GS1®
Korea

GS1 Korea Annual Report 2017

Contents

Message from the President

Last year, the Republic of Korea achieved an economic growth of over 3% and a trade volume of 1 trillion US dollars, and is coming close to realizing a per capita income of 30,000 USD. Such growth in the Korean economy has led to a sharp surge in the number of GS1 Korea membership to approximately 33,000 companies as of 2017.

GS1 standards have been widely used in Korea, mainly by consumer goods manufacturers in food, livingware, apparel and cosmetics. GS1 standards have taken firm roots in the distribution market, as they are used by retailers of various types such as hypermarkets, department stores, supermarkets and convenience stores.

Building on such achievements, GS1 Korea continues to exert great efforts to promote GS1 standards in new sectors where the standards are yet to be fully introduced.

GS1 Korea plays a pivotal part in promoting and settling an UDI system in Korea, by ushering the new updates on the UDI policies of the U.S. and other major countries to the Ministry of Food and Drug Safety and other government agencies, and by making regular presentations on GS1 UDI Application Guidelines to Korean exporters.

Korea is also an ICT powerhouse where online retail grows at more than 20% within recent 3 years. GS1 Korea maintains close cooperation with domestic online retailers to implement various projects for

their introduction of the GS1 standards. GS1 Korea will establish a standardized product information meta-database to be connected to the GS1 Cloud, to comprehensively provide GS1 standards-based product and other additional information to the markets.

Moreover, GS1 is pursuing various projects to promote the GS1 standards in agricultural industry. Examples include an international standard pilot project on a smart farm for Wanju Local Food, which was pursued in collaboration with KAIST and the application of international standard barcodes to product labels for real-time verification of eco-friendly agricultural products by consumers.

Continuous efforts are made to promote GS1 standards-based services and solutions in Korea. The unsafe product Screening System began service in 2009, and the number of subscribing retail establishments has exceeded 90,000 this year. The system collects real-time information of hazardous goods, as declared by relevant government agencies, blocks sales and recalls such goods within 4 hours.

In the future, GS1 Korea will focus on its strengths and explore new areas of opportunity. Extending appreciation to all of you for contributing to the development of GS1 Korea, I ask for your continued support and interest in 2018.

Deogho Seo
President
GS1 Korea

Ⅰ. About GS1 Korea

Overview

Having joined the global standards organization for business communication in 1988, GS1 Korea has functioned as the only organization in Korea to promote and maintain the GS1 supply chain system as well as contribute to the advancement of the nation's distribution and logistics industries.

GS1 Korea's focus areas include issuance and management of GS1 standards, such as the GTIN and other ID keys and barcodes, the promotion of GS1 standard-based services through operation of an information database, and the dissemination of supply chain management solutions. Moreover, GS1 Korea is active in raising awareness of the efficacy of the GS1 system through various publications and conferences. Efforts are also made to strengthen partnerships with government officials and industry executives to expand the use of the GS1 standards in new industries.

GS1 Korea also provides practical and useful information to member companies based on the research outcomes pertaining to major issues in the retail industry.

Leadership

Representatives from the manufacturing, distribution and logistics industries comprise the GS1 Korea management board, which reviews and deliberates on GS1 Korea's activities. GS1 Korea follows the guidance of the management board to promote use of the GS1 standards in Korea, thereby enhancing the efficiency of domestic industries.

■ Chairman

Yong-Mann Park	Chairman	Korea Chamber of Commerce & Industry / GS1 Korea

■ Governors

Jundong Kim	Executive Vice Chairman	Korea Chamber of Commerce & Industry
Deogho Seo	President	GS1 Korea
Byungryun Seo	President	Korea Pallet Pool
Daeyoung Kim	Professor	KAIST
Gyubok Choi	CEO	Yuhan Kimberly
Jaegu Park	CEO	BGFRetail
Jaeyoung Jang	CEO	Shinsegae Department Store
Jinsun Park	CEO	Sempio Foods
Kwansoo Shon	CEO	CJ Korea Express
Saejo Oh	Professor	Business Dept. of Yonsei University
Sukyong Cha	CEO	LG Household & Health Care

Membership

GS1 Korea enjoyed many bursts of rapid expansion since its inception in 1988, and has a total membership of 33,000 as of 2017. GS1 Korea has a diverse membership of manufacturing, distribution and retail companies covering a broad range of industries including food, livingware, pharmaceuticals and fashion.

| GS1 Korea Membership, 1988-2017 |

| Membership Breakdown |
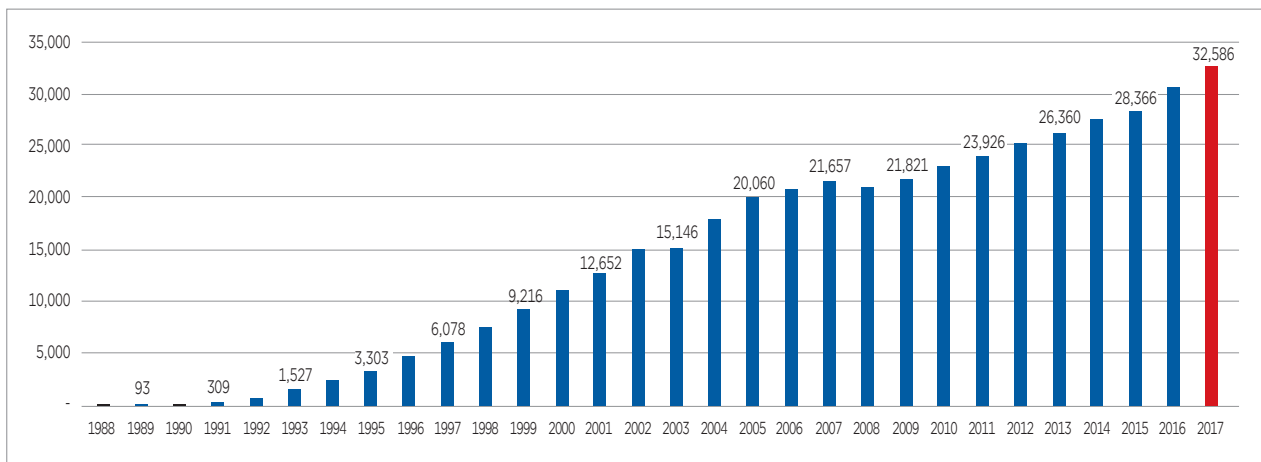
Industry Sector	No. of Companies	Ratio
Processed Foods	13,113	40.2%
Fresh Foods	1,860	5.7%
Livingware/Houseware	8,317	25.5%
Pharmaceuticals/Medical Device	1,411	4.3%
Educational/Cultural Goods	2,035	6.2%
Consumer Durables	1,884	5.8%
Apparel/Accessories	1,964	6.0%
Sports Equipment	159	0.5%
Others	1,843	5.8%
Total	**32,586**	**100%**

Ⅱ. Services & Solutions

Ⅱ. Services & Solutions

1) KorEANnet

KorEANnet is a GTIN-based product information database in which the standardized detailed information of products with domestic or international standard bar codes are entered. The accumulated data of Korea's one and only product information portal service is utilized on a real-time basis by manufacturing, distribution and logistics companies through the internet or Electronic Data Interchange (EDI).

For product classification, KorEANnet makes use of the KAN Classification, which GS1 Korea revises once a year in accordance with the domestic situation, through consultation with domestic retailers and retail marketing companies. Efforts for code-matching have been made in recent years to enable automatic synchronization of the KAN code with GS1 Global Product Classification (GPC).

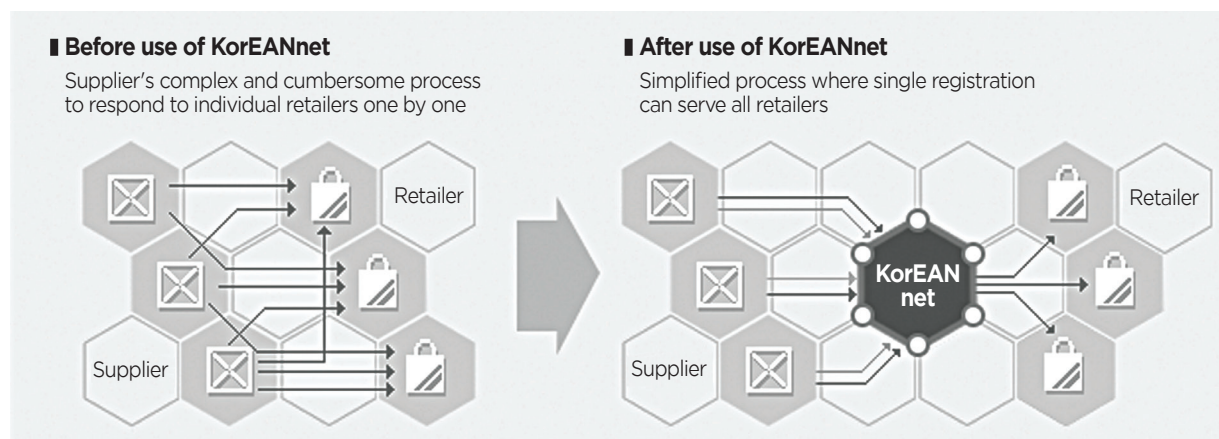KorEANnet takes reference from the Global Data Directory (GDD), which contains the mandatory attributes required by the GS1 Global Data Synchronisation Network (GSDN), but gives priority to using the items and item names as required by the domestic distribution industry.

KorEANnet is currently used by not only most of the mid-to large-sized retailers in the domestic market, such as large size marts, department stores, supermarkets and convenience stores, but also by approximately 30,000 manufacturers. As of December 2017, a total of 12.7 million product data entries have been made available to users.

It should be noted that KorEANnet requires manufacturers to register their new (or revised) product information only once. In the past, manufacturers had to comply with the complicated and troublesome process of repeatedly registering the same product information for different counterpart retailers. With a more simplified process, the new requirement now plays a pivotal role in bringing more convenience to the manufacturers.

| KorEANnet Business Frame |

▐ Before use of KorEANnet
Supplier's complex and cumbersome process to respond to individual retailers one by one

▐ After use of KorEANnet
Simplified process where single registration can serve all retailers

| KorEANnet's Product Information Structure |

Essential info	Detailed info	Marketing info	Logistics info	Image info
Trade item/package*	Volume*	Date of introduction	Trade name for distribution*	Main (front)*
Category*	Capacity*	Date of discontinuation	Volume*	Product description (label)*
Manufacturer*	Net/gross weight*	Importer	Weight*	Additional
Brand	RRP info	Expiry date	Units contained*	Symbology
Product name*	Season	Website (URL)	Symology image	RRP
Product name in Eng	Pricing unit*	Product description		POG (front)
Origin*	Product for infants subject to tracking?	Alcohol content		POG (side)
Taxation*	Color/size*	ISBN		POG (top)
	Distribution channel	Genre/media		

* Mandate

| KorEANnet's Product Registration Status, by Utilization Objective |

	Objective	Ratio	Remarks
1	Generate a barcode number	97.3%	- Create barcode numbers - Download symbol files
2	Expose product information to the market	8.8%	- For users of affiliate services, such as the KorEANnet mobile app and Naver app.
3	Verify the barcode	1.6%	- For suppliers to submit barcode verification info as they open business with new retailers

1) RRP : Retail Ready Package
2) POG : Planogram

KorEANnet's major service offerings include:

■ Mobile app service

The mobile app service allows general consumers or retailers to scan the barcode of a product and search the product information registered under the KorEANnet. Manufacturers can utilize the mobile app as a means to promote their goods. On the other hand, distributors can use barcode and product info to ensure safe transactions by validating against GTIN to confirm that the barcode was formally issued by GS1 Korea.

| **Screenshot of KorEANnet Mobile App** |
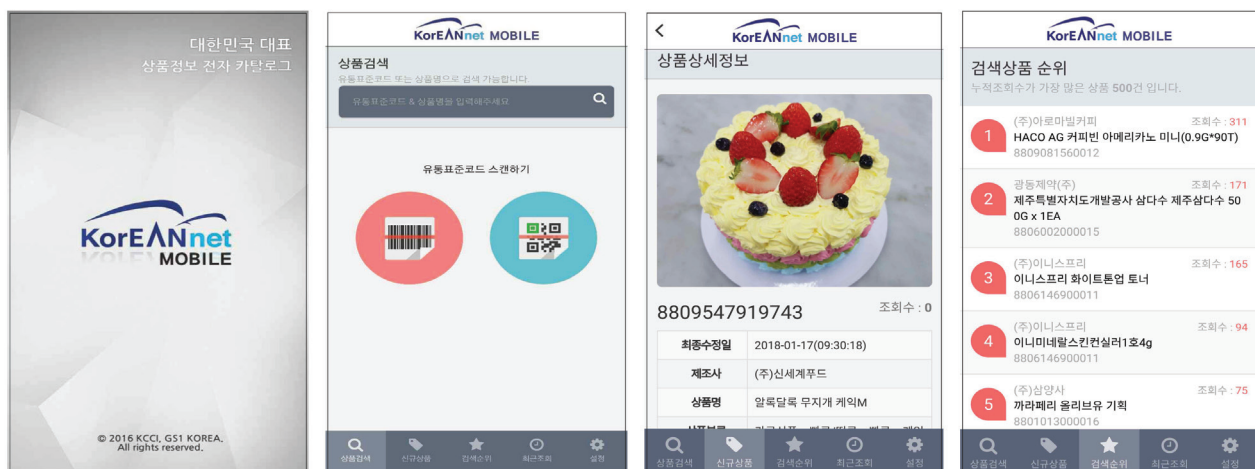
■ Affiliate Services Related to Product Information Database

The affiliate services offer product information registered under KorEANnet to businesses through the Application Program Interface (API). They are mainly used by web-POS service providers for SME retailers, mobile app developers and distribution analytics service providers. In recent years, KorEANnet has increased its affiliate services with retailers and manufacturers that specialize in omnichannel (O2O), big data and artificial intelligence-related businesses, and also with start-up companies that pursue new technology and ideas.

| **KorEANnet API-based Smart Collection Box for Used Milk Cartons** |

* An individual can scan the barcode of a milk carton and discard it in a collection box, to earn mileage points that can be accumulated through the mobile app. The points can be used later to purchase the same milk product. Currently, the Seocho District Office and Sangha Farm utilize this concept under a joint recycling campaign.

In the future, for member companies, KorEANnet plans to expand from the existing barcode issuance service to include the services required for starting businesses with new retailers. KorEANnet will also strengthen communication with member companies to focus on the quality management of product information.

Moreover, preparations are underway for GS1 Korea to provide information on products registered under KorEANnet on a worldwide basis, via GS1 Cloud. It is expected that the accurate product information of manufacturers or brand owners, whose effective membership with GS1 Korea is confirmed, will be easily checked and utilized in any country under a single channel, thereby contributing to the expansion of membership services as well as use of the barcode.

・GS1 Cloud Service Planning in Korea
① Provide support to the member companies for the penetration of overseas markets
② Provide the product data (by country) to the Korean retailers for overseas merchandise sourcing
③ Establish an international GTIN validation system to keep GS1 system healthy
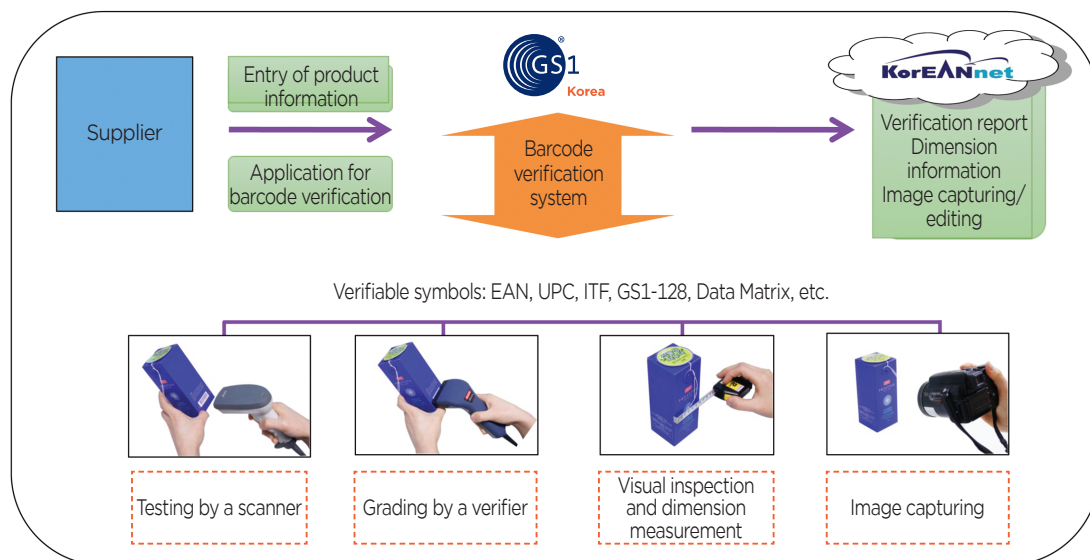
2) Barcode Verification Service

If a retailer's checkout counter machines are unable to read the product bar codes, the customer wait time may increase and thus adversely affect the revenue and reputation of the retailer. In addition, manufacturers may suffer time waste and economic losses for having to collect and repackage the products.

The barcode symbol verification service is proactively designed to prevent such losses in advance, by verifying the readability of a barcode before product shipping by manufacturers.

| Barcode verification process |

Supplier → Entry of product information / Application for barcode verification → GS1 Korea → Barcode verification system → KorEANnet Verification report Dimension information Image capturing/ editing

Verifiable symbols: EAN, UPC, ITF, GS1-128, Data Matrix, etc.

Testing by a scanner | Grading by a verifier | Visual inspection and dimension measurement | Image capturing

GS1 Korea has verified more than 660,000 product barcodes for 6,900 companies thus far, and more than 64,000 product barcodes of 1,300 companies in 2017 alone.

Barcode verification service will be further expanded in the future, to prevent economic losses stemming from barcode reading errors for businesses and to secure quality product information for users.
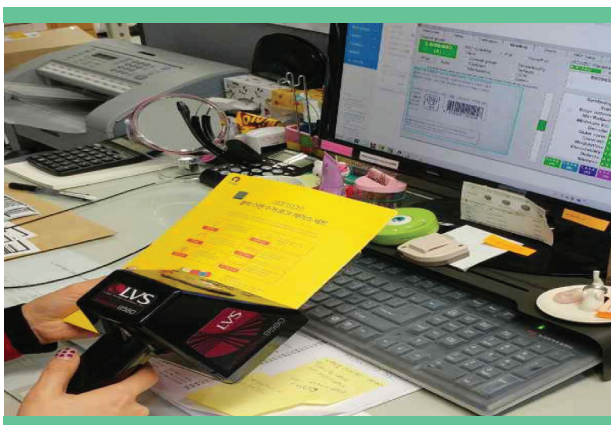
3) Promotion of the Unsafe Product Screening System (UPSS)

Designed to automatically block unsafe products, the UPSS relays the real-time hazardous product information received by the GS1 Korea KorEANnetwork System – as determined and transmitted by the government inspection agencies (which include the Ministry of Environment, the Ministry of Food and Drug Safety, and the Korean Agency for Technology and Standards) to the subscribing retailers, so that sales of such products can be blocked at the POS level.

The system was developed to effectively stop sales and remove unsafe products from stores. When notifying users of such information, the inspection agency needs to transmit the unsafe product information to the pre-connected retailer's system together with the GTIN, so that a transaction can be stopped at the POS level as the product bar code gets scanned.

| System diagram |
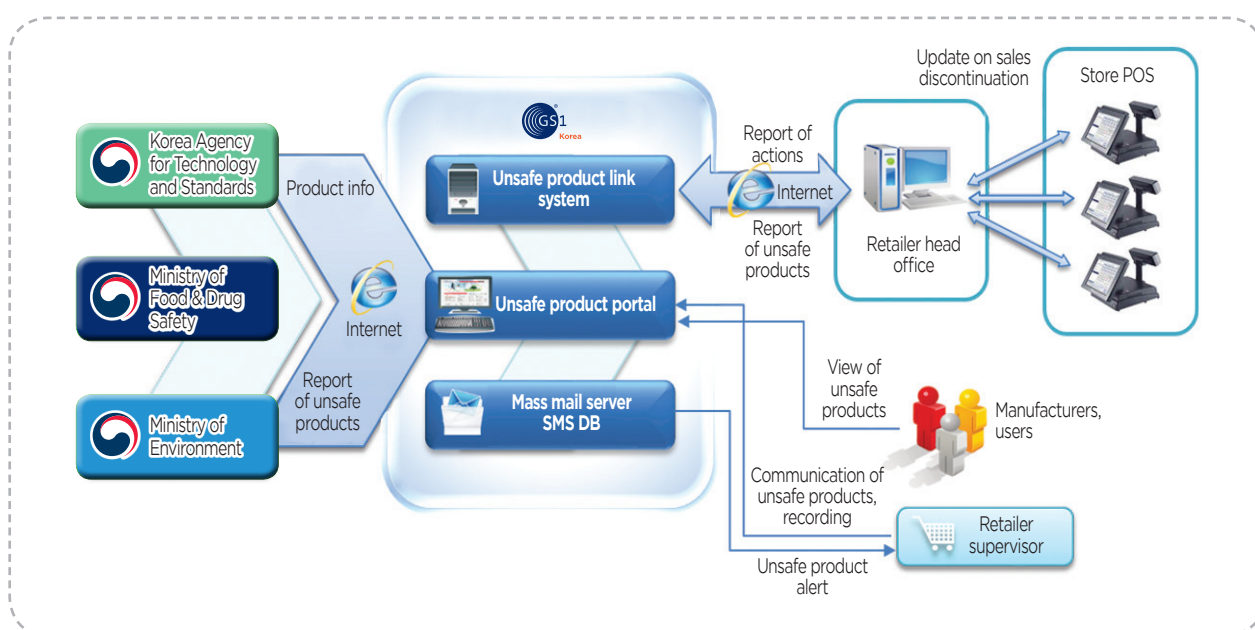
Retailers that subscribe to the system can obtain all of the unsafe product information on a real-time basis, as opposed to accessing such information via website or through the press release of the individual inspection agency. GTIN information reduces processing time (from stock checking to recall) from an average of 24 hours to less than four hours, thereby contributing to better protection of consumer health .

As of today, UPSS is connected to a total of 86,000 stores across the country, and GS1 Korea is promoting the use of UPSS in all types of distribution channels from large discount stores to small supermarkets.

| Adoption of UPSS by year/retail type |

Chart showing cumulative adoption values by year:
- 2009: 8,744
- 2010: 13,600
- 2011: 28,768
- 2012: 40,699
- 2013: 43,102
- 2014: 54,953
- 2015: 66,252
- 2016: 77,845
- 2017: 92,048
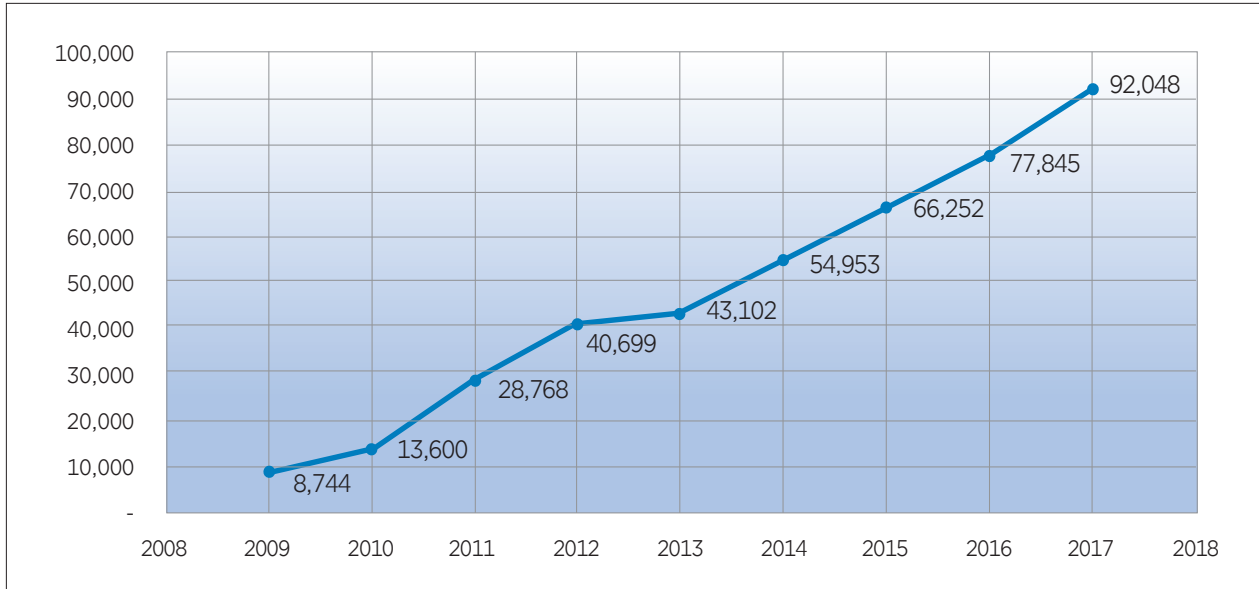
* cumulative

	Hyper markets	Department stores	Super markets	Convenience stores	Drug stores	Online stores	Food material distributors	Grocery chain	others
No. of stores	563	38	3,590	26,815	21,704	16	25,746	7,603	470

* cumulative

Samples from (both locally-produced and imported) products on the shelves may be collected by the inspection agencies, and test results are notified to the relevant retailers when they turn out to be unsafe. During the 2009-2017 period, a total of 7,928 unsafe product cases have been notified.

| Cumulative Cases of Unsafe Products Notification by Inspection Agency, 2009-2017 |

	MOE[3]	MOAF[4]	KATS[5]	MFDS[6]				Total
				Foods	Non-medical Products	Cosmetics	Medical Device	
No. of notification	452	43	1,877	3,176	1,444	917	19	7,928

* cumulative

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3) MOE : Ministry of Environment
4) MOAF : Ministry of Agriculture and Forestry
5) KATS : Korean Agency for Technology and Standards
6) MFDS : Ministry of Food and Drug Safety

The system that was originally used for only screening processed foods, but an increase in the number of inspection agencies led to the extension of the system to livingware, toys, clothing, electrical products, fresh food, cosmetics, quasi-drugs and medical devices. With the UPSS, GS1 Korea has a firm basis for receiving information from inspection agencies on almost every type of unsafe product and transmitting it to retailers. Plans are underway to continuously expand the number of inspection agencies in the future.

As for this year, GS1 Korea has developed software designed for use by SME retailers, as a means to spread their subscription. The software was successfully installed at more than 40 pilot stores, and is freely available for SME retailers to download and use at the GS1 Korea website. In particular, this year's newly developed software is expected to spur expansion in usage, as it operates independently of POS, in contrast to the conventional POS-dependent software that have been installed in SME retailers.

| System Concept Map for SME Retailers |
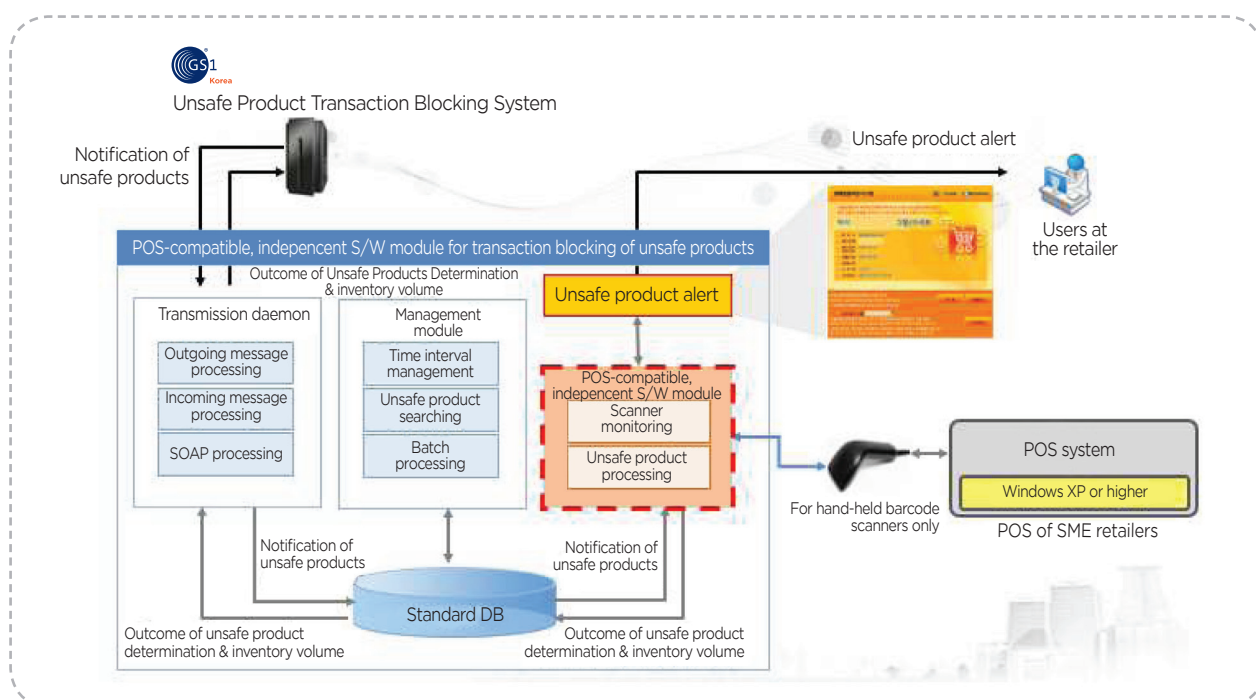
Future efforts will be made to keep pace with the trend toward increased online sales, by increasing the number of UPSS-installed stores with a particular focus on internet shopping malls. Moreover, system upgrades will be pursued on various fronts, including the development of the product recall management system to not only block sales but also to manage the recall of unsafe products. Also, a mobile app that enables manufacturers, retailers and consumers to search for products in real time will be developed.

4) POS Data Service (PDS)

PDS enables the sharing of sales information within the distribution industry. After collecting and processing the POS data sales information of retailers, GS1 Korea will analyze and provide sales status and trends (by product item) to enable efficient marketing for businesses.

| Service flow |

② Data collection, big data analysis

GS1 Korea

① POS data

④ Analyzed information

③ Business partnership (analyzed info, retail market trends)

Retailer

DBS provider

User

① POS data are collected from retailers.
  ※ Over 1,800 stores of 24 retailers (8 department stores, 7 hypermarkets, 6 supermarkets and 3 convenience store chains) transmit monthly sales data from grocery and household categories.

② Collected data is aggregated and processed through a PDS analytic engine to produce actionable insights.

③ Collected data is transferred to market researchers to generate reports on market trends.

④ Market reports are delivered to GS1 Korea and the retailers that provided the data.
  Types of information provided include: what items are popular in a particular season or during an offer; how much impact weather (temperature) has on sales; how sales vary across different regions; and what products are relevant to most searched keywords. Such information is available to retailers free of charge from a dedicated website (bigdata.korcham.net).

Through the PDS analysis service, retailers can obtain and utilize accurate information on sales and consumption trends to reduce marketing and advertising costs, and ultimately, to boost sales.

This year GS1 Korea collected POS data from 1,750 stores and provided free analytic information to 130 distributors, based on 250 reports that were posted at the distribution market analysis service website (http://bigdata.korcham.net/). Major topics covered in these reports include (1) seasonal/event analysis that feature popular items for a particular season or event period; (2) regional analysis that show popular items connected to the characteristics of a given region; and (3) analysis of related keywords that relate popular keywords to their relevant products.

| Example of web pages for PDS analytic information |
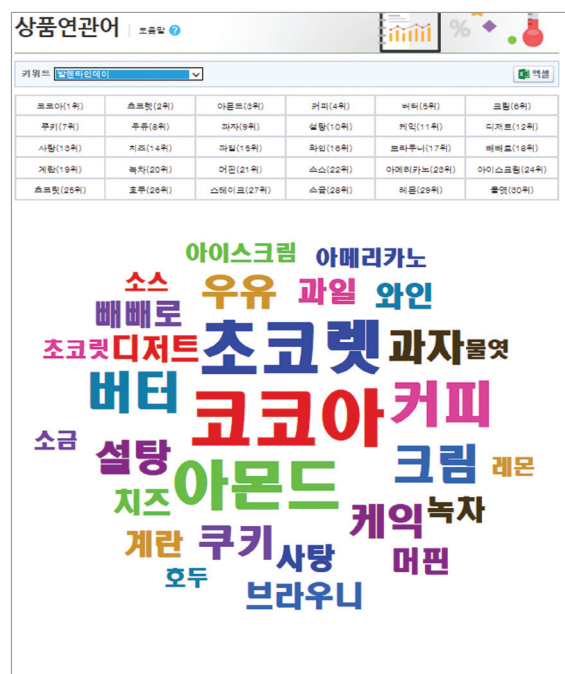
In particular, GS1 Korea additionally provided customized reports to Statistics Korea, the Ministry of Agriculture, Food and Rural Affairs, and four other relevant institutions, thereby contributing to efforts for market research and a nationwide price survey.

| Customized Report |

In the future, GS1 Korea intends to develop the POS Data Service into an information service infrastructure for big data analysis of the distribution market, information provision to SME retailers, and the promotion of win-win cooperation among retailers of all sizes.

5) Promotion of the Eco-friendly Agricultural-Products Tracking System (EATS)

In cooperation with the National Agricultural Products Quality Management Service (NAQS), GS1 Korea has promoted EATS, under which GTIN is assigned to an eco-friendly agricultural product so that its certification status can be verified in real-time through the electronic system of retailers or the smartphone of consumers.

Unlike ordinary agricultural products, eco-certified agricultural products are packaged by intermediaries based on pre-measured dimensions and delivered to retailers. In consideration of such product characteristics, EATS was set up to meet the needs of retailers and consumers who want to verify the information of the certification body that manages the certification information.

| Actions Taken by System Users |

User	Description
Intermediaries	- Pack eco-friendly agricultural produce received from producers into distribution units for delivery to retailers - Access EATS to register barcodes and history data by product - Add barcode and history data on the product label during packaging
Retailers	- Receive certification info, barcode and history data - Check certification status during order placement and store receipt - Suspend sales and remove goods from shelves in the event of nonconformity - Communicate to consumers about the status of the stores
Consumers	- Check real-time certification status from their smartphones - Access the data history of products
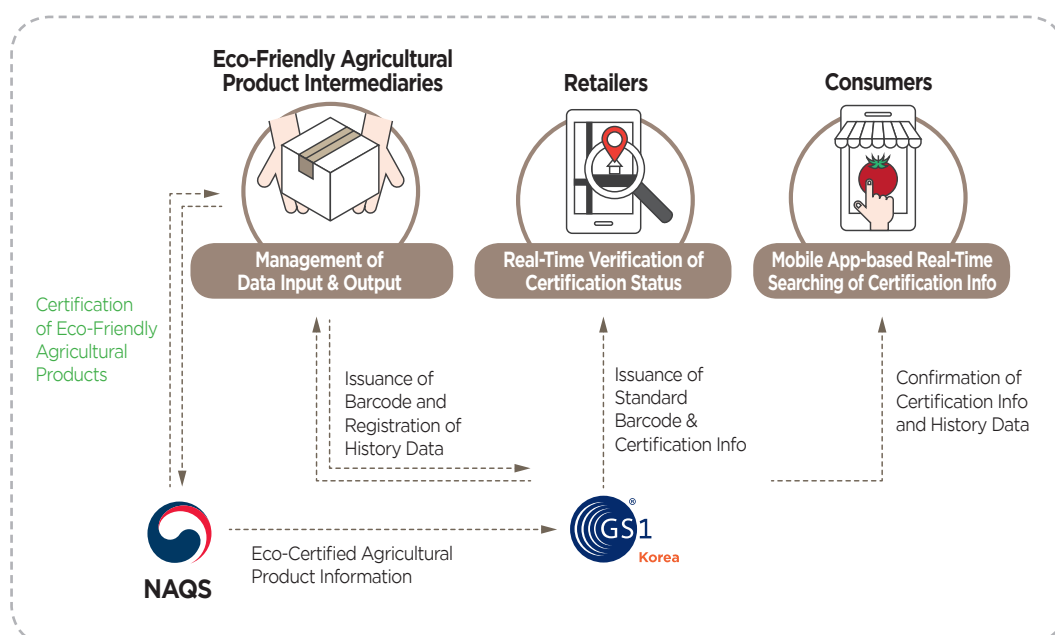
| Concept Diagram |

| Website Homepage (www.safeorganic.org) |

The EATS system helps farmers and intermediaries build consumer trust in the eco-friendly agricultural products that they produce and deliver, thereby ensuring higher prices and quality. Retailers also benefit from EATS by replacing manual labor with a systemic procedure when certifying verification information, as the accurate and efficient management of certification info becomes possible. Finally, consumers are able to safely purchase environmentally friendly agricultural products as they can now check the certification status and producer information through this system, whenever needed.

Currently, EATS is used by a department store and an eco-friendly specialty store. A food ingredients distributor is also preparing for its introduction in the next year. The provision of non-compliant certification information to retailers began in 2017 to block the sale of non-conforming products, thereby expanding the use of the standard bar code for eco-friendly agricultural-products as well as promoting the health of the general public. The system will be continuously expanded by focusing on eco-friendly specialty grocery stores, and further connecting to the systems of food ingredient distributors and school meal operators.

Ⅲ. New Sectors

Ⅲ. New Sectors

1) Medical Devices

Since 2013, the Ministry of Food and Drug Safety (MFDS) has selected high-risk medical devices (including implants) that are subject to the tracking and control of the entire flow of process from manufacturing/import to usage. For a total of 52 high-risk medical devices, including those implanted into a human body, a track and trace system was established to ensure the safety of patients from medical device accidents through concentrated management.

Given the global trend towards institutionalization of the Unique Device Identification (UDI) system - as seen in the cases of the US, EU and Turkey - MFDS is also stepping up efforts for a more systematic approach to the traceability management of medical devices. The Medical Devices Act was passed in December 2016, and the UDI system will be developed in phases from 2019. As for standardization, MFDS is actively considering the GS1 standard for harmonization with international regulations, and related laws and regulations will be announced by 2H in 2018.

As part of the Experts Committee on UDI and Traceability, GS1 Korea has given policy advice to the government on the global trend of UDI policy and the introduction of GS1 standards. GS1 Korea also hosts the GS1 UDI Implementation Guideline event four times a year to the Korean exporters to the US market, and provides countermeasure reports on the US FDA's UDI regulations to the member companies. In addition, GS1 Korea published a global trend report on the UDI policy of major countries, including the EU and the US, to actively support UDI policy formulation by regulators in the government and related institutions.

Moreover, the 2nd GS1 Korea Healthcare Conference was held on December 1, 2017, covering UDI case studies on the introduction and utilization of GS1 standards in the medical device industry. Presentations included the UDI introduction of MNCs, including Johnson and Johnson Medical Korea Ltd., and UDI utilization by Korean SMEs and hospitals. Approximately 250 participants from the government, related institutions, industry associations and companies attended the conference.

2) Pharmaceutical Products

In 2007, the Ministry of Health and Welfare established the Korean Pharmaceutical Information Service (KPIS) under the Health Insurance Review and Assessment Service (HIRA) for the transparent and systematic management of medicine distribution.

In 2009, GS1 standard barcode or RFID technology became mandatory for pharmaceutical manufacturers or importers, thereby laying the foundation for the informatization and standardization in pharmaceuticals distribution. First, the government established the Korean Drug Code (KDC) system in accordance with the GS1 standards. The requirement to have GTIN, expiration date, batch/lot number and serial number information in the product barcode was applied to all specified drugs[7] in 2012, and was expanded to all specialty drugs[8] in 2013. Finally, a mandatory drug serial number marking system was introduced to trace the transaction data history of each specialty drug in 2015.

In line with the informatization and standardization policies of the government to enhance transparency in medicine distribution, the manufacturer or importer is now required to report the production and import volume of the finished pharmaceutical product,[9] taken from the total yearly volume of production and imports for all pharmaceutical products. The report must be made to the MFDS and KPIS via Korea Pharmaceutical Traders Association (KPTA) and Korea Pharmaceutical and Bio-Pharma Manufacturers Association (KPBMA). Moreover,

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7) Specified drug means narcotics, controlled substance and biological drugs.

8) Specialty drug means medications that require a physician's prescription for purchasing and usage.

9) Finished pharmaceutical product means a pharmaceutical product that has undergone all states of production, including packaging, in its final container for human use.

manufacturers and importers have to make a real-time report on the domestic distribution status of manufactured and imported pharmaceutical products to the KPIS from July 1, 2016. Wholesalers that are intermediary distributors are expected to begin the real-time reporting of medicine distribution status from July 1, 2019.

GS1 Korea provides support to the Ministry of Health and Welfare's serialization and traceability program. More recently, GS1 Korea participated in the publication of the aggregation guidelines for the electronic exchange of drug distribution data history between manufacturers/importers and wholesalers, to support the SSCC adoption at the industry level. Moreover, GS1 Korea is participating in the government-led work group for Serialization improvement, to discuss ways for medicine distribution wholesalers to participate in the GS1 standards-based traceability system of the government.

| Overview of national drug pedigree and traceability system |
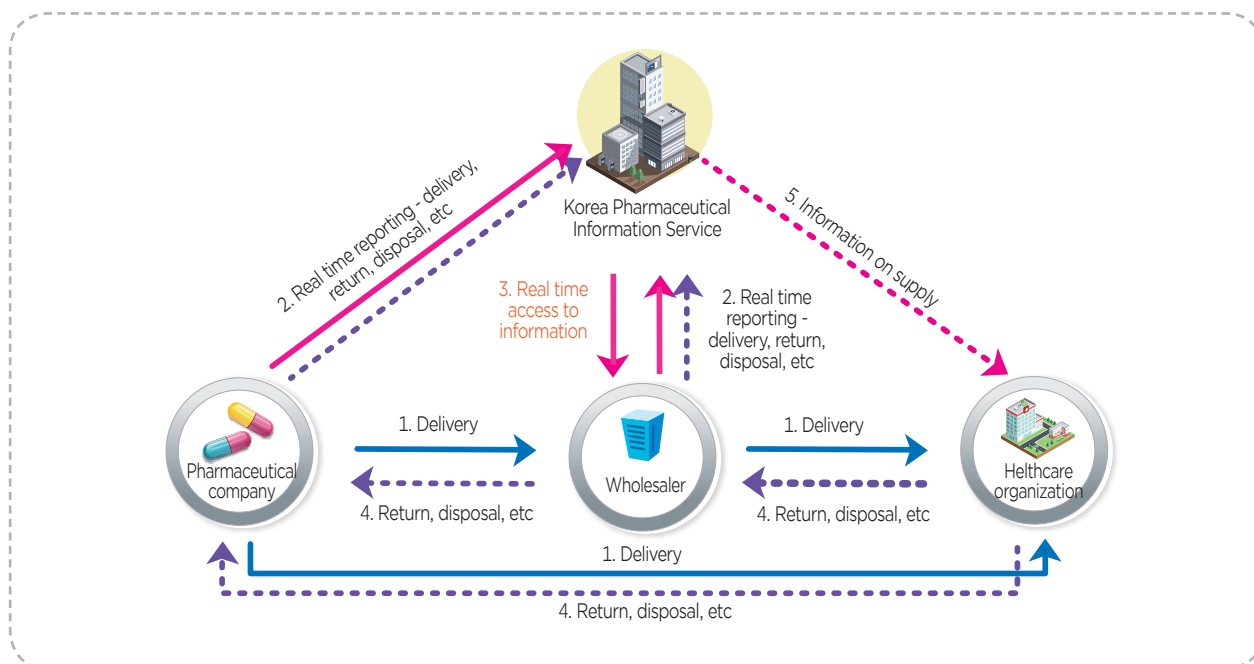
3) Omnichannel

Digitalization is a major issue in the Korean distribution market, where online distribution is undergoing a rapid growth every year. This aspect of digitalization is expected to bring about a structural change in the value chain of the distribution industry, along with the advent of fourth industrial revolution technologies. Thus, new types of distribution services will be developed that maximize customer convenience and distributor business efficiency. In response to such environmental changes, GS1 Korea plans to provide standardization operations and services as required by the industry.

| Examples of New Technology Application and Standard Requirements |

Relevant Technology	Utilized Model	Standard Requirements
Big Data	• Consumption trend analysis by region, weather, temperature and specific event conditions • Consumption pattern analysis by customer characteristics • Association analysis in products purchasing	• Product identification • Benchmark product database • Indexing for natural language processing
Artificial Intelligence (AI)	• Comparison of identical patterns between products, to enable product recommendation to consumers • Machine learning of consumers' purchasing style choices, for curation of customized products • Offering of interactive shopping assistant service (concierge)	• Product identification • Benchmark product database • Shooting of product images • Product names for voice recognition
Virtual Reality (VR) and Augmented Reality (AR)	• VR showrooms (furniture and cosmetics) • AR product coupons and graphic labels • 4D shopping malls (five senses experience)	• Product identification • Benchmark product database • 3D images
Motion, Image and Voice Recognitions	• Voice-activated shopping devices for home use • Unmanned stores and kiosks • Electronic price tags and (pop-up) electronic display	• Product identification • Benchmark product database • Product names for voice recognition • Payments and receipts
IoT	• Smart home system • Automated order service • Multi-platform distribution (home appliance, motor vehicles and wearables)	• Product identification • Benchmark product database • Product names for voice recognition

In 2017, GS1 Korea identified the most urgent issues in Korea's distribution industry, through a survey of distribution industry participants. Subsequently, the Distribution Industry Convergence Alliance was established to design a meta-database service for collection and utilization of standardized product data.

- **Top Three Retail 4.0 Requests from the Distribution Industry**
  ① Standardization of product database for diversification of distribution channels
  ② Development of Big Data and AI Algorithm for customized product recommendation
  ③ Establishment of a public data bank for big data analysis

- **Operation of Sub-Committee within the Distribution Industry Convergence Alliance**
  - A distribution expert consultative council to be composed of distributors, manufacturers, marketers and IT company executives (to work on the standardization working groups to be established by themes, discussing the operation of pilot projects)
  - Main activities of the standardization sub-groups
  ① Standardization of the distribution product database and development of the product info sharing service model
  ② Hosting of latest distribution trend seminars and workshops
  ③ Arranging field trips to experience new technology
  ④ Development of new distribution technologies and making proposals to the government for R&D project tasks

Based on the agreed standard of the Distribution Industry Convergence Alliance, GS1 Korea plans to start building a distribution product knowledge bank service in 2018. It will be an information-sharing platform that comprehensively provides GS1 standards-based product information and other supplementary information, keeping up with the digitalization trends of the distribution industry.

The essence of the standardized product info database service lies in the ability of an operator to manage product information in a consistent and accurate manner. To this end, GS1 Korea will acquire the actual products directly from manufacturers in the future, to register more than 240 online (B2C) product information entries in the database in accordance with the predefined management rules.

Moreover, GS1 Korea will set up a photo studio to secure high quality image data, to be utilized under various fields such as VR or AR technology.

Currently, discussions are underway to develop comprehensive next generation services. On top of basic product information, various additional presentations on new technology convergence will be given, and they include topics such as transaction volume, index for natural language search, emotional information related to product characteristics, product relations and customer comments.

To induce membership subscription by barcode non-members, GS1 Korea also held a briefing session in cooperation with Amazon and eBay, which requires sellers to enter GTIN at the time of product registration. Companies showed positive responses, as proved by the registration of approximately 250 participants at the seminar. In particular, GS1 Korea and Amazon Korea will jointly offer the participants an opportunity to attend an Intensive Course for Potential Amazon Sellers, under which training and field experience under the Amazon store establishment process will be provided. It is expected that about 100 companies will register as sellers at the Amazon market through this five-session program.

Ⅳ. Education & Training

As the only agency in Korea to promote GS1 standards, GS1 Korea operates the GS1 Academy to provide basic education related to the use of international standards and comprehensive and systematic education services on the application of such standards by each industry. GS1 Korea has provided training for new member companies on creating and attaching bar codes as well as the utilization of supply chain management. Approximately 1,100 attendees received training in 2017.

In addition, GS1 Korea conducted the GS1 UDI Implementation Guideline Seminar for medical device exporters to the US market. Approximately 250 attendees participated in the seminar this year. To enhance the competitiveness of SME members, GS1 Korea also established the Training Course for GS1 Standards-Based SCM Efficiency Improvement this year. The course provides an in-depth study into barcode-based inventory management techniques and SCM efficiency improvement measures.

| 2017 GS1 Academy Courses |

Title	No. of Lectures	No. of Participants
Barcode Basics and Utilization Training	48	1,100
GS1 UDI Implementation Guideline Seminar	4	250
Barcode-Based SCM Efficiency Improvement Training	2	50

In the future, GS1 Korea plans to diversify education themes through member surveys, and invite more outside experts to provide a higher quality curriculum to the participants.

GS1 Korea also publishes the GS1 Information Series, which is a translation of the GS1 GO publication materials handpicked for the Korean market. The publications provide up-to-date news on the standardization efforts of the GS1 community. In 2017, publications were focused in industry areas where international standardization efforts were most active in the recent period, including digital, medical devices and fresh foods. The goal of GS1 Korea is to help new companies, in industries where GS1 standards have not been disseminated, smoothly adopt the GS1 standards.

| 2017 Publications on GS1 Information |

Title	Date of Publication
GS1 Fruit & Vegetable GTIN Assignment Implementation Guideline	Jun. 2017
2017 Trend Report on Medical Device UDI Policy of Major Countries	Jul. 2017
GTIN Management Rule	Aug. 2017
GS1 DataMatrix Guideline 2.3	Sep. 2017
GS1 SmartSearch Implementation Guideline	Dec. 2017

Ⅴ. Retail Research & Seminar

To help members keep up with the latest trends, GS1 Korea organizes seminars and conferences, conducts surveys and research on relevant topics, and provides members with the latest information on the retail and logistics industries.

To be noted in particular is this year's 2017 IT Utilization Strategy for the Distribution and Logistics Industry Seminar. Many leading IoT-based companies presented their innovation strategies and case studies for the distribution and logistics industries in the era of the Fourth Industrial Revolution, thereby contributing to the formulation of response strategies by Korean companies. In addition, various seminars related to the distribution industry were held to review the application cases of the GS1 standard-based ICT convergence solution. Through these efforts, GS1 Korea promoted the necessity for companies to apply international standards in their businesses, and presented the companies with practical, applicable model cases.

| 2017 Seminar & Conferences |

Title	Date	Number of Participants
2017 IT Utilization Strategy for Distribution and Logistics Industry Seminar	Jun. 16, 2017	400
Third Conference on New Distribution Trends and Future Growth Strategies	Jul. 12, 2017	500
Fourth Conference on New Distribution Trends and Future Growth Strategies	Nov. 27, 2017	500
2018 Distribution Industry Outlook Seminar	Dec. 6, 2017	600

Moreover, GS1 Korea conducted research on the distribution industry, and presented innovative new trends for global retailers, so as to assist the member companies' efforts to enhance competitiveness in the era of on-line and off-line convergence.

| Research and Publication on 2017 Distribution and Logistics Industry |

Title	Publication Interval
Retail Business Outlook Survey	Quarterly Issue
Distribution Insight	Quarterly Issue
Logistics Insight	Quarterly Issue

GS1 Korea is also actively assisting the government to establish practical and effective policy alternatives by participating in various government support programs. GS1 Korea is also noted for playing a bridge role between the private and public sector by collecting and delivering the issues of businesses to the government.

(Ref.) Retail Statistics in South Korea

1. Distribution of GDP Across Economic Sectors

(Unit: KRW 1 Billion, %)

Industry Description	2014		2015		2016	
	Amount	Ratio	Amount	Ratio	Amount	Ratio
Agriculture, Forestry and Fisheries	29,086.8	2.0	28,951.10	2.0	28,414.30	1.9
Mining	2,343.1	0.2	2,327.70	0.2	2,352.30	0.2
Manufacturing	413,169.9	29.0	416,643.20	28.5	428,333.90	28.4
Electricity, Gas and Water Supply	27,220.5	1.9	29,027.30	2.0	29,754.40	2.0
Construction	56,369.4	4.0	58,174.80	4.0	65,976.80	4.4
Retail and Wholesale Industries	118,138.4	8.3	121,185.60	8.3	125,016.60	8.3
Food Service and Accommodations	31,175.4	2.2	31,288.40	2.1	31,391.50	2.1
Transportation and Warehousing	48,713.4	3.4	49,974.00	3.4	50,535.80	3.4
Financial and Insurance Activities	83,067.2	5.8	88,215.60	6.0	90,584.90	6.0
Real Estate Activities, Renting and Leasing	95,726.9	6.7	98,937.00	6.8	99,296.10	6.6
Information and Communications	54,432.7	3.8	56,455.40	6.1	58,151.00	3.9
Business Services	90,794.2	6.4	95,055.10	4.5	97,695.30	6.5
Public Administration and Defense	87,133.4	6.1	89,401.50	3.9	90,554.20	6.0
Education	65,211.2	4.6	65,235.50	2.3	65,535.00	4.3
Human Health and Social Work Activities	55,071.1	3.9	57,804.50	3.9	63,204.10	4.2
Cultural and Other Services	33,586.1	2.4	33,066.50	6.5	33,445.40	2.2
Gross Value Added by Economic Activity (at Basic Prices)	1,290,294.3	90.4	1,320,845.60	90.2	1,359,580.00	90.1
Taxes Less Subsidies on Product	136,207.0	9.5	143,681.60	9.8	149,066.70	9.9
GDP (at Market Prices)	1,426,540.3	100.0	1,464,244.00	100.0	1,508,265.00	100.0

2. Revenue Trend in Wholesale and Retail Industries

(Unit: KRW 1 Million)

By Industry		2010	2011	2012	2013	2014
Whole of Wholesale and Retail Industries		819,828,179	906,209,659	918,584,833	913,882,008	920,173,258
Description	Sale of Motor Vehicles and Parts	56,881,143	61,738,264	62,263,138	64,531,251	70,167,234
	Transportation and Warehousing	499,366,540	551,484,970	553,261,500	542,762,987	540,744,410
	Retail Industry (Excluding Motor Vehicles)	263,580,496	292,986,425	303,060,195	306,587,770	309,261,615

* Source: Statistics Korea

3. Retail Industry by Product Category

(As of 2014)

By Product Group	No. of Businesses (Unit: 1)	No. of Employees (Unit: 1)	Revenue (KRW 1 Million)	Operating Expenses (KRW 1 Million)	Cost of Sales (KRW 1 Million)
Whole of Retail Industry (Excluding Motor Vehicles)	658,577	1,675,950	309,261,615	287,754,740	214,760,905
General	110,519	420,330	106,186,619	99,664,566	73,378,409
Food, Beverage and Tobacco	106,014	192,666	13,882,671	12,022,811	9,400,832
Information and Communications Equipment	37,494	98,103	27,333,133	26,125,836	17,761,836
Textile, Apparel, Footwear and Leather Goods	157,997	293,505	29,545,067	26,012,580	15,703,356
Other Household Goods	57,175	102,883	8,569,886	7,414,491	5,664,335
Cultural, Entertainment and Recreation Goods	32,211	63,739	7,836,858	7,051,966	5,195,666
Fuel	19,735	69,272	57,790,251	56,632,795	52,418,458
Other Specialized Goods	115,308	234,103	26,610,383	23,421,663	17,102,391
Non-Store Retail Sale	22,124	201,349	31,506,747	29,408,032	18,135,620

By Product Group	Sales and Admin. Expenses (KRW 1 Million)	Personnel Expenses (KRW 1 Million)	Other Expenses (KRW 1 Million)	Yearly Wage (KRW 1 Million)
Whole of Retail Industry (Excluding Motor Vehicles)	72,993,835	20,233,057	43,344,381	13,656,034
General	26,286,157	7,684,940	15,616,334	4,795,231
Food, Beverage and Tobacco	2,621,979	752,760	1,301,227	592,003
Information and Communications Equipment	8,363,999	2,068,522	5,512,639	1,382,223
Textile, Apparel, Footwear and Leather Goods	10,309,224	2,654,955	5,480,429	2,057,817
Other Household Goods	1,750,156	556,067	821,160	400,753
Cultural, Entertainment and Recreation Goods	1,856,300	547,453	925,918	381,955
Fuel	4,214,337	1,394,384	2,518,135	992,249
Other Specialized Goods	6,319,272	2,056,114	2,878,812	1,550,215
Non-Store Retails	11,272,412	2,517,862	8,289,727	1,503,587

4. Annual Turnover Trend in Major Retail Industries

(Unit: KRW 1 Million)

By Industry Type	2014	2015	2016
Total	361,163,945	369,891,505	385,882,539
Department Store	29,096,491	28,931,160	29,868,363
Hypermarket	47,479,752	48,614,573	52,925,350
Supermarket	35,853,136	36,772,612	37,759,291
Convenience Store	12,743,732	16,520,745	19,558,356
Motor Vehicles and Automotive Fuel Store	92,184,826	91,303,760	90,137,653
Specialty Store	102,281,369	102,237,779	102,935,356
Non-Store Retails	41,524,639	45,510,879	52,698,167

* Source: Retail Sales Statistics (at Current Prices), Statistics Korea,
* Specialty Store: Offline retail shop that caters to a specific retail market
* Non-Store Retails: Retail Sales based on internet shopping, home shopping, door-to-door sales and delivery operations.

5. Number of Stores and Revenue of Top Retailers (as of 2016)

1) Hypermarket

(Unit: 1, KRW 1 Million)

Description	Number of Stores	Revenue
E-Mart	167	11,841,651
Homeplus	142	-
Lotte Mart	296	16,042,364

* Source: Electronic Disclosure System, Financial Supervisory Service; KCCI Statistics
* Footnote: 1) Lotte Mart's data includes overseas stores.

2) Department Store

(Unit: 1, KRW 1 Million)

Description	Number of Stores	Revenue
Lotte	43	8,029,764
Shinsegye	13	1,643,709
Hyundai	16	1,370,588

* Source: Electronic Disclosure System, Financial Supervisory Service; Lotte Shopping's electronic data

3) Supermarket

(Unit: 1, KRW 1 Million)

Description	Number of Stores	Revenue
Lotte Super	464	8,200,736
Hanaro Mart	23	3,144,776
E-Mart Everyday	229	1,009,261

* Source: Financial Supervisory Service; Respective company websites
* Data for Hanaro Mart was taken from NH Nonghyup Hanaro Mart's electronic data.

4) Convenience Store

(Unit: 1, KRW 1 Million)

Description	Number of Stores	Revenue
GS25	33,300	7,186,237
CU	10,857	4,941,266
7-Eleven	7,250	3,079,966

* Source: Financial Supervisory Service; Respective company websites.
* 7-Eleven's data is based on 2015 figures

5) Online Shopping

(Unit: 1, KRW 1 Million)

Description	Number of Stores	Revenue
e-Bay Korea	863,357	66,972
Interpark	424,160	8,532
Lotte.com	204,185	(9,552)

* Source: Financial Supervisory Service

6. Online Shopping Transaction Status

1) Transaction Volume Status by Operation Type (2016)

(Unit: KRW 1 Million)

General merchandise Mall vs Speciality Mall		Pure-Play vs Clicks-and-Mortar	
General merchandise Mall	51,464,094	Pure-Play	40,368,355
Speciality Mall	14,152,952	Click-and-Mortar	25,248,694
Total	65,617,046	Total	65,617,046

* Source: Online Shopping Trend Survey, Statistics Korea
* General Mall: Cyber shopping mall that enables the purchasing of different types of goods under various product group categories
* Specialized Mall: Cyber shopping mall that consists of a single category or only a particular kind of product group category.
* Pure-Play Online Mall: Shopping mall that sells products and services to end users only through computer and network-based (online) technologies.
* Clicks-and-Mortar: Shopping mall that sells products and services to end users through both online and conventional offline operations.

2) Quarterly Mobile Shopping Sales (Recent Figures)

(Unit: KRW 1 Million)

Description	2014 3Q	2014 4Q	2015 1Q	2015 2Q	2015 3Q
Total	3,929,614	4,910,028	5,159,366	5,795,902	6,332,862

2015 4Q	2016 1Q	2016 2Q	2016 3Q	2016 4Q	2017 1Q
7,568,850	7,897,335	8,135,932	9,106,298	10,405,027	10,682,948

* Source: Online Shopping Trend Survey, Statistics Korea