



The Global Language of Business



Miyajima torii gate and fireworks, Hiroshima

GS1 Japan Handbook

2023-2024

Message from the President

GS1 Japan was established in 1972 as a specialised organisation for improving the efficiency of distribution systems, and it celebrated the 50th anniversary of its establishment last year (in 2022). It joined the European Article Numbering Association (EAN) (currently known as GS1) in 1978, and this year marks the 45th anniversary of its GS1 membership. Japan was the first country outside Europe to join EAN. We believe that this breakthrough enabled us to contribute to the global growth and development of GS1, which now has 116 member organisations across the world.

GS1 Japan has since improved supply chain systems and their efficiency by promoting various GS1 standards, including Global Trade Item Numbers (GTINs)/barcodes, which became widely used when POS systems were introduced. To date, the total number of GS1 Company Prefixes (GCPs) licensed to entities in Japan has reached approximately 150,000.

2023 will be a memorable year, as it marks the 50th anniversary of the birth of EAN/UPC symbols, one of the most successful GS1 standards. In the meantime, the role of EAN/UPC symbols has expanded and advanced in response to the trends and needs of society, and they have become increasingly important. GS1 standards have been utilised mainly for the following: barcoding for items being scanned at distribution POS and logistics points; identifying key information for ordering units by manufacturers, wholesalers, and resellers; and standardising information exchange systems for B2B data. The standards are expanding and will continue to expand their coverage toward the following: the field of healthcare and production goods in addition to distributions and logistics; and the significant growth in online transactions. In addition, the utilisation and linkage of data in not only scenarios in B2B but also in B2C as well has become a target.

By pursuing the linkage of the real and digital worlds with GS1 standards as a common business language, GS1 Japan will going forward support digital transformation (DX) in order to solve industrial and social challenges, thereby making the supply chain more visible and efficient, while contributing to the realisation of a safe, secure, and sustainable society for consumers and patients.

This GS1 Japan Handbook describes our latest activities.

In the distribution field, in response to the spectacular increase in e-commerce (EC), accurate product information is increasingly required, keyed to GTINs that can identify and manage products internationally without duplication; for example, for use in product identification, when retailers, wholesalers and EC businesses handle vast amounts of products on the internet. In response to this, GS1 Japan has also implemented a major revision of the GCP registration renewal system in 2021 for the stricter management and operation of GTINs and GCPs, for the first time since the system was established in 1978, and is working to ensure its reliable operation.

In addition, GS1 Japan is further developing its GS1 Japan Data Bank (GJDB) and is striving to expand collaboration with industry product databases to increase the information registered in the GJDB, in conjunction with the global development of the GS1 Registry Platform (GRP), which enables the centralised use of GCPs, GTINs, and other interlinked information from around the world. As the next step, GS1 Japan is deploying data utilisation services for industries.

GS1 Japan is promoting further utilisation of various GS1 standards to help improve distribution efficiency with regard to labour shortages, changes in the way we work, and the rising demand for distribution, as well as to meet the needs for managing traceability and best before/use by dates to address the greater awareness of food safety and the Sustainable Development Goals (SDGs).

These include identification codes such as Global Location Numbers (GLNs), two dimensional symbols, Electronic Product Code (EPC) / Radio Frequency Identification (RFID), Electronic Product Code Information Services (EPCIS), and GS1 Digital Link.

In the healthcare sector, we have been encouraging the in-hospital application of GS1 barcodes, through the labelling of pharmaceutical products and medical devices with them, and likewise we are supporting companies in the construction sector in catching up with regard to DX environments by using GS1 standards.



We will continue to respond quickly and appropriately to the needs of the times by promoting GS1 standards so as to streamline and improve business operations while also enhancing consumer satisfaction.

As we celebrate the 45th anniversary of our joining GS1, we hope to undertake collaborative work with user companies, GS1 member organisations, the GS1 Global Office, and other GS1 community members, as well as to grow alongside the global GS1 community. We look forward to your continued support.

MUKAE Yoichi
President
GS1 Japan

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1 Sectors (Case Studies)

1.1 Retail and CPG

1.1.1 Dynamic pricing implemented using GS1 DataMatrix

-First pilot test of 2D at POS in Japan-

In February 2023, a pilot test was conducted in Japan to implement efficient dynamic pricing. The test was the first ever performed in Japan to scan GS1 2D symbols (GS1 DataMatrix) at POS cash registers.

1.1.1.1 Pilot test overview

The pilot test was conducted as part of the 'FY 2022 Infrastructure development project for improving efficiency of and creating added value in distribution and logistics (to create case studies on improving supply chain efficiency and reducing food loss using IoT technologies)', which was commissioned by the Ministry of Economy, Trade and Industry.

The purpose of the pilot test was to verify the effect that inventory management using products' expiration date and dynamic pricing have on supply chain efficiency improvement and food loss reduction.

Pilot venue: Maizuru Carrot Hamatama Store (Karatsu City, Saga Prefecture)

Pilot dates: 24 January to 26 February 2023 (34 days in total)

Target product: Bread 25 SKU

Companies participating in pilot:

Imamura Corporation, SATO Holdings Corporation, Nishinihon Ishida Co., Ltd., Maizuru Department Store Co., Ltd., The Japan Research Institute, Limited



Photo 1.1.1.1-1 Maizuru Carrot Hamatama Store

1.1.1.2 Expected benefits in this pilot test

■ More efficient retail operations, solving labour shortages

Automatic price discounting of products was implemented by using a dynamic pricing system and electronic shelf labels. Verified what degree it was possible to reduce the large workload involved in replacing price tags and attaching discount labels.

■ Reduction of food loss and increasing sales

The achievement of food loss reduction has so far operated manually, detailed discounting operations. It was verified whether automatic discounting could keep the food loss rate as low as it had been in the past. It was also investigated whether the implementation of detailed price discounting in accordance with consumer behaviour had the effect of increasing sales.

■ More advanced production estimates at food manufacturers

Verified whether a higher level of production forecasting could be implemented by utilising sales data by expiration dates and discount rate.

1.1.1.3 How dynamic pricing is implemented

1.1.1.3.1 GS1 DataMatrix labels and group labels are placed on products.

- Once the products that are the subjects of the pilot test have been delivered in the store, GS1 DataMatrix label and **group**(*1) label are attached on the products.

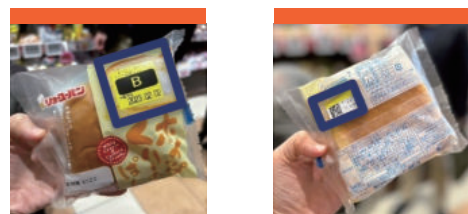


Photo 1.1.1.3.1-1 GS1 DataMatrix label and group label on the products

(A target bread product has a group label on its package front and a GS1 Data Matrix label on its package back.)

- ✓ (*1) **group**: 'group' indicates which products have the same expiration date.



Photo 1.1.1.3.1-2 GS1 Data Matrix with the GTIN and the expiration dates

1.1.1.3.2 The system(*2) automatically reduces prices

- The prices of the products are set by the POS system based on their expiration dates.
- The price of each group of products is displayed on the electronic shelf label.
- And the shelf label is changed automatically in accordance with the POS system at pre-determined times (before store opening, and at 1 p.m. and 4 p.m.).
- At the POS cash registers, the price of each group of products is also changed automatically at pre-determined times.



Photo 1.1.1.3.2-1 The prices are changed automatically at 1 p.m.

✓ (*2) The pilot test used the Sato Dynamic Pricing Solution (SDPS).

1.1.1.3.3 Products are selected

- Consumers choose products according to their own needs. (e.g., a discounted product with a short expiration date if it is to be eaten soon, or a regular-priced product with a long expiration date if it is to be eaten at a later date).
- This allows precise price changes that are not possible with traditional price reduction labels, and is advantageous for both the store and the consumer.



Photo 1.1.1.3.3-1 Products with the electronic shelf labels

1.1.1.3.4 Payment made at a POS cash register

- GS1 DataMatrix labels are scanned at a cash register as well as EAN symbols.
- The prices of products with GS1 DataMatrix labels are automatically calculated based on their expiration dates.

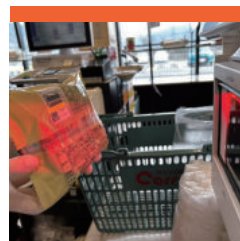


Photo 1.1.1.3.4-1 GS1 DataMatrix compatible POS cash register

1.1.1.4 Result of this pilot

■ Reading GS1 DataMatrix at POS cash register and cashier handling

Since this was the first time in Japan that a POS cash register could read the GS1 DataMatrix, the POS system needed to be modified before this pilot test. It was challenging for the system, which had previously identified products only by GTIN, to identify products by GTIN + expiration date and change prices according to this information.

Fortunately, however, the POS cash register scanners were capable of reading 2D symbols, so there was no need to replace the scanners. Smooth reading was achieved by modifying the scanner system based on the GS1 element string syntax.

Immediately after the start of the pilot, the cashier staffs seemed to have some difficulty with the readable distance and angle of view to read 2D symbols, but they got used to it quickly, and neither took longer to read nor was more difficult to read than the EAN symbol.

■ Improved operational efficiency and reduced labour costs

• Pilot Test Result

A total of 1,682 products were sold at a discounted price during the pilot period. The average number of discounts for these 1,682 items was 1.375 times. If the traditional discounting process is calculated as 10 seconds per discount for one product, this means that 6.42 hours were saved in total.

- Preliminary Calculation (for all bread)

The pilot test covered 10% of the bread sold in this store. This means that automating the discounting of all bread using this method would save 57 hours per month (6.42 hours x 100% / 10% x 30 days / 34 days). In case the wage is USD 15 per hour, a cost saving of USD 855 per month can be achieved.



Photo 1.1.1.4-2 Setting up a lowest-priced products section

■ Food loss percentage

The supermarket had previously had a low food loss rate of less than 1%. With the current pilot test, the food loss rate was initially higher than it had been before the pilot. This was because customers did not understand the process of checking prices by looking at the electronic shelf label. Therefore, various efforts were made to improve the display method. As a result, a food loss rate that was as low as before was achieved in the last stages of the pilot.



Photo 1.1.1.4-1 Adding POPs and videos

As discussed above, it was the first experiment in Japan in dynamic pricing at supermarkets that does not use reduction labels. Therefore, it is necessary to devise ways to make consumers

aware of this new style of discounting. Trial and error will continue to be necessary with regard to this point.

1.1.1.5 Considerations and our next action

Of course, as the number of 2D symbols read at POS registers increases, the importance of correctly using the GS1 standard will also be heightened (e.g., data format and symbol size).

Furthermore, the importance of product identification with GTIN (migration RCN to GTIN) will increase in Japan, where DX, Digital Twin, data management in the cloud, and collaboration among companies are being actively explored as a response to logistics issues and labour shortages.

We will listen to the voices of such industries, attend to their current problems, and propose to companies various ways to utilise GS1 2D symbols. (For more information, refer to the 2.1 GS1 Japan's Industry Engagement for the Use of 2D Barcodes.)

1.2 Healthcare

1.2.1 Medical Products Regulation

- GS1 barcodes usage for ensuring traceability and browsing e-leaflets -

In Japan, GS1 barcode labelling has been implemented for pharmaceuticals since 2006 and for medical devices since 2008, following the notification requirements set by the Ministry of Health, Labour and Welfare (hereinafter referred to as 'MHLW'). The aim of these measures is to enhance traceability, and as such the industry has embraced barcode labelling. Therefore, labelling with GS1 barcodes is now widely used regardless of the packaging unit in question (Photo 1.2.1-1).

The Japanese Pharmaceutical and Medical Devices Act (hereinafter referred to as the 'PMD') is revised every five years by the MHLW. Taking into account the above situation with regard to barcoding, the revision on 4 December 2019 introduced a legal requirement for barcode labelling that applies to pharmaceuticals, medical

devices, in vitro diagnostic products, and cell and gene therapy products. It came into force as of 1 December 2022(*i) in order to ensure traceability and reinforces the legal basis for past MHLW requirements.

The revised PMD also introduced the digitalisation of paper package inserts, and GS1 barcodes are used as its access key. It came into force as of 1 August 2021(*ii), with a transitional period that ended on 31 July 2023. This section provides an overview of the contents of these legal revisions.





Photo 1.2.1-1 GS1 barcodes on medical products

1.2.1.1 Barcoding Requirement

The latest MHLW notice issued September 2022, under the revised PMD requires barcoding for three levels of packaging units as follows:

Primary packaging unit: The smallest packaging unit in which the contents are directly packed.

Secondary packaging unit: The minimum packaging unit sold to medical institutions, etc.

Tertiary packaging unit: The packaging unit in which multiple secondary packaging units are packed.

Out of the above, barcode labelling on secondary packaging units is now mandatory. As for barcode labelling on other packaging units, it is categorised as either ‘essential’ or ‘optional’ based on the product category and encoding data. Summaries of these requirements are given in Tables 1.2.1.1-1, 2, and 3.

Table 1.2.1.1-1 Barcoding requirements for pharmaceuticals

Barcode	Primary packaging			Secondary packaging			Tertiary packaging		
	GS1 DataBar (or its composite)			GS1 DataBar composite			GS1-128		
Encoding data	GTIN	Expiration date	Lot or serial number	GTIN	Expiration date	Lot or serial number	GTIN	Expiration date	Lot or serial number
Specific biological product	○	○	○	●	●	●	○	○	○
Others	○	○	○	●	●	●	○	○	○

✓ (*1) Symbols in the table indicate the followings;

- : legal obligation under PMD,
- : essential requirement with MHLW notice,
- : optional requirement.

Table 1.2.1.1-2 Barcoding requirements for medical devices and in vitro diagnostic products

Barcode	Primary packaging			Secondary packaging			Tertiary packaging		
	GS1-128 or GS1 DataMatrix								
Encoding data	GTIN	Expiration date	Lot or serial number	GTIN	Expiration date	Lot or serial number	GTIN	Expiration date	Lot or serial number
Special treatment materials	◎	◎	◎	●	●	●	◎	◎	◎
Other Medical Devices and In vitro diagnostic products	○	○	○	●	●	●	◎	◎	◎

✓ (*1) Symbols in the table indicate the followings;

- : legal obligation under PMD,
- ◎: essential requirement with MHLW notice,
- : optional requirement.

Table 1.2.1.1-3 Barcoding requirements for cell and gene therapy products

Barcode	Primary packaging			Secondary packaging			Tertiary packaging		
	GS1 DataBar (or its composite), GS1-128, or GS1 DataMatrix								
Encoding data	GTIN	Expiration date	Lot or serial number	GTIN	Expiration date	Lot or serial number	GTIN	Expiration date	Lot or serial number
Specific product	◎	◎	◎	●	●	●	◎	◎	◎
Others	◎	○	○	●	●	●	◎	◎	◎

✓ (*1) Symbols in the table indicate the followings;

- : legal obligation under PMD,
- ◎: essential requirement with MHLW notice,
- : optional requirement.

Example barcode symbols are shown in Figure 1.2.1.1-1. The GS1 DataBar family includes seven symbologies, and only GS1 DataBar Limited and GS1 DataBar Stacked are used for barcoding on Japanese medical products. Those two symbologies can encode only GTIN, therefore the use of Composite is necessary when encoding expiration dates, lot, or serial numbers.

It is strongly recommended to register product information into the database that is operated by the Medical Information System Development Center (MEDIS-DC).

**Figure 1.2.1.1-1** GS1 barcode used for medical products

1.2.1.2 Access for electronic information

This revision also aims to enhance the accessibility of the latest information and reduce paper waste with regard to package inserts (leaflets) in the product package by digitalising the leaflets. It mandates the linking of the electronic information (e-leaflets) with the GTIN of the GS1 barcode^(*1) and the registration of it on the website of the Pharmaceuticals and Medical Devices Agency (hereinafter referred to as 'PMDA'). This allows the viewing of e-leaflets using the GTIN as a key. When the GS1 barcode is scanned using a specialised application such as 'Tenbun Navi[®]', the GTIN serves as a key that automatically redirects users to the PMDA website, where they can access the e-leaflet for the specific product. GS1 Digital Link URI is used for access to the redirect page (Figure 1.2.1.2-1).

(Ex: www.pmda.go.jp/PmdaSearch/bookSearch/01/{GTIN})

'Tenbun Navi[®]', released in April 2021, has been downloaded more than 450,000 times as of July 2023 and is being used within medical institutions. According to a survey^(*iii) conducted by PMDA among pharmacists at 3,282 hospitals in Japan, 22.0% of them scan GS1 barcodes using apps such as 'Tenbun Navi[®]' for browsing e-leaflets.

1.2.1.3 To ensure Traceability

Ensuring traceability relies on the utilisation of GS1 barcodes in medical institutions. According to a survey^(*iv) in 2019 conducted by the MHLW targeting medical institutions with over 100 beds in Japan, the adoption rate of GS1 barcodes was only 35.1% for pharmaceuticals, 5.9% for medical devices, and 11.2% for medical supplies. This rate is likely to have increased since then, but many medical institutions still scan in-hospital barcodes that they have issued themselves.

Since the revised PMD has legally mandated barcode labelling on medical products as described above, it is expected that the use of source-marked GS1 barcodes instead of the issuing of in-hospital barcodes will ensure traceability among all parties involved, from product manufacture to patient use.

Furthermore, in recent years, some hospitals have been using GS1 barcodes on medical devices themselves to manage their usage history, and have directly marked surgical instruments with them to trace sterilisation processes. Although this barcoding is not mandated by the PMD, hospital-led efforts are underway for ensuring in-hospital traceability and improve patient safety, and there is a strong desire to make this legally mandatory.

GS1 barcodes are essential for use in medical institutions, not only to improve operational efficiency through scanning, but also to improve patient safety, and GS1 Japan will continue to promote and support the implementation of GS1 barcodes.

✔ (*1) In principle, GS1 barcodes, which are mandatory for traceability purposes, are also used for viewing electronic e-leaflets.

(*i) For pharmaceuticals

<https://www.mhlw.go.jp/content/11120000/000989346.pdf>

For medical devices and IVDs

<https://www.mhlw.go.jp/content/11120000/000989347.pdf>

For cell and gene therapy products

<https://www.mhlw.go.jp/content/11120000/000989348.pdf>

(*ii) <https://www.pmda.go.jp/files/000248150.pdf>

(*iii) <https://www.pmda.go.jp/safety/surveillance-analysis/0010.html>

(*iv) https://www.mhlw.go.jp/stf/newpage_05388.html

Note the above documents are all in Japanese.

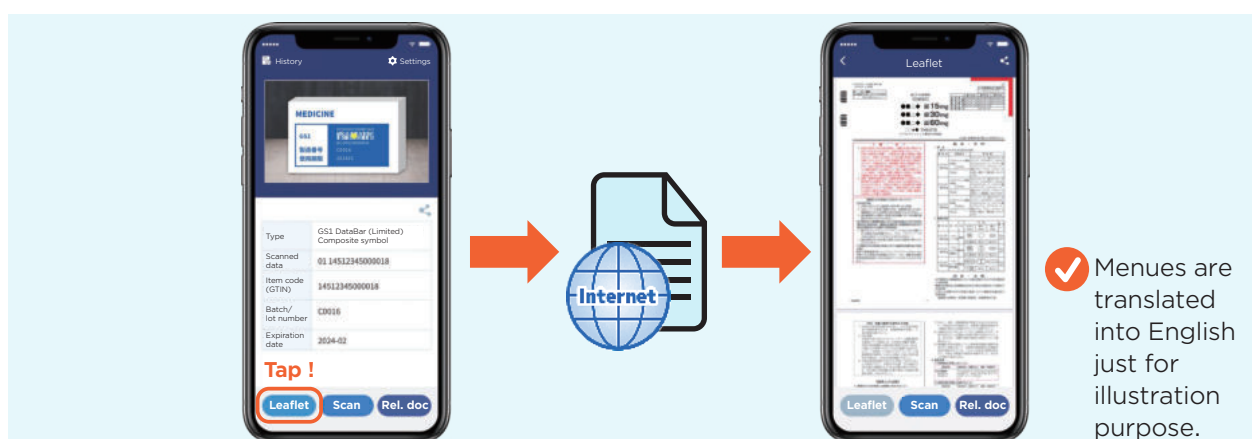


Figure 1.2.1.2-1 Tap the 'Leaflet' button after scanning the GS1 barcode to view the latest e-leaflet.

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 RFID tag attached to a connector for drainage pipes



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

Figure 1.3.1.1-1, are RFID-tagged in the pilot. Some examples are shown below.

Figure 1.3.1.1-4 shows an RFID tag attached to



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

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 1.3.1.1-5 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.

HASEKO Furnishing, 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 at HASEKO Furnitech, which produces some of HASEKO Furnishing's products. These RFID-tagged products are shipped to multiple construction sites of HASEKO Corporation. This year (2023), seven construction sites are utilising



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

the supply chain visibility system simultaneously. HASEKO Furnitech has shipped over 70,000 RFID-tagged products to 44 construction sites.

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, HASEKO Furnishing receives purchase-orders from HASEKO Corporation based on its construction plan, then HASEKO Furnitech produces the products based on orders from HASEKO Furnishing. 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 Wacoal Uses EPC/RFID to Improve Efficiency

1.3.2.1 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).

1.3.2.2 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

✓ (*1) GS1 Japan Handbook 2019-2020 1.2.1 'Onward Kashiyama EPC/RFID Rollout'

www.gs1jp.org/assets/img/pdf/GS1-Handbook_2019-2020.pdf

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, about 4 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.

1.3.2.3 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 1.3.2.3-1 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.

1.3.2.3.1 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%.

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 1.3.2.3.1-1 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 members 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.

1.3.2.3.2 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 49 million pieces of merchandise per year, out of which the Moriyama Distribution Centre handles approximately 35 million pieces per year.

1.3.2.3.3 Receiving Process

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

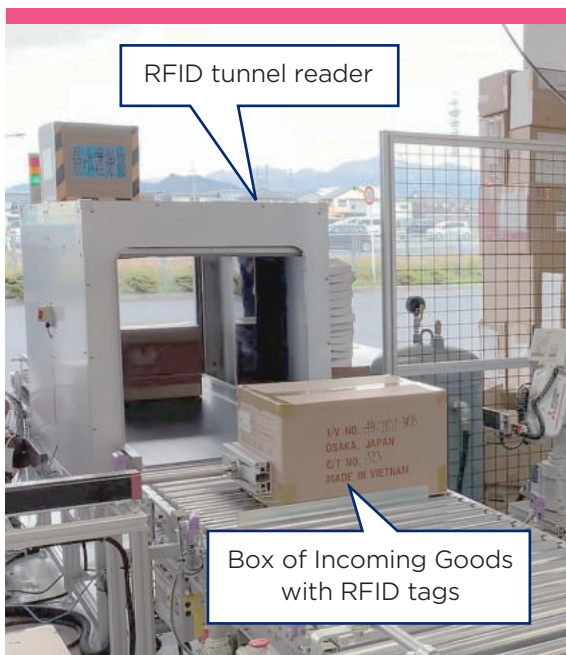


Figure 1.3.2.3.3-1 Receiving Process

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.

1.3.2.3.4 Re-check after Picking

When re-checking after picking, an RFID gate reader (Figure 1.3.2.3.4-1) 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 and move the products in the reader about, which makes the successful reading of all the tags in the gate easier.



Figure 1.3.2.3.4-1 RFID Gate Reader

1.3.2.4 Future Plans for the Utilisation of RFID Tags

1.3.2.4.1 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%.

1.3.2.4.2 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 are 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.

1.3.2.5 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 1.4.1.3-2 Applications of scodt®



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

<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.



Figure 1.4.1.4-3 GS1 QR for olive oil products

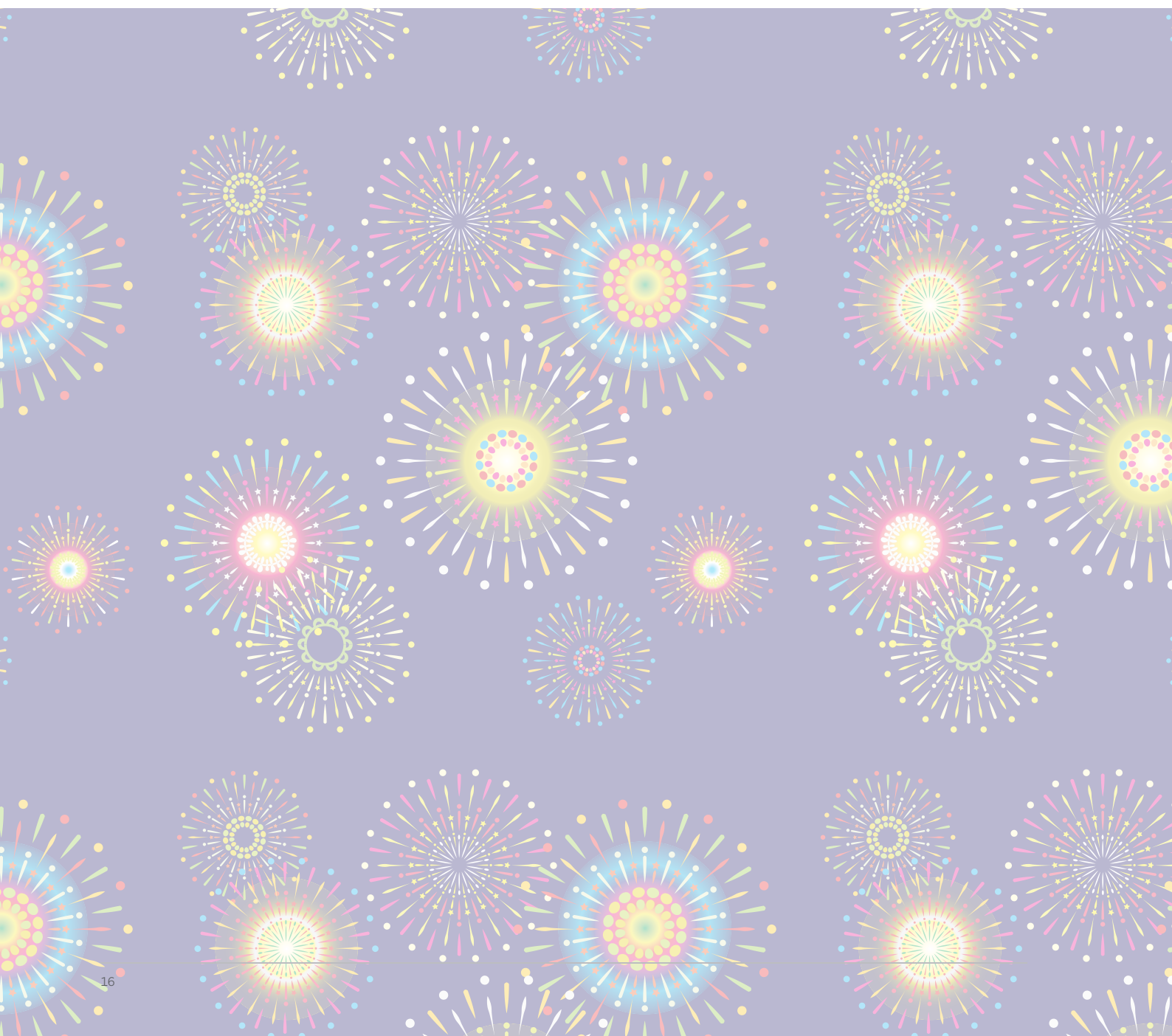
1.4.1.5 Responsibility for product safety

In the field of industrial products and cosmetics, it is expected that consumers knowing how to correctly use products will have a significant 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 Japan's Industry Engagement for the Use of 2D Barcodes

2.1.1 Overview of 2D activities

GS1 Japan's 2D symbol initiative aims to help companies promote Digital Transformation and supply chain optimisation using GS1 2D symbols. We have been engaging in this initiative for over five years, not only for scanning products at POS, but also for raw materials and case units. Our first task in 2017 was to put together guidelines for the GS1 QR code labelling of raw materials.

(www.gs1jp.org/assets/img/pdf/SourceMarkingGuidelineforRawMaterials.pdf)

Since 2022, we have been actively promoting the use of GS1 2D symbols at POS, and our first pilot was realised in February 2023 (see section 1.1.1). In addition, GS1 QR codes have already been displayed on CPG raw materials and case level at several companies, and GS1 2D symbols are increasingly being actively introduced in three areas (raw materials, case level, and POS).

2.1.2 Presentations, seminars and demonstrations

As can be seen below, we also hold many seminars and conduct demonstrations at exhibitions.

We have launched a seminar about GS1 2D symbols. We provide explanations that are easy to understand even by those who have no knowledge of barcodes, such as user companies and solution vendor sales staff. For example, we

cover the rules of GS1 barcodes, the differences among the three syntaxes, HRI and display position, and actual case studies. Also, we offer a hands-on scanning demonstration to all attendees at the venue. At the exhibition, actual printing samples are displayed, and guests can try to scan GS1 2D symbols and get tips on how to improve the efficiency of their businesses by using such symbols. Samples with a GS1 Digital Link QR code that links to an actual web page (linking from the QR code in Figure 2.1.2-1) have also been created.



(01)04912345000057
<http://id.gs1jp.org/01/04912345000057/10/XYZ987?17=240401>



(01)04912345000057
<http://id.gs1jp.org/01/04912345000057/10/STU654?17=240403>

Figure 2.1.2-1 GS1 Digital Link QR codes

2.1.3 GS1 Barcodes Basic Guide

The GS1 Barcodes Basic Guide (hereinafter called the 'Basic Guide') has been published as a technical introduction to GS1 standard barcodes, including 2D barcodes.

This Basic Guide provides basic information on GS1 standards, including GS1 identification keys and GS1 barcodes. It was developed with the support of major Japanese barcode solution providers and includes important information

Table 2.1.2-1 Presentations and seminars about GS1 2D symbol

Date	Theme	Target audience/event name
12 Dec 2022	2D in retail	User companies (Manufacturers, distributors, retailers)
21 Feb 2023	About GS1 2D barcodes	System vendors
02 Mar 2023	2D barcode implementation for raw materials, carton cases, and retail	Retail Tech JAPAN (Tokyo Big Sight)
15 Mar 2023	2D in Retail	System vendor committee of Japan Automatic Identification Systems Association (JAISA)
20 Jun 2023	2D in Retail + pilot	User companies and system vendors
24 Aug 2023	GS1 Summer Seminar <ul style="list-style-type: none"> • Take advantage of GS1 2D barcodes ! • What is GS1 Digital Link? 	Public Seminar

related to GS1 standards such as GS1 identification keys, GS1 application identifiers, GS1 standard barcodes, HRI, FNC1, barcode size, and truncation. The Basic Guide (only available in Japanese) can be downloaded from our website.

<https://www.gs1jp.org/standard/barcode/basicguide.pdf>



Figure 2.1.3-1 GS1 Barcodes 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.

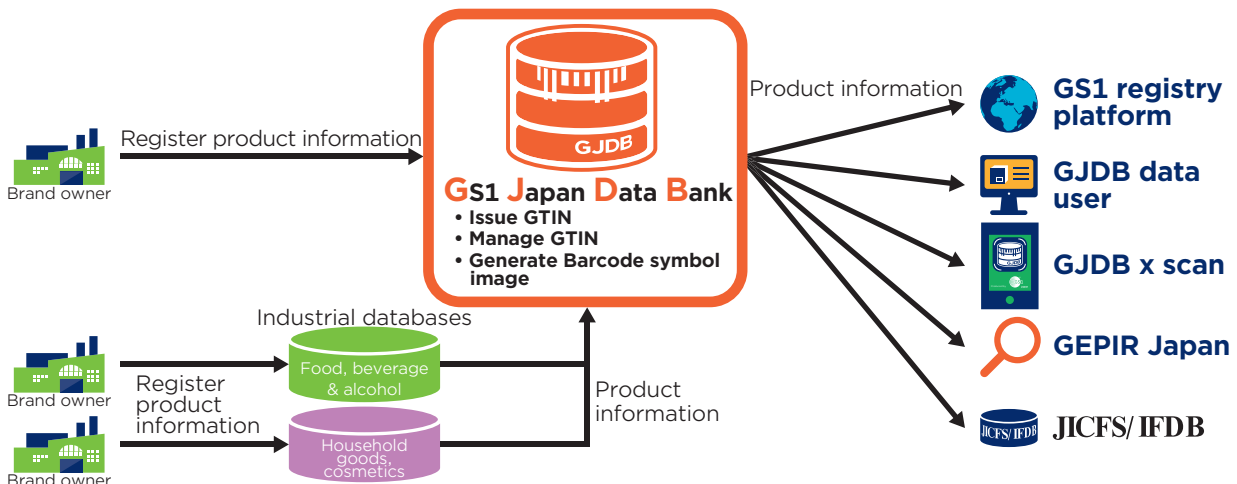


Figure 2.2-1 Overview of the GS1 Japan Data Bank

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 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

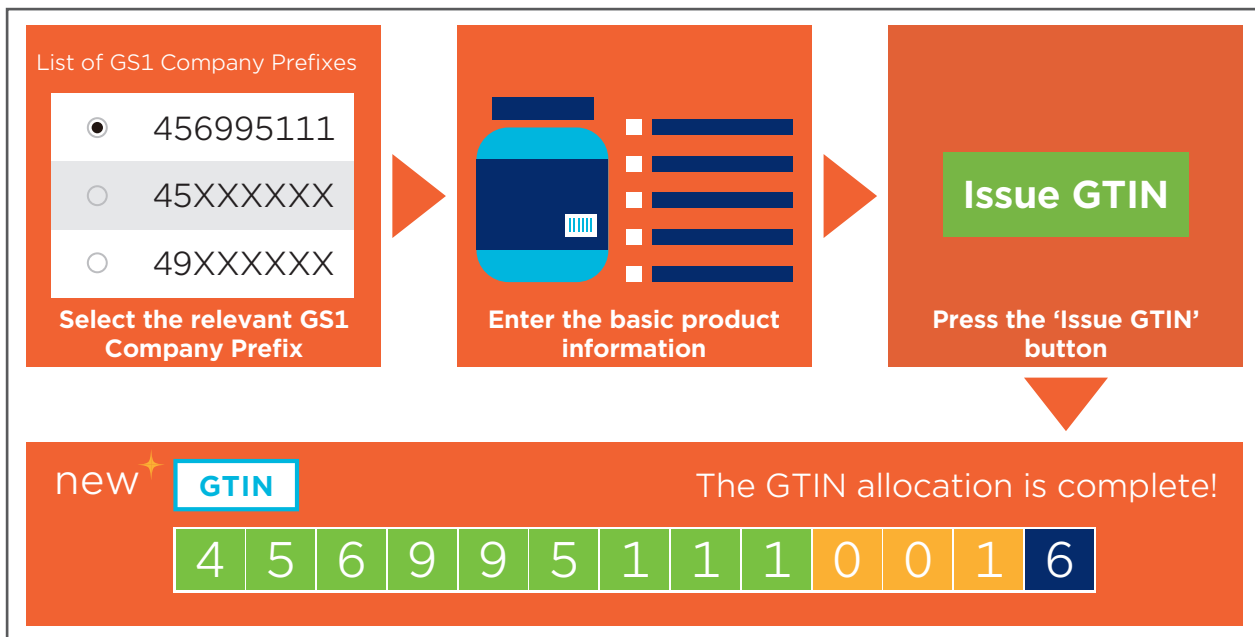


Figure 2.2.2.1-1 GTIN allocation made easy (three steps)

reduplication once they have registered all their 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

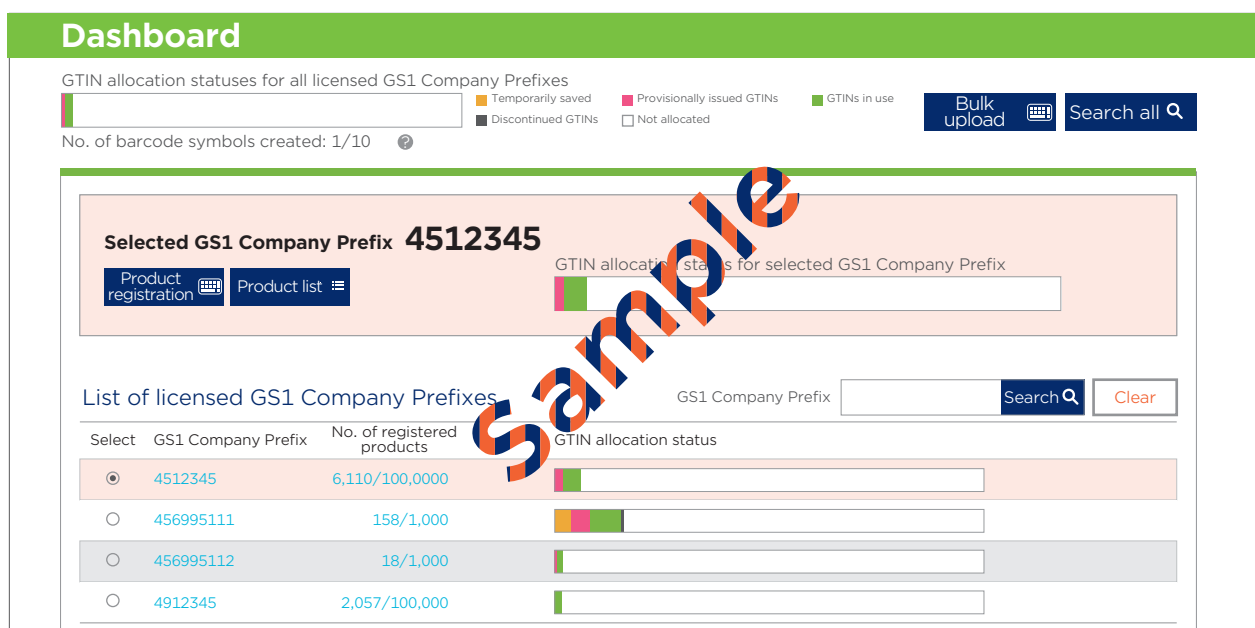


Figure 2.2.2.3-1 Visualised GTIN allocation status using coloured bar charts

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 June 2023, about 3,100,000 items have

Table 2.2.3-1 Item counts by category

Category	Item count
Food	716,565
Healthcare supplies	19,100
General merchandise, household items, and durable consumer goods	447,889
Cultural goods	1,534,851
Apparel and personal items	368,615
Other	33,017
Total	3,120,037

been registered in GJDB by approximately 30,000 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, 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	<ul style="list-style-type: none"> Enhancement of functions for those who register product information Bulk upload/download, bulk update, and assistance for classification selection Launch of functions for those who browse product information Product information search and browse functions
Q3 2020	<ul style="list-style-type: none"> Enhancement of function for those who register product information Barcode symbol form patterns added Support for migration of JICFS/IFDB data to GJDB
Q1 2021	<ul style="list-style-type: none"> Launch of daily uploads of GTIN data to GRP
Q1 2022	<ul style="list-style-type: none"> Launch of receiving product information from two industrial databases* * One is Food, beverage and alcohol industry, and the other is household goods, cosmetics industry
Q2 2022	<ul style="list-style-type: none"> 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

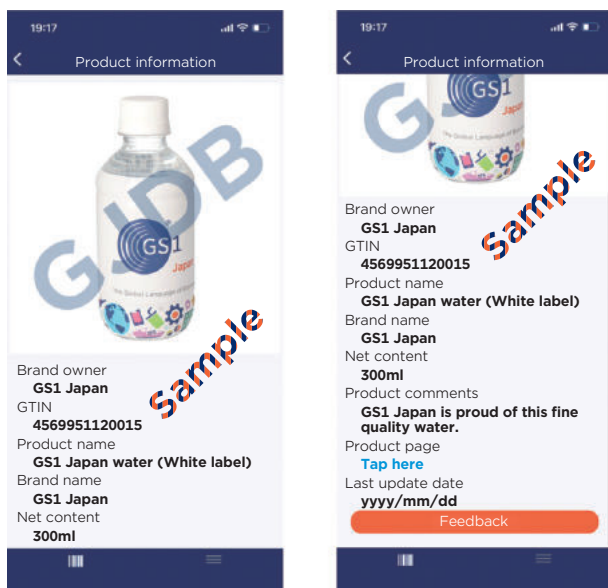


Figure 2.3.2-1 Product information (example)

- 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 after selecting the business category send a message to the brand owner via the app so that it can correct its 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 after selecting the business category.

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

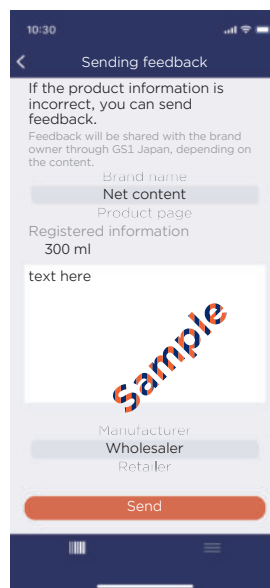


Figure 2.3.2-2 Sending feedback

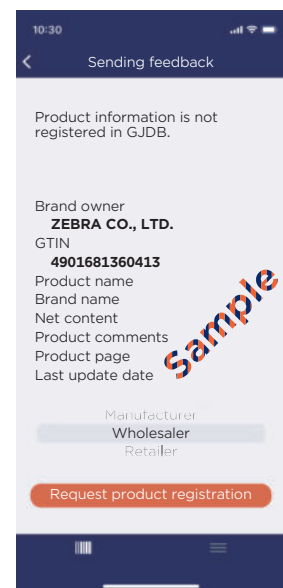


Figure 2.3.2-3 Requesting product information registration

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.

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 as of March 2023.

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

Figure 2.4-1 JICFS/IFDB system flow

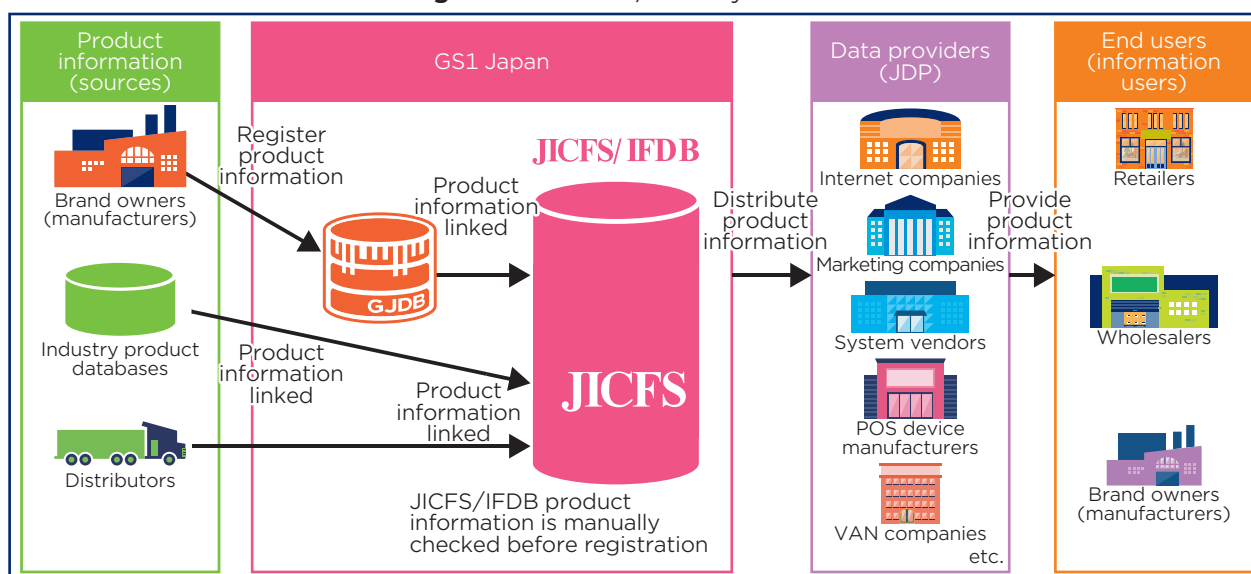


Table 2.4-1 Number of Registered Products

	2023	2022	2021	2020	2019	2018	2017
Food	1,998,630	1,921,582	1,842,309	1,766,776	1,688,487	1,628,262	1,544,912
Commodity	1,145,897	1,097,244	1,032,509	976,486	937,338	897,873	855,876
Recreation and miscellaneous	848,880	803,756	738,773	695,942	653,634	616,509	575,471
Durable goods	576,124	556,217	515,591	485,633	459,415	406,105	337,560
Apparel, personal items & sporting goods	610,669	556,732	480,251	430,390	397,709	367,305	331,360
Others	3,062	3,072	3,080	3,092	3,111	3,123	3,147
Active item total	5,183,262	4,938,603	4,612,513	4,358,319	4,139,694	3,919,177	3,648,326
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	8,287,416	8,042,757	7,716,667	7,462,473	7,243,848	7,023,331	6,752,480
Increase in number of items (year-on-year)	244,659	326,090	254,194	218,625	220,517	270,851	226,104
Rate of increase (year-on-year)	103.04%	104.22%	103.40%	103.02%	103.14%	104.01%	103.46%

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

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 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 had received requests from marketplaces and retailers to develop a single platform that would enable brand owners to globally share information about GTINs and other GS1 identification codes.

In response, GS1 developed a GS1 Registry Platform in 2019 and began collecting GS1 Company Prefix information and product information interlinked to GTINs. GS1 collected the information in stages, and in June 2023, it began collecting GLN information and information linking to GS1 identification codes.

GS1 also provides on its website Verified by GS1, a service used to reference information collected on the GS1 Registry Platform from around the world. With Verified by GS1, company information and information registered with GTIN can be checked by entering GTIN, GLN, GS1 identification codes, or company names.

GS1's Verified by GS1 can also be accessed from the GS1 Japan website. In addition to GS1, GS1-affiliated organisations worldwide have also launched Verified by GS1. Against this backdrop, GS1 Japan also launched the service in March 2022. Figure 2.5-1 illustrates the Japanese version of Verified by GS1. GS1 Japan provides Verified by GS1 on its portal site for business operators that are licensed to use GS1 Company Prefixes. They can use Verified by GS1 on the portal site. They can submit up to 30 queries per day.



Figure 2.5-1 Verified by GS1 provided by GS1 Japan

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.

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.

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

GS1 is, however, in the process of transferring GEPIR functions to Verified by GS1 (2.5) and plans to terminate GEPIR services in December 2023.

GS1 Japan is also considering transferring GEPIR functions to Verified by GS1 in line with GS1's decision.

The screenshot displays the GS1 Japan GEPIR search interface. On the left, there are search filters including 'Select a search method' (GTIN, GLN, Other GS1 Keys, Party Name), 'Search by Barcode (GTIN)', and 'Search for' (Trade Item Ownership, Trade Item Info). A 'Global Trade Item Number' field contains '4569951120015'. The main search results area shows 'Number of Hits: 1'. Below this, a table provides 'Company Information' for the search results.

No.	Entity GLN	Company Information	Contact Information	GS1 Company Prefix single GTIN-8	GLN Information
1	4569951110009	一般財団法人流通システム開発センター GS1 Japan 〒107-0062 東京都港区南青山1-1-1新青山ビル東館9F 9F, Shin Aoyama Bldg., East,1-1-1,Minami Aoyama,Minato-ku,TOKYO 107-0062, Japan JP	https://www.gs1jp.org/	GS1 Company Prefix 4512345 4912345 4987000 456995111 456995112 4595000109 4595007798 499687	GLN List
				single GTIN-8 45500008 45500459	

Information Provider GS1 Japan(4569951110009)

Photo 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 June 2023, the development of 43 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 (www.gs1.org/standards/gpc).

Localisation has been progressing, with translations into 24 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.

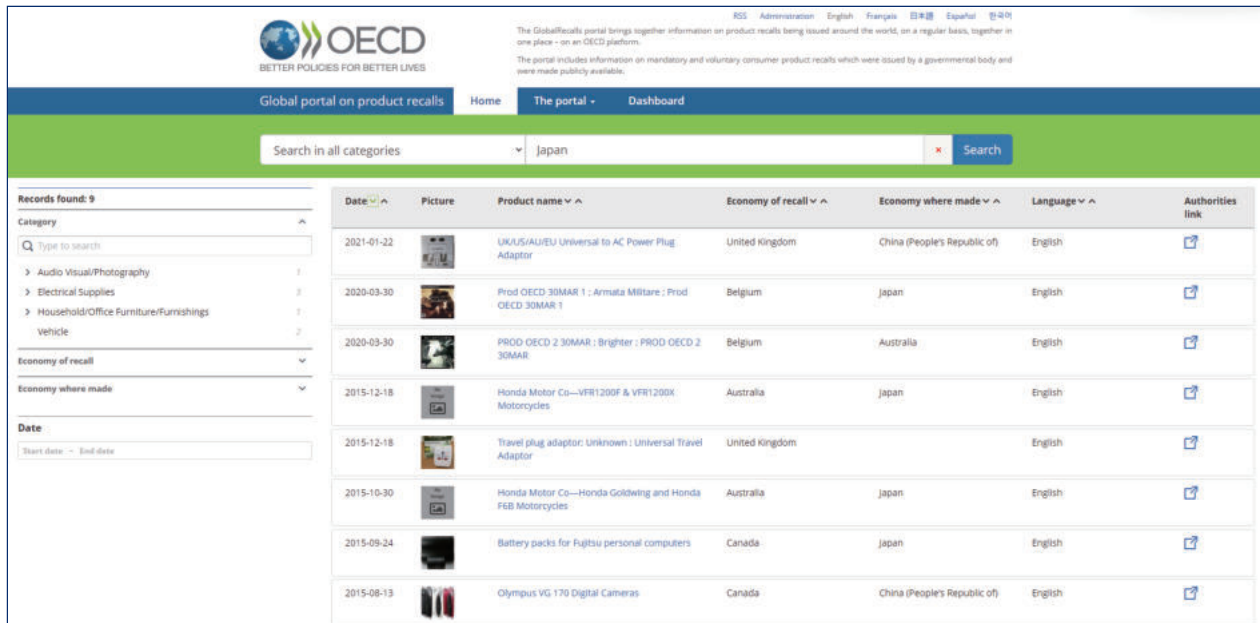


Figure 2.7-1 The Global Recalls portal showing Japanese products subject to recall

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.

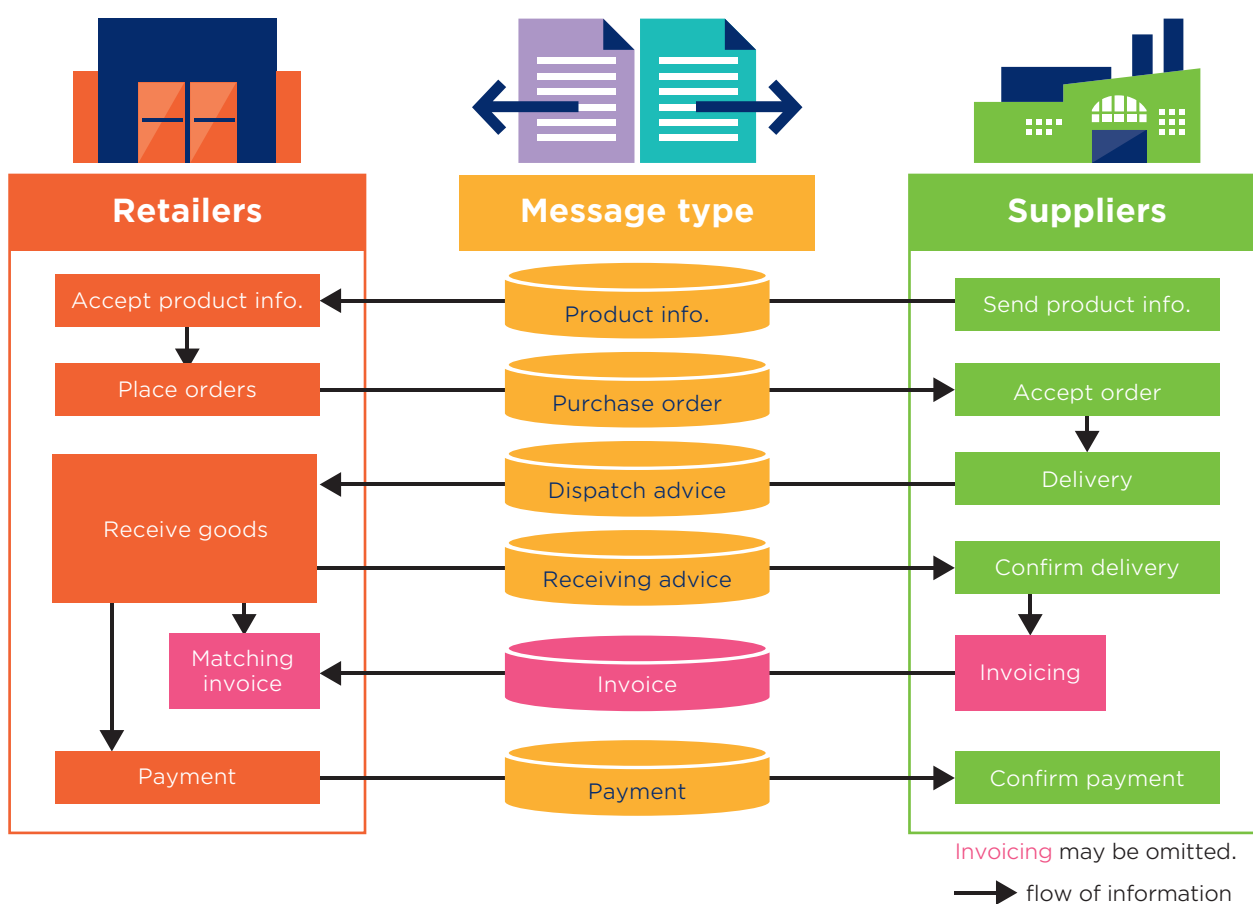


Figure 2.8.2-1 Typical turnaround business processes and Ryutsu BMS messages between retailers and suppliers

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 2023, about 600 retailers and 17,700 wholesalers and manufacturers had already adopted Ryutsu BMS.



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 112 members, including many of Japan's leading solution providers (Table 3.1-1).

Table 3.1-1 Membership structure
(as of March 2023)

Sales [unit: JPY]		No. of members
Less than	1 billion yen	49
1 billion -	10 billion yen	29
10 billion -	1 trillion yen	32
1 trillion yen and above		2
Total		112

Table 3.1-2 Seminars held in FY2022

Date	Events	Topics
Jun 2022	1st Seminar	<ul style="list-style-type: none"> • Can be used for logistics! GS1 identification code • 'GS1 Digital Link', which connects GS1 identification codes to the Web
Jul 2022	1st Special Seminar	<ul style="list-style-type: none"> • <i>Current Trends</i>: Prospects for Distribution and Consumption in the Covid-19 Pandemic
Aug 2022	2nd Special Seminar <ul style="list-style-type: none"> • Importance of Product Information in a Digital Society 	<ul style="list-style-type: none"> • About Joint Efforts on product information:GS1 Japan, Japan Inforex, Inc. (JII), and PLANET,INC. (PLANET) • Product Information Initiatives in the Daily Necessities and Cosmetics Industry:Planet's product database supported by the industry • Direction of the Distribution DX of the Commodity Master of Food Products
Oct 2022	Open Seminar <ul style="list-style-type: none"> • Mobile Seminar 2022 (Business Process Re-Engineering in an Omni-Channel Environment Using GS1 Standards) (refer to 3.9.2) 	<ul style="list-style-type: none"> • <i>Keynote speech</i>: Tidal Wave and issues identified through various EC operations:Thinking about the impact of product ID integration on practice • GS1 standards to be increasingly used in online sales around the world • More than just master data!: GS1 standards and their availability for building information systems • Report on case studies of implementation in B2C by GS1 QR: Incentives for consumers and businesses through product traceability
Oct 2022	2nd Seminar	<ul style="list-style-type: none"> • Overview of GLN and expectations for utilization • Introduction of EPC Tag Data Standard 2.0
Nov 2022	3rd Seminar	<ul style="list-style-type: none"> • Introducing plenty of case studies!:Latest developments in GS1 2D symbols to be displayed on products Scanned by POS cash registers • GS1 Connect 2022 Participation Report: Efforts to improve operational efficiency and safety by utilising GS1 standards in the U.S.
Dec 2022	4th Seminar	<ul style="list-style-type: none"> • The Latest Trends in GS1 Company Prefix • Flow from registration of GS1 Company Prefix to GTIN setting
Mar 2023	5th Seminar	<ul style="list-style-type: none"> • For traceability! For business efficiency! For manpower shortage countermeasures!: How to assemble GS1 standards barcode that displays GTIN and attribute information

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 2023, the council is composed of 47 full member organisations. In 2023, 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 2023, 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.

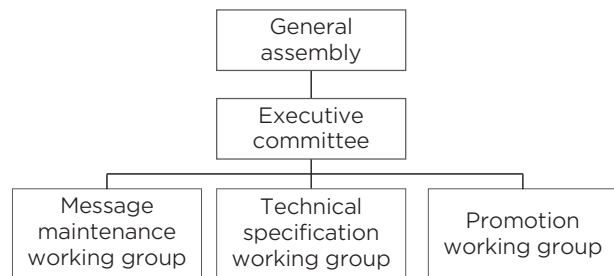


Figure 3.2.1-1 Organisational structure of the council

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 2.8.

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 2023, 131 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 2023, GS1 Healthcare Japan has 120 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, propel medical safety system installations to hospitals.

- **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 2022/2023

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.

This year's conference was held through a combination of online and face-to-face events. 'GS1 standards are increasingly being used to solve problems in the medical field' was set as the theme and two sessions were facilitated, consisting of six lectures and panel discussion. 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 721 attendees on the day itself, and the streaming views increased this number to 805 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.

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 46 members as of May 2023.

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 'Transformation into Next-generation Wholesalers', the study group worked on the following five topics in FY2022.

1. Improving efficiency of wholesale logistics for

the next generation

2. Promoting and implementing Ryutsu BMS in light of the revisions to the Law on Book and Record Keeping through Electronic Methods, and responding to the Invoice System (see 2.8 for information about Ryutsu BMS)
3. Collaboration and co-creation in the wholesale industry, and the ideal next generation wholesaler
4. Digital transformation for the next generation wholesaler.
5. Core systems, infrastructure, and information security for the next generation wholesaler.

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 July 2023, 53 companies are participating in the council.

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 Recent Activities of the Council

Recent major topics that the council has studied during its activities have been the identification of logistics issues and their resolution in order to realise a 'physical internet'.

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 FY2022, four working groups were established to cover the following topics.

- Maintain various master data such as product catalogues and business location databases.
- Standardise Returnable Transport Items ('RTI'; referred to as 'Smart Box') and discuss how to operate them.
- 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 council is carrying out discussions towards the identification of issues and measures to solve them. The objective of the Action Plan, which was put together in FY2021, is the realisation of the physical internet in 2030 and discussions with regard to this are expected to continue for the next few years.

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.

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.

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

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



Figure 3.6-1 Regular meeting

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. Introduction to EPCIS
5. Introduction to GS1 Digital Link
6. Technical Seminar on EPC Encoding/Decoding

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.

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

We had held several online courses by July 2023, and every time after the courses the staff gather together to improve the courses further.

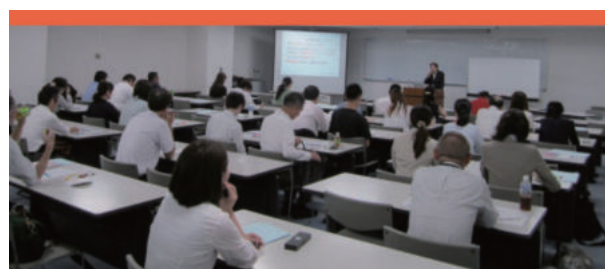


Figure 3.7.1-1 Introduction to Barcodes Seminar (before Covid-19)

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.

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.

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 Introduction to EPCIS

This course explains the concepts behind supply chain visibility systems using the EPCIS and Core Business Vocabulary (CBV) standards (collectively referred to below as the 'EPCIS standards').

Expected participants for this course are anyone who is interested in the supply chain visibility, and this course does not require any background knowledge of computer systems.

The following is explained during the course: background knowledge of GS1 systems; core concepts of the EPCIS standards; use cases; and basic methodology for visibility system design using the EPCIS standards.

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.

Expected participants for this program are from any type of business, including 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. Finally, the course introduces some envisaged use cases and existing case studies on GS1 Digital Link.

3.7.6 Technical Seminar on EPC Encoding/Decoding

The objective of this course is for participants to become able to understand the procedures to encode and decode the memory contents of EPC/RFID tags based on the EPC Tag Data Standard (TDS).

Expected participants for this course are technical engineers at RFID solution providers.

Recently, we have significantly revised the contents of this seminar in order to provide information on the new encoding system introduced in the TDS 2.0 published in August 2022.

The existing course, which describes the encoding schemes introduced in the previous TDS Release 1.x, is also available.

This course is one of our membership services for member companies of the GS1 Japan Partners program. Staff at member companies can take this course for free.

3.7.7 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.

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 www.gs1jp.org/code/jan/jan_marking_manual.html

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



Figure 3.8.1.2-1 Barcode guidelines for UDI www.gs1jp.org/group/gshealth/guide-tools/guide.html

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.

3.8.1.3 Let's Scan - Barcodes on pharmaceuticals make work efficient and safe -

Let's Scan, a manga (cartoon) promoting the use of GS1 barcodes, explains in simple terms the benefits of using GS1 barcodes in healthcare institutions, such as preventing medication mix-ups, managing checks when mixing orders and correcting medication errors.



Figure 3.8.1.3-1 Let's Scan - Barcodes on pharmaceuticals make work efficient and safe - www.gs1jp.org/group/gshealth/guide-tools/tools.html

3.8.1.4 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 3.8.1.4-1 GS1 QR code/GS1-128 barcode guidelines for carton cases

www.gs1jp.org/standard/barcode/gs1-qr/carton/

3.8.1.5 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.

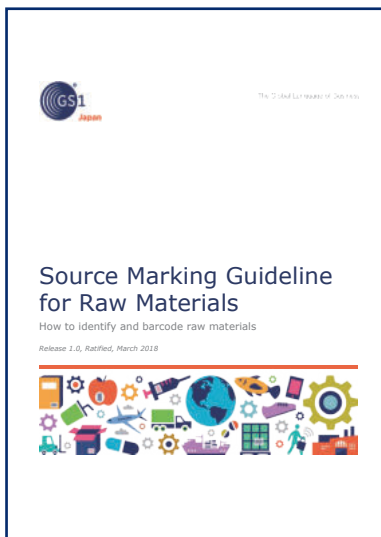


Figure 3.8.1.5-1 Source marking guideline for raw materials

www.gs1jp.org/standard/industry/upstream/

3.8.1.6 GS1 Barcodes Basic Guide

This guide is a significant revision of 'GS1 AIDC standards conformity check guide' providing technical information on GS1 identification codes and GS1 barcodes.



Figure 3.8.1.6-1 GS1 Barcodes Basic Guide

www.gs1jp.org/standard/barcode/

It contains essential information for companies manufacturing and selling barcode-related equipment and users utilising GS1 barcodes.

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



Figure 3.8.2-1 GS1 Japan Review

www.gs1jp.org/seminar_book/publication/index.html

information, including case studies, in addition to the above.

These publications were redesigned to match the GS1 Brand Manual from last year (2022) onwards.



Figure 3.8.2-2 GS1 Japan News

www.gs1jp.org/seminar_book/publication/gsljapannews/index.html

3.8.3 Videos and GS1 Japan Scan mobile app

In addition to the above, GS1 Japan creates educational videos about GS1 standards,



Figure 3.8.3-1 QR code for the video URL

www.gs1jp.org/seminar_book/movie/index.html



Figure 3.8.3-2 GS1 Japan Scan

www.gs1jp.org/seminar_book/application/index.html

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.

www.youtube.com/channel/UCWaw3zjmvvjytr0x4kLK1hw

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.

3.9 Events

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.

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 14 October 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 'Trends of EC & D2C (Direct to Consumer) and the future of GS1 standards'. We offered the following four speeches at the event.

- Future trends and challenges visualised throughout various EC operations.
Mr. Moriu ISHIKAWA (Chief e-Commerce Officer: CECO, DINOS CORPORATION)
- Current status report on GS1 QR-based services being offered for B2C. (refer to 1.4.1)
Mr. Yoshiaki WATANABE (Vice Chairperson, Association for Product Liability & Consumer Safety Studies)
- 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

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.

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.

In 2022, the 17th forum has been held on November via Zoom webinar. Reports on RFID pilot studies conducted by the Ministry of Economy, Trade and Industry (METI) in 2021 was the main theme, and participants in each pilot were invited to give lectures. In addition, presentations were given on examples of the utilization of attributes in RFID and on research and development efforts for next-generation sensor tag technology.

The online forum was successful, with approximately 250 participants. Since the webcast was well received by participants, we will continue to make the forum available online as well as offline.

3.9.4 RETAILTECH JAPAN 2023

RETAILTECH JAPAN is an annual 4-day trade show that is held by Nikkei Inc., 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.

The latest RETAILTECH JAPAN conference, RETAILTECH JAPAN 2023 (held 28 February-3 March 2023) attracted 77,160 visitors, 1.5 times more than in 2022, as the event was held at a time when the COVID-19 pandemic was trending downward.

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.



Figure 3.9.4-1 GS1 Japan booth at 'RETAILTECH JAPAN 2023'

3.9.5 RETAILTECH OSAKA 2023

Starting in 2021, RETAILTECH OSAKA has been held regularly over a two-day period every year, and GS1 Japan also has exhibited at each of these events.

This year, we demonstrated the benefits of GS1 standards at RETAILTECH OSAKA 2023 (held on 20-21 July 2023), showing the effectiveness of EPC/RFID standards and the benefits of 2D barcodes at POS for future development.



Figure 3.9.5-1 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 2.4), 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.

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.

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.

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

To provide GCPs in a more appropriate manner for the effective use of GCP resources, we started to allocate 10-digit GCPs in 2021.

Currently, GS1 Japan generally allocates nine- or 10-digit GCPs to new applications.

70% of all applicants in FY2022 registration applications were allocated 10-digit GCPs.

4.2.1 Revision of the GCP Registration and Renewal System

In 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.

There are three key points in the revision.

Firstly, we started to allocate 10-digit GCPs, as

mentioned earlier.

Secondly, licensees can choose the term of their GCP license contract. The contract term available at the time of registration and renewal used to be for three years only, but the revision allows licensees to choose either one year or three years for their contract term when registering or renewing.

Thirdly, we annually provide licensees with their registration data and request that they keep it up to date and accurate.

The revision has enabled GS1 Japan to provide GCPs with the appropriate number of digits, effectively use code resources, and improve the accuracy of registered licensees' data.

4.2.2 GCP Registration Status

The top product categories handled by new licensees in the FY 2022 are as follows. (multiple choice)

- 1) Sundries (25%)
- 2) Processed foods (24%)
- 3) Apparel (12%)
- 4) Cosmetics and hairdressing products (11%)
- 5) Confectionery (10%).

4. About GS1 Japan

Since 2009, the healthcare sector has accounted for a certain percentage, although not as high as other categories.

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 May 2023, the number of GCP licensee reached 146,795.

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.

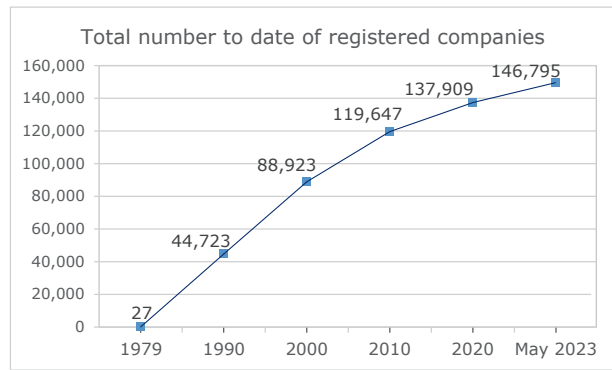


Figure 4.2.2-1 GS1 Company Prefix allocation

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.

4. About GS1 Japan

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.
	GS1 Japan launches 'Verified by GS1' information retrieval service via GJDB.



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. (2021)

	Stores			Annual sales (JPYm)			Employees (*1)	Store space (k sq m)
	2021	Ratio	vs 2016	2021	Ratio	vs 2016		
Department store, General supermarket	1,097	0.1%	(31.0%)	7,526,522	5.6%	(40.4%)	245,975	11,004,042
Other various product retailers (less than 50 regular employees)	1,652	0.2%	7.6%	470,319	0.4%	92.3%	21,660	950,996
Draper, fabric, bedding	11,454	1.3%	(22.1%)	314,374	0.2%	(35.0%)	40,573	811,370
Men's clothing	14,982	1.7%	(14.0%)	1,000,566	0.8%	(34.7%)	72,080	2,691,169
Women's and children's clothing	49,948	5.7%	(22.0%)	3,610,223	2.7%	(27.2%)	262,096	7,923,710
Shoes and Footwear	8,465	1.0%	(19.6%)	480,464	0.4%	(36.0%)	36,364	1,232,718
Other textiles, clothes, personal goods	27,711	3.1%	(15.3%)	2,016,261	1.5%	(10.8%)	161,137	5,543,566
Various food	23,860	2.7%	(13.1%)	22,965,128	17.2%	11.7%	1,101,681	24,804,025
Vegetable and fruit	14,379	1.6%	(21.8%)	665,230	0.5%	(31.5%)	75,418	763,674
Meat	9,322	1.1%	(15.7%)	585,008	0.4%	(19.7%)	54,530	330,493
Fresh fish	10,244	1.2%	(25.3%)	485,043	0.4%	(33.4%)	46,867	297,073
Liquor	24,210	2.8%	(24.9%)	885,221	0.7%	(43.4%)	73,189	979,445
Confectionery and bread	55,447	6.3%	(10.5%)	1,560,941	1.2%	(34.8%)	355,491	1,647,863
Other food and beverage	119,428	13.6%	(9.9%)	11,989,934	9.0%	(18.1%)	1,366,941	12,500,992
Motor vehicle	82,205	9.3%	(2.0%)	16,586,864	12.4%	(4.5%)	562,399	2,871,247
Bicycle	9,552	1.1%	(14.8%)	222,735	0.2%	(7.2%)	25,609	673,251
Machinery and equipment (except motor vehicles and bicycles)	40,399	4.6%	(12.7%)	9,357,110	7.0%	(1.6%)	276,161	9,745,591
Furniture, fittings, tatami	16,555	1.9%	(17.8%)	1,300,032	1.0%	(16.1%)	82,528	4,822,424
Utensil	14,730	1.7%	(3.3%)	385,529	0.3%	(14.5%)	54,819	1,053,353
Pharmaceutical and cosmetics	90,343	10.3%	1.0%	13,029,331	9.8%	3.0%	656,901	13,062,594
Agricultural supplies	10,778	1.2%	(9.7%)	1,521,326	1.1%	(6.4%)	59,065	1,534,265
Fuel	43,677	5.0%	(9.5%)	10,563,317	7.9%	(12.9%)	287,303	358,248
Books and stationery	27,627	3.1%	(20.7%)	2,139,727	1.6%	(32.2%)	345,184	3,394,082
Sporting goods, toys, entertainment goods, musical instrument	20,601	2.3%	(7.8%)	1,904,084	1.4%	(15.3%)	127,507	4,566,887
Camera, clock, glasses	18,142	2.1%	(10.1%)	947,425	0.7%	(16.4%)	70,952	1,143,500
Not classified above	83,475	9.5%	(18.2%)	7,456,305	5.6%	(10.6%)	534,320	22,246,019
Mail order and door-to-door sales point of sale	31,353	3.6%	11.9%	10,628,180	8.0%	30.2%	279,150	-
Automatic vending machine sales	2,852	0.3%	(23.7%)	1,491,842	0.9%	64.7%	34,067	-
Other non-storefront primary retailers	8,164	0.9%	61.4%	14,918	1.1%	(98.7%)	69,710	-
Total	880,031	100.0%	(11.1%)	133,257,457	100.0%	(8.2%)	7,540,345	136,952,597



(*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

(<https://www.stat.go.jp/data/e-census/2021/kekka/index.html>)

Table 5.1-2 Current survey of commerce [Sales: unit JPYb, 2022]

Companies		2022		2021		2020	
		Sales	Growth (%)	Sales	Growth (%)	Sales	Growth (%)
Total		584,982	5.99	551,910	6.0	503,116	(9.5)
Wholesale		430,580	7.26	401,448	7.7	356,658	(12.2)
	General Merchandise	22,340	0.07	22,324	8.0	21,790	(19.2)
	Textiles	2,229	7.73	2,069	(0.8)	2,117	(22.4)
	Apparel & Accessories	4,126	3.41	3,990	(4.5)	3,985	(20.7)
	Livestock & Aquatic Products	37,681	8.36	34,773	(1.7)	33,386	(3.6)
	Food & Beverages	57,185	7.02	53,433	(0.8)	52,895	(4.0)
	Building Materials	21,108	(1.66)	21,465	(1.8)	20,902	(10.3)
	Chemicals	26,534	7.63	24,654	8.7	21,176	(12.1)
	Minerals & Metals	78,680	27.91	61,510	25.2	46,167	(21.8)
	Machinery & Equipment	106,769	0.33	106,414	9.3	90,541	(16.4)
	Industry Machinery & Equipment	20,204	(1.81)	20,576	0.1	18,449	(20.8)
	Motor Vehicles	16,143	(1.48)	16,385	5.5	14,493	(21.9)
	Electrical Machinery & Equipment	61,173	1.41	60,323	15.0	49,634	(11.5)
	Others	9,248	1.28	9,131	3.4	7,966	(24.0)
	Furniture & House Furnishings	4,329	(2.94)	4,460	(2.3)	4,122	(9.0)
	Medicines & Toiletries	31,850	3.75	30,698	6.0	28,193	(6.0)
	Others	37,749	5.86	35,658	10.5	31,384	(6.0)
Retail		154,402	2.62	150,462	1.9	146,457	(3.2)
	General Merchandise	10,968	6.01	10,346	0.8	10,207	(15.5)
	Fabrics Apparel & Accessories	8,707	1.13	8,610	0.9	8,638	(16.8)
	Food & Beverages	45,521	0.43	45,328	0.7	45,145	1.3
	Motor Vehicles (*1)	16,285	(4.21)	17,001	2.5	16,592	(8.8)
	Machinery & Equipment (*2)	9,745	(2.89)	10,035	0.7	9,429	2.6
	Fuel (*3)	15,248	10.18	13,839	15.8	11,893	(9.5)
	Medicine & Toiletry Stores (*4)	16,256	8.19	15,026	0.5	14,259	1.3
	Others (*5)	20,304	7.65	18,862	(1.6)	19,503	0.5
	Non-store retailers	11,369	(0.41)	11,416	1.2	10,791	3.5
Reference (*4) & (*5)		36,561	7.89	33,888	(0.6)	33,762	0.4



(*1): From April 1996, we excluded transaction values related to precious metal dealing.

Hence, for the sake of chronological continuity, the sales figures were revised to exclude the value of those transactions, going back to 1990.

Consequently, there is a discontinuity with the figures for 1989 and before.

(*2): The figures for the years before 1991 and the quarters before 1993 have been calculated by accumulating the monthly figures as the figures have not been compiled.

(*3): There is a discontinuity in the data before and after 1988, as the Japanese Standard Industrial Classification (JSIC) was revised in October 1993, and sales time series data were recalculated based on the new classification until 1989.

(*4): The 1999 Survey of Commercial Statistics was conducted simultaneously with the Survey of Establishments and Enterprises under the jurisdiction of the Ministry of Internal Affairs and Communications (MIC), which was also conducted to capture existing target establishments. As a result, there are discrepancies between the figures before March 1998 and after April 1998.

(*5): The 2002 Survey of Commercial Statistics changed the definition of sales in the wholesale motor vehicle industry. This has led to fault lines in the figures before March 1999 and after April 1999.

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-SHOKUJIN 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

5. References

Table 5.1-4 Top 25 Retailers in Japan (2022) [Unit: JPYm]

2022	2021	Companies	Business	Annual sales (JPYm)	Growth (%)
1	1	Seven & i Holdings Co., Ltd.	Holding Company	11,811,303	34.99%
2	2	AEON CO., LTD.	Holding Company	9,116,823	4.60%
3	3	Amazon Japan G.K. (*2)	Mail-order	3,205,146	26.53%
4	4	FAST RETAILING CO., LTD.	Holding Company	2,301,122	7.88%
5	5	Pan Pacific International Holdings Corporation	Holding Company	1,831,280	7.18%
-	-	AEON RETAIL Co.,Ltd.	Supermarket	1,751,500	(3.62%)
6	6	YAMADA HOLDINGS CO., LTD.	Holding Company	1,600,586	(1.16%)
-	-	YAMADA DENKI CO., LTD.	Specialty Shop	1,293,678	(1.31%)
-	-	WELCIA HOLDINGS CO.,LTD.	Holding Company	1,144,278	11.53%
7	18	Lawson, Inc.	Convenience Store (Corner shop)	1,000,385	43.25%
-	-	WELCIA YAKKYOKU CO.,LTD.	Specialty Shop	971,031	5.09%
8	15	MatsukiyoCocokara & Co.	Specialty Shop	951,247	30.31%
9	7	TSURUHA HOLDINGS INC.	Holding Company	915,700	(0.39%)
-	-	SEVEN-ELEVEN JAPAN CO.,LTD.	Convenience Store (Corner shop)	872,719	1.12%
-	-	UNIQLO CO., LTD.	Specialty Shop	810,261	(3.84%)
10	8	BICCAMERA INC.	Specialty Shop	792,368	(5.00%)
11	12	Yodobashi Camera Co.,Ltd.	Specialty Shop	778,463	3.38%
12	10	LIFE CORPORATION	Supermarket	765,426	(0.38%)
13	14	Valor Holdings Co., Ltd.	Holding Company	759,977	3.75%
14	16	COSMOS Pharmaceutical Corporation	Specialty Shop	755,414	3.99%
15	13	K'S HOLDINGS CORPORATION	Specialty Shop	737,320	(1.32%)
-	-	Ito-Yokado Co., Ltd.	Supermarket	729,342	(31.68%)
16	17	EDION Corporation	Specialty Shop	720,584	0.95%
-	-	United Super Markets Holdings Inc.	Holding Company	708,690	(1.08%)
-	-	Don Quijote Co., Ltd.	Specialty Shop	690,474	3.65%
17	20	Sundrug Co.,Ltd.	Specialty Shop	690,462	6.43%
18	21	Sugi Holdings Co., Ltd.	Holding Company	667,647	6.74%
-	-	Sugi Pharmacy Co., Ltd.	Specialty Shop	665,487	16.96%
19	28	H2O RETAILING CORPORATION	Holding Company	628,089	21.15%
20	24	Nojima Corporation	Specialty Shop	626,181	10.83%
21	22	SHIMAMURA Co.,Ltd.	Specialty Shop	616,125	5.57%
22	25	Daiso Industries Co., Ltd.	Specialty Shop	589,100	7.25%
23	23	ARCS COMPANY, LIMITED	Holding company	566,209	(1.97%)
24	26	Y A O K O C O . , L T D .	Supermarket	564,487	5.31%
25	27	OK Corporation	Supermarket	553,332	9.00%
-	-	MAXVALU NISHINIHON CO., LTD.	Supermarket	547,366	(1.34%)

✓ (*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, 19 July 2023

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

5. References

Table 5.1-6 Top 25 Speciality Store Chains in Japan (2022) [Unit: JPYm]

2022	Companies	Business Areas	Sales (JPYm)		Ordinary Income (JPYm)	Stores
			2021	Growth (%)		
1	YAMADA DENKI CO., LTD.	Home electrical appliances	1,293,678	(20.1%)	-	1,174
2	WELCIA YAKKYOKU CO.,LTD.	Chemists & Medicines	971,031	5.1%	51,203	2,145
3	UNIQLO CO., LTD.	Casual clothing	810,261	(3.8%)	-	809
4	Yodobashi Camera Co.,Ltd.	Home electrical appliances	778,463	3.4%	57,785	24
5	COSMOS Pharmaceutical Corporation	Chemists & Medicines	755,113	3.9%	32,839	1,244
6	Don Quijote Co., Ltd.	General warehouse stores	690,474	3.7%	30,913	363
7	Sugi Pharmacy Co., Ltd.	Chemists & Medicines	665,487	6.4%	13,475	1,551
8	EDION Corporation	Home electrical appliances	649,335	0.8%	17,533	1,147
9	K'S HOLDINGS CORPORATION	Home electrical appliances	630,992	(15.6%)	18,168	154
10	SHIMAMURA Co.,Ltd.	Women's and children's clothing	610,819	5.5%	53,912	2,173
11	Daiso Industries Co., Ltd.	100-yen shops	589,100	7.2%	-	4,139
12	TSURUHA HOLDINGS INC.	Chemists & Medicines	441,280	(0.6%)	20,587	1,382
13	Cainz Co., Ltd.	DIY stores & Motor car accessories stores	440,990	(6.3%)	25,655	230
14	Sundrug Co.,Ltd.	Chemists & Medicines	433,068	4.1%	23,195	-
15	Joshin Denki Co.,Ltd.	Home electrical appliances	406,502	(0.2%)	7,056	211
16	BICCAMERA INC.	Home electrical appliances	405,608	(7.9%)	3,294	45
17	KOHNAN SHOJI CO., LTD.	DIY stores & Motor car accessories stores	388,941	(1.6%)	19,384	442
18	DCM	DIY stores & Motor car accessories stores	386,940	(10.5%)	27,401	513
19	KOMERI Co.,Ltd.	DIY stores & Motor car accessories stores	368,781	0.9%	23,273	1,214
20	Ryohin Keikaku Co.,Ltd. (MUJI)	Daily necessities	366,797	6.9%	23,692	493
21	Matsumotokiyoshi Holdings Co., Ltd.	Chemists & Medicines	344,714	(52.8%)	27,404	1,863
22	CREATE SD.CO.,LTD.	Chemists & Medicines	344,357	3.7%	17,375	686
23	cocokara fine Inc.	Chemists & Medicines	341,595	-	-	1,546
24	Nojima Corporation	Home electrical appliances	284,324	5.6%	30,097	233
25	Kojima Co.,Ltd.	Home electrical appliances	279,374	(6.1%)	8,525	141

The source: The Nikkei Marketing Journal, 2 August 2023

Table 5.1-7 Sales by Type of Merchandise in Department Stores (2022) [unit: JPYk]

	2022	Growth (%)	Ratio (%)	2021
Grand Total	4,981,230,097	12.74%	100.00%	4,418,298,830
Apparel	1,326,981,136	13.76%	26.64%	1,166,462,206
Men's	276,233,865	13.29%	5.55%	243,823,749
Women's	879,433,106	16.64%	17.65%	753,986,916
Children's	89,486,342	0.85%	1.80%	88,734,493
Others	81,827,823	2.39%	1.64%	79,917,048
Personal items	763,042,995	25.93%	15.32%	605,943,837
Accessories	982,935,837	14.57%	19.73%	857,969,921
Cosmetics	379,538,899	8.99%	7.62%	348,242,463
Jewelleries	452,674,550	23.08%	9.09%	367,795,840
Others	150,722,388	6.19%	3.03%	141,931,618
Household Items	184,908,169	2.05%	3.71%	181,189,888
Furniture	48,396,088	3.10%	0.97%	46,941,198
Home electrical appliances	15,777,338	6.93%	0.32%	14,754,154
Others	120,734,743	1.04%	2.42%	119,494,536
Foods	1,445,336,395	5.76%	29.02%	1,366,650,362
Fresh foods	247,934,386	(2.99%)	4.98%	255,577,904
Confectioneries	433,816,501	11.77%	8.71%	388,117,527
Delicatessen	335,613,523	7.69%	6.74%	311,653,190
Others	427,971,985	4.05%	8.59%	411,301,741
Restaurant	107,872,960	30.17%	2.17%	82,871,986
Services	50,395,951	17.39%	1.01%	42,931,845
Others	119,756,654	4.79%	2.40%	114,278,785
Gift Vouchers	97,848,913	(3.25%)	1.96%	101,134,432

✓ 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 (2022) [Unit: JPYm]

	2022	Growth (%)	Ratio (%)	2021
Grand Total	1,327,276,794	(0.50%)	100.0%	1,333,892,721
Foods	918,673,307	0.57%	69.2%	913,435,794
Agricultural products	129,801,052	(1.15%)	9.8%	131,312,271
Livestock products	107,822,892	(0.07%)	8.1%	107,901,211
Fishery products	82,211,115	(2.47%)	6.2%	84,289,138
Delicatessen	122,351,839	2.94%	9.2%	118,859,215
Other foods	476,486,409	1.15%	35.9%	471,073,959
Apparel	74,342,205	3.57%	5.6%	71,778,509
Men's	13,008,673	1.54%	1.0%	12,811,363
Women's	18,715,660	3.26%	1.4%	18,124,746
Other apparels	42,617,872	4.35%	3.2%	40,842,400
Household items	249,803,316	(5.63%)	18.8%	264,717,042
Sundries	109,120,001	3.80%	8.2%	105,122,436
Healthcare & cosmetics	32,535,546	1.82%	2.5%	31,952,988
Furniture & interior accessories	70,765,019	(0.04%)	5.3%	70,793,621
Home electrical appliances	7,031,172	(38.58%)	0.5%	11,447,999
Other products	30,351,578	(33.15%)	2.3%	45,399,998
Services	2,873,086	(22.44%)	0.2%	3,704,171
Others	81,584,880	1.65%	6.1%	80,257,205

The source: Japan Chain Stores Association (55 member companies and 10,622 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>)

5. References

Table 5.1-10 Top 25 E-Commerce (B2C) Players in Japan (2021) [Unit: JPYm]

2021	2020	Companies (Main Website)	Sales (JPYm)	Growth (%)	EC Ratio (%)	Main Products
1	1	Amazon Japan G.K. (amazon.co.jp) (*1)	2,535,500	16.0%	100%	General
2	2	Yodobashi Camera Co.,Ltd (yodobashi.com)	213,659	(3.8%)	100%	Home electrical appliances
3	4	ZOZO, Inc. (zozo.jp) (*2)	166,199	12.8%	100%	Apparel
4	3	BICCAMERA INC. (biccamera.com) (*3)	156,400	5.2%	100%	Home electrical appliances
5	10	YAMADA HOLDINGS CO., LTD. (www.yamada-holdings.jp/)	(*a)144,500	106.4%	100%	Home electrical appliances
6	5	UNIQLO CO., LTD. (uniqlo.com)	126,900	17.9%	100%	Apparel
7	6	Oisix ra daichi Inc. (oisixradaichi.co.jp) (*4)	113,470	13.4%	100%	Foods
8	7	Japanet Takata Co.,Ltd. (japanet.co.jp/shopping)	(*a)82,700	4.7%	33%	Home electrical appliances
9	8	Joshin Denki Co.,Ltd. (joshinweb.jp)	75,890	5.8%	100%	Home electrical appliances
10	-	AEON Next Co., Ltd. (shop.aeon.com/netsuper/)	(*a)75,000	-	100%	Foods
11	9	NITORI Co., Ltd. (nitori-net.jp/store)	71,600	1.6%	100%	Furniture, sundries
12	21	XPRICE Inc. (corp.xprice.co.jp) (*5)	64,709	44.5%	100%	Home electrical appliances
13	12	Dell Japan Inc. (dell.com)	(*a)59,000	(1.7%)	100%	PC
14	15	Adastria Co., Ltd. (www.adastria.co.jp)	57,400	6.7%	100%	Apparel
15	18	BAYCREW'S STORE (baycrews.jp)	54,500	6.9%	100%	Apparel
16	17	ASKUL Corporation (askul.co.jp)	54,330	2.8%	100%	Household items
17	13	MouseComputer Co.,Ltd. (mouse-jp.co.jp) (*6)	54,076	(3.8%)	100%	PC
18	14	Senshukai CO.,LTD. (bellemaison.jp)	(*a,b)53,000	(5.4%)	83%	General
18	39	Nojima Corporation (www.nojima.co.jp/)	(*a)53,000	112.0%	100%	Home electrical appliances
20	16	Jupiter Shop Channel Co.,Ltd. (shopch.jp)	(*a)52,000	(1.9%)	33%	General
21	27	IRIS PLAZA (www.irisplaza.co.jp)	(*a)50,000	51.5%	100%	Sundries
22	19	Belluna Co., Ltd. (belluna.jp)	48,176	(0.8%)	31%	General
23	11	DINOS CORPORATION (dinos-corp.co.jp) (*7)	(*b)43,779	(29.7%)	77%	General
24	23	ONWARD HOLDINGS CO., LTD. (www.onward-hd.co.jp) (*8)	43,100	3.6%	100%	Apparel
25	22	Ito-Yokado Co., Ltd. (itoyokado.co.jp) (*9)	42,278	(2.2%)	100%	Foods

- ✓ (*1) Amazon Japan: Amazon's sales in Japan, including other businesses other than product sales.
- (*2) ZOZO: Sales for accounting purposes, with a product turnover (total distribution value) of JPY 419,438 million.
- (*3) BIC CAMERA: Consolidated group net sales including Kojima and Sofmap.
- (*4) Oisix La Daichi: Includes some catalogue and other sales.
- (*5) XPRICE: Changed its name from 'MOA Co.,Ltd.' on 1 April 2021.
- (*6) MouseComputer: Includes store sales etc.
- (*7) DINOS CORPORATION: Changed its name from 'Dinos Cecile Co., Ltd.' on 1 March 2021.
- (*8) ONWARD HOLDINGS: Total EC sales including external malls, of which the group's own EC sales amount to approximately JPY 35.7 billion.
- (*9) Ito-Yokado: Mainly their online supermarket 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 (2022) [Unit: JPYk]

Type	Product examples	Machines in operation					Sales (JPYk) 2016
		2022	Growth (%)	2021	2020	2016	
Beverages	Soft drinks	1,994,000	(0.3%)	1,999,000	2,020,000	2,133,000	1,740,528,000
	Milk drinks	100,400	(0.6%)	101,000	106,000	148,000	120,620,000
	Coffee, cocoa (Cup)	128,000	(4.5%)	134,000	137,000	169,000	137,904,000
	Alcoholic drinks	20,300	(0.5%)	20,400	21,600	24,600	30,750,000
Total (Beverages)		2,242,700	(0.5%)	2,254,400	2,284,600	2,474,600	2,029,802,000
Foods	Instant noodles, frozen foods, ice creams, confectioneries, etc.	77,700	6.7%	72,800	70,000	69,400	54,132,000
Cigarettes	Cigarettes	92,300	(20.4%)	116,000	123,000	193,300	209,356,000
Thickets	Passenger tickets	14,200	(1.4%)	14,400	14,500	14,800	1,415,842,000
	Meals, admissions, etc.	48,900	1.9%	48,000	46,600	35,400	410,972,800
Total (Tickets)		63,100	1.1%	62,400	61,100	50,200	1,826,814,800
Household items	Prepaid cards, sanitary goods, newspapers, toys, etc.	201,500	(0.7%)	202,900	209,000	722,300	417,967,500
	Others (Newspapers, sanitary goods, toys, etc.)	-	-	-	-	138,800	52,762,400
Total (Household items)		201,500	(0.7%)	202,900	209,000	861,100	470,729,900
Total (Vending machines)		2,677,300	(1.1%)	2,708,000	2,747,700	3,648,600	4,590,834,700
Automated self-service machines	Money changer	63,500	(0.9%)	64,100	64,400	61,000	-
	Automatic fare adjustment machine (Parking, hotels, hospitals, etc.)	157,700	(1.3%)	159,800	161,700	21,800	-
	Others (Automatic lockers, lending machines, etc.)	1,071,000	0.0%	1,071,200	1,072,000	1,210,000	145,200,000
Total (Automated self-service machines)		1,292,200	(0.2%)	1,295,100	1,298,100	1,292,800	145,200,000
Grand total		3,969,500	(0.9%)	4,003,600	4,045,800	4,941,400	4,736,034,700

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

GS1 Japan

9F, Shin Aoyama Bldg., East, 1-1-1, Minami Aoyama, Minato-ku, Tokyo

107-0062, JAPAN

www.gs1jp.org

President	MUKAE Yoichi
CEO and Senior Executive Director	SOMAYA Haruhisa
COO & Executive Director	MAEDA Shigeru
Director	NISHIYAMA Tomoaki
Director	MORI Naoko



GS1 Japan

9F, Shin Aoyama Bldg., East, 1-1-1, Minami Aoyama, Minato-ku, Tokyo
107-0062 JAPAN

www.gs1jp.org

