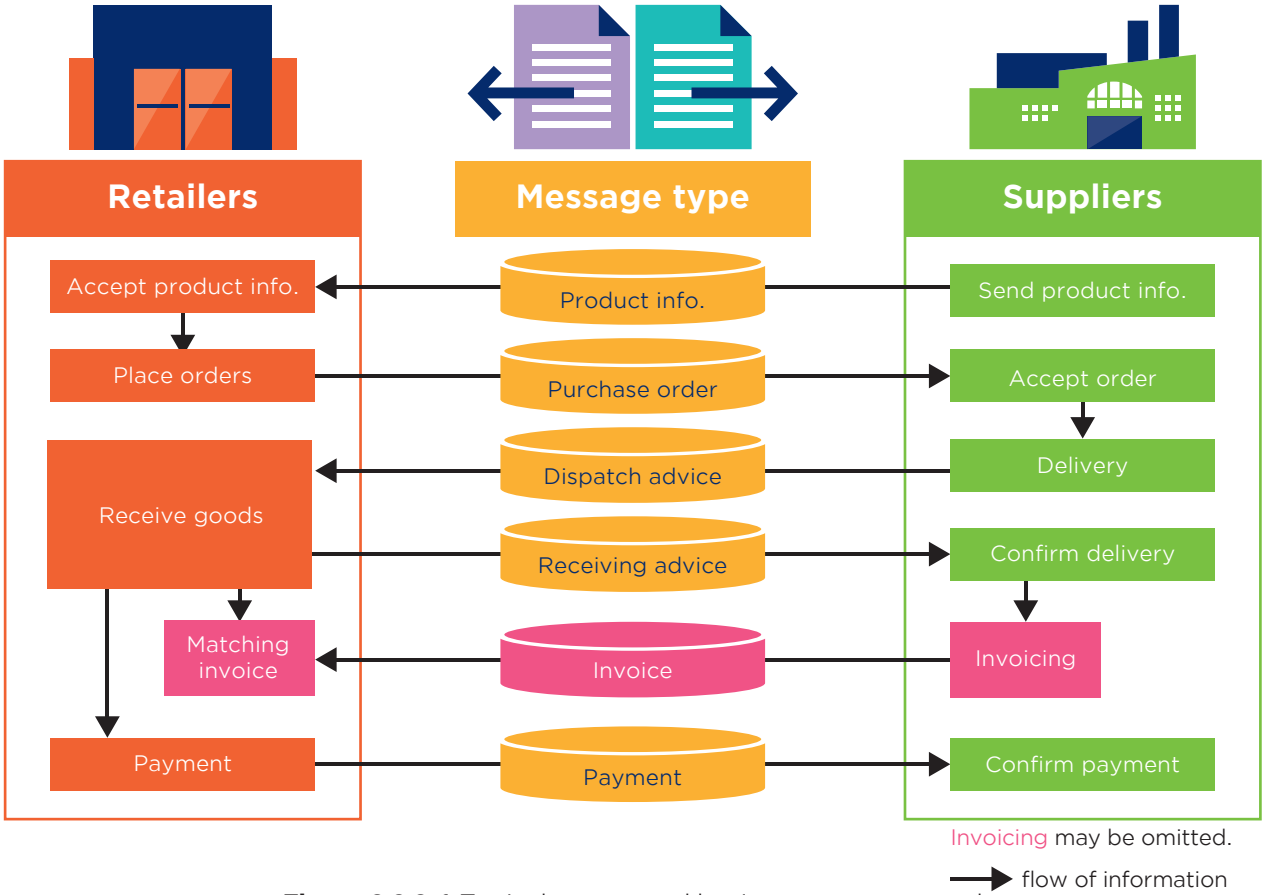


**Figure 2.8.2-1** Typical turnaround business processes and Ryutsu BMS messages between retailers and suppliers

# 3. Community engagement and standards implementation

## 3.1 GS1 Japan Partners

In April 2015, GS1 Japan launched GS1 Japan Partners(GJP), a program mainly for solution providers. This program is aimed at sharing information on the latest systematisation trends and case studies while also utilising GS1 standards to promote the systematisation of information and greater efficiency in the overall distribution industry.

In FY2022, the program had 117 members, including many of Japan's leading solution providers (Table 3.1-1).

**Table 3.1-1** Membership structure (as of March 2022)

| Sales [unit: JPY] | No. of members |
|---|---|
| Less than 1 billion yen | 50 |
| 1 billion – 10 billion yen | 31 |
| 10 billion – 1 trillion yen | 34 |
| 1 trillion yen and above | 2 |
| **Total** | **117** |

**Table 3.1-2** Events held in FY2021

| Date | Events | Topics |
|---|---|---|
| Jun 2021 | Special Seminar | • Project overview and results : Verification of GS1 QR Code direct printing on carton boxes<br>• 'Tenbun-Navi', a specialised app that allows medical professionals to view package inserts of medical products using GS1 barcodes |
| Jul 2021 | 1st Regular seminar<br>• Current status of digital transformation (DX) in logistics and construction, and GS1 standard | • Realising a sustainable society through logistic DX<br>• Linkage of BIM and GS1 standards for Construction DX<br>• Digitalisation related GS1 Services and Standards: GS1 Registry Platform, EPCIS, GS1 Digital Link |
| Dec 2021 | Open seminar<br>• Introduction to GJP members' products and solutions | • Introduction to standard logistics labels (SEIKODO Corp.)<br>• Introduction to "BarTender®" and label issuing system utilising "BarTender®" (Sankyo Intec Co., Ltd.)<br>• Introduction to 'NAVINECT', which works with GS1 codes and reader/writers (Toppan Inc.)<br>• Introduction to Amazon EDI complementary system "amazingEDI" (USAC SYSTEM Co.Ltd) |
| Feb 2022 | Open seminar<br>• Mobile seminar 2022 (refer to 3.9.2) | • Marketing essences, viewed through the experience of mail orders, manufacturers, and retailers.<br>• GS1 standards increasingly used for online sales around the world<br>• Overview and availability of GS1 Digital Link |
| Mar 2022 | 2nd Regular seminar<br>• The importance of standard and digitalisation under the COVID-19 pandemic (refer to 1.2) | • Impact on product safety and distribution retails<br>• Overview and availability of GS1 Digital Link<br>• Impact on product safety and distribution retails |

# 3.2 Supply Chain Standards Management and Promotion Council

The Supply Chain Standards Management and Promotion Council was founded in April 2009 by various industry groups and businesses to help promote an efficient supply chain information system in Japan's retail sector.

The activities carried out by the council include maintaining and promoting Ryutsu BMS (see 2.8), which was initially developed with the support of the Ministry of Economy, Trade and Industry. At present, GS1 Japan serves as the council's secretariat.

The council held its inaugural General Assembly in Tokyo in April 2009. The council's full members consist of trade associations for manufacturers, distributors, and retailers in the consumer goods industry. As of May 2022, the council is composed of 49 full member organisations. In 2022, the council is being operated under the following structure.

## 3.2.1 Organisational structure

1. General Assembly

   Once a year, the council holds its General Assembly to share and confirm its activity results for the previous fiscal year and approve its agenda for the new fiscal year. In addition, the officers of the council are appointed at the General Assembly to serve two-year terms.

2. Executive Committee

   The role of the Executive Committee includes making important decisions concerning the management of the council, such as admitting new members, establishing and discontinuing working groups, and appointing working group members. As of 2022, the committee is composed of representatives from 16 full member organisations.

3. Working groups (task forces)

   The council has the following three working groups (Figure 3.2.1-1).

   a. Message Maintenance Working Group

      This group maintains and manages Ryutsu BMS messages, except for product master data, as well as various guidelines.

      The group's work is conducted in response to requests from full members for changes or additions to the established standards.

      The group examines such requests, decides on the steps to be taken, revises the relevant guidelines, and then publishes them as a new standard.

      Publishing in 2021 of messages and guidelines in line with the start of the qualified invoice-based method in October 2023.

   b. Technical Specification Working Group

      This group maintains and manages guidelines for the network technologies and information processing technologies that are used to exchange standard Ryutsu BMS messages via communications circuits.

   c. Promotion Working Group

      This group examines and implements steps aimed at encouraging the more widespread adoption of Ryutsu BMS among SMEs. The group also monitors 'off the standard usage' of Ryutsu BMS.

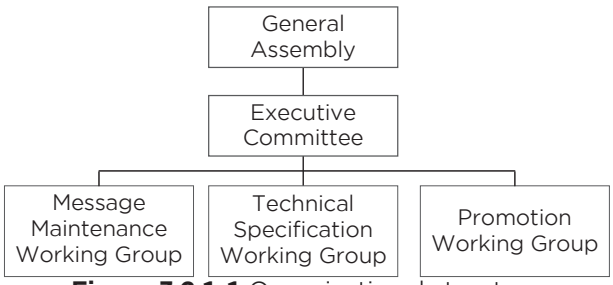


**Figure 3.2.1-1** Organisational structure of the council

## 3.2.2 Activities for promoting and increasing the adoption of Ryutsu BMS

GS1 Japan and the council are working together to carry out various initiatives aimed at encouraging the more widespread adoption of Ryutsu BMS. For details, see 2.7.

## 3.2.3 Registration of the Ryutsu BMS trademark

GS1 Japan has registered the Ryutsu BMS logo for use with products and services that comply with Ryutsu BMS specifications. As of May 2022, 130 accredited products are permitted to use the logo.

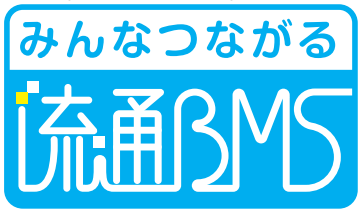


**Figure 3.2.3-1** Ryutsu BMS logo

## 3.3 GS1 Healthcare Japan

GS1 Healthcare Japan is a voluntary group that is made up of domestic medical institutions, pharmaceutical and medical device manufacturers, wholesalers, and solution providers.

The group works with GS1 Healthcare, the Ministry of Health, Labour and Welfare, and other organisations to promote standardisation with the aim of ensuring patient safety, maintaining traceability, and enhancing efficiency in distribution and medical management.

As of May 2022, GS1 Healthcare Japan has 113 members.

### 3.3.1 Activities

The members of GS1 Healthcare Japan are actively engaged in three groups: the International Standards and Regulations Study Work Group; the Medical Solutions Study Work Group; and the Planning and Public Relations Group.

### 3.3.2 Activities of work groups

- **International Standards and Regulations Study Work Group**

  Research into trends in international regulations and standardisation.

- **Medical Solutions Study Work Group**

  Promotion of GS1 standards as measures aimed at improving safety and supply chain efficiency throughout the entire medical industry.

- **Planning and Public Relations Group**

  Promotion of using GS1 standards to medical institutions.

### 3.3.3 Topics in 2021/2022

GS1 Healthcare Japan holds its annual conference every spring to share case studies of GS1 barcode usage at medical institutions and the latest regulatory information.

Unfortunately, last year's conference had to be cancelled due to the spread of COVID-19, but this year's conference was held through a combination of online and face-to-face events. This year, we set the theme to 'Digital transformation for the medical field through the use of GS1 barcode', and facilitated two sessions: seven lectures and panel discussion. Same as last year, the conference was held through a combination of online and face-to-face events. Some of the GS1 Healthcare Japan members exhibited their medical products at the event venue, which facilitated matching between the manufacturers and healthcare service providers. This event attracted 634 attendees on the day itself, and the streaming views increased this number to 753 later dates. Those attendees were from medical institutions, medical device manufacturers, pharmaceutical companies, automatic identification technology-related companies, and others. The conference was generally very well received by those who attended.

We remain committed to actively sharing information related to the utilisation of GS1 standards, taking into account the fact that barcode labelling for medical products will become a legal requirement in December 2022.

## 3.4 ICT-Oriented Wholesale Industry Study Group

With GS1 Japan acting as its secretariat, the ICT-Oriented Wholesale Industry Study Group was established in August 1985 in accordance with instructions issued by the Ministry of Economy, Trade and Industry (METI).

The purpose of this group is to promote the rationalisation of the wholesale industry. To this end, member wholesale companies take the lead in studying common issues every year.

Wholesalers play a major role in Japan's supply chain system since most manufactured products are delivered to retailers through wholesalers.

This study group is operated primarily by wholesalers dealing in fast-moving consumer goods (FMCG) in a variety of different industries (foods, household products, etc.).

It has 45 members as of May 2022.

The group is further divided into several sub-working groups according to themes related to the interests of its members, with each sub-working group holding monthly meetings.

In line with its mission of pursuing the 'Optimise distribution channel', the study group worked on the following five topics in FY2021.

1. The Sustainable Logistics: improving transportation productivity, increase logistics efficiency, and create a worker-friendly environment.
2. Promoting and Implementing Ryutsu BMS (about Ryutsu BMS see 2.8)
3. How to collaborate with other wholesalers.
4. Digital Transformation Initiatives: in the era of digital technology.
5. Desirable future direction of wholesalers.

## 3.5 Collaborative Council of Manufacturers, Wholesalers, and Retailers

The Collaborative Council of Manufacturers, Wholesalers, and Retailers (herein under the council) was formally established in May 2011 with 43 member companies with the aim of improving global competitiveness and contributing to a more prosperous lifestyle through the pursuit of extensive innovations and improvements to supply chain management in the consumer product industry. As of August 2022, 52 companies are participating.

GS1 Japan and the Distribution Economics Institute of Japan (DEIJ) jointly serve as the council's secretariat.

Since its launch, the council has received continuous support from the Ministry of Economy, Trade and Industry (METI).

The council employs a four-tier structure that consists of the following: general meetings, strategic meetings, steering committee meetings, and working group meetings. The outcomes of the working groups are reported at the annual general meeting.

### 3.5.1 FY2022 General Meeting

FY2022 general meeting was held in July 2022 mixing physical and virtual participants, with a report on the activities in FY2021 and the plan for FY2022, as well as a ceremony to announce the commitment to realise the physical internet. In addition, the Supply Chain Innovation Awards ceremony was also held.

The activities in FY2021 were presented by the Logistics Optimization Working Group, the Preparatory Group for the Construction of Smart Logistics, and the Retail Technology Study Group.

In FY2022, the council will focus on recent logistics issues.

In FY2021, 'Study meeting for the physical internet realisation', which was collaboratively held by both Ministry of Economy, Trade and Industry (METI) and Ministry of Land, Infrastructure, Transport and Tourism (MLIT), reviewed issues and summarised them.

In response to that, there is a plan to set up four working groups for further study on the standardisations.

The physical internet, conceptually applied the internet communications to logistics, is a new logistics, and joint transportation-and-delivery system. For its realisation, digital technology utilisation is indispensable in order to visualise the availability of goods, warehouses, and vehicles, and to establish a network in which multiple companies can share logistics assets such as standardised transportation containers, logistics depots, and delivery trucks.

In March 2022, the 'Study meeting for the physical internet realisation', published the 'Physical internet roadmap', which aims to realise the physical internet in Japan by 2040.

While pursuing the above, the sector-specific subcommittees were placed under the Study meeting.

One of the subcommittees, which is formed with the stakeholders in the CPG industry, including processed foods, daily necessities, and sundries, developed an action plan for the realisation of the physical internet in their industry by 2030.

The plan is called 'The Action Plan for supermarkets and others for the realisation of the physical internet'.

According to the Action Plan, followings are essential for ultimate open joint logistics.

- Standardise schemes for identifying products and logistic units.
- Maintain various master data such as product catalogues and business location databases.

- Standardise transport equipment such as pallets, folding containers, basket carts, etc., and review their operational methods.
- Review business practices that prevent ultimate open joint logistics.
- Standardise various data formats and make rules for their operation in order for effective data sharing.

The 45 member companies of the council have pledged their support for the Action Plan.

This is a declaration by each company that it agrees with the Action Plan and will formulate its own plan and implement initiatives to realize the Physical Internet.

At the general meeting, Mr. SAEGUSA, chairman of Ito-Yokado, made a declaration of endorsement on behalf of the endorsing companies, and a commemorative photo was taken by the representatives of the companies gathered at the venue.

It is expected that the number of endorsers will be increased by obtaining more organisations other than the member of the council.

## 3.5.2 Supply Chain Innovation Awards

After the general meeting, 'Supply Chain Innovation Awards' were announced.

This award is to recognise outstanding efforts to optimise the entire supply chain under the cooperation of manufacturers, wholesalers, and retailers.

The grand prize went to an initiative conducted by several major processed food manufacturers and wholesalers, which is to achieve optimised lead times for deliveries by expanding the scope of cooperation to the retail industry. It is expected that the initiative contribute building sustainable logistics.

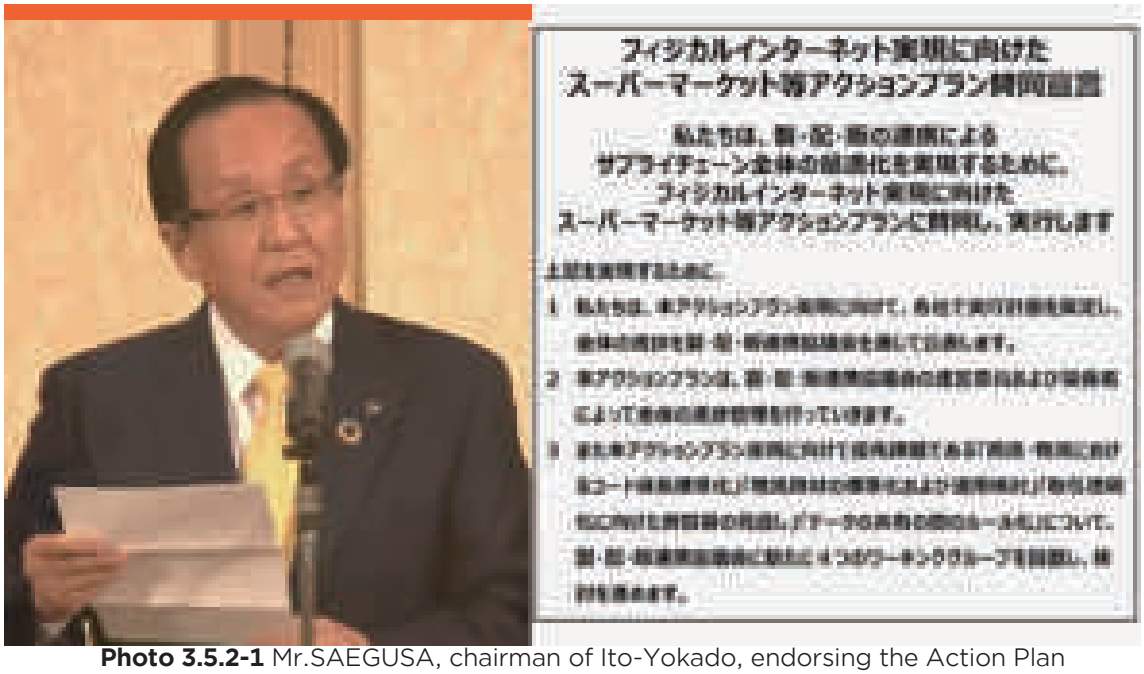


**Photo 3.5.2-1** Mr.SAEGUSA, chairman of Ito-Yokado, endorsing the Action Plan

**Photo 3.5.2-2** Major manufacturers, wholesalers, and retailers proclaiming The Action Plan

**Photo 3.5.2-3** Supply Chain Innovation Awards ceremony

## 3.6 Study Group for Information Systems in Food, Beverage, and Alcohol Industry

It is important for food producers to cooperate with wholesalers, as they are positioned between retailers and the product manufacturers.

This voluntary study group for liquor and processed food businesses was established in 1983 with the aim of conducting studies to identify the most appropriate information systems for use between food producers and wholesalers.

The study group consists of 50 Japanese leading companies in the processed food, marine product, and liquor industries.

GS1 Japan serves as the group's secretariat.

The study group conducts joint studies on new issues concerning the standardisation of B2B data exchanges among companies in the supply chain.

It holds regular quarterly meetings to introduce best practices for the pursuit of information systemisation by its members.

**Figure 3.6-1** Regular meeting

It also organises seminars where outside lecturers are invited to discuss the latest topics and conducts study tours of pioneering businesses.

## 3.7 User support

So that users can better understand GS1 standards, GS1 Japan offers both various seminar style courses and distance e-learning courses.

Due to the explosive spread of COVID-19, this year's courses are being mainly held online and are attracting participants from all over Japan. The following are being offered as scheduled courses:

1. Introduction to Barcodes
2. Introduction to EPC/RFID
3. Introduction and Implementation of Ryutsu BMS
4. EPC Technical Seminar
5. Introduction to GS1 Digital Link
6. Introduction to Barcodes for Prescription Drugs and Medical Devices

### 3.7.1 Introduction to Barcodes

This scheduled program offers basic knowledge on GS1 barcodes, in order to accelerate GTIN usage and application.

The seminar locations are in Tokyo and Osaka, and the participants are mostly new members who want to learn about barcodes from the basic and to know how to display barcode to products.

It is expected that they will obtain general knowledge about barcodes.

On-site training is also available accordingly upon request at an applicant' s specified place and time.

In addition to the seminar courses above, an e-learning program was introduced in 2016 enabling users to learn wherever and whenever they choose.

This year, due to COVID-19, we reviewed our course delivery methods, updated the content of the e-learning course, and reviewed the structure, textbook, and the delivery method of

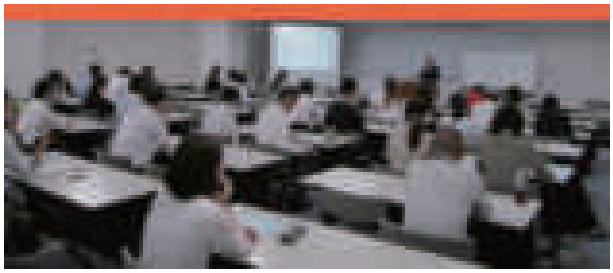

**Figure 3.7.1-1** Introduction to Barcodes Seminar (before Covid-19)

structure, textbook, and the delivery method of the online introductory barcode course before holding it.

We had held several online courses by September, and every time after the courses the staff gather together to improve the courses further.

### 3.7.2 Introduction to EPC/RFID

This program is intended to give newcomers to EPC/RFID an understanding of approaches to the utilisation of EPC/RFID. Participants are expected to learn about the characteristics of RFID, case studies on the successful implementation of EPC/RFID systems, GS1 EPC/RFID standards, and other related information. This seminar is held regularly four times a year, and now held as a webinar due to COVID-19. E-learning called 'Guide to EPCIS System Construction' is also available, and is helpful for developing EPCIS systems.

### 3.7.3 Introduction and Implementation of Ryutsu BMS

The program 'Introduction of Ryutsu BMS' explains EDI from the basics through to an outline of Ryutsu BMS, the results of implementation, and more.

This program is intended for persons related to CPG supply chains, especially persons newly assigned to information system departments or who are considering introducing Ryutsu BMS.

In addition, it is also useful for solution providers or consultants when supporting user companies.

This program is mainly conducted in seminar-style courses, and an e-learning version of the program was launched in May 2017.

Seminar-style courses were held in Tokyo and Osaka, but due to COVID-19, the courses are currently not being held.

The e-learning course called 'Introduction to Ryutsu BMS' offers participants to learn the basics of Ryutsu BMS online.

As the next step after Introduction to Ryutsu BMS, another e-learning course called 'Ryutsu BMS Implementation Course' is also offered. This course explains the key points in effectively introducing Ryutsu BMS while complying with the standard specifications.

### 3.7.4 EPC Technical Seminar

The objective of this seminar is for participants to become able to understand the encoding and decoding procedures of any EPC scheme by themselves, based on the EPC Tag Data Standard. The expected participants are technical engineers at RFID solution providers. The seminar firstly reviews the basics of GS1 identification keys, then describes the structure of EPCs. The SGTIN EPC scheme (GTIN + serial number) is used in the explanation as an example. Its encoding and decoding procedures are described on an individual basis while referring to the corresponding chapters in the EPC Tag Data Standard. A hands-on activity is conducted in the later part of the seminar. GS1's

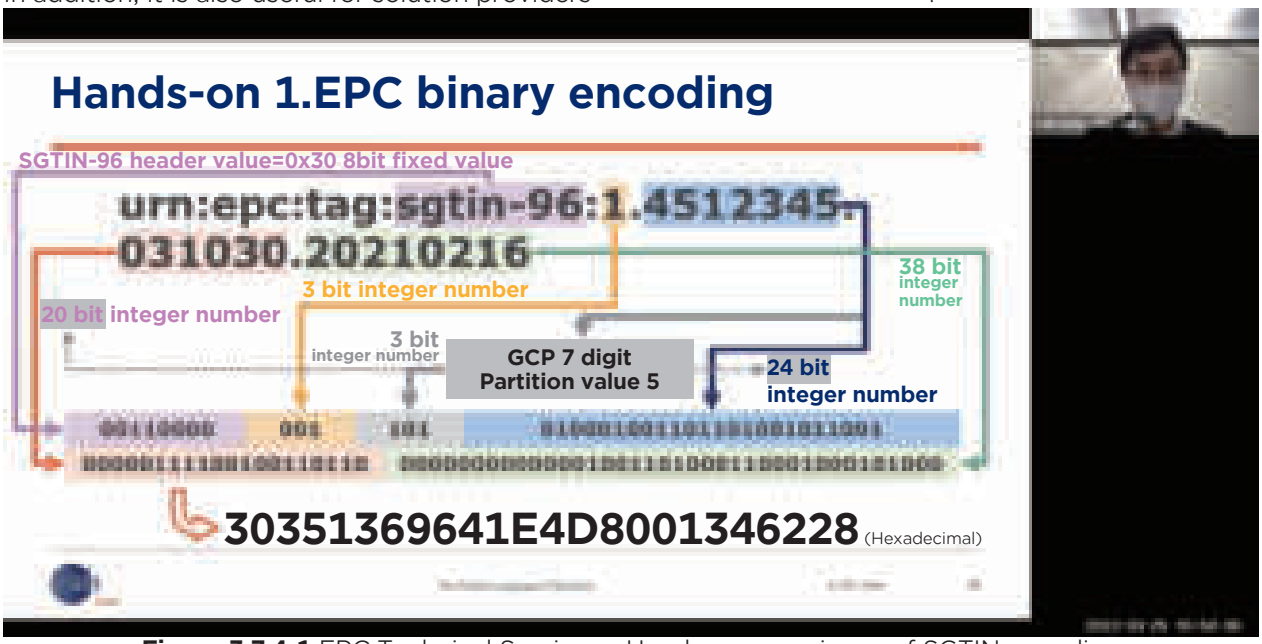


**Figure 3.7.4-1** EPC Technical Seminar – Hands-on experience of SGTIN encoding

tools and its recent activities related to EPC/RFID are also introduced.

GS1 Japan now issues 10-digit GS1 company prefixes in addition to its existing 7- and 9-digit ones. Properly processing the length of GS1 company prefixes is essential to correctly encode EPCs from their original GS1 keys. A correct understanding of the EPC Tag Data Standard is key to achieve this.

This year, this seminar was held for the Japan Apparel-Fashion Industry Council, or JAFIC. Apparel is one of the industries in which the adoption of RFID is proceeding. It was a hybrid seminar which accommodates both participants in a meeting room and via a web meeting.

Many people from JAFIC' s regular member companies and supporting member companies (respectively, apparel companies and solution providers) participated in the seminar.

## 3.7.5 Introduction to GS1 Digital Link

This program is designed to give an overview of GS1 Digital Link to participants who do not know anything about GS1 Digital Link but are interested in it.

This program targets people from any type of business, such as brand owners and solution providers.

The course firstly shows the core concepts of GS1 Digital Link, then explains how it works in an easy-to-understand way. The explanation includes the following: GS1 Digital Link URIs; the role of resolvers; link types; the data-carrier-agnostic nature; and the use of GS1 Digital Link URIs in 2D symbols. Finally, the course introduces some expected use cases and existing case studies on GS1 Digital Link.

This brand-new course was held as a webinar during March 2022 and accommodated about 40 participants. Most participants were from solution providers, but there were also some from brand owners and regulatory bodies.

We will continue to introduce GS1 Digital Link via publications, periodic courses, and on-demand meetings.

## 3.7.6 Introduction to Barcodes for Prescription Drugs and Medical Devices

This program provides practical knowledge about the guidelines released by the Ministry of Health, Labour and Welfare (MHLW), which specifies barcode marking rules for prescription drugs and medical devices. This program is designed for people working at drug or medical device manufacturers, wholesalers, medical service providers and related solution providers. Due to COVID-19, the classroom is now held as a webinar.

## 3.7.7 Junior job shadowing

GS1 Japan has welcomed study visits from middle and high school students on several occasions.

These study visits form part of an educational program that is operated with the School Support Centre, a specified non-profit organisation, acting as an intermediary.

This program gives students a chance to tour public institutions, government offices and private companies in Tokyo when they visit the city from other regions on school excursions, thereby helping them learn about the specific operations of an organisation and its role in society.

On 1 June 2022, seven students from Ohyake Junior High School, which is located in Kyoto Prefecture, visited the GS1 Japan office for a study visit.

We explained our services to the students and gave them an opportunity to scan GS1 barcodes and read the data carriers.

The student responses have generally been positive, with some making comments such as the following: 'I was able to gain a better understanding of the purpose of barcodes', and 'I felt a bit more familiar with barcodes'.

**Figure 3.7.7-1** Welcome to GS1 Japan

# 3.8 Publications and PR tools to promote GS1 standards

## 3.8.1 Guidelines

GS1 Japan has been providing materials about the GS1 standards to retailers, wholesalers, products manufacturers, and solution providers.

This information is published in order to promote the GS1 standards, and most of the materials are also available on our website.

The following are examples of our current publications:

### 3.8.1.1 JAN symbol marking manual

This manual explains the technical basics of EAN (called 'JAN' in Japan) symbols, such as their structure, size, and colour, as well as some examples of practical symbol creation to avoid the creation of incorrect symbols which take a long time to or are difficult to read. The manual is intended not only for brand owners who are responsible for displaying EAN symbols, but also for companies providing equipment and services related to printing, acquiring and verifying symbols.


**Figure 3.8.1.1-1** JAN symbol marking manual

### 3.8.1.2 Barcode guidelines for UDI

With regard to barcode labelling of medical devices, there are subtle differences between the GS1 standards and the rules of each country, including Japan. As barcodes are increasingly used for the import and export of products, it is important for brand owners to correctly understand the regulations and industry rules of each country in addition to the international GS1 standards. This guide provides basic information about the GS1 standards as well as points to note when distributing healthcare products in Japanese markets. Furthermore, it provides fundamental information to exporters about FDA UDI regulations in the US.


**Figure 3.8.1.2-1** Barcode guidelines for UDI

### 3.8.1.3 GS1 QR code/GS1-128 barcode guidelines for carton cases

These guidelines outline the rules and provides useful information for utilising GS1 QR codes or other GS1 standard barcodes to encode GTIN, date information (production, best-before and expiry date) and lot numbers on carton cases.

It has been developed to enable the efficient management of date information for packaged consumer goods, including processed foods requiring strict FIFO inventory control.


**Figure 3.8.1.3-1** GS1 QR code/GS1-128 barcode guidelines for carton cases

### 3.8.1.4 Source marking guideline for raw materials

These guidelines define standard data items such as GTIN, lot number and date information (e.g. expiry date) to be displayed, as well as recommended barcodes for raw materials. We hope that these guidelines will encourage the use of barcodes with globally unique identification (i.e., without any duplicates) anywhere in the world, helping make supply chains more efficient and improve food safety and security.

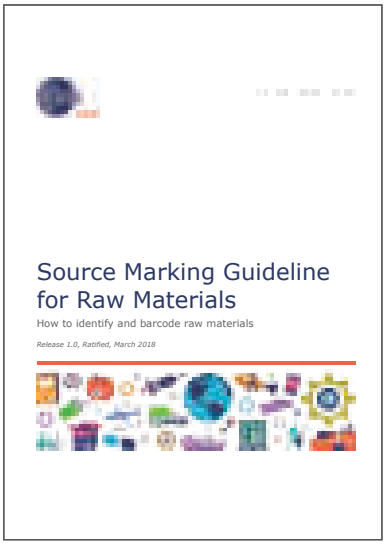


**Figure 3.8.1.4-1** Source marking guideline for raw materials

### 3.8.1.5 GS1 AIDC standards conformity check guide

This guide provides fundamental information about GS1 standards and checklists for verifying if barcode-related products conform with the GS1 standards for generating, printing, and reading barcodes.

The guide can be used for confirming the functions of various products and as reference material for GS1 standards.


**Figure 3.8.1.5-1** GS1 AIDC standards conformity check guide

## 3.8.2 Periodical Publications

We also issue two periodical publications: GS1 Japan News and GS1 Japan Review.

GS1 Japan News is issued six times per year and provides the latest information about GS1 standards, events and trends in industry standardisation. GS1 Japan Review is issued twice a year and provides more detailed information, including case studies, in addition to the above. These publications were redesigned to match the GS1 Brand Manual from this fiscal year onwards.

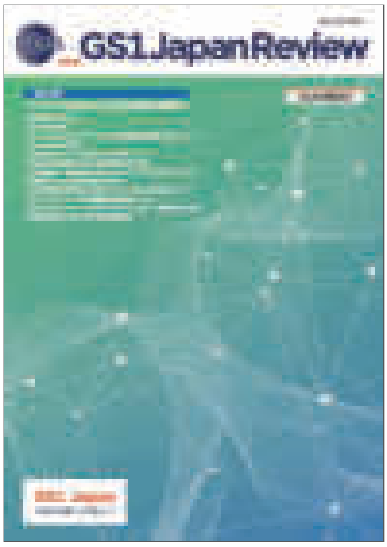


**Figure 3.8.2-1** GS1 Japan Review


**Figure 3.8.2-2** GS1 Japan News

### 3.8.3 Videos and GS1 Japan Scan mobile app

Addition to the above, GS1 Japan creates educational videos about GS1 standards, including EAN and ITF symbols, GTIN, EPC/RFID, GS1 Healthcare, and Ryutsu BMS.

Besides those videos, we also have created many other informative educational videos that are mostly used during seminar programs.

All the videos are available both on our website and the GS1 Japan YouTube channel.

(https://www.youtube.com/channel/UCWaw3zjmvvjytr0x4kLK1hw)

**Figure 3.8.3-1** QR code for the video URL

Moreover, in 2018 GS1 Japan has developed a mobile app called 'GS1 Japan Scan' to promote the utilisation of the GS1 standards.

This app allows users to easily check their products' barcodes to provisionally find if they meet GS1 standards and the Japanese industry rules for medical devices, pharmaceuticals, or food raw materials.

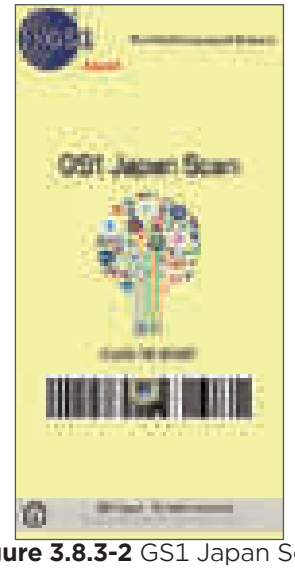

**Figure 3.8.3-2** GS1 Japan Scan

## 3.9 Event

GS1 Japan organises and sponsors various events. Key events are introduced below.

### 3.9.1 GS1 Japan Annual Seminar

Every year in December, we hold the GS1 Japan Annual Seminar meeting at the Meiji Kinenkan reception hall, which is usually attended by more than 300 people from various organisations and companies.

At the meeting, industry leaders give special speeches and annual awards are presented to organisations and persons who made outstanding contributions.

The year 2022 is the 50th anniversary of GS1 Japan, so we plan to hold the seminar with adequate measures against COVID-19.

### 3.9.2 Mobile Seminar 2022

To promote GS1 standards in B2C environments, GS1 Japan has been holding seminars for several years. It has been endorsed by a wide range of industrial bodies, including Japan Retailers Association (JRA), National Supermarket Association of Japan (NSAJ), Japan Automatic Identification Systems Association (JAISA), Mobile Computing Promotion Consortium (MCPC), Mobile Content Forum (MCF), and Japan Academic Society of Direct Marketing (JASDM).

Mobile Seminar 2022 was held on 22 February 2022. Attended by 70 representatives from retailers, manufacturers, and online sellers, the event was held online and in-person at the same time due to the COVID-19 pandemic.

The theme of this seminar was D2C (Direct to Consumer) and OMO (Online Merges with Offline) trends, and GS1 standards. We offered the following four speeches at the event.

- Marketing essences, viewed through the experience of mail orders, manufacturers, and retailers.

  Mr. Satoru ONISHI (Consultant)

- Impacts on product safety and distribution retails (refer to 1.4.1)

  Mr. Yoshiaki WATANABE (TDN International Ltd.)

- GS1 standards increasingly used for online sales around the world

  Mr. Hideki ICHIHARA (GS1 Japan)

- Overview and availability of GS1 Digital Link

  Mr. Yuki SATO (GS1 Japan)

The seminar proved a great success. Participants could acquire knowledge about the importance of marketing functions and GS1 standards in B2C, in addition to the latest developments. GS1 Japan will continue holding such seminars to help promote GS1 standards.

**Figure 3.9.2-1** Seminar speakers

**Figure 3.9.2-2** Seminar venue

## 3.9.3 EPC RFID FORUM

GS1 Japan and the Auto-ID Laboratory Japan (Keio University) have jointly hosted this periodic forum, aiming to promote the widespread use of EPC/RFID and to encourage its appropriate usage.

The forum was cancelled due to the COVID-19 pandemic in FY 2020; however in 2021, we have decided to hold the 16th forum via Zoom webinar in September 2021. Reports on RFID pilot studies conducted by the Ministry of Economy, Trade and Industry (METI) in 2020 was the main theme, and participants in each pilot were invited to give lectures.

The online forum was successful, with a record number of approximately 400 participants. Since the webcast was well received by participants, we will continue to make the forum available online in the future.

## 3.9.4 RETAILTECH JAPAN 2022 and RETAILTECH OSAKA 2021

RETAILTECH JAPAN is an annual 4-day trade show that is held by Nikkei Inc. in Tokyo, which specialises in retail information systems. GS1 Japan supports the show as a special collaborator.

With keywords such as AI and data utilisation, e-commerce and digital marketing, logistics and IoT and IT solutions, more than 200 exhibitors showcase cutting-edge retail information technology, attracting more than 130,000 visitors every year.

Held during the COVID-19 pandemic, RETAILTECH JAPAN 2022(1 to 4 March 2022) was still attended by more than 190 exhibitors and some 50,000 visitors.

GS1 Japan set up a joint booth with the 'Supply Chain Standards Management and Promotion Council' to actively promote Ryutsu BMS and GS1 standards (refer to 3.2).

In the seminar zone that we set up inside the booth, we held mini-seminars on GS1 standards and offered members of the GS1 Japan Partners program an opportunity to promote their solutions.

There were signs of recovery, with more than 60 exhibitors and about 15,000 visitors increasing compared to last year when the event was forced to be held on a small scale.

**Figure 3.9.4-1** GS1 Japan booth

In addition to Tokyo, Nikkei decided to hold the RETAILTECH exhibition regularly in Osaka, the first of which was in 2021.

At RETAILTECH OSAKA 2021, GS1 Japan sets up a special corner in the booth for a demonstration experiment of sake using RFID tags and exhibited the followings, as a special-feature.

1. Management of temperature history using RFID tags with temperature sensor embedded.

2. Real-time management of sake bottles stored in a refrigerator using the refrigerator with an integrated RFID tag reader.
3. Identification of open sake bottles using RFID tags with open detects function.


**Figure 3.9.4-2** GS1 Japan booth at 'RETAILTECH OSAKA'

# 4. About GS1 Japan

## 4.1 Overview

GS1 Japan was originally founded in 1972, mainly through the efforts of the then Ministry of International Trade and Industry (now the Ministry of Economy, Trade and Industry [METI]) as the Distribution System Research Institute (DSRI), a non-profit organisation for promoting the introduction of distribution systems. Since then, we have been striving to rationalise and increase the efficiency of supply chains. For our first mission, we conducted studies into the standardisation of national product codes for apparel and groceries. We began working to develop a system of standard product codes and symbols for Japanese industries by studying and incorporating systems that had already been standardised in both Europe and the US. In 1978, we were accepted as the first non-European member of the EAN Association.

In the latter half of the 1970s, we paved the way to adopting the EAN system in Japan, starting with the incorporation of EAN symbols in the Japanese Industrial Standards (JIS). The feasibility of source marking was tested with the cooperation of Kikkoman Corporation (a soy sauce manufacturer), Coca-Cola (Japan) Company, Limited, and Kai Corporation (a cutlery manufacturer), while retailers began conducting storefront practical demonstrations of the POS system.

In the 1980s, Jusco Co., Ltd. (now AEON Co., Ltd.), Co-op supermarkets, and other retailers conducted pilots of the POS system. We held many seminars on the EAN system and the POS system throughout Japan with the aim of encouraging stakeholders to adopt source marking.

One of the most remarkable milestones in expanding the use of source marking was the adoption in 1982 of the POS system by SEVENELEVEN JAPAN CO., LTD., a leading convenience store chain, at all of its stores (1,650 at the time, but this number had increased to about 21,200 by 2021). Another remarkable contribution to the widespread adoption of the POS system was the introduction of consumption tax in 1989. As our next step, we established study groups for selected industries in the 1980s to study business process improvements together with members of various industries. Members of the processed foods, sporting goods, consumer electronics, and books and magazines industries participated positively in the study groups. The study group for wholesalers was established under the leadership of representatives from various industries. These study groups soon began cooperating in the adoption of EAN standards.

In the mid-1980s, we launched the JAN Item Code File Service (JICFS; refer to 2.3), which contains cleaned and proofed product data that is useful in the collection and provision of POS data.

During the 1990s, we studied product codes, EDI messages, and other matters in cooperation with the apparel industry under a METI-funded study of the quick response (QR) system. Retailers used to assign their own proprietary codes to apparel products. Together with members of the apparel industry, we studied a way of encouraging the use of EAN source marking for apparel products. This proved to be a success. Another notable accomplishment was the adoption of GS1-128 for the labelling of wooden crates containing various products for delivery to department stores. We then successfully developed the Japan EDI for Commerce Systems (JEDICOS), which is a standard for Japanese EDI messages, based on EANCOM to comply with Japanese business practices.

In the 2000s, a new business model was established in Japan that involved convenience stores acting as agencies for the receipt of public utility payments from customers. As a tool for realising this service, GS1-128 was adopted for public utility bills. Furthermore, the meat industry also decided to adopt GS1-128 for its standard labels for traceability. A means of identification is necessary not only for physical products but also for non-physical products.

In the latter half of the 2000s, GTINs were being employed to identify non-physical music streaming services, and online and mail-order companies began using GTINs for the identification and management of their products.

GS1 Japan celebrates its 50th anniversary in 2022.

### 4.1.1 EPC/RFID

Between 2003 and 2009, we supported METI's RFID pilot projects aimed at identifying and resolving issues related to the introduction of RFIDs in various industries (apparel, footwear, books, home appliances, international logistics, etc.). These efforts led to us building a foundation for the promotion of EPC/RFID.

Following the development of the EPC/RFID standards suite, we have been actively developing the industry's awareness of EPC/RFID, as well as striving for its adoption.

### 4.1.2 Healthcare

In 2009, GS1 Healthcare Japan was established as a voluntary group for the promotion of GS1 standards in the healthcare sector. We can confidently state that our founding of GS1 Healthcare Japan can be traced back to all of our ongoing efforts, including the issuing of guidelines that illustrate how GS1 systems can be applied to medical device management, and all of the other pioneering efforts that we have conducted in collaboration with healthcare industry stakeholders since the late 1990s.

### 4.1.3 New developments

In the area of EDI, we have created an XMLFormat EDI standard (Ryutsu BMS) that supports domestic business practices and we have been working to promote the use of this standard together with 49 trade organisations. In addition to the above, we have initiated the following new developments.

In 2015, we launched GS1 Japan Partners (refer to 3.1) with the aim of sharing information and best practices among solution providers.

In 2017, we hosted the GS1 Asia Pacific Regional Forum in Tokyo, which was attended by more than 80 people from GS1 GO and 18 AP MOs.

## 4.2 GCP allocation by GS1 Japan

GS1 Japan joined GS1 in 1978 and obtained the GS1 prefixes '490 – 499'. We subsequently applied for additional prefixes in 1992, obtaining the prefixes '450 – 459'.

Initially, we were allocating seven-digit GCPs (GS1 Company Prefixes), but since January 2001, we have started to allocate nine-digit GCPs, given the diffusion of GTIN usage rise and a recommendation from GS1.

### 4.2.1 Revision of the GCP Registration and Renewal System

In August 2021, we implemented a major revision of the GCP registration and renewal system for the first time in the 40 years since the launch of the system to respond to the changing circumstances surrounding the GTIN.

One of the changes in this revision is the 10-digit GCP allocation.

In recent years, there has been an increasing number of small businesses, such as sole proprietorships, applying for GCPs, but they use only a small number of GTINs to sell their products on online shopping marketplaces.

Therefore, we had started to allocate 10-digit GCPs in August 2021 in order for the limited amount of GCP assets to be utilised more efficiently.

Currently, we allocate nine- or 10-digit GCPs to new applicants in principle.

Another major change in this revision is the introduction of the one-year renewal system for licensee information, while offering licensees multiple options for contract periods.

Previously, the GCP registration and renewal period was fixed to three years, but the revision allows licensees to choose between a one-year or three-year period.

In the rapidly changing social conditions, they can now flexibly choose the license period for their GCPs in accordance with their business strategies.

Licensees that selected a one-year license period are required to renew every year, while those that selected a three-year period are required to update their information every year.

For the system revision, licensee information is updated on a yearly basis, which allows us to enhance the reliability of information on licensees.

### 4.2.2 GCP Registration Status

Following the rapid expansion of the e-commerce market due to the COVID-19 pandemic, the number of newly registered GCP licensees increased by approximately 25% in

FY2020 compared to the previous year.

In FY2021, there were 14,190 new registrations, the same level as in FY2020, and the number of GCP registration is continuously increasing in Japan.

The top product categories handled by new licensees in the FY 2021 are as follows. (multiple choice)

1) Sundries (27%), 2) Processed foods (23%), 3) Apparel (14%), 4) Cosmetics and hairdressing products (11%), 5) Health foods (8%).

More than a quarter of the businesses selected sundries, as the primary category, and half of which are sole proprietorships. 85% of them obtained GCP to open a shop in EC mall.

Sole proprietorships had been accounting for more than 30% of new registrations since 2019, and that is about 37% in FY2021.

In addition, while the percentage was not so high, healthcare products had also been securing steady figures since 2009. The number of new GCP licensees selecting 'medical devices and medical supplies' as the products they handle continues to grow, increased by 25% in FY2021 from the previous year.

This is partly because the Ministry of Health, Labour and Welfare (MHLW) is promoting the labelling of GTINs and other information on medical devices and medical supplies with GS1 barcodes in addition to ethical drugs, which already have GS1 barcodes.

As of the end of August 2022, the number of GCP licensee reached 148,055.

The number of GCP licensee in Japan is expected to grow steadily, given the expansion of online sales channels and the increase of source marking in areas with previously low source marking rates, such as apparel and specialty products.

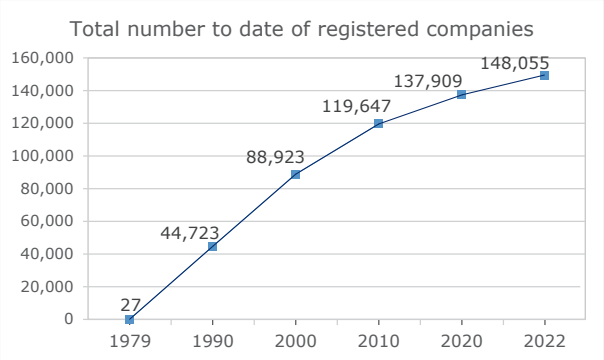


**Figure 4.2.2-1** GS1 Company Prefix allocation

## 4.3 History

| Year | Events |
|---|---|
| 1972 | DSRI (Distribution Systems Research Institute) is established. (Shinagawa-ward) |
| 1973 | 'Supply Chain Information Network Models' is developed. |
| 1974 | 'Standardised Transaction Code' study is conducted by industry types. |
| | 'Distribution & System' (quarterly journal) first issue is published. |
| 1975 | 'Distribution System Design Engineer Course' and 'Distribution System Management Course' are started. |
| 1977 | 'Distribution Information System Study Committee' is started. |
| | 'Distribution Code Centre' is opened. (predecessor of GS1 Japan) |
| | Allocation of 'Common Supplier Codes' is started. |
| 1978 | Joins 'EAN International' and GS1 Prefix '49x' is allocated. |
| | EAN/UPC symbol is defined as a JIS standard (JIS B 9550). |
| | Allocation of 'GS1 Company Prefix' starts. |
| 1979 | First POS pilot is conducted at a supermarket in Tokyo (Tatsumi Chain, Tokyu Store). |
| 1980 | 'JCA (Japan Chain Stores Association) Protocol' for Retail industry is defined. |
| | Second POS pilot is conducted at some selected supermarkets (AEON, Co-op Supermarket, etc.) |
| 1981 | Third POS pilot is conducted at some selected retailers (Kasmi Convenience Store (now called: United Supermarkets Holdings Inc.), Kishi Shopping Center (now called: Watahan & Co., Ltd.), etc.). |
| 1982 | 'DCC Japan Newsletter' (later, the name changed to 'RYUKAI Centre News' (Bi-monthly)) is first published. |
| | SEVEN-ELEVEN JAPAN (Convenience Store) has introduced POS. |
| | Moves office to another location in Shinagawa-ward. |
| 1983 | 'Low-interest financing for POS introduction' is provided to SME retailers by the government (Small and Medium Enterprise Agency). |
| | 'Study Group for Information System in Food, Beverage, and Alcohol Industry (called F-KEN)' is started. |
| 1985 | 'Study Group for ICT-Oriented Wholesale Industry (called OROSHI-KEN)' is started. |
| | Ryutsu POS Database Service (RDS) Project is started. |
| | JICFS (Jan Item Code File Service) Project is started. |
| | Ito-Yokado (GMS) has introduced POS. |
| 1987 | Sporting Goods Information System Study Group has started. |
| | 'Common Magazine Code' registration has started. |
| | ITF symbol is defined as a JIS standard (JIS X 0502). |
| | Utility bills collection service system using multiple EAN-13 symbols has started. |
| 1988 | Practical application experiment of JICFS (JAN Item Code File Service) is started. |
| | Standard EOS (Electronic Ordering System) using GTIN-13 is developed. |
| | EAN International General Assembly is held in Tokyo. |
| | U.P.C. Company Prefix application service is started. |
| 1989 | 'Consumption Tax' is introduced. |
| | Research and pilots of POS are conducted for small retailers located in the shopping street. |
| 1990 | Barcoding in Book Industry. |
| 1991 | Multi-functional card for regional shopping streets is developed. |
| | Daiei (GMS) has employed EAN codes for all the products. |
| 1993 | Heiwado (supermarket in Western Japan) has first employed ITF as a retailer. |
| 1995 | Acquires additional GS1 Prefix '45x' and started allocating '45x' GS1 Company prefix. |
| 1996 | Study for computerisation of trade for perishables is started. |
| | Moves office to Minato-ward. |
| | Open Business Network (OBN) system is developed. |
| | Code-128 is defined as a JIS standard (JIS X 0504). |
| 1997 | Heiwado (Supermarket) has begun CRP (continuous replenishment program) with several manufacturers. |
| | JEDICOS, Japanese version of EANCOM, has been developed. |
| 1999 | GLN utilisation study and verification test are started to realise efficient and effective distribution system for the supply chain. |

| Year | Events |
|---|---|
| 2001 | Nine-digit GS1 Company Prefix has been introduced. |
| 2002 | EAN International's Asia Pacific Regional Meeting is held in Tokyo. |
| 2003 | GEPIR operation has started. |
| | EPCglobal subscription has started. |
| | GS1 Application Identifier is defined as a Japanese Industrial Standard (JIS X 0531). |
| 2004 | 'EPCglobal Japan' is set up. |
| 2005 | MHLW (Ministry of Health, Labour & Welfare) issues a guideline 'Implementation Guideline for Bar Code Labelling of Prescription Drugs', which uses GS1 barcodes. |
| | Promotion of GTIN has started. |
| | 'DCC Japan' changed name to 'GS1 Japan'. |
| 2006 | GTIN is employed for online sales of music products. |
| | EPCglobal Board Meeting is held in Tokyo. |
| 2007 | Ryutsu BMS (Japanese XML-EDI Message Standards) has published. |
| | GS1 Mobile Conference held in Tokyo. |
| | 'GS1 DataBar Study Group' is set up. |
| 2008 | 'GS1 Healthcare conference' is held in Tokyo. |
| | Several Online Shopping companies have started to use JICFS/IFDB. |
| 2009 | 'Supply Chain Standards Management and Promotion Council' is set up. |
| | 'GS1 Healthcare Japan' is set up. |
| 2010 | Verification test of GS1 DataBar utilisation is conducted at some supermarkets. |
| | Mobile Day Seminar is held in Tokyo. |
| 2011 | Mobile Day event held in Tokyo. |
| | 'The Collaborative Council of Manufacturers, Wholesalers, and Retailers' has started. |
| 2012 | 'GS1 Advisory Council Meeting' is held in Tokyo. |
| | Changes corporate form to 'General Incorporated Foundation'. |
| 2013 | GS1 B2C mobile and omnichannel Seminar are held in Tokyo. |
| 2014 | 'GS1 Healthcare Japan UDI and Prescription Drug Traceability Seminar' is held in Tokyo. |
| 2015 | 'GS1 Japan Partners' membership has started. |
| | 'GS1 Company Prefix' application on the web has started. |
| 2017 | 'Source Marking Guideline for Raw Materials' has published. |
| | Hosts 'GS1 Asia Pacific Regional Forum' in Tokyo. |
| 2018 | 'GS1 Japan Scan' app distribution has started. |
| 2019 | 'GS1 Japan Data Bank' is launched. |
| 2020 | 'GS1 AIDC standards conformity check guide' has published. |
| | Moves office to Minami-Aoyama. (Minato-ward: Current location) |
| | Renewed 'RYUKAI Centre News' design and changed the name to 'GS1 Japan News'. |
| | Renewed 'Distribution & System' design and changed the name to 'GS1 Japan Review'. |
| | 'GS1 QR Code/GS1-128 Barcode Guidelines for Carton Cases' has published. |
| 2021 | 'GJDB × scan' app distribution has started. |
| | '10-digit GCP' allocation has started. |
| | 'GCP one-year-renewal' system has started. |
| | 'Tenbun Navi' app distribution has started. |
| 2022 | GS1 Japan celebrates its 50th anniversary. |

# 5. References

## 5.1 Statistics on Japanese Retail Industry

**Table 5.1-1** Number of establishments, number of employees, annual sales of goods and sales floor space. (2016)

| | Stores | | Annual sales (JPYm) | | Employees (*1) | Store space (k sq m) |
|---|---|---|---|---|---|---|
| | | Ratio (%) | | Ratio (%) | | |
| Department stores and general merchandise supermarkets | 1,590 | 0.16 | 12,634,774 | 8.71 | 330,992 | 17,936,735 |
| Miscellaneous retail trade, general merchandise (with less than 50 employees) | 1,536 | 0.16 | 244,574 | 0.17 | 11,663 | 376,657 |
| Dry goods and cloth stores, Bedding stores | 14,711 | 1.49 | 483,722 | 0.33 | 51,131 | 936,835 |
| Men's clothing | 17,419 | 1.76 | 1,531,789 | 1.06 | 83,324 | 2,960,425 |
| Women's and children's clothing | 64,013 | 6.46 | 4,961,255 | 3.42 | 322,551 | 8,860,879 |
| Footwear | 10,523 | 1.06 | 750,596 | 0.52 | 48,953 | 943,847 |
| Other miscellaneous woven fabrics, apparel, apparel accessories and notions stores | 32,709 | 3.30 | 2,259,523 | 1.56 | 170,047 | 5,061,745 |
| Grocery | 27,442 | 2.77 | 20,552,114 | 14.16 | 1,025,225 | 22,364,400 |
| Vegetable and fruit | 18,397 | 1.86 | 970,860 | 0.67 | 84,882 | 808,690 |
| Meat and poultry | 11,058 | 1.12 | 728,575 | 0.50 | 58,530 | 322,363 |
| Fresh fish | 13,705 | 1.38 | 728,352 | 0.50 | 56,326 | 334,111 |
| Liquor | 32,233 | 3.26 | 1,564,253 | 1.08 | 95,169 | 1,118,052 |
| Confectioneries and bakeries | 61,922 | 6.25 | 2,392,327 | 1.65 | 369,508 | 1,655,102 |
| Other miscellaneous food and beverage stores | 132,479 | 13.38 | 14,631,846 | 10.08 | 1,280,037 | 9,250,911 |
| Motor vehicles | 83,887 | 8.47 | 17,366,166 | 11.97 | 565,227 | 2,982,778 |
| Bicycles | 11,207 | 1.13 | 240,079 | 0.17 | 27,204 | 667,430 |
| Machinery and equipment (except motor vehicles and bicycles) | 46,272 | 4.67 | 9,507,282 | 6.55 | 271,385 | 9,241,211 |
| Furniture, fixture and 'tatami' mat | 20,138 | 2.03 | 1,550,041 | 1.07 | 91,251 | 5,107,010 |
| Household utensil stores | 15,225 | 1.54 | 450,699 | 0.31 | 46,310 | 742,967 |
| Medicine and toiletry stores | 89,453 | 9.03 | 12,654,688 | 8.72 | 605,676 | 10,363,924 |
| Farming supply | 11,938 | 1.21 | 1,626,018 | 1.12 | 59,051 | 1,567,625 |
| Fuel | 48,240 | 4.87 | 12,123,560 | 8.36 | 305,230 | 539,003 |
| Books and stationery | 34,847 | 3.52 | 3,157,908 | 2.18 | 438,421 | 3,773,623 |
| Sporting goods, toy, amusement goods and musical instrument | 22,347 | 2.26 | 2,247,270 | 1.55 | 137,588 | 4,506,737 |
| Camera, watch and spectacles stores | 20,175 | 2.04 | 1,133,785 | 0.78 | 77,848 | 1,136,958 |
| Stores, n.e.c. (not elsewhere classified) | 102,095 | 10.31 | 8,340,300 | 5.75 | 562,834 | 21,783,675 |
| **Total** | **990,246** | **100.00** | **145,103,822** | **100.00** | **7,654,443** | **135,343,693** |

(*1): The number of Employees is the total of 'sole proprietors', 'unpaid family employees', 'paid executives', and 'regular employees', thus 'temporary employees' are not included.

(*2): Total and breakdown may not match as the figures include establishments that could not methodically be classified.

The source: Ministry of Economy, Trade and Industry of Japan

(www.stat.go.jp/english/data/e-census/2012/index.html)

**Table 5.1-2** Current survey of commerce [Sales: unit JPYb, 2021]

| Companies | | | 2021 | | 2020 | | 2019 | |
|---|---|---|---|---|---|---|---|---|
| | | | Sales | Growth (%) | Sales | Growth (%) | Sales | Growth (%) |
| **Total** | | | 551,910 | 6.0 | 503,116 | (9.5) | 459,975 | (2.5) |
| **Wholesale** | | | 401,448 | 7.7 | 356,658 | (12.2) | 314,928 | (3.6) |
| | General Merchandise | | 22,324 | 8.0 | 21,790 | (19.2) | 33,037 | (13.3) |
| | Textiles | | 2,069 | (0.8) | 2,117 | (22.4) | 2,909 | (3.9) |
| | Apparel & Accessories | | 3,990 | (4.5) | 3,985 | (20.7) | 3,803 | (8.3) |
| | Livestock & Aquatic Products | | 34,773 | (1.7) | 33,386 | (3.6) | 23,663 | 0.0 |
| | Food & Beverages | | 53,433 | (0.8) | 52,895 | (4.0) | 49,275 | (2.5) |
| | Building Materials | | 21,465 | (1.8) | 20,902 | (10.3) | 18,200 | 5.2 |
| | Chemicals | | 24,654 | 8.7 | 21,176 | (12.1) | 15,676 | (5.3) |
| | Minerals & Metals | | 61,510 | 25.2 | 46,167 | (21.8) | 43,616 | (8.6) |
| | Machinery & Equipment | | 106,414 | 9.3 | 90,541 | (16.4) | 68,415 | 0.6 |
| | | Industry Machinery & Equipment | 20,576 | 0.1 | 18,449 | (20.8) | 11,072 | (6.0) |
| | | Motor Vehicles | 16,385 | 5.5 | 14,493 | (21.9) | 12,674 | (3.1) |
| | | Electrical Machinery & Equipment | 60,323 | 15.0 | 49,634 | (11.5) | 39,496 | 4.1 |
| | | Others | 9,131 | 3.4 | 7,966 | (24.0) | 5,173 | (0.9) |
| | Furniture & House Furnishings | | 4,460 | (2.3) | 4,122 | (9.0) | 2,172 | (3.9) |
| | Medicines & Toiletries | | 30,698 | 6.0 | 28,193 | (6.0) | 25,626 | 3.0 |
| | Others (*1) | | 35,658 | 10.5 | 31,384 | (6.0) | 28,537 | (6.1) |
| **Retail** | | | 150,462 | 1.9 | 146,457 | (3.2) | 145,047 | 0.1 |
| | General Merchandise | | 10,346 | 0.8 | 10,207 | (15.5) | 11,795 | (2.9) |
| | Fabrics Apparel & Accessories | | 8,610 | 0.9 | 8,638 | (16.8) | 10,988 | (0.5) |
| | Food & Beverages | | 45,328 | 0.7 | 45,145 | 1.3 | 45,362 | 0.4 |
| | Motor Vehicles | | 17,001 | 2.5 | 16,592 | (8.8) | 18,204 | 0.8 |
| | Machinery & Equipment | | 10,035 | 0.7 | 9,429 | 2.6 | 6,256 | 2.0 |
| | Fuel | | 13,839 | 15.8 | 11,893 | (9.5) | 12,905 | (2.6) |
| | Medicine & Toiletry Stores | | 15,026 | 0.5 | 14,259 | 1.3 | 10,538 | 4.2 |
| | Others (*2) | | 18,862 | (1.6) | 19,503 | 0.5 | 21,297 | (0.7) |
| | Non-store retailers | | 11,416 | 1.2 | 10,791 | 3.5 | 7,702 | 1.4 |
| **Reference (*3)** | | | 33,888 | (0.6) | 33,762 | 0.4 | 31,835 | 0.8 |

Note 1: 'Others' of wholesale trade refers to the items classified as 536,553,559 (excluding 5598) under the Japan Standard Industrial Classification.

Note 2: 'Others' of retail trade refers to the items classified as 5914,592,60 (excluding 603 and 605) under the Japan Standard Industrial Classification.

Note 3: 'Reference (*3)' is total of 'Medicine & Toiletry Stores' and 'Others (*2)'.

Source: Ministry of Economy, Monthly Report on the Current Survey of Commerce

(https://www.meti.go.jp/english/statistics/tyo/syoudou_kakuho/index.html)

**Table 5.1-3** Top 30 Wholesalers in Japan (2021) [Unit: JPYm]

| 2021 | 2020 | Companies | Head office | Annual sales (JPYm) | Growth (%) | Industries |
|---|---|---|---|---|---|---|
| 1 | 1 | MEDIPAL HOLDINGS CORPORATION | Tokyo | 3,290,921 | 2.48 | Pharmaceutical |
| 2 | 2 | Alfresa Holdings Corporation | Tokyo | 2,585,643 | (0.67) | Pharmaceutical |
| 3 | 5 | SUZUKEN CO., LTD. | Aichi | 2,232,774 | 4.91 | Pharmaceutical |
| 4 | 4 | NIPPON ACCESS,INC. | Tokyo | 2,120,295 | (1.25) | Food |
| 5 | 3 | Mitsubishi Shokuhin Co., Ltd. | Tokyo | 1,955,601 | (24.13) | Food |
| 6 | 6 | KOKUBU GROUP CORP. | Tokyo | 1,881,471 | 1.82 | Food |
| 7 | 7 | TOHO HOLDINGS CO., LTD. | Tokyo | 1,266,171 | 4.62 | Pharmaceutical |
| 8 | 8 | KATO SANGYO CO., LTD. | Hyogo | 1,137,101 | 2.93 | Food |
| 9 | 9 | ARATA CORPORATION | Tokyo | 857,087 | 2.76 | Household items, Medical supplies |
| 10 | 11 | TOMOSHIA HOLDINGS CO.,LTD. | Tokyo | 742,176 | 1.32 | Food |
| 11 | 10 | MITSUI FOODS CO.,LTD. | Tokyo | 664,367 | (15.44) | Food |
| 12 | 12 | ITOCHU-SHOKUHIN Co.,Ltd. | Osaka | 612,658 | (6.71) | Food |
| 13 | 13 | VITAL KSK HOLDINGS, INC. | Tokyo | 577,249 | 7.49 | Pharmaceutical |
| 14 | 15 | NIHONSHURUIHANBAI CO., LTD. | Tokyo | 512,981 | (1.37) | Food |
| 15 | 14 | NIPPAN GROUP HOLDINGS, INC. | Tokyo | 504,993 | (3.07) | Books, Music, Video, Instruments |
| 16 | 17 | Forest Holdings inc. | Oita | 472,697 | 3.08 | Pharmaceutical |
| 17 | 18 | TOHAN CORPORATION | Tokyo | 428,151 | 0.86 | Books, Music, Video, Instruments |
| 18 | 16 | YAMAE HISANO Co., Ltd. | Fukuoka | 399,163 | (17.50) | Food |
| 19 | 19 | Starzen Co., Ltd. | Tokyo | 381,432 | 9.22 | Food |
| 20 | 20 | SHINMEI Co., LTD. | Hyogo | 317,082 | 10.59 | Food |
| 21 | 27 | CHORI CO.,LTD. | Osaka | 284,096 | 31.38 | Textile |
| 22 | 23 | HAPPINET CORPORATION | Tokyo | 282,441 | 8.92 | Toy |
| 23 | 22 | YAMABOSHIYA Co., Ltd. | Osaka | 278,098 | (1.54) | Food |
| 24 | 21 | OHKI HEALTHCARE HOLDINGS CO., LTD. | Tokyo | 276,207 | (2.66) | Pharmaceutical |
| 25 | 25 | HOKUYAKU TAKEYAMA Holdings,Inc. | Hokkaido | 248,369 | 3.71 | Pharmaceutical |
| 26 | 26 | MARUICHI CO.,LTD. | Nagano | 238,302 | 0.18 | Food |
| 27 | 30 | NAKAKITA Co.,ltd | Aichi | 216,351 | 9.98 | Pharmaceutical |
| 28 | 28 | TAKAYAMA CO.,LTD. | Tokyo | 203,670 | (1.46) | Food |
| 29 | 30 | PIP CO., LTD. | Osaka | 203,524 | 2.55 | Household items, Medical supplies |
| 30 | 31 | TOHO Co.,Ltd | Hyogo | 188,567 | 1.26 | Food |

The source: The Nikkei Marketing Journal, 1 September 2021

**Table 5.1-4** Top 25 Retailers in Japan (2021) [Unit: JPYm]

| 2021 | 2020 | Companies | Business | Annual sales (JPYm) | Growth (%) |
|---|---|---|---|---|---|
| 1 | 2 | Seven & i Holdings Co., Ltd. | Holding Company | 8,749,752 | 51.73 |
| 2 | 1 | AEON CO., LTD. | Holding Company | 8,715,957 | 1.30 |
| 3 | 3 | Amazon Japan G.K. (*2) | Mail-order | 2,533,196 | 15.94 |
| 4 | 4 | FAST RETAILING CO., LTD. | Holding Company | 2,132,992 | 6.18 |
| - | - | AEON RETAIL Co.,Ltd. | Supermarket | 1,817,300 | (7.62) |
| 5 | 6 | Pan Pacific International Holdings Corporation | Holding Company | 1,708,635 | 1.59 |
| 6 | 5 | YAMADA HOLDINGS CO., LTD. | Holding Company | 1,619,379 | (7.60) |
| - | - | Ito-Yokado Co., Ltd. | Supermarket | 1,067,545 | (1.24) |
| - | - | WELCIA HOLDINGS CO.,LTD. | Holding Company | 1,025,947 | 8.03 |
| - | - | WELCIA YAKKYOKU CO.,LTD. | Specialty Shop | 923,958 | 6.64 |
| 7 | 8 | TSURUHA HOLDINGS INC. | Holding Company | 919,303 | 9.31 |
| - | - | SEVEN-ELEVEN JAPAN CO.,LTD. | Convenience Store | 863,025 | 1.50 |
| - | - | UNIQLO CO., LTD. | Specialty Shop | 842,628 | 4.43 |
| 8 | 7 | BICCAMERA INC. | Specialty Shop | 834,060 | (1.63) |
| 9 | 16 | Nitori Holdings Co., Ltd. | Holding Company | 811,581 | 13.21 |
| 10 | 12 | LIFE CORPORATION | Supermarket | 768,335 | 1.21 |
| 11 | 18 | Takashimaya Co., Ltd. | Departmental Store | 761,124 | 11.78 |
| 12 | 14 | Yodobashi Camera Co.,Ltd. | Specialty Shop | 753,028 | 2.89 |
| 13 | 10 | K'S HOLDINGS CORPORATION | Specialty Shop | 747,219 | (5.72) |
| 14 | 15 | Valor Holdings Co., Ltd. | Holding Company | 732,519 | 0.32 |
| 15 | 24 | MatsukiyoCocokara & Co. | Specialty Shop | 729,969 | 31.08 |
| 16 | 17 | COSMOS Pharmaceutical Corporation | Specialty Shop | 726,424 | 6.14 |
| - | - | United Super Markets Holdings Inc. | Holding Company | 716,407 | (2.38) |
| 17 | 11 | EDION Corporation | Specialty Shop | 713,768 | (7.08) |
| 18 | 20 | Lawson, Inc. | Convenience Store | 698,371 | 4.86 |
| 19 | 19 | Izumi Co., Ltd. | Supermarket | 676,800 | (0.44) |
| - | - | Don Quijote Co., Ltd. | Specialty Shop | 666,153 | (5.38) |
| 20 | 21 | SUNDRUG CO.,LTD. | Specialty Shop | 648,734 | 2.27 |
| 21 | 22 | SUGI Holdings Co., Ltd. | Holding Company | 625,477 | 3.81 |
| 22 | 25 | SHIMAMURA Co.,Ltd. | Specialty Shop | 583,618 | 7.37 |
| 23 | 23 | ARCS COMPANY, LIMITED | Holding company | 577,568 | 3.70 |
| - | - | UNY Co.,Ltd. | Supermarket | 569,928 | 9.19 |
| 24 | 28 | Nojima Corporation | Specialty Shop | 564,989 | 7.96 |
| - | - | MAXVALU NISHINIHON CO., LTD. | Supermarket | 554,809 | (1.49) |
| 25 | 26 | Daiso Industries Co., Ltd. | Specialty Shop | 549,300 | 4.39 |

(*1): Companies with a hyphen (-) in the rank column are consolidated subsidiaries whose parent companies are listed on the top 500 list.

(*2): The total annual sales is calculated using the annual average exchange rate.

(*3): 'Convenience Store' means 'Corner shop' in the UK.

The source: The Nikkei Marketing Journal, 27 July 2022

**Table 5.1-5** Top 8 Convenience Store Chains in Japan (2021) [Unit: JPYm]

| 2021 | 2020 | Shop Names | Companies | Groups | Annual sales (JPYm) | Growth (%) | Shops |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 7-Eleven | SEVEN-ELEVEN JAPAN CO.,LTD. | Seven & i Holdings Co., Ltd. | 4,952,700 | 1.69 | 21,327 |
| 2 | 2 | FamilyMart | FamilyMart Co.,Ltd. | FamilyMart UNY Holdings Co., Ltd. | 2,841,900 | 2.81 | 15,646 |
| 3 | 3 | LAWSON | Lawson, Inc. | Mitsubishi Corporation | 2,617,400 | 2.91 | 14,656 |
| 4 | 4 | MINI STOP | MINISTOP Co., Ltd. | AEON CO., LTD. | 292,900 | 0.69 | 1,959 |
| 5 | 5 | Seicomart | Secoma Company Limited | Independent | 190,400 | 3.65 | 1,176 |
| 6 | 6 | Daily YAMAZAKI | YAMAZAKI BAKING CO.,LTD. | Independent | 152,900 | 0.59 | 1,361 |
| 7 | 7 | NewDays | JR East Retail Net Co.,Ltd. | East Japan Railway Company | 75,100 | 13.79 | 496 |
| 8 | 8 | POPLAR, SEIKATSU SAIKA, Kurashi House, Three Eight | POPLAR. CO., LTD | Independent | 12,800 | (62.90) | 253 |

This survey was conducted with chain convenience stores which meet the following four criteria: (1) self-service, (2) food and beverage, (3) open at least 14 hours a day, and (4) have a sales floor area of at least 30 square meters but less than 250 square meters. In addition, this year's survey targeted companies that meet the following criteria: (5) total shop sales of at least 10 billion yen and (6) excluding (area) franchisee companies.

Overseas stores are excluded.

The source: The Nikkei Marketing Journal, 17 August 2022

**Table 5.1-6** Top 25 Speciality Store Chains in Japan (2021) [Unit: JPYm]

| 2021 | Companies | Business Areas | Sales | | Ordinary Income (JPYm) | Stores |
|---|---|---|---|---|---|---|
| | | | 2021 | Growth (%) | | |
| 1 | YAMADA HOLDINGS CO., LTD. | Home electrical appliances | 1,619,379 | (7.60) | 74,136 | 12,537 |
| 2 | WELCIA YAKKYOKU CO.,LTD. | Chemists & Medicines | 923,958 | 6.64 | 46,906 | 2,023 |
| 3 | UNIQLO CO., LTD. | Casual clothing | 842,628 | 4.43 | - | 810 |
| 4 | Nitori Holdings Co., Ltd. | Furniture | 811,581 | 13.21 | 141,847 | 801 |
| 5 | Yodobashi Camera Co.,Ltd. | Home electrical appliances | 753,028 | 2.89 | 49,515 | 24 |
| 6 | K'S HOLDINGS CORPORATION | Home electrical appliances | 747,219 | (5.72) | 46,545 | 533 |
| 7 | Matsumotokiyoshi Holdings Co., Ltd. | Chemists & Medicines | 729,969 | 31.08 | 44,881 | 3,325 |
| 8 | COSMOS Pharmaceutical Corporation | Chemists & Medicines | 726,423 | 6.14 | 35,817 | 1,130 |
| 9 | Don Quijote Co., Ltd. | General warehouse stores | 666,153 | (5.38) | 17,935 | 346 |
| 10 | EDION Corporation | Home electrical appliances | 644,036 | (7.81) | 19,645 | 1,138 |
| 11 | Sugi Holdings Co., Ltd. | Chemists & Medicines | 625,477 | 3.81 | 33,082 | 1,483 |
| 12 | SHIMAMURA Co.,Ltd. | Women's and children's clothing | 579,127 | 7.72 | 50,375 | 2,162 |
| 13 | Daiso Industries Co., Ltd. | 100-yen shops | 549,300 | 4.39 | - | 4,042 |
| 14 | Cainz Co., Ltd. | DIY stores & Motor car accessories stores | 470,841 | (0.54) | 30,141 | 227 |
| 15 | TSURUHA HOLDINGS INC. | Chemists & Medicines | 444,048 | 1.76 | 26,457 | 1,382 |
| 16 | BICCAMERA INC. | Home electrical appliances | 440,298 | (4.39) | 3,900 | 45 |
| 17 | DCM Co., Ltd. | DIY stores & Motor car accessories stores | 432,539 | (6.82) | 28,791 | - |
| 18 | Trial Company ,Inc. | General warehouse stores | 425,132 | (6.81) | - | - |
| 19 | Sundrug Co.,Ltd. | Chemists & Medicines | 415,906 | 0.71 | 21,306 | - |
| 20 | Joshin Denki Co.,Ltd. | Home electrical appliances | 407,435 | (8.17) | 9,231 | 213 |
| 21 | KOHNAN SHOJI CO., LTD. | DIY stores & Motor car accessories stores | 395,357 | (0.57) | 23,774 | 416 |
| 22 | FUJI YAKUHIN CO., LTD. | Chemists & Medicines | 371,547 | (5.78) | - | 1,372 |
| 23 | KOMERI Co.,Ltd. | DIY stores & Motor car accessories stores | 365,619 | (1.51) | 25,054 | 1,214 |
| 24 | Ryohin Keikaku Co.,Ltd. (MUJI) | Daily necessities | 343,096 | - | 51,792 | 456 |
| 25 | GEO HOLDINGS CORPORATION | Secondhand shop | 334,788 | 1.96 | 9,662 | 1,958 |

The source: The Nikkei Marketing Journal, 10 August 2022

**Table 5.1-7** Sales by Type of Merchandise in Department Stores (2021) [unit: JPYk]

| | 2021 | Growth (%) | Ratio (%) | 2020 |
|---|---|---|---|---|
| **Grand Total** | **4,418,298,830** | **4.69** | **100.00** | **4,220,425,225** |
| **Apparel** | **1,166,462,206** | **2.23** | **26.40** | **1,140,999,801** |
| Men's | 243,823,749 | (1.70) | 5.50 | 248,038,753 |
| Women's | 753,986,916 | 4.83 | 17.10 | 719,257,852 |
| Children's | 88,734,493 | (3.89) | 2.00 | 92,328,824 |
| Others | 79,917,048 | (1.79) | 1.80 | 81,374,372 |
| **Personal items** | **605,943,837** | **10.08** | **13.70** | **550,466,686** |
| **Accessories** | **857,969,921** | **9.18** | **19.40** | **785,805,154** |
| Cosmetics | 348,242,463 | 0.84 | 7.90 | 345,334,719 |
| Jewelleries | 367,795,840 | 24.74 | 8.30 | 294,854,581 |
| Others | 141,931,618 | (2.53) | 3.20 | 145,615,854 |
| **Household Items** | **181,189,888** | **1.79** | **4.10** | **178,007,673** |
| Furniture | 46,941,198 | 0.97 | 1.10 | 46,490,607 |
| Home electrical appliances | 14,754,154 | 5.85 | 0.30 | 13,938,677 |
| Others | 119,494,536 | 1.63 | 2.70 | 117,578,389 |
| **Foods** | **1,366,650,362** | **3.59** | **30.90** | **1,319,345,203** |
| Fresh foods | 255,577,904 | (3.32) | 5.80 | 264,366,880 |
| Confectioneries | 388,117,527 | 7.76 | 8.80 | 360,164,160 |
| Delicatessen | 311,653,190 | 6.69 | 7.10 | 292,108,939 |
| Others | 411,301,741 | 2.13 | 9.30 | 402,705,224 |
| **Restaurant** | **82,871,986** | **(1.14)** | **1.90** | **83,824,946** |
| **Services** | **42,931,845** | **3.48** | **1.00** | **41,487,516** |
| **Others** | **114,278,785** | **(5.15)** | **2.30** | **120,488,246** |
| **Gift Vouchers** | **101,134,432** | **(2.13)** | **2.60** | **103,335,161** |

The sales of Gift Vouchers are excluded from the total sales.

The source: Japan Department Stores Association (www.depart.or.jp/store_sale/)

**Table 5.1-8** Sales by Type of Merchandise in Chain Stores (2021) [Unit: JPYm]

| | 2021 | Growth (%) | Ratio (%) | 2020 |
|---|---|---|---|---|
| **Grand Total** | **13,338,927** | **4.54** | **100.00** | **12,759,718** |
| **Foods** | **9,134,358** | **4.43** | **68.50** | **8,746,573** |
| Agricultural products | 1,213,312 | (4.64) | 9.80 | 1,272,287 |
| Livestock products | 989,992 | (6.78) | 8.10 | 1,062,036 |
| Fishery products | 779,796 | (2.73) | 6.30 | 801,702 |
| Delicatessen | 1,008,250 | (4.66) | 8.90 | 1,057,582 |
| Other foods | 4,516,373 | (0.80) | 35.30 | 4,552,964 |
| **Apparel** | **1,111,706** | **48.27** | **5.40** | **749,786** |
| Men's | 218,429 | 65.40 | 1.00 | 132,058 |
| Women's | 325,230 | 72.45 | 1.40 | 188,593 |
| Other apparels | 568,046 | 32.37 | 3.10 | 429,134 |
| **Household items** | **2,620,191** | **3.60** | **19.80** | **2,529,164** |
| Sundries | 1,064,976 | 7.59 | 7.90 | 989,856 |
| Healthcare & cosmetics | 379,158 | 10.31 | 2.40 | 343,723 |
| Furniture & interior accessories | 624,756 | (14.07) | 5.30 | 727,076 |
| Home electrical appliances | 133,212 | 26.11 | 0.90 | 105,633 |
| Other products | 418,088 | 15.22 | 3.40 | 362,874 |
| **Services** | **35,978** | **26.00** | **0.30** | **28,555** |
| **Others** | **767,044** | **8.70** | **6.00** | **705,639** |

The source: Japan Chain Stores Association (56 member companies and 11,808 stores)
(www.jcsa.gr.jp/public/statistics.html)

**Table 5.1-9** BtoC EC market size in Japan (2021) [Unit: JPYb]

| | | 2021 | EC Ratio (%) (*1) | Growth (%) | 2020 | EC Ratio (%) |
|---|---|---|---|---|---|---|
| **Grand Total** | | **20,695.0** | | **7.35** | **19,277.9** | |
| **Retail** | Foods, beverages, liquors | 2,519.9 | 3.77 | 14.09 | 2,208.6 | 3.31 |
| | Home electrical appliances, audio & visual equipment, PC & peripherals | 2,458.4 | 38.13 | 4.66 | 2,348.9 | 37.45 |
| | Books, video & music software | 1,751.8 | 46.20 | 7.88 | 1,623.8 | 42.97 |
| | Cosmetics, healthcare | 855.2 | 7.52 | 9.82 | 778.7 | 6.72 |
| | Household items, furniture, interior accessories | 2,275.2 | 28.25 | 6.71 | 2,132.2 | 26.03 |
| | Apparels & accessories | 2,427.9 | 21.15 | 9.35 | 2,220.3 | 19.44 |
| | Motor vehicles, motorbike, parts etc. | 301.6 | 3.86 | 8.33 | 278.4 | 3.23 |
| | Others | 696.4 | 1.96 | 8.42 | 642.3 | 1.85 |
| | **Total** | **13,286.5** | **8.78** | **8.61** | **12,233.3** | **8.08** |
| **Services** | Travel | 1,400.3 | | (9.62) | 1,549.4 | |
| | Food & drinks | 493.8 | | (17.36) | 597.5 | |
| | Tickets | 321.0 | | 67.01 | 192.2 | |
| | Financing | 712.2 | | 6.47 | 668.9 | |
| | Beauty & barber | 595.9 | | (4.33) | 622.9 | |
| | Food delivery | 479.4 | | 37.48 | 348.7 | |
| | Others (Healthcare, insurances, homes, educations) | 639.8 | | 6.00 | 603.6 | |
| | **Total** | **4,642.4** | | **1.29** | **4,583.2** | |
| **Digital Contents** | e-publication (Books & magazines) | 567.6 | | 24.23 | 456.9 | |
| | Charged music distribution | 89.5 | | 14.30 | 78.3 | |
| | Charged movie distribution | 379.1 | | 18.47 | 320.0 | |
| | On-line games | 1,612.7 | | 7.82 | 1,495.7 | |
| | Others | 117.1 | | 5.97 | 110.5 | |
| | **Total** | **2,766.1** | | **12.38** | **2,461.4** | |

The '**EC Ratio**' means the ratio of EC market size to the amount of business transaction (Market size) including telephone, e-mail, and face-to-face based sales.

The source: METI (Ministry of Economy, Trade and Industry) 'Research on Infrastructure Development in Japan's Information-based Economy Society (E-Commerce Market Survey)'
(www.meti.go.jp/policy/it_policy/statistics/outlook/ie_outlook.html)
(https://www.meti.go.jp/press/2022/08/20220812005/20220812005-h.pdf)

**Table 5.1-10** Top 25 E-Commerce (B2C) Players in Japan (2020) [Unit: JPYm]

| 2020 | 2019 | Companies (Main Website) | Sales | Growth (%) | EC Ratio (%) | Main Products |
|---|---|---|---|---|---|---|
| 1 | 1 | Amazon Japan G.K. (amazon.co.jp) (*1) | 2,185,200 | 25.2 | 100 | General |
| 2 | 2 | Yodobashi Camera Co.,Ltd (yodobashi.com) | 222,143 | 60.3 | 100 | Home electrical appliances |
| 3 | 4 | BICCAMERA INC. (biccamera.com) (*2) | 148,700 | 37.0 | 100 | Home electrical appliances |
| 4 | 3 | ZOZO, Inc. (zozo.jp) (*3) | 147,402 | 17.4 | 100 | Apparel |
| 5 | 5 | UNIQLO CO., LTD. (uniqlo.com) | 107,600 | 29.3 | 100 | Apparel |
| 6 | 7 | Oisix ra daichi Inc. (oisixradaichi.co.jp) (*4) | 100,061 | 40.9 | 100 | Foods |
| 7 | 9 | Japanet Takata Co.,Ltd. (japanet.co.jp/shopping) | (*a)79,000 | 36.0 | 33 | Home electrical appliances |
| 8 | 10 | Joshin Denki Co.,Ltd. (joshinweb.jp) | 71,706 | 25.5 | 100 | Home electrical appliances |
| 9 | 18 | NITORI Co., Ltd. (nitori-net.jp/store) | 70,500 | 59.2 | 100 | Furniture, household items |
| 10 | 16 | YAMADA DENKI CO., LTD. (www.yamada-denkiweb.com) | (*a)70,000 | - | 100 | Home electrical appliances |
| 11 | 8 | DINOS CORPORATION (dinos-corp.co.jp) (*5) | (*b)62,296 | 7.1 | 65 | General |
| 11 | 6 | Dell Japan Inc. (dell.com) | (*a)60,000 | - | 100 | PC |
| 13 | 14 | MouseComputer Co.,Ltd. (mouse-jp.co.jp) (*6) | 56,222 | 19.6 | 100 | PC |
| 14 | 11 | Senshukai CO.,LTD. (bellemaison.jp) | (*a,*b)56,000 | - | 83 | General |
| 15 | 36 | Adastria Co., Ltd. (www.adastria.co.jp) | 53,800 | 23.4 | 100 | Apparel |
| 16 | 11 | Jupiter Shop Channel Co.,Ltd. (shopch.jp) | (*a)53,000 | - | 33 | General |
| 16 | 13 | ASKUL Corporation (askul.co.jp) | 52,858 | 8.7 | 100 | Household items |
| 18 | 23 | BAYCREW'S STORE (baycrews.jp) | 51,000 | 29.0 | 100 | Apparel |
| 19 | 21 | Belluna Co., Ltd. (belluna.jp) | 48,588 | 44.4 | 31 | General |
| 20 | 16 | KITAMURA Co., Ltd. (kitamura.jp) (*7) | (*a)47,000 | - | 100 | Cameras |
| 21 | 19 | XPRICE Inc. (corp.xprice.co.jp) (*8) | 44,788 | 20.6 | 100 | Home electrical appliances |
| 22 | 15 | Ito-Yokado Co., Ltd. (itoyokado.co.jp) (*9) | 43,237 | (4.3) | 100 | Foods |
| 23 | 25 | ONWARD HOLDINGS CO., LTD. (www.onward-hd.co.jp) (*10) | 41,584 | 26.0 | 100 | Apparel |
| 24 | 72 | TSI HOLDINGS CO., LTD. (www.tsi-holdings.com/company.html) (*11) | 40,681 | 12.0 | 100 | Apparel |
| 25 | 63 | World Co., Ltd. (corp.world.co.jp) (*12) | 38,913 | 15.4 | 100 | Apparel |

(*1) Amazon Japan: Amazon's sales in Japan, including other businesses other than product sales.

(*2) BICCAMERA: Consolidated group net sales including Kojima and Sofmap.

(*3) ZOZO: Sales for accounting purposes, with a product turnover (total distribution value) of JPY 419,438 million.

(*4) Oisix La Daichi: Includes some catalogue and other sales.

(*5) DINOS CORPORATION: Changed its name from 'Dinos Cecile Co., Ltd.' on 1 March 2021.

(*6) MouseComputer: Includes store sales etc.

(*7) KITAMURA: EC related estimated sales including home delivery and in-store-pick-up sales.

(*8) XPRICE Inc.: Changed its name from 'MOA Co.,Ltd.' on 1 April 2021.

(*9) Ito-Yokado: Mainly their online supermarket sales.

(*10) ONWARD HOLDINGS: Total EC sales including external malls, of which the Group's own EC sales amount to approximately JPY 35.7 billion.

(*11) TSI HOLDINGS: Total EC sales including external malls, of which the Group's own EC sales amount to approximately JPY 17.9 billion.

(*12) World: Total of Group EC sales.

(*a) Estimation

(*b) Sales calculated from the ratio of orders received.

The source: Koubunsuppan Corporation (netshop.impress.co.jp/node/9126)

**Table 5.1-11** Number of Vending Machines and Annual sales in Japan (2021) [Unit: JPYk]

| Type | Product examples | Machines in operation | | | | | Sales (JPYk) 2016 |
|---|---|---|---|---|---|---|---|
| | | 2021 | Growth (%) | 2020 | 2019 | 2016 | |
| Beverages | Soft drinks | 1,999,000 | (1.04) | 2,020,000 | 2,100,000 | 2,133,000 | 1,740,528,000 |
| | Milk drinks | 101,000 | (4.72) | 106,000 | 111,600 | 148,000 | 120,620,000 |
| | Coffee, cocoa (Cup) | 134,000 | (2.19) | 137,000 | 141,400 | 169,000 | 137,904,000 |
| | Alcoholic drinks | 20,400 | (5.56) | 21,600 | 22,400 | 24,600 | 30,750,000 |
| **Total (Beverages)** | | **2,254,400** | **(1.32)** | **2,284,600** | **2,375,400** | **2,474,600** | **2,029,802,000** |
| **Foods** | **Instant noodles, frozen foods, ice creams, confectioneries, etc.** | **72,800** | **4.00** | **70,000** | **71,900** | **69,400** | **54,132,000** |
| **Cigarettes** | **Cigarettes** | **116,000** | **(5.69)** | **123,000** | **131,000** | **193,300** | **209,356,000** |
| Thickets | Passenger tickets | 14,400 | (0.69) | 14,500 | 15,000 | 14,800 | 1,415,842,000 |
| | Meals, admissions, etc. | 48,000 | 3.00 | 46,600 | 45,400 | 35,400 | 410,972,800 |
| **Total (Tickets)** | | **62,400** | **2.13** | **61,100** | **60,400** | **50,200** | **1,826,814,800** |
| Household items | Prepaid cards, sanitary goods, newspapers, toys, etc. | 202,900 | (2.92) | 209,000 | 210,100 | 722,300 | 417,967,500 |
| | Others (Newspapers, sanitary goods, toys, etc.) | - | - | - | - | 138,800 | 52,762,400 |
| **Total (Household items)** | | **202,900** | **(2.92)** | **209,000** | **210,100** | **861,100** | **470,729,900** |
| **Total (Vending machines)** | | **2,708,000** | **(1.44)** | **2,747,700** | **2,848,800** | **3,648,600** | **4,590,834,700** |
| Automated self-service machines | Money changer | 64,100 | (0.47) | 64,400 | 66,800 | 61,000 | - |
| | Automatic fare adjustment machine (Parking, hotels, hospitals, etc.) | 159,800 | (1.18) | 161,700 | 162,500 | 21,800 | - |
| | Others (Automatic lockers, lending machines, etc.) | 1,071,200 | (0.07) | 1,072,000 | 1,071,000 | 1,210,000 | 145,200,000 |
| **Total (Automated self-service machines)** | | **1,295,100** | **(0.23)** | **1,298,100** | **1,300,300** | **1,292,800** | **145,200,000** |
| **Grand total** | | **4,003,600** | **(1.04)** | **4,045,800** | **4,149,100** | **4,941,400** | **4,736,034,700** |

The source: Japan Vending Machine Manufacturers Association (www.jvma.or.jp/information/information_3.html)

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