

5 Cost-Leadership Strategies

2. Low-Cost Strategy by Functional Specialization

- ◆ Specialization in Production Function: To secure and stabilize production volume, and to minimize overhead cost
 - OEM: No assurance of stabilization
 - EMS
 - Semiconductor foundry
- ◆ Mass Production of Standardized Products
 - Combination with OEM
 - As demand is taken in with standard items, the standardization is conducted with high quality (Mabuchi)
 - Specialization in parts and device business (Samsung Electronics)

2.1 Funai Electric Co.: Overseas Production and Design Technology

- ▼"Feature: Funai Electric Co.", *Nikkei Business*, Sep. 18, 2000
- ◆ Funai Electric's Share of U.S. Market
 - VCR: 34%, top (the first half of 2000)
 - VCR integrated with TV: 52%, top (1999)
 - Inkjet printer: 22%, number 2 (1999)
- ◆ VCR 30% Cheaper than Matsushita's/Toshiba's
 - Symphonic (Funai's brand in the U.S.) \$69.99
 - Samsung \$79.99
 - Toshiba \$99.99
 - Matsushita \$99.99
- ◆ OEM Supply
 - Philips: VCR, VCT integrated with TV
 - Inkjet PrintOut Printer
 - Maker specialized in printers, a spin-off of the printer sector of U.S. IBM in 1991
 - Joint development by two firms
 - Minimum going market price of "z22", current main product, is below \$50.
- ◆ High Growth Ratio and Profit Ratio
- ◆ Cost Competitiveness 1: Production— overseas factories centering on manpower
 - Overseas production ratio above 90%; manufacturing of a narrow variety of products in large quantities
 - "It's another matter if we keep on making the same product for 5 years. But in view of the reality that a life cycle of a product is less than one year, using manpower in full is far more productive as compared to utilizing machines."
 - Funai Production System (FPS)

Dong Guan Plant: VCR production units per worker per day was 6.9 units in 1993, which 6 years later went up to 22.1 units in '99, an increase over threefold.

-VCR: Dong Guan Plant (Dong Guan City, Guang Dong, China)

6700 workers, monthly production of 1,150,000 mechanical decks, 850,000 final products

-Printer: Zhong Shan Plant (Zhong Shan City, Guang Dong, China)

2400 workers, monthly production of 900,000 ink-jet printers, 45,000 laser-beam printers

-VCR integrated with TV: Malaysia

◆ Cost Competitiveness 2: Design

-“Efforts on the factory’s part alone cannot reduce much cost. Our company’s price competitiveness has been achieved only after a through trim down starting on design, material, production, distribution, sales, and down to indirect departments. This cannot be copied by major firms with bloated head offices.” (President Funai)

-Design of VCR mechanical deck: Cutback on number of parts

290 pieces for 1995 “MK4”, 229 for '97 “MK6”, 199 for '99 “MK8”

-Ink-jet printer

Overwhelmed other firms with levity, smallness, small number of parts

Number of parts at 70% of Canon’s, less than half of Epson’s; Size of printed-circuit board being half the other firms’

◆ Cost Competitiveness 3: Parts procurement

◆ Funai Electric: History of product development

-1960s: Clock radio; 90% share at one point in the U.S.

-1962: Entry into tape recorder; acquired Denpado→mechanical engineers

-1979: Video camera with independent system “CVC”

6.25mm tape width, smaller than “Beta”

Pulled out due to limited availability of video-picture softwares

-1983: Entry into VCR of VHS system

-1987: Launch of bread-making machine

13 firms followed, including Matsushita Electric

800,000 units in the initial year; down sharply to 100,000 from the second year

◆ Core Technology: rolling mechanism

-“We have learned that a product not equipped with the precision rolling mechanism gets imitated quickly (with the bread-making machine).”

-“What we’ve had that is different from other companies in the same trade such as Aiwa, Uniden and Akai Electric is that we have been able to design the section of the precision rolling mechanism by ourselves and self-manufacture its parts for such products as tape

recorders and video decks.” (President Funai)

-Future business: DVD, CD-R, CD-RW, laser-beam printer, copy machine

◆ Cooperative Venture with Mitsubishi Electric in DVD Business

▼ Ogawa, Koichi (2006), “Japanese Companies’ Strategy on Standardized Business Seen in DVD”, Standardization Economic Efficiency Study Group, Ministry of Economy, Trade and Industry ed., *International Competition and Global Standard*, chap. 1, Japan Standards Society

-1999: “DIGITEC” was established as a joint venture between Mitsubishi Electric (51% equity participation) and Funai Electric (49%)

-DIGITEC consigns DVD production to Funai Electric’s factory in China, and after DIGITEC buys out all the quantity produced, both Funai and Mitsubishi market the products independently on its own.

-While holding the substantial intellectual property rights as a major member of the DVD forum, Mitsubishi Electric has a very large overhead, and if the firm self-manufactures, its cost competitiveness is small. Mitsubishi receives the remuneration for its advanced technological capabilities and the trade-off for the decrease in its royalty in the form of cash flow generated by DIGITEC.

-On the other hand, Funai Electric has a very small overhead and an advanced production technology. Possessing no intellectual property right on DVD, however, Funai under normal circumstances has to face a large amount of royalty in order to produce DVD. As DIGITEC is a subsidiary of Mitsubishi Electric, Funai can considerably alleviate its royalty payment which would be on its shoulders with the production of DVD.

2.2 OEM

◆ OEM means:

-OEM=Original Equipment Manufacturer

-Being translated like “sales of other party’s brand”

-In Japan it refers to a manufacturing of products to be sold under other party’s brand, or to a maker which manufactures such products. A firm which receives products supplied by an OEM maker sells them under its own brand.

-Originally, a firm that receives the supply is an OEM.

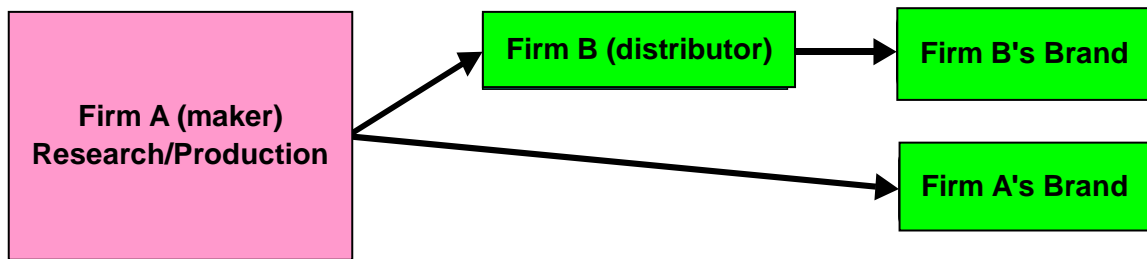
◆ OEM: Case 1

-A maker supplies a retailer.

-The retailer sells under its private brand. This retailer sometimes covers product planning as well.

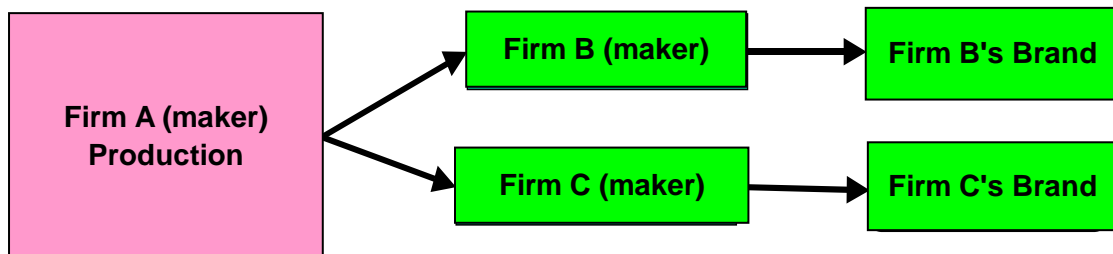
-In case a product is the one developed by its maker, this maker sells the same under its own brand, too.

- A Japanese white goods maker in bygone time:



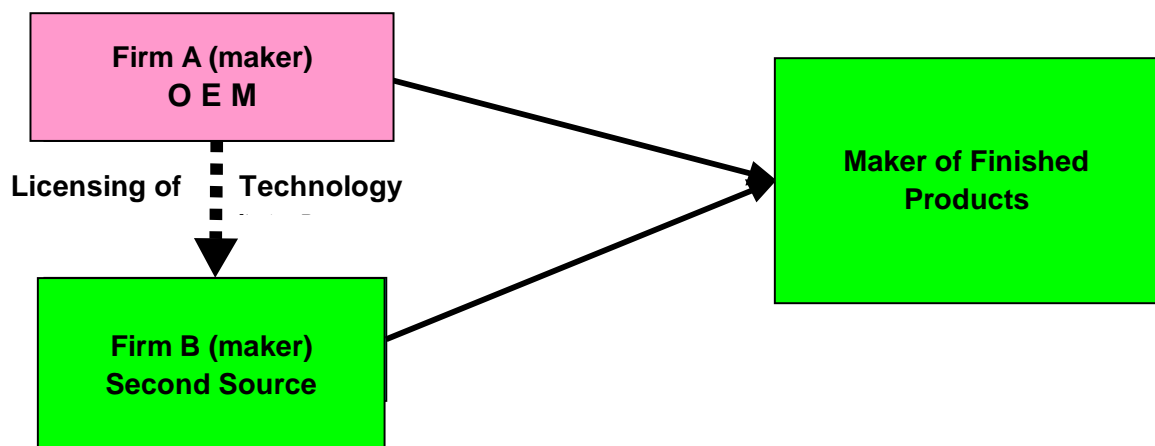
◆ OEM: Case 2

- A maker supplies another maker.
- To consign a production to a low cost manufacturer so as to save the production cost of own products. Normally development and design are done by the consigner.
- A Japanese company consigns the production of its personal computers to Taiwanese makers:



◆ OEM: Case 3

- A maker of finished products requests a parts supplier for a second sourcing.
- IBM: CPU procurement from Intel



2.3 Rise of EMS Companies

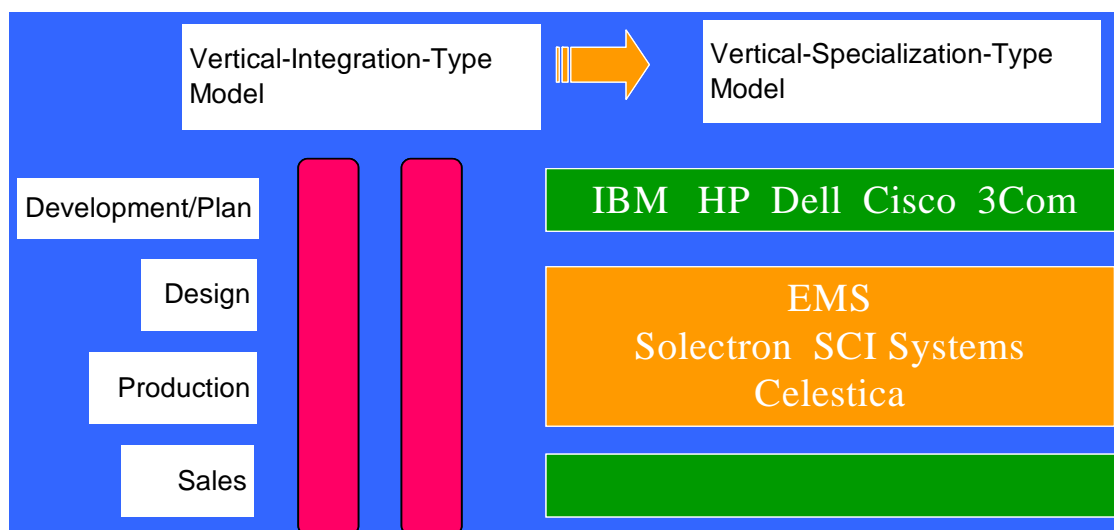
Amid the rehabilitation of U.S. manufacturing industry, it is a group of companies called EMS (Electronic Manufacturing Service). that supports the industry's competitiveness on production front.

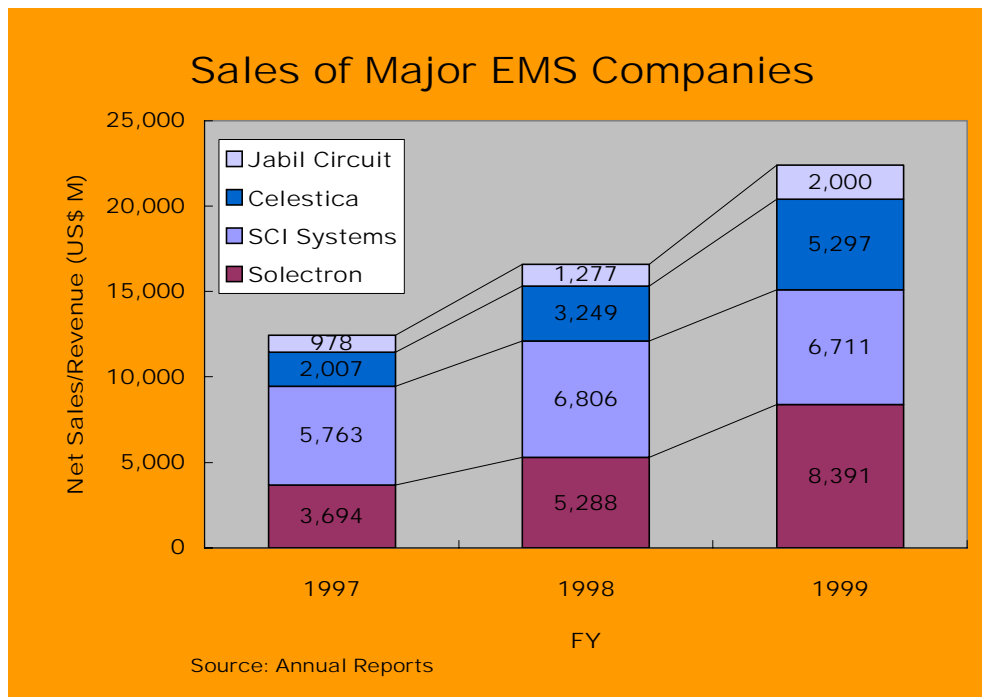
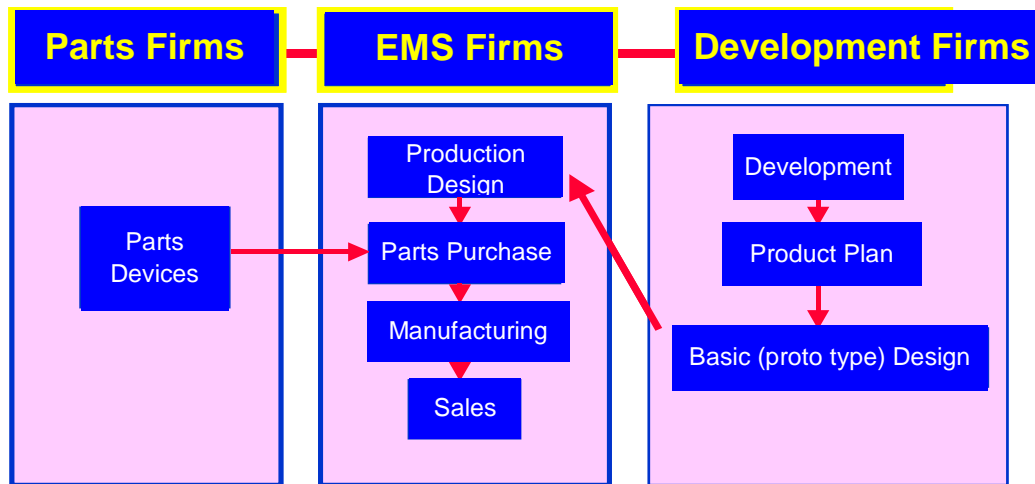
In earlier days, such a group used to be called CEM (Contract Electronic Manufacturing) or CM (Contract Manufacturing).

As they say, the American industry has changed from the conventional Vertical Integration to Horizontal Alliance. That is, each company has become specialized in respective field of R&D, design, manufacturing, logistics, sales, and service. Among those, the ones specialized in manufacturing, and successfully, constitute EMS.

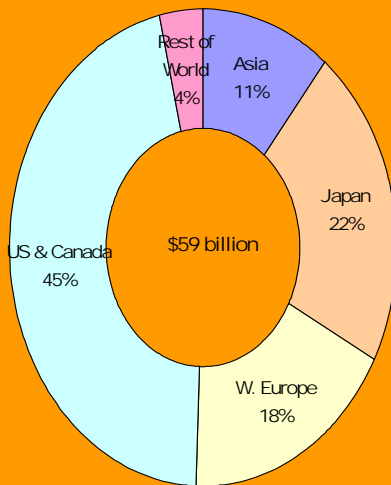
Conventional set makers that produce final consumption products come in predisposed to enhance the weight of their subcontracts. For example, for personal computers, ratios of subcontracting are 40% for IBM, 50% Compaq, 100% Dell and 50% HP. What Dell does by itself is the last operation before shipment, like the memory add-in, which is sometimes consigned to distribution firms such as Nippon Express. And, as for network products, the ratios are 60% for 3COM and 100% CSCO.

Major companies of EMS that these set makers place orders with are SCI Systems (M\$6390), Solectron (M\$4350) and Celestica (M\$3520), which are all North American corporations with major production bases in North America. (Figures in parentheses are revenues in 1997.) The EMS's growth is so rapid that the top 20 EMS firms recorded their total revenue of M\$17,573 in 1996 and M\$23,632 in 1997.



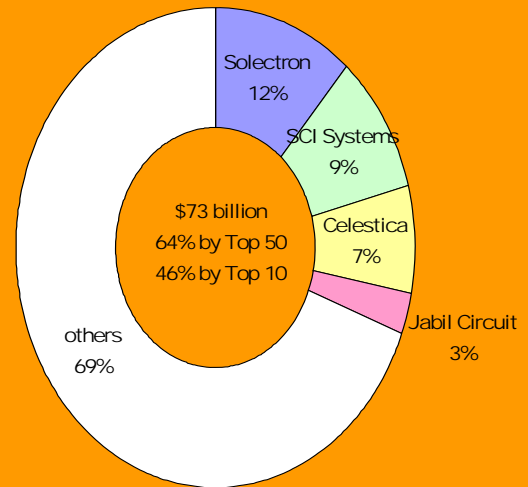


EMS Market 1996



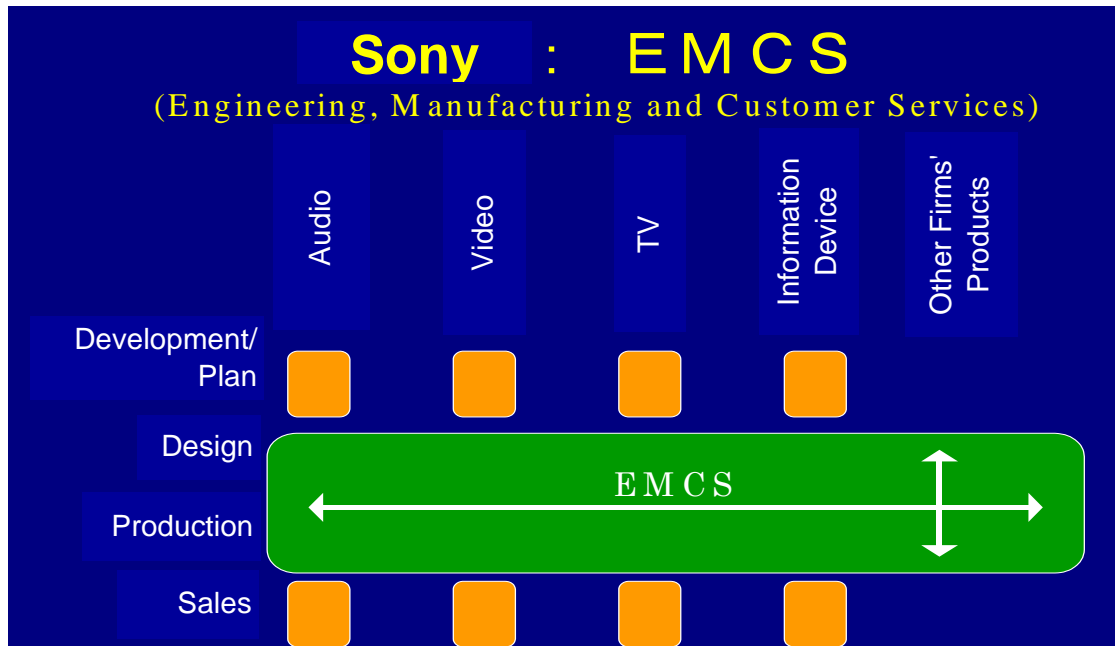
Source: Roberts (1998)

EMS Market 1999

Source: MMI, www.mfgmkt.com/top_50release.html

EMS Firms	Products	Consignor Firms
Sollectron	computer & peripheral, networking equipment	Cisco, Qualcomm, Hewlett-Packard, etc.
SCI Systems	computer & peripheral, network equipment, communication device, medical instrument	TI, Fujitsu, NCR, Dell, Tandem, Nortel
Celestica	computer & peripheral, networking equipment	Cisco, Dell, IBM
Flextronics	communication device, networking equipment, medical instrument	Philips, Ericsson, Siemens, Cisco
Sanmina	networking equipment	Ciso
Jebill Circuit	computer & peripheral, communication device	Cisco, 3Com, Compaq, Hwelett-Packard, Lucent

Source; MM, ww.mfgmkt.comtop_release.html (Drawn up by Shintaku based on the data)

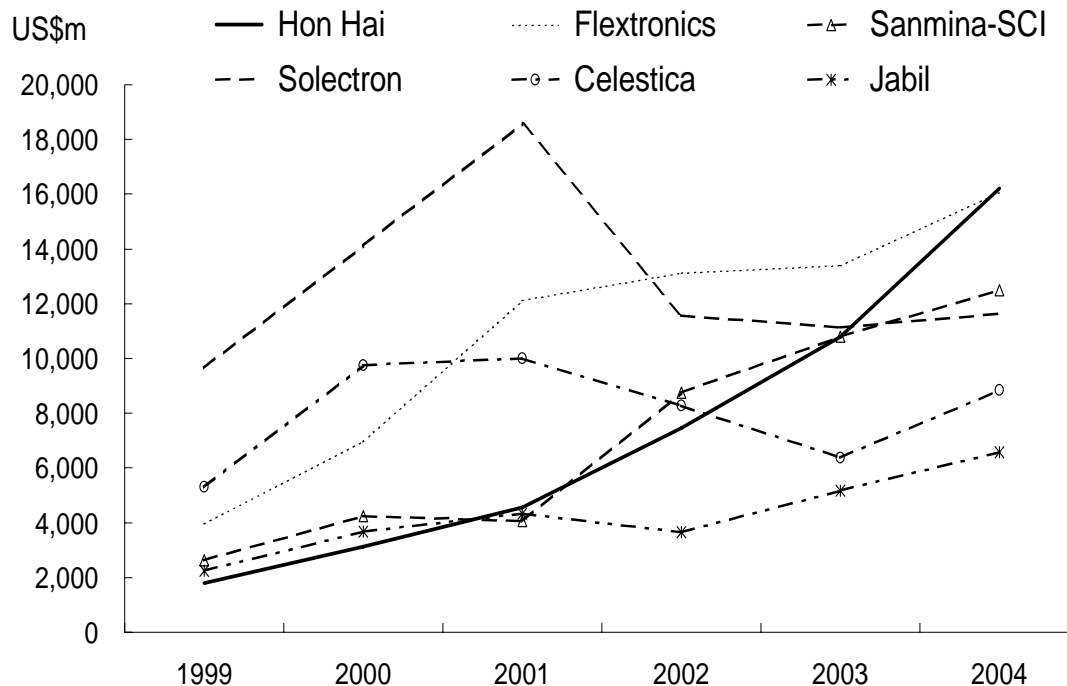


These EMS firms started coming to the forefront in about 1989 to 1990. There is a company like Jabil which is 3 years old since its inauguration of business. Many of EMS firms were originally board makers, i.e., ones specialized in loading parts onto electronic circuit cards, which are turning into building whole sets. First, they received orders from various set makers, as being nonaffiliated with specific set makers. During this process, they not only produced as per set makers' designs, but also began to design by themselves for ease of their production, and to make their propositions to set makers. To that end, they hired design engineers and accumulated technical capabilities/know-how. In such a phase, set makers, while fixing specifications at large, came to leave board designs in the hands of EMS firms, and consigned the production to them. In the early stage, EMS firms produced with parts purchased and outfitted by set makers (e.g., IBM). Later, these firms bought in parts by themselves and put out. Knowledgeable about prices at which each set maker had procured its parts, EMS firms bargained with parts' makers to buy in their own at prices cheaper than ones for set makers, and succeed in the negotiations.

◆ Rise of Taiwanese EMS

▼ From the briefing (2006) paper of Mr. Ryotaro Sugishita, Taipei Branch Office, Daiwa Institute of Research Ltd.

Revenues of 6 major EMS Firms



Origin: company data

Hon Hai's PC-Affiliated Business

Product	Main Customer							Competitor			
PC											
desktop PC	Dell	HPQ	Apple	Acer				Asustek	FIC	Mitac	Elitegroup
note PC	Sony	Apple						Asustek			
Peripheral device/Parts											
motherboard	Intel	Dell	Apple				Asustek	Microstar			
graphic card	Dell	HPQ	Acer	CP Tech	Leadtek		Asustek	Microstar			
connector cable	Asustek	Quanta	Compal	Microstar			Tyco	Molex			
drive housing	Dell	HPQ	Apple	Acer			Enlilght	Everskill			
magnesium alloy for note PC	Dell	HPQ	Quanta	Compal	IBM	Toshiba	Sony	Catcher	Waffer Tech		
thermal module	Dell	HPQ						CCI	Asia Vital Component		
liquid crystal monitor	Dell	Acer	HPQ	Apple			BenQ	TPV	Lite-On Teck	Amtran	
optical disk drive	Chinese maker(s)						Lite-On	BenQ	HLDS	TSST	

Origin: DIR

2.4 Innovation in Manufacturing System: Cellular Production

◆ From the single-item mass production to the high-mix low-volume production—Diversification of customer needs

-Frequent changeover of production machines

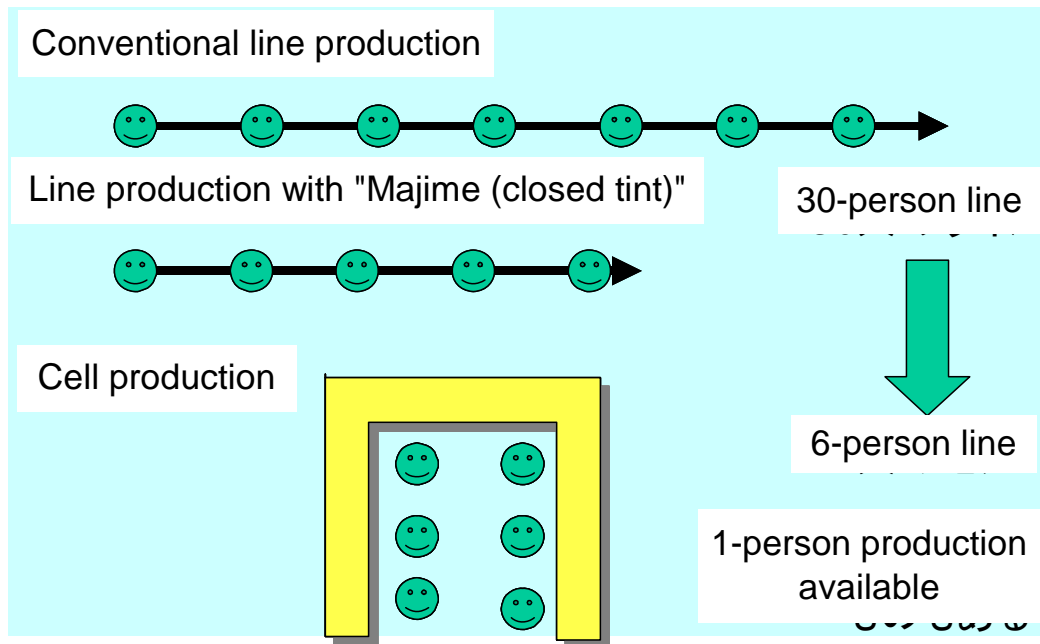
-Fluctuation of production quantity

Uncertainty of hit (seller)

Fluctuation of demand

-Under-scale for an automatization investment

◆ Transition Process of Manufacturing System



◆ Merits of Cellular Production

- Production response to multiproduct/quantity variation
- One month required to start up a line → Timely response
- Inventory reduction
- Quick response, cut back on production lead-time
- Productivity uplift
- Quality advancement
- Note PC, digital camera, cell phone

