

Keeping Shop in the Electronic Age

By Kyosuke Asano

Under growing criticism at home and abroad, Japan's traditional distribution structure is beginning to crack. Symbolic of the break-up is a gradual decline in the number of wholesale and retail businesses, although exactly how many are closing up shop is still a matter of conjecture.

Two factors are contributing to today's changes in the distribution system. One is the expansion and improvement of air transport and road systems across the country. Back when such nationwide networks were still unavailable, the transportation of goods depended mainly on railroads and such primitive means as horses, and the scope of physical distribution was inevitably limited. Now, however, physical distribution covers vast regions and is conducted on a very large scale.

The other contributing factor is the "informationalization" of distribution, or the increasingly widespread use of information systems in the industry. Giving impetus to this trend are point-of-sale (POS) systems, on-line electronic ordering systems (EOS) and the expansion of value-added networks (VAN). Distribution information networks are spreading rapidly among numerous enterprises, while new media such as cable television (CATV) are coming to play an important role. The nation's overall distribution-related information network is illustrated in Fig. 1.

Answering a need

The informationalization of distribution in Japan began with the adoption of the POS system. POS systems have spread so rapidly that their impact on the distribution industry cannot be over-emphasized. The POS system was first adopted by U.S. retailers. The U.S. retail industry had been dreaming for half a century of achieving item-by-item management in order to make automatic ordering possible. The POS system was

the answer to that dream. No wonder the introduction of the system was dubbed the American retail industry's "Apollo Program."

That program came to fruition in April 1973 with the announcement of a universal product code (UPC), a committee-revised version of the black and white 10 bar formula first proposed by IBM. And thus began source-marking by the UPC bar code, now used in stores across the United States. In May 1974 the world's first UPC-based POS system was introduced by Marsh Supermarkets Inc. Today, more than a decade later, the same kind of POS system that is used at supermarkets has been installed in more than 30,000 stores in the U.S. The number has grown so large that surveys of stores introducing POS have been discontinued.

In January 1974 the first session of the European Article Numbering Association (EANA) convened in Paris at the initiative of the International Association of Chain Stores. It was at this meeting that IBM adopted the so-called EAN 13 bar code symbol (standard type) based on the UPC (Fig. 2).

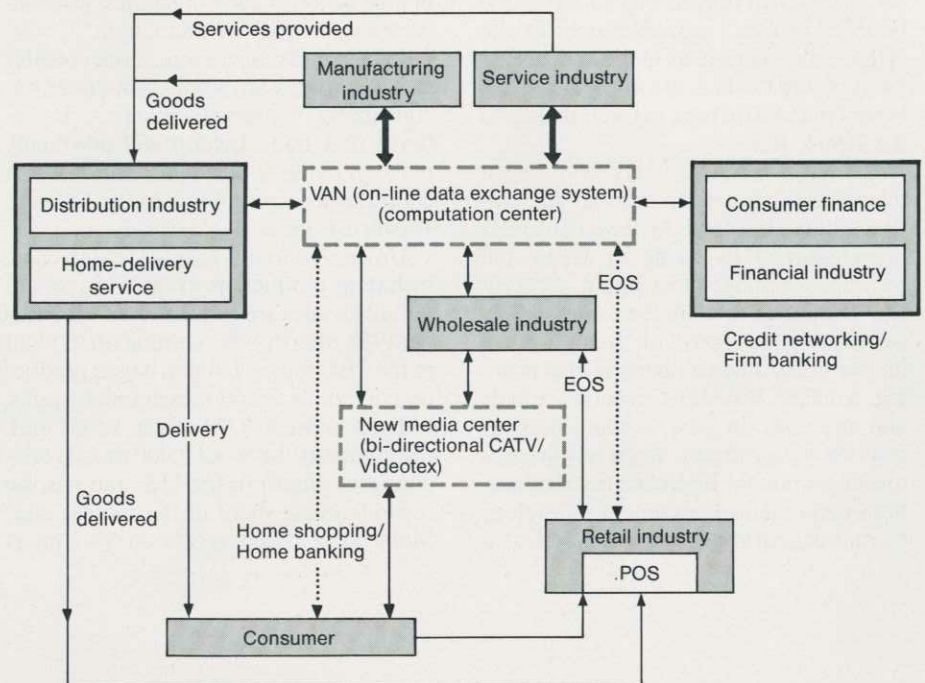
In February 1977 in Brussels, 12 distributors and manufacturers from original EANA members and other countries applying to join it signed a memorandum on the creation of the EANA. Thus started the POS system in Europe. Japan joined the EANA the following year, and Japan's country code was set at 49. Today, the association has more than 30 member states, and maintains close contact with related domestic organizations in its member countries.

Going modern

In Japan, the modernization of the distribution system first became an issue around 1970, and more effective use of computers was one of the greatest concerns. Many argued that the first step had to be the standardization of slips and codes, and studies were initiated on ways to achieve this. When reports reached Japan of U.S. moves to introduce the UPC bar code, they attracted great attention.

POS advocates argued that Japan, as a major trading nation, should keep in step with the United States and Europe. In

Fig. 1 Distribution-related Information Network



October 1977, the Distribution Code Center was established in the Distribution Systems Research Institute to accept registrations for the JAN (Japanese article number) code and to educate the public about the system.

Source marking started in Japan in November 1978, with the Distribution Code Center overseeing the registration of maker codes and the attachment of item code numbers.

The nation's first commercial food-store POS system was introduced in March 1979, but it was not until around 1982 that the number of stores using this system really took off in parallel with the popularization of source marking. The need for POS increased sharply in the 1980s, reflecting, among other things, the changing circumstances surrounding Japanese corporations and the rapid expansion of VAN systems. Today, POS forms the nucleus of the various types of information equipment in the store. Moreover, both headquarters and suppliers are incorporated into this fast-growing distribution information network. The age of "store information" has dawned.

Ranking first

As of March 1988, about 21,000 Japanese stores were using POS, with an estimated 60,000 POS machines in operation (Fig. 3). Now the number of machines is estimated to be double that figure, with some reports putting it as high as 200,000. Japan already ranks first in the world in the number of POS machines in operation.

One feature of the POS boom in Japan is the great variety of stores using the system. Not only supermarkets and large chain stores, the original users, but also

specialty shops and non-franchised stores have adopted POS. The number of POS units has increased particularly sharply in electrical appliance, toy and sporting goods shops. This is because manufacturers and wholesalers in these industries have been so enthusiastic about introducing POS and electronic ordering systems.

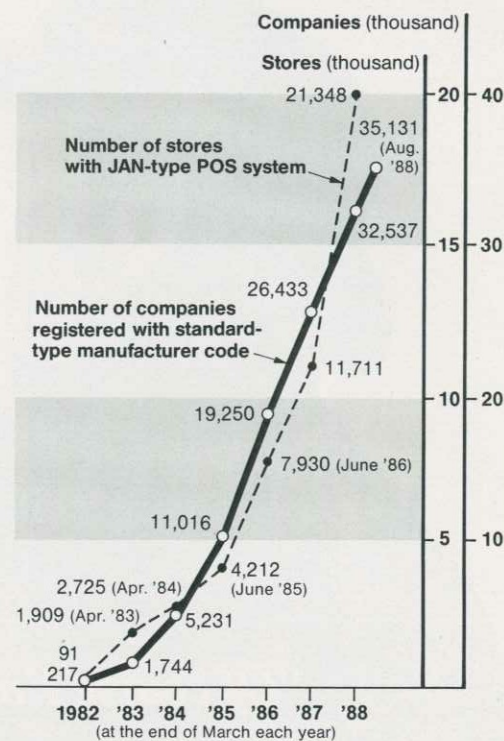
The spread of source marking

The number of registered makers, the keys to the JAN bar code, now exceeds 38,500. Maker code registrations for source marking have increased steadily for the past 10 years, but over the past several years the number of newly registered companies has been soaring by some 500 every month. An estimated 2 million items use the JAN bar code.

A major factor behind the rapid growth in the number of registered makers is the striking increase in registrations in outlying areas. In addition, source marking is being introduced into more and more different fields. While the JAN code is first and foremost a code symbol for POS systems, a product code used in the bar code can also serve as an "on-line code" for order taking and placement. They are also beginning to be used as an infrastructure code for distribution VAN and EOS in numerous industries.

Moves to use the JAN code are also under way for intermediate goods, which in the production process lie between such producer goods as building materials, piping and tools, and consumer goods. Automotive parts and electronic components, which are supposed to strongly reflect corporate identity, are but two examples. The need for source marking is even being voiced in the apparel industry, which so far has been left out of

Fig. 3. Diffusion of JAN Bar Code and POS System in Japan



the movement toward a common code. Such appeals are coming from all sectors of the industry.

Japan's wholesale industry is said to be one of the most backward sectors of the distribution industry as a whole. Now, however, the industry is rushing to adapt itself to the tide of informatization, the rapid expansion of POS systems and the active introduction of EOS. The industry must modernize in order to ensure speedy delivery of small orders of goods through EOS, that is, on-line order taking. These moves could greatly improve the structure of the industry.

Japanese companies today are keenly interested in mergers and tie-ups as a way of achieving economies of scale and diversification. In spite of these inter-industry consolidations and associations, however, the fact remains that the future of the wholesale industry hangs on its ability to orient itself to the arrival of the information age in the distribution industry. Much will depend on how it responds to the spread of the POS system.

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Fig. 2. JAN Code Symbol (same as EAN)

<Standard type>



- Country code (2 digits); Japan's is set at 49.
- Manufacturer code (5 digits); corporate code managed by the Distribution Code Center. The center also attaches the number.
- Product item code (5 digits); single-item code, with the number attached by the company with a manufacturer code ②.
- Check digit (1 digit)

<Simplified type>



- Country code (2 digits)
- Manufacturer code (4 digits)
- Item code (1 digit)
- Check digit (1 digit)