ii. Analysis of cost variance

Due to lack of integration of cost and financial accounting systems, continuous calculation and analysis of cost variance is not feasible. After integration of the both systems, timely and detail analysis of standard vs. actual costs will be possible and which will help enhance cost control.

iii. Standard cost setting

In most of the units in Machine Tool Business Group, it is observed that once standard cost for certain model is set, it is seldom updated or "improved" over years. This applies not only to standard hours but also to raw material consumption as well. Improvements in standard cost should be made annually so that increase of productivity can be achieved every year.

(d) Internal controls under Computerized Information System (CIS) environment

As discussed in above (b) computerization of financial accounting system, already significant amount of accounting information has been processed by microcomputers or computer centers established by each unit. Additionally, further computerization is expected in near future. Our limited review indicated the following problem areas:

(1)CIS Department within the HMT organization

The head of CIS Department currently reports to Director Finance. From the view point of organizational independence, organizational structure should be set up so that CIS Department directly reports to the Chairman and Managing Director.

(2)CIS Department controls

CIS Department and especially CIS sections at unit level does not maintain segregation of incompatible duties such as systems and programming vs. opera-

tions.

With regard to program changes, procedures to obtain approval for change by user department are not followed.

Access control involving use of security software and maintenance of operation log is seldom observed especially at unit level.

(3)Processing and application controls

Per our observation of data processing, we noted several occasions where input sheets do not have required information, i.e. incomplete input.

We also noted that in some cases proper records for those rejected data have not been maintained.

Proper procedures which ensure that all data are input into the computer and any rejected or suspended data are properly followed and reprocessed need to be established.

(4)Contingency planning

In order to provide for various hazards including fire and flood, contingency plan should be set up. As a part of this plan, back up files should be stored at a location away from the CIS operating room. In addition, fire extinguisher using halogenous gas should be installed to avoid damages to machinery and magnetic tapes.

(5)Internal auditors

Currently no CIS specialist are assigned to the internal audit department. Because of increasing use of EDP, CIS specialist auditors are essential to properly perform duties of internal audit department.

## 2.Management Accounting System

### (a)Management Control Framework

For the purpose of managerial control, HMT has adopted comprehensive system of corporate plan. IV. Corporate Plan (1990-91 to 1994-95) was compiled in July 1989 as a result of planning efforts by all Units, Business Groups and Head Office management guided by the Steering Committee. The corporate plan shows plan targets in broad terms for the period of 5 years.

Operational plan is prepared for each fiscal year and serves as basic documents for management control of operations. The annual operational plan also is the basis of annual Performance Budget to be submitted to the Government as a part of Memorandum of Understanding.

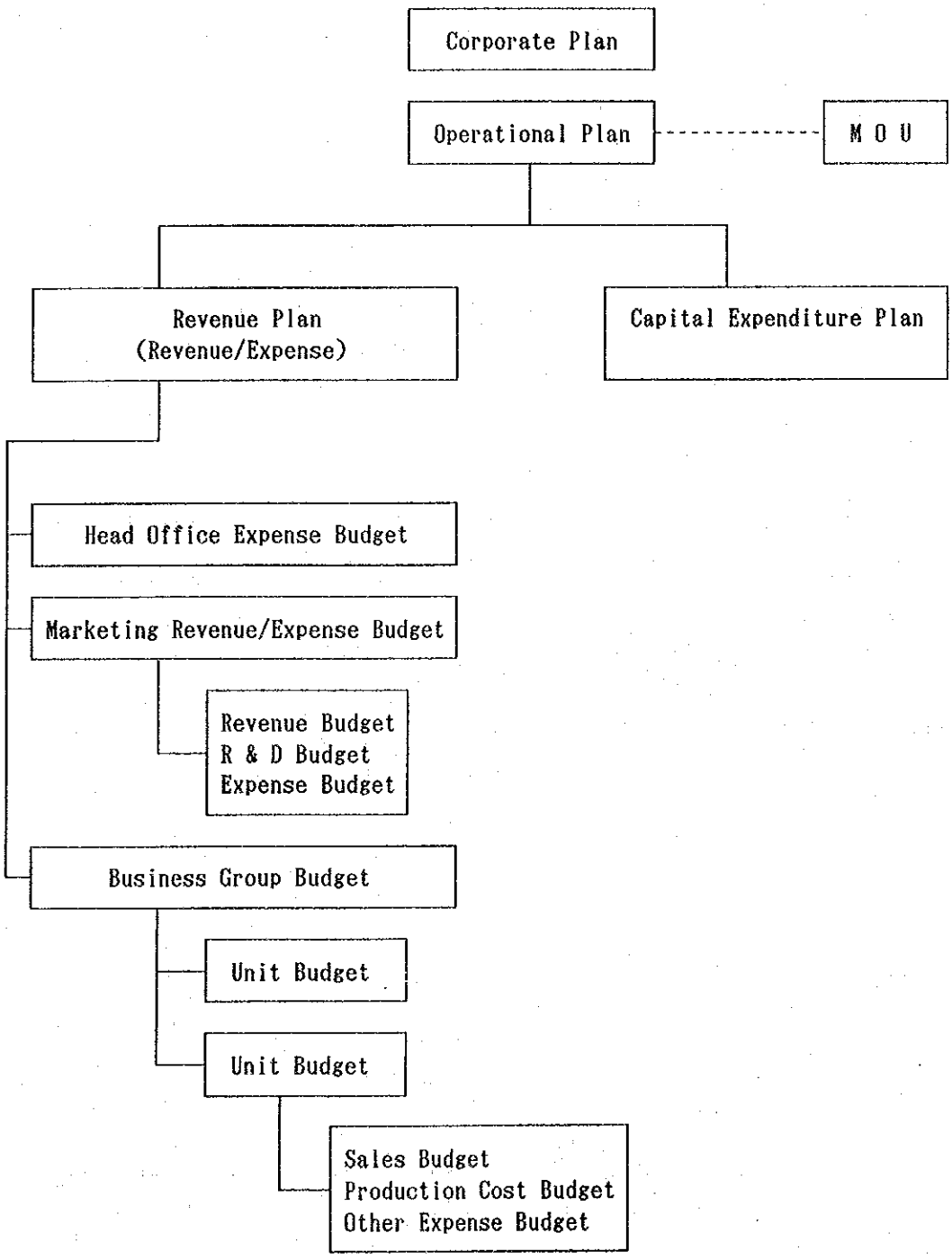
Preparation of operational plan originates in each unit where sales projection and estimate are made considering new product development, which is subsequently matched with production budget of each unit. Production budget also takes into consideration of the new equipment and production facilities authorized under capital expenditure plan as well as current production capacity and personnel resources. Concurrently with the above production cost budget including personnel cost and material purchases, various expenditure budget are being prepared and matched.

Once the unit budget is prepared, it is reviewed and approved by unit board meeting and then submitted to the corporate Executive Committee for approval. The approved unit budget is consolidated and compiled into the annual operational plan. A summary of system of operational plan is presented in Fig. V-2-8.

Operational plan is a comprehensive set of documents summarizing all key figures by units including:

1. Description of major factors considered in the plan
2. Summary of operational plan by business group
3. Projected financial and other data by unit concerning

Fig. V-2-8 SYSTEM OF CORPORATE PLANS



(a) Production
(b) Sales
(c) Profit
(d) Inventories and debtors
(e) Profit and loss account (total company)
(f) Balance sheet (total company)
(g) Sources and application of funds (total company)
(h) Schemewise capital expenditure
(i) Inventory and debtors analysis
(j) Ratio analysis
(k) Manpower

Performance of each business group and units are monitored by the corporate management based on this operational plan. Formal performance reviews' are made quarterly and annually .

On a day to day basis, each unit board meeting monitors performance of each unit based on the unit budget which was approved by the corporate Executive Committee.

(b) Review of Management Accounting Sub-Systems and findings

i. Budget and budget control

Current budget system places emphasis on plant production capacity utilization and lacks focus on profitability by product or by product group.

In order to cope with market which is increasingly competitive, monitoring of product profitability on an on-going basis is essential. A system which monitors product profitability need to be established.

ii. Cash Management System

HMT has adopted limited degree of centralized cash management system under which advance from customers or sales proceeds are collected by marketing offices and sent to each unit. Only when cash kept by each unit exceeds pre-determined limit, the excess is to be transferred to head office, which seldom happened as most

units are in net borrowing position to the head office recently.

Procurements of raw materials and related payments as well as disbursement for various expenditures including payroll are also decentralized and handled by each unit. In view of relatively high interest rate, we believe further centralization of cash management would enable HMT to allocate and utilize its funds more effectively and reduce the overall interest cost.

Additionally, we recommend that centralization of purchasing functions be considered.

Generally cost of materials accounts for 55% to 60% of the total cost of production. In view of the trend of liberalization in the Indian raw material market in the coming year, centralization will naturally bring about higher negotiation power with the supplier. HMT will be able to get better prices and terms of purchase.

Considering the magnitude of the amount (Rs.3,067 million in 1990-91), savings through lower purchase price or better purchase terms will result in significant improvements in the HMT's result of operations.

In addition, coordinated centralized purchase function will enable HMT to reduce inventory level and chances of raw material stock-out by centrally monitoring the consumption of units, thus reduces the level of funds to finance inventory. This will also result in savings of interest expense.

iii. Production cost control

Refer to 1. (c) Cost accounting system.

iv. Investment project evaluation and control

Capital investment projects are generally originated by units during preparation of operational plan and corporate plan, and approved by corporate executive committee, after approval by a unit board meeting. Capital investments also require government approval if the

proposed capital investment exceed licensed capacity of production.

In addition, any investment exceeding Rs.200 million requires approval by Public Investment Board of the Government.

Because of relatively stagnant performance of HMT in recent year, no major investments are made/contemplated in recent years.

v. Financing

Paid-in capital and retained earnings

As of March 31, 1991, HMT has paid-in capital of Rs.785,644 thousand represented by 785,644 shares with face value of Rs.1,000 per share wholly owned by the Government. Authorized number of shares as of the same data is 1,000,000.

Increase of paid-in-capital requires the Government's consent and is generally included in the Memorandum on Understanding (MOU). Reserves and surplus internally generated and accumulated as of March 31, 1991 amounts to Rs.1,765 million. Dividend payments, which have not been made recent years, are also generally covered by MOU.

Loan funds

Borrowings are centrally control by the Finance Division. As of March 31, 1991, HMT has various borrowings outstanding as follows:

| | March 31,1991 (Rs. in Million) | Approximate annual interest rate |
|---|---|---|
| Debentures & bonds - Secured | 2 | 14% |
| - Unsecured | 500 | 15% |
| - 7 year bond | 303 | 15% + 5% premium upon redemption |
| Banks - Cash credit | 752 | 13% |
| - Pading/Export credit | 106 | 16.5% |
| - Term loans | 197 | |
| Financial institution | 112 | 15% + 1% up-front management fee |
| Inter-corporate loans | 131 | 14.0% maximum |
| Fixed deposits from public | 739 | 13.5% maximum |
| Others | - | |
| | Rs.2,987 | |

Current line of credit available from banks approximates Rs.1,310 million. HMT is also allowed to take deposits from public up to 35% of its net worth. Maximum interest payable is 13.5% p.a., which is 0.5% lower than the rate offered by private companies.

As to recommendation, refer to (b) ii. Cash management system.

3. Summary of Financial and Management Accounting Systems

Following is a summary of recommendations which are more fully discussed in B.1 Financial Accounting System and B.2 Management Accounting Systems.

- Further computerization of financial accounting system under total system concept is necessary.
- Integration of cost accounting system with financial accounting system is required.
- Improvement of standard cost must be made annually.

- Establishment of improved internal controls under CIS environment is necessary.

- Systems to monitor profitability by product or product group need to be set up.

- Cash management system should be centralized.

- Centralization purchasing functions should be considered.

## V-3. Examination of Management Information Systems

### A. Present Situation and Questions on Information Systems

#### 1. Planning, Policy and Organization Systematization

(a) Policy of Information Systematization

Up to the middle of the 1980's, each unit and department had their own computer and developed their own EDP system as follows.

(1) Production system, which had been developed by MTB, was the standard model system for other factories,

(2) Each unit and each department had developed and operated similar systems on its own computer.

At that stage, as each factory installed different hardware and software and it had to develop its own system. Therefore, although it appeared that all of them were the same system, each production system was a little different from the other.

Furthermore, applications which were already developed by one unit were also developed parallely by other units.

Of course,this situation had to be resolved because duplicated effort and man-power was not economical and efficient.

After installation of the host computer UNISIS A3K in 1986, the Bangalore based units and CHO switched over to A3k for all applications by 1987-88 and were provided with links to A3k. At present 60 terminals are connected

with the host computer.

HMT plans to establish a communication network connecting all HMT units and also all international offices.

The above policy of HMT'S information systematization was correct and suitable for future expansion of HMT.

In order to plan and monitor the systematization needed at Bangalore-based units and to exercise control over future investment in hardware, software, development standards for Systems Analysis, programming, etc., SCC (Steering Committee on Computerization) was constituted in October 1988 and has so far held 13 meetings.

As mentioned above, HMT'S information systematization has just started.The basic policy aimed at establishing a communication network connecting all HMT units is a proper one. The process of information systematization seems to be steadily progressing.

It is very important that the direction of HMT's future information systematization policy does not go wrong.

SCC doesn't seem to recognize that computerization is a key competitive edge in business.

Thus, SCC should discuss management usage of computers, such as the reason why the computer is used, the way it solves problems and the strategies which are adopted.

(b) Information System Plan

SCC has contributed to the direction but the policies of the computer information system have left out many serious problems from the viewpoint of planning each information system.

The first point is that there is no total HMT information system plan.

For example,though SCC decided on an information network system covering all HMT units, SCC approved individual computer development and implementation planned by each unit and each department. This type of system development duplicated cost and effort.

If the above situation is overlooked as it is, it must be emphasized that HMT will have to bear enormous cost and effort for future redesign and maintenance.

The second point is that development plans for each unit and each department are shortsighted and only need-based. This means that it is very difficult for HMT to construct the ideal system expected by top management.

MIS supported decision making by top management is a long way off.

(c) Organization of Information Systematization

Currently there is no central planning section of information systematization in HMT.

At the time the A3k system was installed, a new division, the Computer System Division(CSB), started services as the "Modal Agency" to coordinate the development

of applications needed by the various Bangalore-based units.

Actually, each unit and each department has the right to plan its EDP center and develop its own systems with its own computer staff. CSB has no power to plan a company-wide information system and only gives some consultation services and advice on a need-basis. Therefore, CSB can only construct the fundamental information system on a need-basis upon the request from each unit and each department.

It is a severe problem for CSB to plan the company-wide information system because this division is not given sufficient authority.

Restructuring of HMT's information system is required along the following points:

i. A person (CIO: Chief Information Officer) reporting regularly and directly to the Chairman and responsible for planning and for constructing the strategic information system for the whole company is required. The CIO should be a person who understands company strategies and makes strategic information systems.

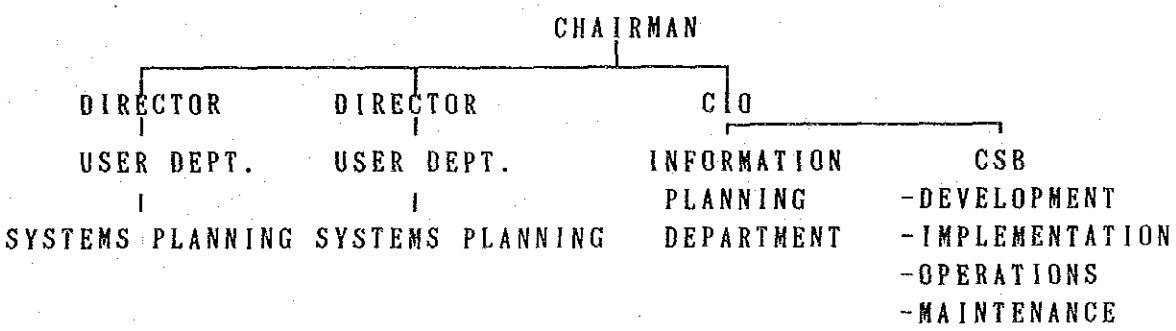
ii. It is also essential to set up a planning department for information systems within the Corporate Head Office, to support the CIO. This department should be composed of 4 or 5 staff members, an expert each in production, marketing, finance and information technology.

iii. CSB should be a profit center whose main activities should be total companywide systems developments, operations and maintenance.

In the first stage, all information engineers, such as SEs and programmers, in Bangalore-based units and departments should be transferred to CSB. Thus CSB has to have total responsibility for the development and implementation of all Bangalore-based applications.

A Central library should be established in CSB in order to centralize all documents, such as configuration of hardware, general flow charts, program specifications, etc.

CSB should study the above documents and monitor the development, operation and maintenance of computer applications for the whole company.




2. Management of Information Systems

As mentioned before,each unit outside Bangalore has established its own data processing systems on its own inhouse computer and Bangalore based units have their own EDP staff who are engaged in development, operations and maintenance.

Moreover, personal computers are scattered and utilized for many purposes.

These reveal the following:

The first problem is that nobody grasps what systems each unit and each department have and how these systems are operated.

The second is that, in terms of safety and security, systems on personal computers have serious problems.

In order to promote Office Automation, investigation on personal computer applications should be started as soon as possible.

3. Situation of System Development

(a) Development of Information Systems

It is, of course, essential to organize a reasonable development system. Substantial effort to standardize in many fields, especially the hardware, the software and the system development procedures, is also essential for the information network system covering all HMT units.

Regarding the software, CSB desires that the standard operating system be UNIX and the relational database is to be ORACLE. But in case each unit and each department continue to develop their own systems, it will be impossible for the present systems to evolve into a company-wide integrated system.

In order to break this situation, CSB has to take a leadership role in solving the following points:

- To establish a document collecting system from all EDP centers into a central library at CSB and to analyze them immediately.
- "MANUAL OF SYSTEM DEVELOPMENT", prescribing the standard procedures and documentation of systems development, should be prepared as soon as possible.

(b) Information Engineers

There not enough information engineers.

For instance, CSB has about 50 people, of whom information engineers are as follows.

System Analysts/System Engineers 7 Persons(including GM And JGM)
Programmers: 18 Persons

Since almost all programmers have less then 5 years experience, CSB cannot give enough service to user units and departments.

EDP centers in each unit and department have around 10 information engineers. Thus it seems that HMT has enough information engineers. However, young engineers, even at the junior programmer levels, resign tire just after training. This is mainly due to strong demand for information engineers in India, but also because of the low status of the EDP departments and the poor treatment EDP members receive, such as salary. Thus there are problems as follows:

i. Absence of information system planner

At present not only CSB but also EDP centers in UNITs and departments develop systems only on need basis.

This situation does not allow a company-wide information system planner like a CIO who will have the power to make arrangements among data processing systems and to decide on the introduction of new information technologies.

ii. Shortage of SE

SE (System Engineer) is to be a person who understands the work and the businesses and can design information systems using updated information technologies. But there are few SEs who have enough knowledge in such areas as production, marketing and finance.

iii. Lack of experts in technologies

The following experts are essential for establishing a total HMT information network system.

- experts in databases
- experts in data communications and networks
- experts in LAN(Local Area Network)

Skilled staffing is one of the most important problems. HMT has to take into consideration the following points:

a. To re-examine the importance of information systems.

Information departments should plan and control information, the so-called 4th management resource, under information system strategies.

b. To build in such transfer systems that people who have enough knowledge and experience could be transferred to EDP departments as SEs for 3 to 5 years.

c. To prepare training program for both technical and business applications and from mainframe computers to personal computers.

d. To design clear career plans for people who work in EDP departments.

4. Hardware / Software / Infrastructure

In CSB, two mainframe UNISIS A3K dual processing systems for the commercial module and a VAX-11/750 computer for the R&D module are provided as host systems. A3K systems are connected to all Bangalore-based factories and CHO. But both host systems are one generation old.

Regarding all applications of Bangalore-based units, some have been continue to use their inhouse computers, others hire outside agencies, and some have switched over to A3K systems. The utilization of the A3K systems for various application areas is increasing rapidly and has almost reached capacity.

## A3K UTILIZATION

| | 1988-89 | 1989-90 | 1990-91 (Up to Jan) |
|---|---|---|---|
| CPU | 1,688 | 2,471 | 2,772 |
| I/O | 2,939 | 4,693 | 6,009 |
| TERMINAL | 32,341 | 45,067 | 73,273 |

Present A3K systems are overloaded by the Bangalore-based applications. The A3K systems are deficient in the following areas:

i. Fixed disk storage spaces. Present capacity of 1700 MB available to the users is practically full. Therefore it is very difficult to enhance applications and to develop new systems and future company-wide network of on-line communication system. At least 50 GB is essential.

ii. Main memory. Each of the two systems has 9 MB. This memory size is not only insufficient for the current needs but also the future needs. But it is not impossible to enhance the A3K system.

iii. Terminals. 60 terminals are connected to A3k system. An on-line network system needs more terminals. But installation of more terminals will slowdown the response time.

Regarding the VAX-11/750 system for R&D modules, the response time decreases when more than 4 or 5 terminals are attached.

There are too many problems in capacity and functions on the hardware in the Bangalore-based systems. Moreover such old computers can not get enough technical support and service from the computer manufacturers. HMT cannot utilize updated information technology for its information systems.

As long as this situation is not improved, it will be difficult to build a futuristic information system

covering the entire company and any investment for information systems will be of no use.

On the software side, it is very dangerous for the future of HMT's communication network system that many units outside Bangalore have installed and will install incompatible machines, and continue to construct their own information systems against the basic standards, such as the UNIX operating system and the ORACLE relational database.

HMT has many problems in infrastructure, such as poor communication circuits and immature communication techniques, for establishing a wide area network system covering all HMT units and sales offices, which are located apart from each other. But CSB has managed to solve technical problems in the software.

5. Database

The importance of databases should be recognized.

It is true that databases are used in the Bangalore-based system, but they are not effective because some systems, which have been developed in each unit or each department, are not designed on an on-line concept.

Moreover, it seems that some units and departments outside Bangalore have no concept of database.

It is very important that the databases in different information systems in all units and offices of HMT be combined into an integrated one which can supply unified data.

But each unit and department still has the same type of data, hence, the adjustments as stated below are required:

a. rules of data input and adjustment.
b. procedure for data input and updating.
c. production item code and part material codification.

d.data item and structure.
e.record construction.
f.updating timing & procedures,etc.,

6. Data processing system of each individual function

The following table is the business group-wide utilization of A3K system. MC tool units used about 44% of the total CPU available hours which increase rapidly.

UTILIZATION OF A3K SYSTEM(1) (CPU hours)

| Business group | 1988-1989 | 1989-90 | 1990-91(Up to Jan) |
|---|---|---|---|
| MC TOOL UNITS | 672 | 1,066 | 1,211 |
| WATCH UNITS | 343 | 557 | 602 |
| OTHERS | 673 | 848 | 959 |
| TOTAL | 1,688 | 2,471 | 2,772 |

The next table is the application-wise utilization of the A3K system. Production and inventory related areas are expanding, but MIS and marketing use is decreasing. It seems the usage for payroll & personnel is a little bit too much.

UTILIZATION OF A3K SYSTEM(2) (CPU hours)

| APPLICATION | 1988-1989 | 1989-90 | 1990-91(Up to Jab) |
|---|---|---|---|
| PRODUCTION & INVENTORY | 437 | 923 | 978 |
| FINANCIAL MANAGEMENT | 219 | 304 | 382 |
| PAYROLL & PERSONNEL | 398 | 518 | 579 |
| MIS & MARKETING | 134 | 210 | 112 |
| CHO/CSB OPERATIONS | 500 | 516 | 721 |
| BACKUP SERVICES, ETC | | | |
| TOTAL | 1,688 | 2,471 | 2,772 |

At an early stage in computerization, the EDP system is easily designed with clear objectives and results. This is very important as a basic foundation for the total information system which will support the future MIS.

Each important application is checked briefly:

(a) Production System

The production system is a fundamental one which produces basic information. Hence this system is the key to influence all other applications. Too much machine time is consumed for production applications.

But the present production system is not satisfactory and has many problems which are pointed out, such as "application of computers for production control" is lacking, and the current accounting system does not provide 'actual' production cost information during the year.

Processes of typical production systems for machine tools are (1)to input orders of production processes, (2) to printout job cards for each process, (3) to put inspection record on job cards, and (4) to make data entry of job cards from terminals. Job cards are basic sources for both production systems and incentive calculation applications.

This production systems does not have "realtime" and "process control" concepts and no planning and control functions such as what, by whom and when components are to be manufactured or assembled.

It is impossible to grasp inventory control of semi-finished goods because of lack of lead time.

Regarding the incentive system, there are problems as follows:

- workers give priority to high-incentive jobs. Process schedules are secondary.
- the incentive system makes it impossible to redesign inspection processes for more rational process control.

The watch manufacturing system basically uses a guide job card system but a more rational system is necessary

since job cards are not used for incentive calculations for each worker. Hence, other types of production systems may be for different Business Groups.

In addition to the above, there are the following problems:

- The production system is not related to business work procedures, especially of production planning and manager's administrative activities.
- Half-way computerized systems are found in many areas such as purchasing and inventory applications, etc. A system which removes handwritten ledgers related to these applications should be implemented.

As in the above, the basic information system policy for production - for example, some Japanese companies focus on inventory control for drastic product cost reduction and others focus on Just In Time inventory control for cutting lead time of production - seems to be lacking.

Generally, the goals of the production system are (1) to cut the lead time in production, (2) to reduce total cost and (3) to assure the high quality of products.

In order to accomplish the above goals, the production system should have the following functions:

a. quality control
b. operation control
c. schedule control
d. inventory control
e. cost control
f. profit control

Consequently, process control applications to cut lead time, inventory control applications to reduce total cost and cost control applications to grasp actual cost needs to be urgently enhanced.

A shortage of fixed disk storage space may result only in a partially utilized computer system. But for basic policy, the current computers have enough capacity to carry out control of time and quality. Planning and

control of both working processes and inventory are the most suitable tasks for the computers.

In order to solve the above problems, the following should be done:

- Investigation into new host computers should be started. Each business group has to review its basic production system and redesign an ideal system accordingly.

- In parallel with the above work, redesigning of the business procedures for improvement of work and productivity is needed. The information flow which supplies timely instructions for plant operations also should be designed.

Finally, the present production systems do not seem to be related to Design and R&D systems. If HMT were to develop CIM, and CAD/CAM systems, they would have to be rechecked. The present CAD/CAM is basically only a partial computer graphic design system. In order to utilize CAD/CAM in production systems, HMT has to do its best to enhance the present production systems and to improve the "R&D module" computer.

(b) Marketing system

The marketing applications cannot be constructed without marketing strategies, which are, in many cases, key to company strategies. But such clear marketing strategies do not seem to exist at HMT which seems to be strongly oriented towards production.

The machine tool marketing system handles orders and despatch information, but it still seems to be only a sub-system of the production system.

The integration of the marketing system and production system is clearly instructed by SCC. In view of the expected severe competition in the market, the marketing system should be integrated with the production system and work out a proper price policy and sales promotion

policy based exactly on market needs.

Both sales activities and sales promotion policies in line with production plans and despatch schedules will become necessary. Also, the marketing system has to issue information for sales promotion policies.

Moreover, in order to receive orders, a speedy estimation system for costs and delivery dates would become an critical weapon for sales personnel in machine tools. But this system is lacking in HMT's marketing division.

The Marketing Division is to be equipped with the following systems functions:

- customer's database
- estimation of cost and delivery dates
- outgoing billing system

The watch business group has an outward billing system on the A3K system and a market information gathering system in the sales offices on PCs. Besides the above, there are some PC-based systems such as the ones for showrooms and those for C&F depots. Each marketing system is however incomplete.

But when proper marketing policies are settled, these separate applications can be integrated into a total marketing information system which collects updated marketing information and gives analyzed information to the production system.

Lastby, there is the question of whether the distribution system can support both marketing and production systems. HMT has many kinds of products and a very broad market in India, therefore, the distribution system will directly impact total productivity.

Unfortunately HMT doesn't seem to pay attention to the total distribution system. The total distribution system should be taken into consideration when marketing systems for each business group are being designed.

(c) Accounting and Finance Systems

An integrated accounting and finance system will be established only after production systems and marketing systems are completed.

At present almost all accounting data must be put into the A3K system. Thus, it takes more time to establish such systems which can get the needed information from other systems automatically.

(d) HRD System

The units and CHO have their own HRD systems. These systems seem to be applications for listing employees rather than human resource development systems, and they don't seem to be unified with the other systems such as payroll and production.

But these systems are very valuable and will have to be transformed into total human resource databases. The following items are to be considered:

1) Combination with other systems such as payroll, production system, etc.

2) Integration of these databases into central human resource databases covering all HMT employees.

3) Utilization of these databases for all personnel management fields.

The new HRD database system has just started in CHO. When this system is adopted by every unit, HMT will have a high-level HRD system. This should be completed in the near future.

## 7. How Systems Are Used

### (a) *Controlling Input Data*

Input data is the foundation of information systems and every computer system needs "accurate" and "timely" data input. Accurate data input means that input data are (1) accurate, (2) not duplicated and (3) not omitted. But much of the data entry is done in batch style and much of the validation of data is done by sight checks, not by computers.

Delayed data input causes discrepancies in output information and makes it impossible to display updated management information. Such input systems as real time capture and easy data input have to be studied and introduced. This is essential for the future communication network system connecting all HMT units and offices.

If process control data of confirmed accuracy are supplied to the accounting departments, this data would be very useful for the accounting system. The secondary data which is inputted into other systems are more accurate, therefore it is important to use the above secondary data, and not to use the manually inputted data. Individual systems not related to each other are not rational and need to be integrated.

### (b) How Operations Are Controlled

CSB is now enabling the users in the Bangalore-based units to have access to the A3K host computer system from 7:45 am to 9:30 pm every day of the week. The operations are controlled as follows:

a. applications which are completely operated by CSB.
b. applications which are partially operated by CSB and partially by the units.
c. applications which are completely operated by the units.

Basically, most of the operations are controlled by units or departments based on their schedules. Thus, frankly speaking, CSB's functions are only to switch the host computer "on" and "off". There is no organization to control and grasp all of the computer operations, as well as system development.

Units outside Bangalore are operating computers in their own way. Further, CSB does not know the operational situation in each unit and thus there are no standardized OPERATION MANUALS.

(c) How Output Is Used

Output sheets overflow in HMT. But expected output of vital information, such as actual cost data and inventory data, is not supplied by the computer system. Some systems, for example MIS and marketing systems, do not get timely data and so user cannot satisfactorily utilize output information.

Too many copies of printouts are delivered to departments or sections. This means that the work which should be done by using computer displays, is done by manual ledgers made of computer printouts.

This situation creates useless tasks such as filing and keeping copies and makes work procedures confusing.

The less computer system issues printouts, the more trustful the computer system becomes.

(d) How Facilities Are Controlled

CSB has enough facilities but EDP centers in units and departments have only minimum facility management. The reasons are supposedly (1) facility management is not recognized to be important and (2)facility control is costly. Very important points are follows:

- Backup of the information resources (Data, Program, etc,)

Even if the computer systems suffers a big disasters in the hardware or software, it is possible to recover from the disasters if data files and program files are backed-up. Hence, at least, two backup files - one in the computer room, the other in some place far from the computer room are essential.

- Computer room

Computer rooms should be located in such places where outside people cannot find them. At least, the computer center should be sale from external dangers. Some EDP centers in Units are located in half-basements which are not suitable for guarding against destruction.

8. MIS

MIS should contribute to the decisions of management, especially those of top management. Thus, the supply of immediately updated and accurate information is essential.

At present HMT's MIS is basically dependent on monthly floppy-based and manual-based reports from each unit, division and department. These reports are inputted into MIS databases on the A3K.

Many of these reports are originally prepared manually and each EDP system cannot prepare them automatically. Thus they seem to show too many discrepancies. MIS is separated from each data processing system.

In the case of MIS, managers, especially top management, should be second users of information which is filtered by data processing systems. MIS information should be transferred directly to the A3K host computer from data processing in the field in order to confirm the freshness and accuracy of MIS information. Internal EDI (Electronic Data Interchange) would be required.

Therefore, in order to get enough MIS data, (1) enhancement of data processing systems and databases in the field and (2) standardization and integration among data processing systems are necessary. After (1) and (2) are completed, the whole company communication network system will become reliable.

Further, the establishment of MIS would not be possible without the support of top management, and MIS should correctly reflect the strategies of top management. Thus, a correct grasp of top management's needs will be required. In this point, a CIO who contacts top management and plans information strategies is recommended.

## B. Future Trends in the Improvement of Information Systems

### 1. Fundamental points of view about the improvement of information systems.

Every information system, not only HMT's, should contribute to the company's strategies. Goals are considered to be as follows:

- reduce total cost.
- ensure quality of products.
- cut lead time in production.
- to grasp customer's needs.
- product planning.

In order to the achieve the above goals, the key concepts which should be taken into consideration for the future strategies of MIS are "Standardization", "Integration" and "EDI(Electronic Data Interchange)".

#### (a) Standardization and Outlook for the Present System

Almost all applications of the present Bangalore-based information system are basically batch-oriented design systems, even though the configuration of the hardware and other surroundings are equipped for on-line orientation.

Therefore, in addition to enhancement or redesign of cost control systems, inventory control systems, process control systems, etc, on-line oriented redesign of each application has to start as soon as possible.

This work, focused on the Bangalore-based on-line system, should be strongly pushed forward by the leadership of CSB. The following points are to be considered:

a. Understanding and consensus with EDP chiefs of all units and departments should be achieved.
b. Building of company's strategies into each application.
c. Standardization of internal codes and system development, etc.

d. Redesigning present databases into future integrated ones.

Some of the EDP systems outside Bangalore still have the old type EDP systems based on the master file concept and not on the database concept. CSB has to educate them on the importance of databases as soon as possible.

In parallel with the above jobs, CSB should prepare, "guidelines for standardization" of the hardware, software, internal data coding, documentation, etc. Also, CSB has to thoroughly educate all people who are concerned with the information system.

(b) "System Integration" and Internal EDI

Both databases and information systems, which have been developed by each unit or each department, require integration. The design of the integrated information system should be suitable both for the Bangalore-based on-line network and for the whole HMT on-line network system connecting all units and departments.

In order to establish the above mentioned network system, CSB has to standardize its communication protocol, business protocol, etc.

(c) EDI

In parallel with the completion of the whole HMT internal network, HMT has to take into consideration that the information network system should expand outside to various groups such as suppliers, vendors, dealers, customers, etc.

At present,in the United States as well as in Europe, the use of EDI is promoted as the means of world-wide communication of electronic business data. Order placement and receipts, invoices, shipping notes, etc. are made using the information systems of customers, subcontractors and shippers.

International EDI connecting not only Indian companies but also foreign companies can be planned.

In India, computer to computer based data interchanges are not conducted between factories or between the related companies, but EDI will spread very rapidly in the near future.

If HMT's information network systems were to go ahead and adopt international standard EDI such as "EDIFACT", HMT would become a leader in INFORMATION TECHNOLOGY in India.

Being the first to use this standard in India, HMT could benefit as follows:

(1) HMT could exchange information with both domestic and foreign clients and vendors.

(2) Criteria for internal standardization of hardware and software would become clear

(3) HMT would become the leader of EDI standardization in India.

(4) HMT could export EDI software.

2. Centralization and Decentralization System

Because of inadequate communication circuits in India, a decentralized system will be necessary for the present.

In this case, it is important to comprehend the foundation of the above mentioned standardization. In this foundation, CSB is required to take a leadership role and push to achieve information system strategies.

For the future, construction of an on-line information network system connecting all of the production and sales establishments of HMT would be needed.

HMT has to study the direction of systems construction for the entire company and identify those which are contradictory to each other and do not match the present infrastructure in India.

3. Promotion of OA

The promotion of end-user computing is essential. But unrestricted promotion is harmful for the construction of future information systems.

The following guidelines regarding OA(Office Automation) are required:

- hardware
- software
- procedures for systems development and implementation

Such OA consultants, who understand the above OA guidelines and promote end-user computing, should be trained.

## 4. Key Points for Building Information Systems

The key concept for the introduction of an integrated system which would combine both production and marketing should be made. The following is one possible example:

| | | |
|---|---|---|
| Products | Machine Tools | Watches/Tractors,etc |
| System | Integrated system both for production & marketing. | Integrate Manufacturing, Marketing and Retailer/ Dealer networks. |
| Target | Cut lead time. | Prior grasp of market needs. |
| | Large variety of in small products quantities. | Obtaining of product information on competitors. |
| | Identification of changes in customer specifications. Factories with higher profit rates. | Expansion of market share. |
| Channel | Sales location. | Retail store/ wholesale. |
| Function | Speedy estimation of cost and delivery. | Customer Satisfaction. |
| | Total cost reduction from sales to distribution. | Rationalization of channels. |

## V-4. RESEARCH AND DEVELOPMENT

### A. Current Situation

HMT has several R&D Centers in the business groups, to carry out the improvement, modification and the expansion of the present product mix. Also, each unit has a tactical R&D team, responding immediately to the current production requests. These are performed as the normal activity of the enterprise in close cooperation with the design and the production stages.

On the other hand, in parallel to the recent rapid advancement of technology, the new product mix should always be studied. There are excellent companies who add new product lines for diversification and even change the corporate image because of successful diversification into exotic fields.

It seems to be the right time for HMT to analyze the future creation of a new product mix for its survival and the continuation of the enterprise into the 21st century.

### B. Problems

A fresh start for new diversification requires technology imported from outside; some time has to be spent for the negotiation of the technical transfer agreement and also for governmental clearance.

In this time span, the outside technology is still advancing further and when everything is ready, the said new technology might be obsolete; again the new import of technology must be sought. The repetitive import of technology, as experienced by HMT in the past, is not only expensive but also it makes it difficult to catch up to the top level of international competition.

C. R&D Strategy

To come out from the above-mentioned unavoidable trough, HMT should have its own capability for the continuous creation of competitive technology.

It is necessary to establish an organization where the future R&D assessments will always be carried out to determine the long range R&D targets, looking forward at least ten years.

Future targets for diversification should be selected from the present technology cores (seeds) in HMT and their feasibility should be studied. (Table V-4-1)

When the inhouse technology core is not available, in exotic fields and in fields where the potential market is foreseeable (such as textiles, apparel and food processing), appropriate outside consultants might be utilized.

A technology situation appraisal should be conducted. The technology potential, which would be the seed for the future, would be compiled against the market potential, which would represent market needs.

The analysis should be conducted from the perspectives of marketing, cost, finance and HRD. These activities shall be impartial, independent of the existing business groups, and directly connected to the technical director.

Also, license possibilities, joint venture schemes, M&A, and OEM production are to be studied and evaluated. HRD is indivisible from the R&D plan; it are proposed to establish a "Mechatronics Center", and a "CAM/CAD Computer Application Center", where young engineers are to be trained for inhouse development of competitive technology.

Proposed Technology Council

In order to keep abreast of technological developments in various fields and to align HMT's strategies in the expanding business domains, it is worthwhile to have a Technology Council (including representation from finance and marketing) at the corporate level. This council will make the

Table V-4-1 Examples of R&D Candidates for Future HMT Product Mix

| |
|---|
| Laser Beam Machines |
| Electric Discharge Machines |
| CNC, FMC, FMS Auxiliaries |
| Cutting Monitoring Device |
| Auto-Detection of Tool Breakout |
| Automatic Gauging and Compensations |
| Tool Life Calculation, Cumulative Device |
| Robot |
| Auto-Loading and Unloading Device |
| Automatic Chip Removal |
| FA Machinery |
| Unattended Vehicle |
| CNC Store |
| Transfer System |
| Textile, Apparel CNC Machines (Cutting & Sewing) |
| Food Processing Machines |
| Drying, Freezing, Pulverizing, Mixing, ..... |
| Packing, Vacuum, Sterilizing, Heating, ..... |
| Rotary Printing Machine |
| Calender Machine (Plastic Film) |
| Exotic Material Processing |
| Solar Energy Utilization |

Note: Extracted from the assessment procedure, subject to further study

major decisions which will affect the company in the long term. Decisions regarding diversification, developing/acquiring technology, source of technology and funding to be the responsibility of this corporate council.
The director, technical should be the head of the corporate technology council. Since the specialists in various business and product groups will be available only at the different units and business group head quarters, the corporate technology council can draw on these specialists from time to time while scrutinizing major policy decisions.

Technology-R&D in Machine Tools

HMT has R&D centers at each manufacturing units in the machine tool group and a central R&D at Bangalore. The combined resources of these R&D groups have been quite successful in developing many products especially in CNC technology during the last ten years. However, none of the R&D groups in involved in work of a fundamental nature leading to basic knowledge in machine tool technology. The following is an assessment of present competence of machine tool R&D in various areas:

* Product design . . . . . High
* Realizing product features/functions comparable to international levels . . . . . Medium
* Investigative type of research into basic machine tool technology to upgrade, precision, quality, reliability etc. . . . . Low

There is a need to strengthen the product development function while at the same time enabling R&D to establish basic understanding of machine tool technology to attain international standards of performance.
The major thrust in machine tool technology should be in further development of CNC products. A target of 60% production share for CNC machines is set-out for HMT by the year 2000 A.D.
If this is to be realized, the R&D function in machine tools should primarily focus on the following areas:

* CNC turning machines in all sizes and variants.
* CNC machining centers in all sizes and variants.
* CNC drilling, milling and boring machines.

* CNC (and non-CNC) grinding machines.
* SPMs, CNC flexible SPMs and flexible transfer lines.

Concurrently R&D should also focus on the development of manufacturing systems around HMT's products such as:

* Flexible Manufacturing Cells (turning, machining)
* Flexible Manufacturing Systems (turning, machining)
* Computer Integrated Manufacturing

It is necessary to allocate responsibilities between the units and central R&D to realize a fast rate of development in the above areas.
The development of products to cover different sizes and variants and to customers' special requirements should be primarily the responsibility of the units manufacturing the products.

Central R&D

The central R&D should be working on the development of products at least 3 - 5 years ahead. It is also the major responsibility of the central R&D to raise the basic level of machine tool technology for the benefit of the total product range.
The major areas that should engage the central R&D should be the following:

* Incorporating advanced features on HMT machine tools in line with international levels.
* Taking up investigative research for upgrading machine tool performance in all areas.
* Application engineering of new machines and technologies.
* Development of system oriented products (FMC, FMS, software etc.).
* Development of new technology products to expand product range and to meet the diversification plans of the company, supported by technology acquisition wherever needed (for example: Electrical machining technology, Laser machining etc.).

It must be recognized that development of modern technology calls for high skills, knowledge and exposure to international developments. It is very difficult for HMT to do of

its development entirely in-house within a short time frame. Therefore, the company must adopt a mixtures of:

* In-house R&D
* Technology acquisition
* Collaborations (in upgrading the technological standards)

In addition, R&D should also establish strategic alliances with international R&D organizations/institutions in machine tool/manufacturing technology fields. HMT should also explore the possibility of R&D cooperation with internationally reputed machine tool units.
Due to rapidly advancing technology, R&D facilities and personnel tend to get outdated after 5 years. In the long term, this can be brought about by creating opportunities for HMT R&D engineers to work at international R&D organizations and through collaborative R&D with other international machine tool manufacturers. HMT must consciously develop these avenues for updating its R&D skills.

# VI DIRECTION OF CORPORATE STRATEGY

## VI-1. Direction of Business Mix and Business Domain

### A. Pressures on HMT to Change

Under the current competition , the following strengths and constraints of HMT are highlighted.

Strengths:
- -Possession of wide-range basic engineering background
- -Nation-wide marketing and service network
- -Stable industrial relations

Constraints:
- -Restriction on strategic decisions due to its status as a public enterprise
- -Low flexibility in reaction to market forces
- -Insufficient engineering manpower and R&D personnel
- -Outdated technologies and production facilities

On the other hand, the changing business environment is presenting the following opportunities and threats to HMT businesses.

Opportunities:
- -Accelerated growth of the industrial sector in India
- -Increasing demand for consumer products in India
- -Trend towards more liberalized functioning of public enterprises
- -Increase in price competitiveness for exports due to the devaluation of the rupee

Threats:
- -Progress of the liberalization of Indian economy
- -Increasing input costs
- -Rapid technological changes

HMT is faced with the following key issues emerging from the above environmental and market forces and HMT's limitations on its internal resources.

-To identify the growing market segments for each business group and devote its endeavors to these segments

-To maintain its competitive edge in technology by reinforcing R&D capabilities for every promising segment

-To secure its competitive position, in quality and price, against top-level competitors including imports

## B. Evaluation of Existing Business Domains

HMT's present business domain consists of four areas; the machine tool business group, watch business group, agricultural machinery business group, and lamp division. Key financial data by business group are shown in Table VI-1-1. In addition, HMT has three subsidiaries, HMT Bearing, Praga Tool, and HMT(I). The composition of the present business groups of HMT is illustrated in Fig. VI-1-1.

The market attractiveness and HMT positioning by product group are summarized in Table VI-1-3 based upon the major indicators shown in Table VI-1-2.

Concerning the present product-mix, the following major problems are pointed out.

(1) The profitability of the machine tool business, the core business of HMT, has decreased.

(2) In most areas, the products are losing technological competitiveness against major competitors and require technical collaboration.

(3) In general, the prospects for HMT's small-scale businesses, which are HMT's businesses other than machine tools, watches, and tractors, are not bright when HMT's capabilities are considered.

(4) For its major businesses, machine tools, watches and tractors, HMT is losing market share in the growing segments, i.e., CNC machines and quartz watches and higher HP tractors. (See Fig. VI-1-2 and Fig. VI-1-3.)

(5) Strategic decisions should be made for the lamp business

(6) In recent years, the diversification of businesses has been inactive.

(7) HMT engages in two types of business: industrial machinery (including machine tools) and consumer goods, which require different types of marketing, corporate culture, and the way of mobilizing internal resources.

On the other hand, the present business-mix has the following advantages.

(1) It reduces the effects of business cycles.

(2) The machine tool business has provided basic technologies to related businesses.

(3) It has built up a good corporate image among customers

Table VI-1-1 Basic Financial Data by Unit 1990/91

| | Financial Performance | | | | Key Financial Ratio | | | Growth 85/86 - 90/91 | |
|---|---|---|---|---|---|---|---|---|---|
| | Sales (Rp. Million) | Added Value (Rp. Million) | Net Profit (Rp. Million) | No. of Employee (Number) | Sales per Employee (Rp.1,000) | Added Value per Employee (Rp.1,000) | Inventory Turnover (Days) | Sales (%) | Net Profit (%) |
| HMT Total | 7,055.6 | 3,379.8 | 160.9 | 28,145 | 251 | 120 | 147 | 14.9 | 13.3 |
| Machine Tool Business Group | 2,848.8 | 1,482.2 | 3.0 | 14,622 | 195 | 101 | 169 | 18.1 | -42.1 |
| MTB | 584.4 | 336.7 | -68.7 | 3,556 | 164 | 95 | 231 | 8.2 | - - |
| DCB | 83.7 | 45.1 | 9.3 | 207 | 404 | 218 | 173 | 19.7 | 3.8 |
| MTP | 387.9 | 193.1 | 13.7 | 2,280 | 170 | 85 | 159 | 11.2 | -16.8 |
| MTK | 467.0 | 249.7 | 11.9 | 2,368 | 197 | 105 | 116 | 22.2 | 36.6 |
| PMK | 114.5 | 64.3 | 16.0 | 527 | 217 | 122 | 64 | 18.1 | 87.0 |
| MTH | 728.3 | 280.1 | -24.3 | 2,562 | 284 | 109 | 159 | 33.5 | 5.9 |
| PRH | 193.1 | 96.7 | 36.2 | 498 | 388 | 194 | 152 | 31.1 | + + |
| MTA | 160.2 | 108.2 | -44.2 | 1,411 | 114 | 77 | 199 | 11.8 | - - |
| HMB | 58.0 | 47.9 | 12.1 | 424 | 137 | 113 | 185 | 6.5 | 0.0 |
| Other | 71.7 | 60.4 | 41.0 | 789 | 91 | 77 | - | - | - |
| Watch Business Group | 2,099.7 | 1,211.6 | 77.4 | 7,871 | 267 | 154 | 183 | 11.7 | -14.2 |
| WFB | 499.8 | 346.9 | 15.4 | 2,665 | 188 | 130 | 143 | 16.1 | -7.4 |
| WFS | 57.0 | 34.0 | 0.0 | 963 | 59 | 35 | 343 | -13.3 | - |
| WFT | 1,008.4 | 499.5 | 81.6 | 1,995 | 505 | 250 | 188 | 17.3 | -1.0 |
| WFR | 457.4 | 240.3 | -64.6 | 1,257 | 364 | 191 | 190 | 44.1 | -2.4 |
| ANC | 11.0 | 5.4 | -9.7 | 162 | 68 | 33 | 904 | -45.2 | - - |
| Other | 66.1 | 85.5 | 54.5 | 829 | 80 | 103 | - | - | - |
| Agricultural M. Business Group | 1,884.2 | 535.9 | 245.4 | 3,409 | 553 | 157 | 79 | 15.1 | 45.7 |
| TRP | 1,859.8 | 521.6 | 245.3 | 3,261 | 570 | 160 | 73 | 15.3 | 46.2 |
| PMU | 24.4 | 14.3 | 0.1 | 148 | 165 | 97 | 422 | 3.0 | -32.2 |
| Lamp | 222.9 | 120.0 | -62.3 | 1,852 | 120 | 65 | 174 | 12.6 | -0.7 |
| LMH | 222.9 | 120.0 | -62.3 | 1,852 | 120 | 65 | 174 | 12.6 | -0.7 |

Fig. VI-1-1 Present Business Groups of HMT

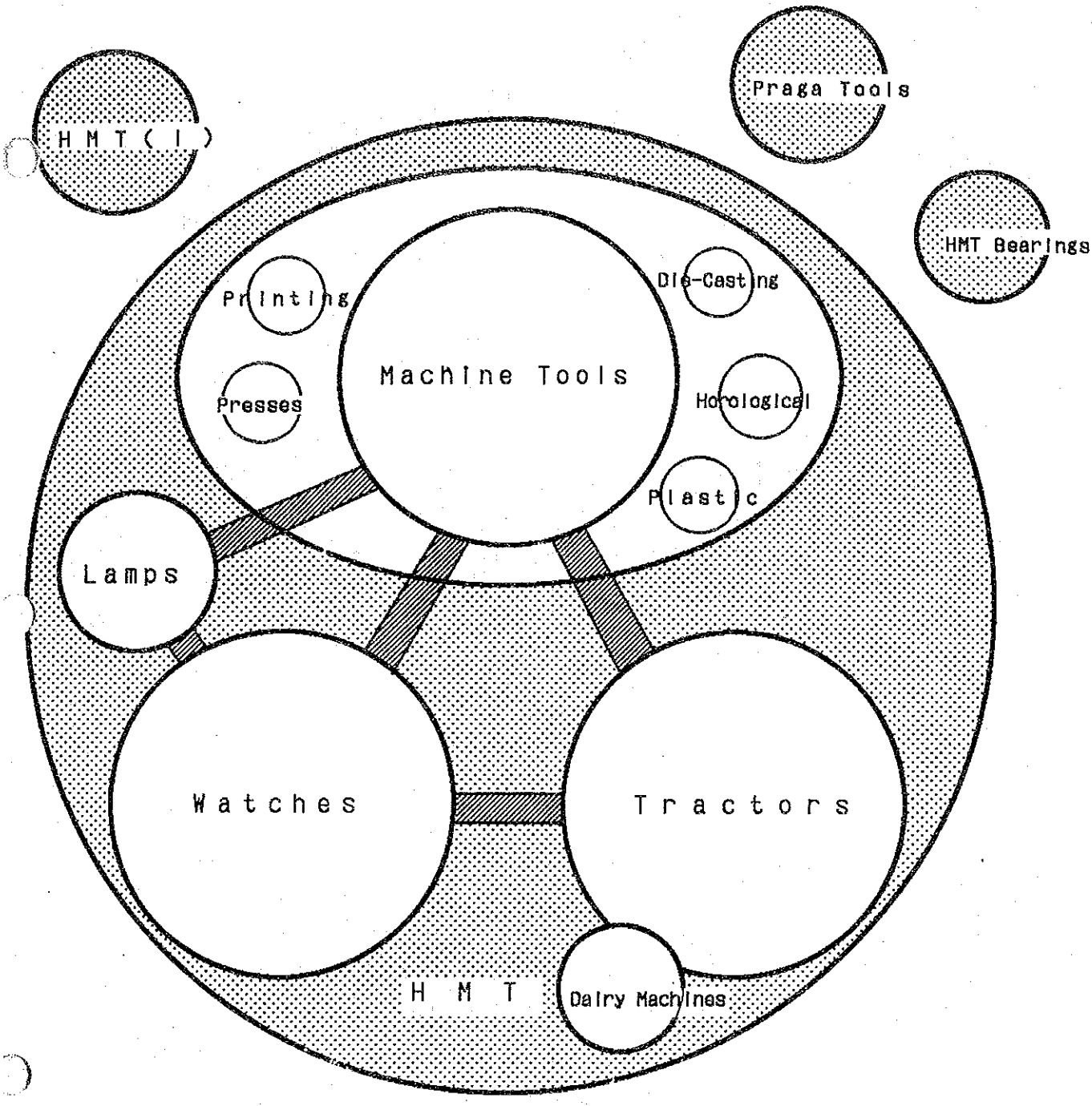


Table VI-1-2 Indicators of Market Attractiveness and HMT Positioning by Product Group

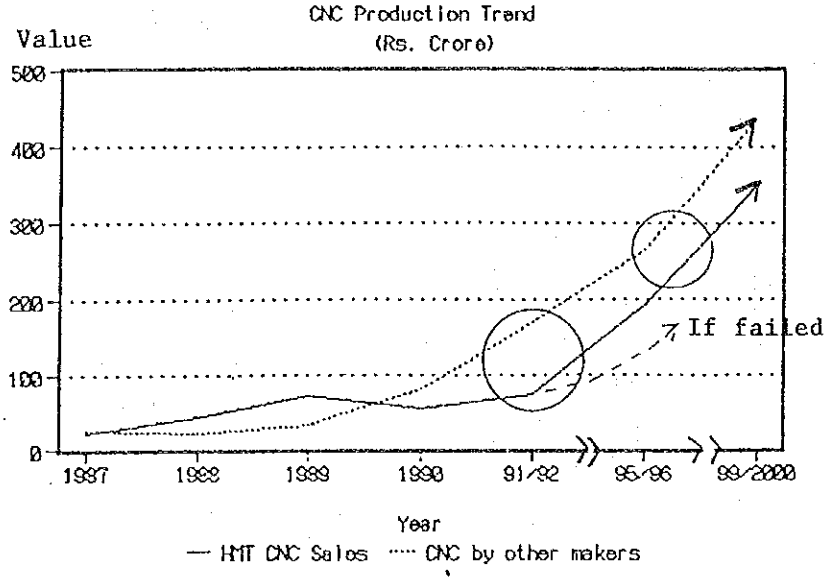
| Product Group | Market Size (Rs.Mil.) (At Present) | HMT Sales (Rs.Mil.) (1990/91) | HMT Sales Growth (85/86-90/91) | HMT Profit (Rs.Mil.) (1990/91) | HMT Profit Turnover Ratio (%) (1990/91) | HMT Market Share (%) (1990/91) |
|---|---|---|---|---|---|---|
| Machine Tools | 9,408 | 3,139 | 17% | -86.6 | -2.8 | 33% |
| Die-Casting Machines | 30 | 28 | -10% | 21.9 | 22.9 | 90-95% |
| Plastic Molding Machines | 960 | 68 | 80% | | | 7% |
| Presses | 390 | 175 | 18% | 36.2 | 20.7 | 45% |
| Printing Machines | 460 | 127 | 31% | 16.0 | 12.6 | 28% |
| Tractors | 17,000 | 2,061 *3 | 15% | 224.9 | 10.9 | 12% |
| Dairy Machines | 1,500 *1 | 35 | 3% | -0.1 | -0.0 | 2% |
| Watches | 10,000 *2 | 2,478 | 12% | 72.8 | 2.9 | 25% |
| Lamps | 5,600 | 237 | 13% | -83.9 | -35.3 | 4% |
| Bearings | 8,200 | 305 | 14% | 15.8 | 5.2 | 4% |

*1 Including unorganized sector production
*2 Including imports
*3 Including sales tax

Table VI-1-3 Evaluation of Market Attractiveness and HMT Positioning by Product Group

| | Market Size | Market Potential (Growth Rate) | Profit-ability | Domestic Market Share | Degree of Competition |
|---|---|---|---|---|---|
| Machine Tools | Large | High | Low | Large | Medium |
| Die-Casting Machines | Very Small | Very Low | Very High | Very Large | Very Mild |
| Plastic Molding Machines | Small | Very High | Medium | Very Small | Severe |
| Press Machines | Small | High | Very High | High | Mild |
| Printing Machinery | Small | Very High | High | Medium | Severe |
| Tractors | Very Large | High | Very High | Medium | Severe |
| Dairy Machine | Medium | Medium | Low | Very Low | Severe |
| Watches | Large | High | High | High | Medium |
| Lamps | Large | Very High | Very Low | Very Low | Very Severe |
| Bearings | Large | Very High | Medium | Very Small | Very Severe |

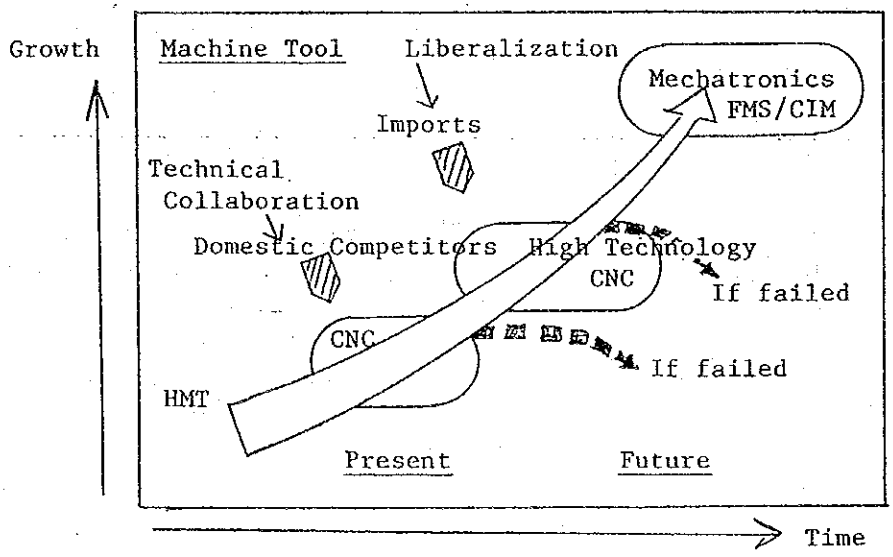
Fig. VI-1-2 Competition of Core Businesses in Growing Segments

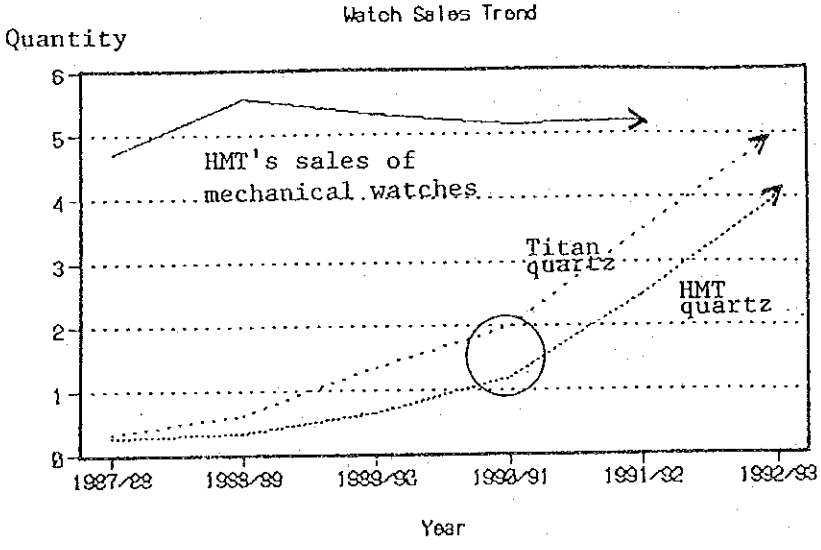



* HMT's share is decreasing in CNC machines.

* HMT plans to increase CNC sales, keeping pace with the market growth.

* This has a significant importance for the futu HMT's machine tool business.



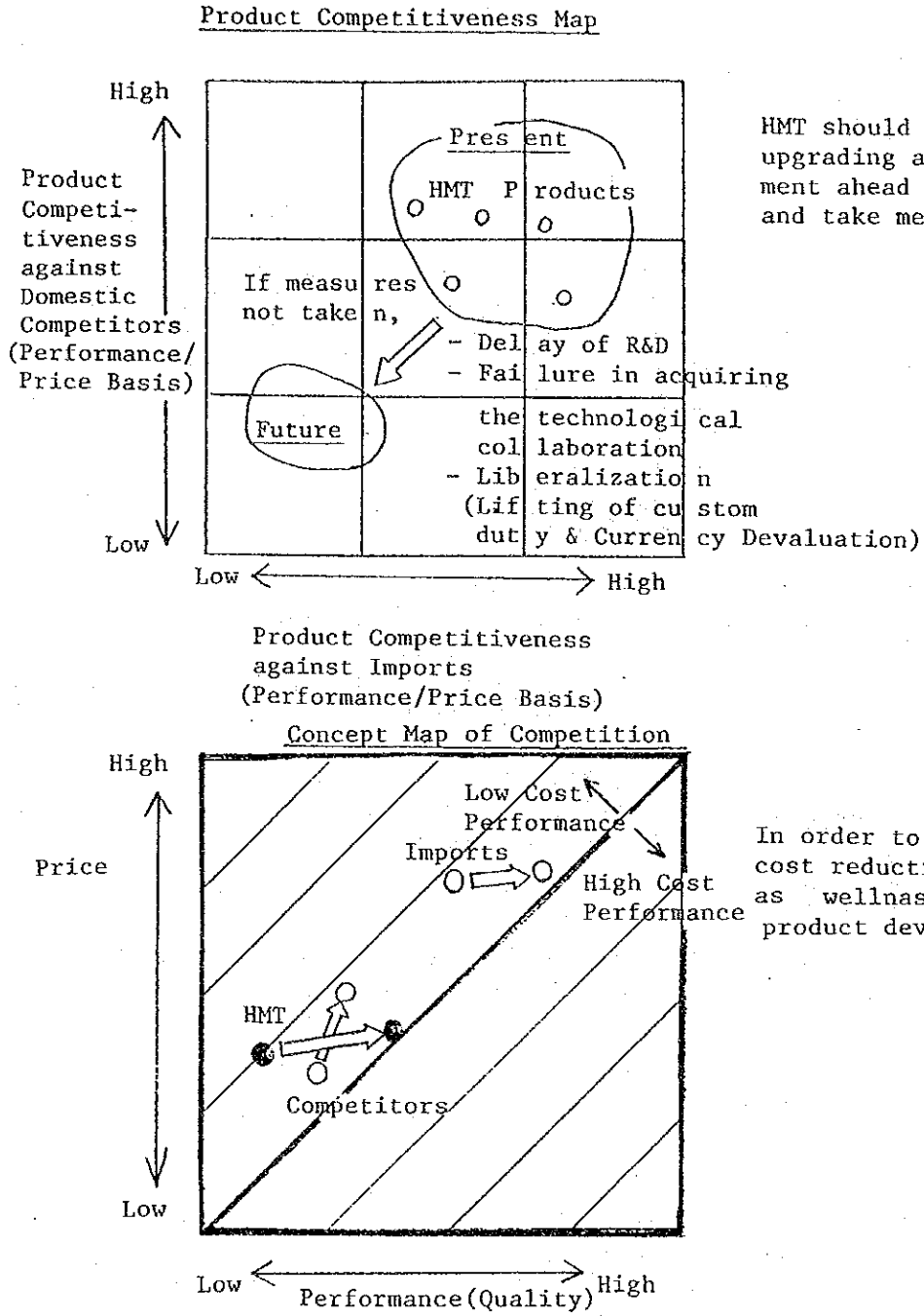




* HMT's sales of mechanical watches has been stagnated.

* In the quartz watch bus ss, HMT lags behind Titan.

* If HMT can not take measures to reverse its position in the quartz watch business, the market leadership will be firmly with Titan.

Fig. VI-1-3 Concept of Product Competitiveness




HMT should advance its product upgrading and product development ahead of domestic competitors, and take measures against imports.

In order to overcome competitors, cost reduction is of high importance as wellnas product upgrading and product development.

C. Direction of Future Business-Mix

Based on the above, the following can be pointed out as the direction of the future product-mix of HMT.

(1) The machine tool business shall be the driving force of the company's growth and the source of business diversification. (See Fig.VI-1-4.)

(2) The consumer goods business, especially watches, shall be led by an appropriate organizational culture and strategic norms which are quite different from those for in the engineering goods business.

(3) The basic mode of management at HMT has been production-oriented. However, a more technology-oriented style will be required for engineering business and a more market-oriented style for consumer goods business.

(4) More dynamic organization for mobilizing internal resources and acquiring technologies is required in bringing up new businesses as well as in competing with strong competitors in the existing core businesses. Strong leadership by top management should be established in each business group.

Stemming from the above, the following guidelines are suggested for the future management of HMT's business-mix.

(1) The capital goods business group and consumer goods business group shall be the two core business groups in HMT.

The capital goods business group will consist of the following businesses;

- Machine tools
- Industrial machinery (i.e.,printing machinery, presses, plastic machines, food processing machinery, etc.)
- Agricultural machinery (Tractors, etc.)
- New businesses

The consumer goods business group will consist of the following groups;

- Watches
- Lamps
- New businesses

The establishment of the most appropriate organization, including management system and corporate culture, for each business category is essential.

In the area of capital goods business, the pursuit shall be the engineering products of mechatronics technologies.

(2) The engineering components business group and service business group shall be new sub-businesses-groups.

Engineering components business group will consist of the following businesses;
- Castings
- Forgings
- Bearings
- New businesses

The service business group will consist of the following businesses;
- Trading
- Software
- Engineering consulting
- Maintenance service, etc.

(3) Clear criteria of withdrawal should be established.
For example,
- Losses or low profitability
- Small market share
- Little possibility of market growth
- Comparison with the expected ROI of new business opportunity

(4) Diversification through active joint ventures should be examined in the areas where HMT's business foundation is weak in terms of technology, sales network, etc., especially with foreign collaborators, electronics makers, and industrial machinery manufacturers.

(5) Acquisition of high technologies in the fields of

"mechanics" and "electronics" to realize a high level of competition in "mechatronics" technology.

(6) Technical collaboration should be actively pursued in the priority areas.

The proposed constitution of HMT business groups in the future is illustrated in Fig. VI-1-5.

In line with the guidelines mentioned above, the existing businesses can be positioned as shown in Table VI-1-4.

For each existing business group, the following directional shift of products is recommended in general.

Recommended Future Direction of Existing Business Group

Machine Tool Business Group
- -To move forward to high-technology products in each product group, such as CNC machine tools and 4-color printing machinery.
- -To advance to new production technologies, such as FMC, FMS, CIM (See Fig. VI-1-6)
- -To diversify into promising relevant machinery businesses
- -To separate units manufacturing various kinds of industrial machinery
- -To make foundries an independent business unit and start to sell castings to outsiders

Tractor Business Group
- -To expand the production of tractors and improve the position in the market
- -To separate the Dairy Machinery Unit

Watch Business Group (to be a core unit of consumer goods business group)
- -To increase production of quartz watches
- -To improve the position in quartz watches market
- -To diversify into the fields of high-tech consumer products

Lamp Business Group (to be a part of consumer goods business group)

-To focus on high-value added products, i.e., FTLs, HPSVL, MVL, etc.

The future business sizes of existing businesses are shown in Table VI-1-5. In this table, the sizes of existing businesses in 1999/2000 are forecast from the viewpoint of long-term corporate planning.

To supplement the sales expected for 1999/2000, new business areas should be opened up in addition to creating new products stemming from the sphere of existing business groups. (See Fig. VI-1-7)

Diversification by adding related products to existing products is expected in the following areas.

- Total manufacturing systems to consist of CNC, FMS, FA, robots, and transfer lines
- Diesel engines
- Calender machines
- Food processing machines

In addition, one promising area of new businesses is the casting business, which shall constitute the engineering components business group together with bearings, forgings, etc.

In line with the accumulation of technologies concerning electronics and mechatronics, new business opportunities will be identified such as:

- Industrial machinery which is new to HMT,
- Electronic component manufacturing machinery,
- Software development,
- Engineering service, and
- New material processing.

The concept of product development and diversification is illustrated in Fig. VI-1-8. The concept of new technologies is shown in Fig. VI-1-9.

Fig. VI-1-4 Diversification Process of HMT

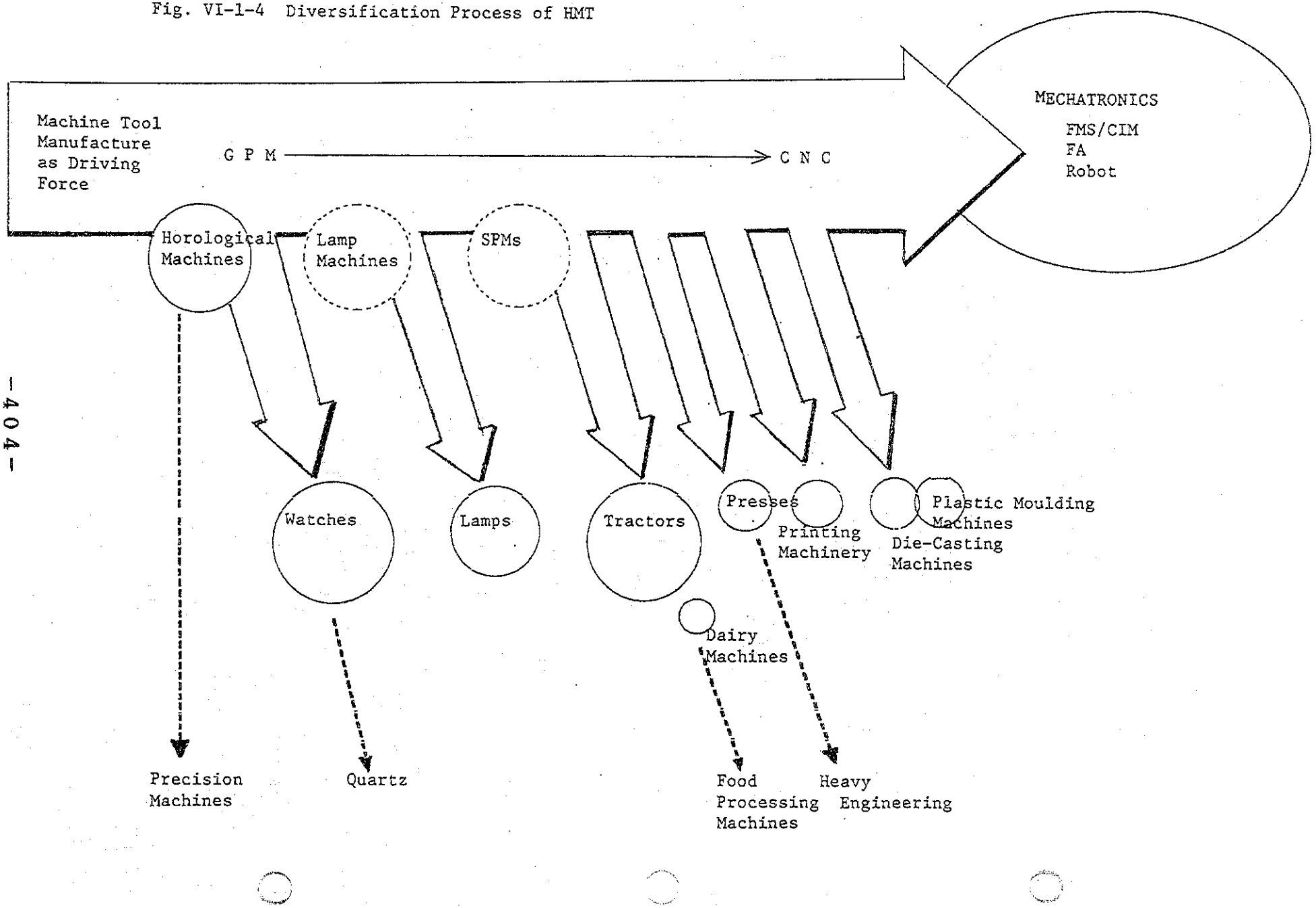


Fig. VI-1-5 Future Business Groups of HMT

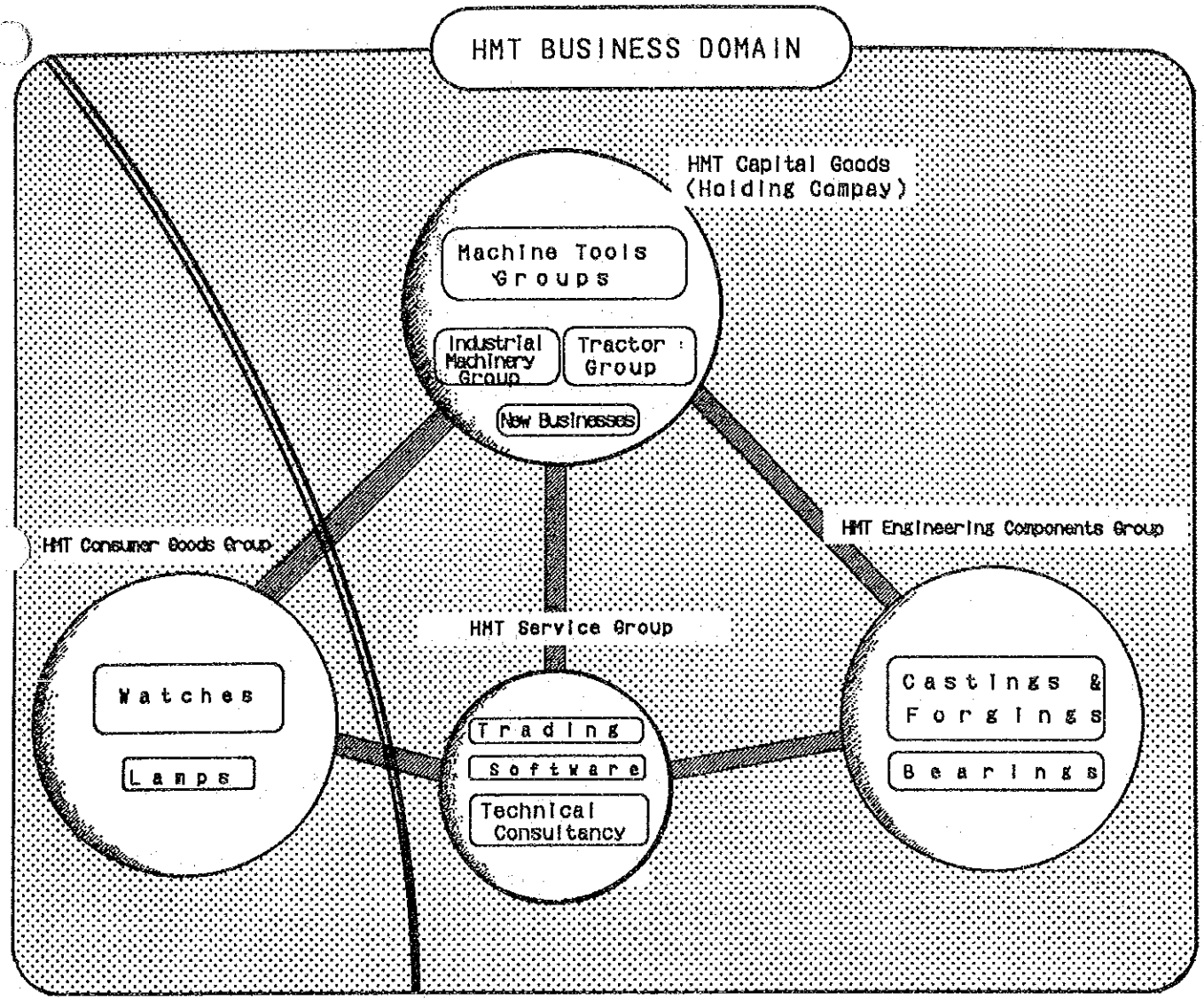


Table VI-1-4 Positioning of Existing Businesses

| Business | Positioning |
|---|---|
| Machine Tools | The most important core business of HMT. Source of technologies. Driving force to diversify into industrial machinery business.<br><br>To aim at active growth by positive technology upgradation, restructuring of products, and product development.<br><br>To take drastic measures to improve loss-making operations.<br><br>To continue CNC systems manufacture within the group. |
| Die-Casting Machines | One of the satellite businesses of machine tools at present.<br><br>To maintain the present position in the market.<br><br>To aim at concentric diversification. |
| Plastic Moldings | One of the satellite businesses of machine tools at present and to be in the industrial machinery group.<br><br>To aim at market penetration into the domestic market.<br><br>(Note: Technological upgrading is essential to survive in the market) |
| Presses | One of the satellite businesses of machine tools at present and to be in the industrial machinery group.<br><br>To be upgraded to be an integrated heavy machine shop. |
| Horological Machines | To aim at concentric diversification into the precision machinery area.<br><br>To rename the business as Precision Machinery Division. |
| Printing Machinery | One of the satellite businesses of machine tools at present and to be in the industrial machinery group. |

| | |
|---|---|
| | To aim at active growth by product development. |
| Tractors | One of the core businesses of HMT. |
| | Active growth policy to be taken. |
| | To aim at product development and market penetration. |
| Dairy Machines | One of satellite business of tractor business at present and to be in the industrial machinery groups. |
| | To rename the business as Food Processing Machinery Division. |
| | To aim at concentric diversification in the fields of food processing. |
| Watches | One of the core businesses of HMT. Key business in consumer goods business group. |
| | To obtain the leading position in the market. |
| | To aim at conglomerate (unrelated) diversification. |
| Lamps | Loss-making business and to be in the consumer goods business group. |
| | To enlarge the production of high value-added product groups in tie-up with other leading manufacturers in the field. |
| Bearings | One of the subsidiaries and to be in the engineering components group. |
| | To aim at market penetration in tie-up with world-class manufacturers in the field. |

Fig. VI-1-6 Technological Development Path of Machine Tools

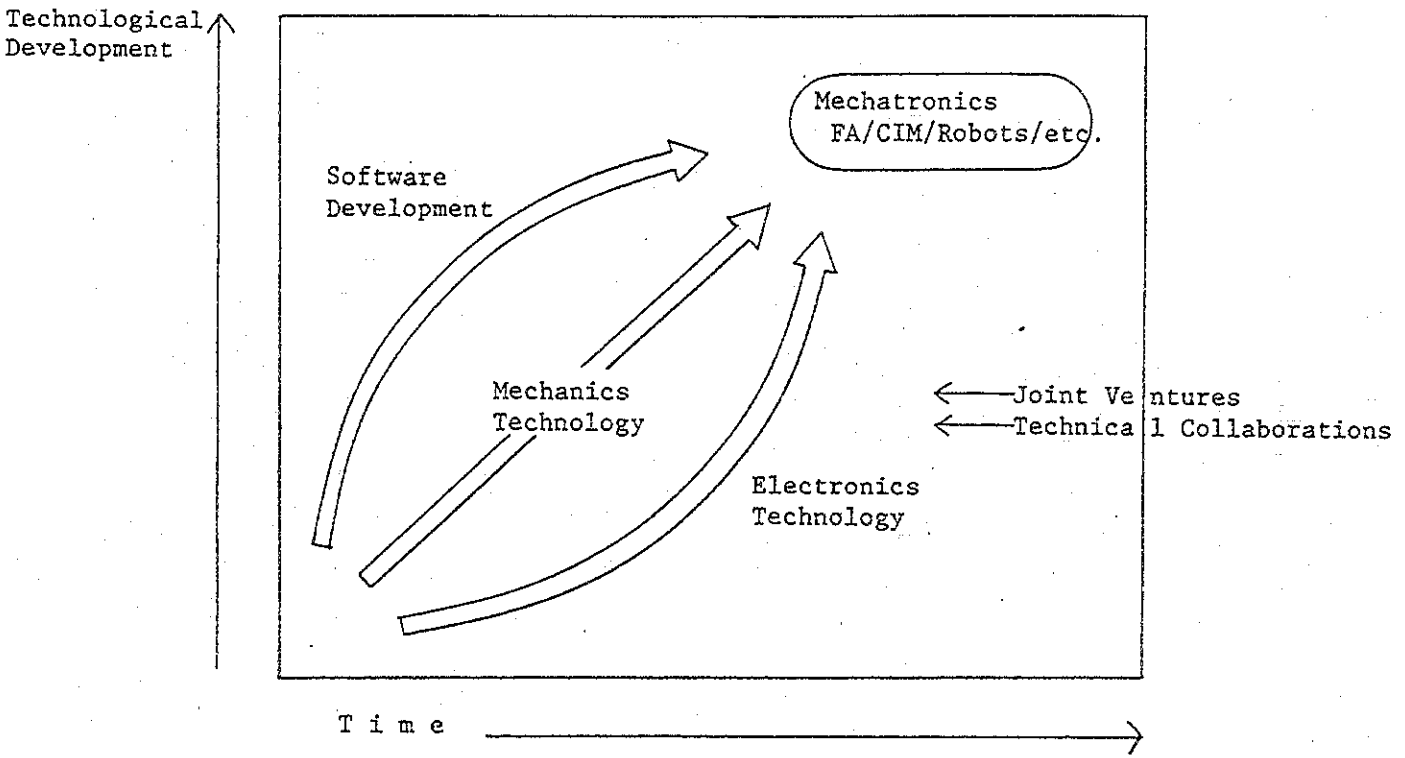
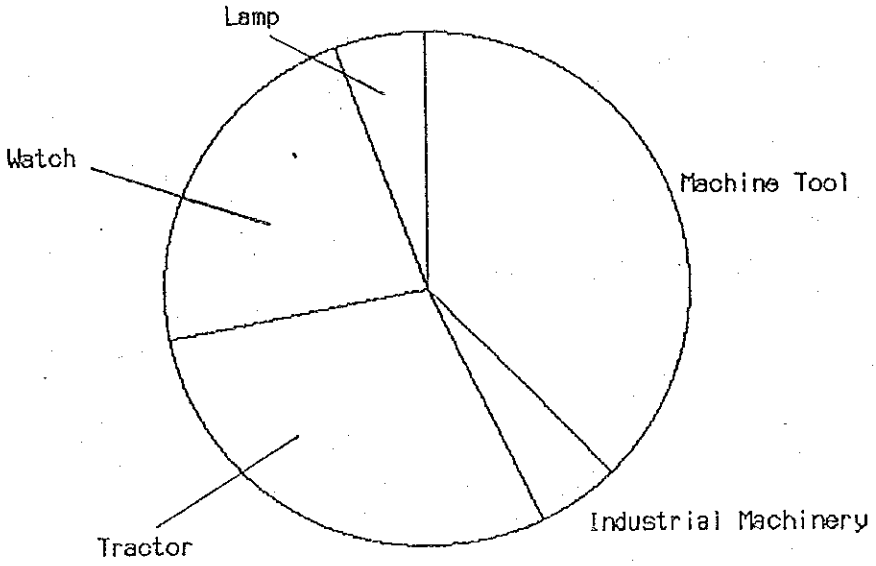


Table VI-1-5 Composition of Future Business Mix of HMT Group

Unit: Rs. Million

| | 1990/91 | 1996/97 | 1999/2000 |
|---|---|---|---|
| Machine Tools B.G. | 3,139 | 7,373 | 11,437 |
| - HMT | 2,633 | 6,262 | 9,666 |
| - Praga Tools | 508 | 1,110 | 1,770 |
| Tractors B.G. | 1,886 | 5,384 | 9,412 |
| Consumer Products B.G. | 2,715 | 6,267 | 8,138 |
| - Watches | 2,478 | 5,276 | 6,921 |
| - Lamps | 237 | 990 | 1,218 |
| Industrial Machinery B.G. | 422 | 3,687 | 8,083 |
| - Press Machines | 175 | 598 | 1,106 |
| - Printing Machinery | 127 | 590 | 1,233 |
| - Die Casting/Plastic Machinery | 85 | 375 | 672 |
| - Food Processing Machinery | 35 | 111 | 249 |
| - Other New Areas | 0 | 2,013 | 4,822 |
| Engineering Components B.G. | 562 | 2,539 | 4,911 |
| - Castings | 257 | 921 | 1,482 |
| - Bearings | 304 | 1,538 | 3,320 |
| - Ball Screws | 0 | 79 | 109 |
| TOTAL | 8,728 | 25,250 | 41,982 |

Fig. VI-1-7 Future Business Mix of HMT (1999/2000)
Based on Existing Business Line




Note: Existing subsidiaries and future new business potentials are not included.

Fig. VI-1-8 Product Development Matrix

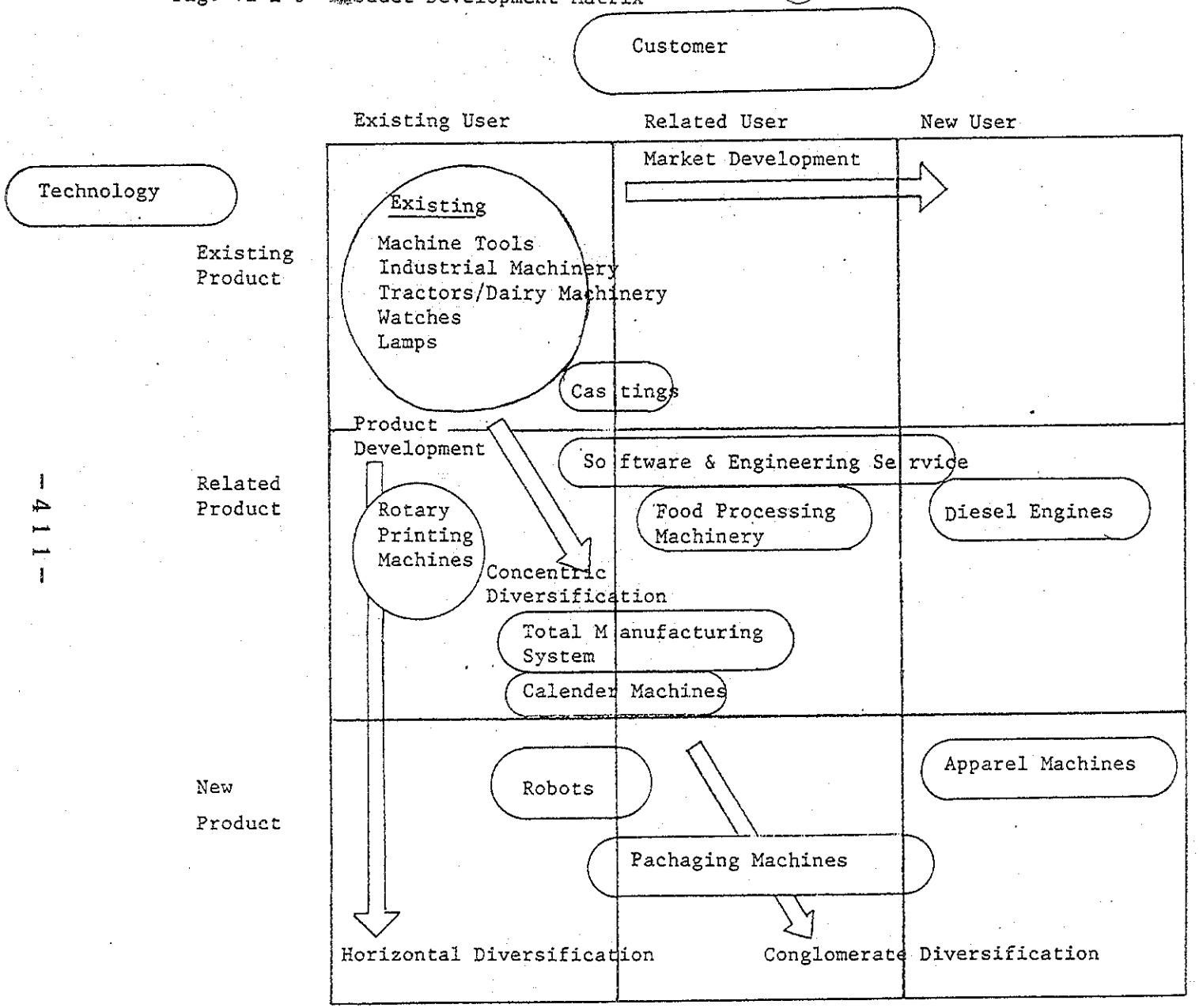
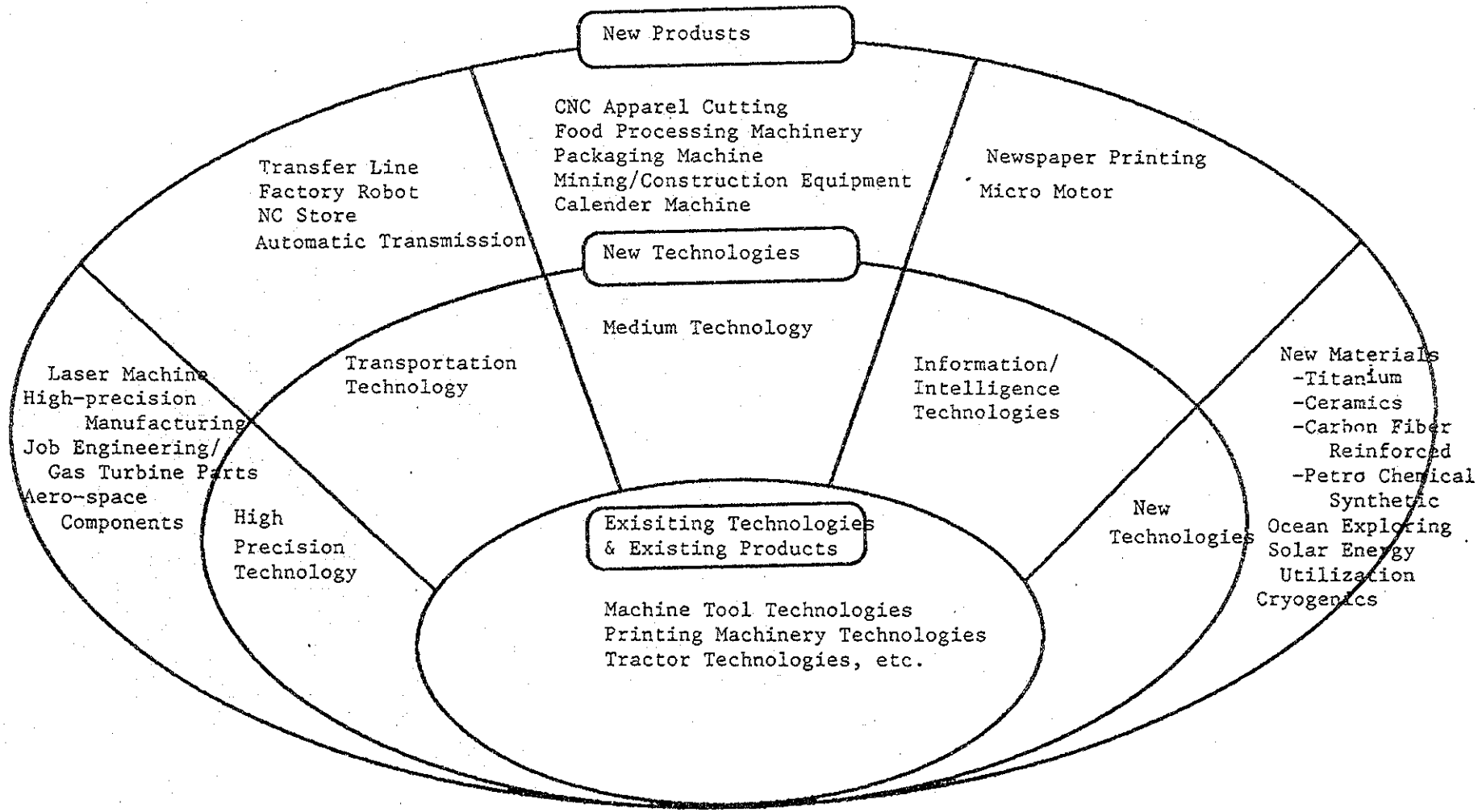


Fig. VI-1-9 New Technologies Related to Existing Technologies



## VI-2. Direction of Organization and Human Resource Management Systems Restructuring

### A. Basic Concepts of Organizational Restructuring

Any proposal for organizational restructuring has to be made taking the following concepts into consideration:

1) Organizational restructuring would become effective only when it is associated with appropriate reform in management systems such as personnel management and corporate planning;

2) The implementation of any kind of organizational restructuring is associated with resistance and temporary dislocation. Thus, they can be implemented only when they have merit surpassing the above problems, and when a consensus within the organization is obtained;

3) There are no perfect organizational structures or management systems. The major emphasis should be placed on their conformity with the future direction of management and their strategies; and

4) Organizational structures and management systems have to be flexibly modified according to the shift in the business environment or other internal aspects. Thus, the new organizational structure or management system should not be considered as eternal.

## B. Direction of Organizational Restructuring

### 1. Major Objectives of HMT Organizational Restructuring

(a) Achievement of Market-oriented Business Operations

The Indian market is going to shift from a protected seller's market into a more competitive buyer's market. In order to make HMT more competitive both in the domestic and international markets, the organizational structure has to be reformed so as to achieve more market-oriented operations (based on customer's needs or requirements) rather than production-oriented operations.

(b) Development of Better HRD Climate

In order to enhance the working morale of employees and to make the organization quickly to market demand, the organization of HMT, which is rather bureaucratic at present, must be reformed. A new organization is required that gives enough incentive and reward for front-line workers to perform to their fullest capabilities. This would contribute to the newly recruited and also prevent the out-flow of capable employees.

(c) Promotion of Strategic Management

While implementing drastic delegation of powers aimed at the enhancement of working morale among the employees, HMT's new organization should be established so that it could pursue strategic management which would achieve the optimum allocation of internal resources. For carrying out the strategic missions, the strategic vision must be clearly defined.

2. Outline of Proposed Measures

(a) Measures to Achieve Market-oriented Business Operations

i. Reform of the Unit as a Profit Center

- The basic profit center should be shifted from the present units (each factory) to the business groups. The marketing functions are all attached to the Directorate of business groups.

- Each unit under a business group should be a cost center, and their responsibilities should be confined to manufacturing products which are specified in quality, cost and delivery time from the Directorate of business groups.

- The functions of the Directorate of business group should be enlarged.

- The above measures would strengthen the marketing function of each business group, and enable it to build-in market-oriented production planning, product development and after-sales services.

ii. Delegation of Powers to Each Business Group

- Most of the management decision powers should be delegated from Corporate Headquarters (CHQ) to each business groups, and the reporting obligations from business groups to CHQ should be minimized.

- The top management of each business group should be headed a Director from CHQ.

- The above measures designed to increase the autonomy of each business group would motivate the employees of each group, enable each group to react flexibly to changing market needs, and enable CHQ to concentrate their efforts on long-term and strategic management decisions.

iii. Modification of Career Development Programs (CDP) and Promotion Criteria

- Based on the modified CDP, more chances should be given for factory workers and engineers to interact with customers and dealers and to establish better communication networks with marketing staff.

  a. Job rotation of factory employees to such sections as sales, after-sales services or planning

  b. Participation of factory employees in meetings with dealers or during customers' visits

- In promotion criteria to managers of business groups or units, higher emphasis should be given to marketing knowledge and interests.

iv. Marketing Oriented Employment and Job Assignment

- New recruitment of marketing experts

- Shift of factory employees to marketing-related sections.

v. Introduction of Product Manager System

- For those specific product groups within a business group which need integrated control from sales and production to delivery, appointment of product managers would be recommended.

(b) Measures to Establish Active Working Environment

i. Simple Management Structure and Delegation of Powers

- The relationship between management posts and ranks for pay scales should be made more flexible, and the hierarchy should be delayered with 3 levels at CHQ and Business Groups and 4 levels at the Units.

- The management posts should be re-allocated according to actual needs by function and the establishment of new posts for promotion should be avoided. The Ranks RSI to X will be for the purpose of career growth and Positions for hierarchical levels.

- The powers which are at present excessively concentrated in the Directors or Unit General Managers should be drastically delegated to lower management posts in terms of 3 position levels at CHQ and Business Groups, and 4 position levels at the Units.

- The above measures would make the functions and responsibilities of each manager clearer and make quicker decisions possible.

ii. Re-organization of Business Groups

- Divisions such as DCB, PMK, PRH in the Machine Tool Business Group and DMU in the Agricultural Business Group should be separated from the Business Group.

- The foundry attached to each machine tool factory should be consolidated and one independent unit should be established.

- An independent business group, viz; the Industrial Machinery Business Group, consisting of die casting, printing machinery, press, plastic machinery and dairy machinery should be newly established.

- The Watch Business Group, as well as the Lamp Unit, which are both producing consumer products, should be separated from the main HMT into an autonomous subsidiary of HMT.

- As for the Machine Tool and Tractor Business Group, they should further be sub-divided into smaller and independent sub-divisions.

- The above measures would make major business groups concentrate on their own business operations, while enhancing the working morale of the employees in other relatively small units by giving them higher autonomy.

- The Personnel Directorate may be re-organized as HRD Directorate.

iii. Review of Evaluation and Promotion Systems

- The personnel evaluation system for promotion should also be applied to factory workers. In the evaluation criteria, items such as team spirit, "kaizen" efforts or problem solving capabilities should be given high points.

- The difference in promotion eligibility periods between high- achievers and average-achievers should be made clearer.

- A new performance improvement scheme should be introduced, which should take into consideration the Merit Rating/Performance Appraisal. The merit-rating should not be based on the standard hour output but on such evaluation criteria which emphasize target achievement, assuming challenges in new areas or acquisition of multiple skills.

- The above measures would contribute not only to enhance the morale of the workers but also to strengthen the controlling capability of supervisors over workers.

iv. Creation of Harder Competition within the Organization

- The career growth pace for the high achievers should be faster, and such fast track for high achievers should also be introduced beyond PS VI as well.

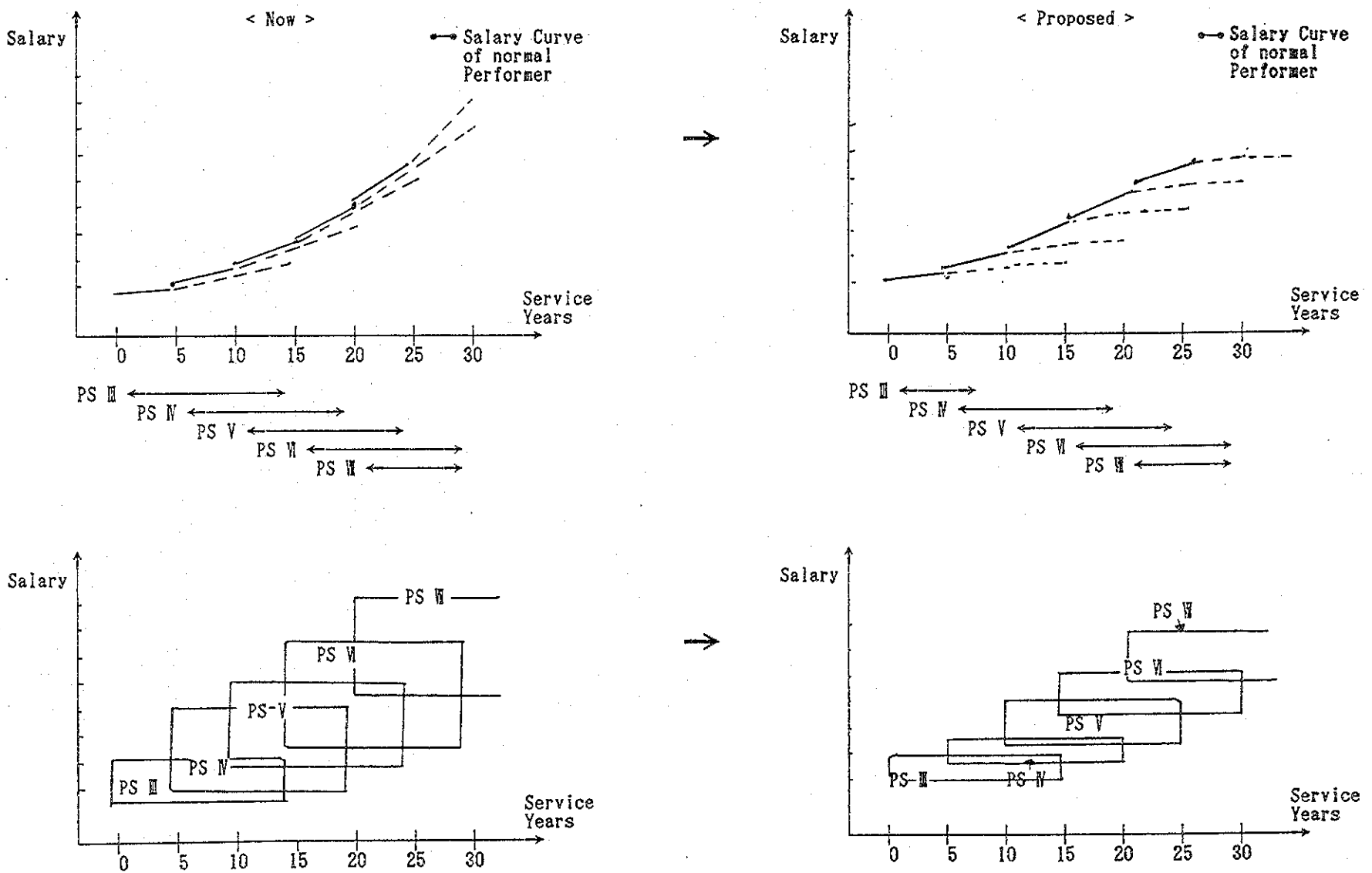
- The academic qualifications should be considered for recruitment; putting higher emphasis on performance for promotion.

- The above measures would increase the competition among employees after their entry.

v. Establishment of Closer Links between Corporate Profit and Employees Compensation

- The personnel remuneration system should be revised with the major emphasis on the following (Refer to Fig. VI-2-1):

Figure Ⅵ－2－1　Concept of new personnel remunaration system



a. The difference of salary and wage levels between positions should be introduced.

b. For the above purpose, the increase in rates of salary at the time of promotion should be made higher, while the annual increase rates within the same position should be made more moderate.

- The individual incentive system based on the standard hour should be abolished. Instead, a new group incentive system based on both profit contribution and improvement compared to the previous year should be introduced.

- A new incentive scheme which covers all employees (in spite of the existing regulatory limit based on the annual basic salary) should be established. The criteria should mainly be based on the corporate or section profit as well as the contribution of each employee. For those units which bear continuous losses, however, the efforts for loss reduction should also be taken into consideration.

- In order to share the benefits of growth of the company with the employees, a Mutual Benefit Trust Fund Scheme, which would utilize the amounts contributed by employees to purchase shares of HMT from the Government of India, should be established.

vi. Extension of Human Resource Development

- The training schemes for employees should be expanded by renovating existing training facilities at each unit, establishing a Mechatronics Training Center or making more use of outside training facilities. There should be a strong functional relationship between the Training Centers of the Units and MDI.

- A regular Job-rotation scheme aimed at acquiring multiple skills and experience should be established.

- A self-declaration scheme by each employee for the purpose of career development should be introduced.

- Jobs which are easy for aged workers to perform should be identified and the reallocation of job assignments should be promoted.

- Worker Entrepreneur tiny Ancillary Complex (WETAX) scheme which has already been proposed by HMT should be implemented. The scheme should expand its coverage from the establishment of parts and equipment sub-contractors to that of service functions such as after-sales service, distribution, technical services or engineering training.

(c) Measures to Promote Strategic Management

i. Delegation of CHQ Powers to Business Groups

- By delegating most of the powers to each business group, the staff members of CHQ can concentrate more on corporate strategic matters.

ii. Strengthening Corporate Planning Capabilities

- The Planning Department at CHQ should be enlarged so that it can establish closer ties with each unit or business group planners and can coordinate all the plans from each unit and business group.

- A stronger monitoring system of the progress of business plans of each unit or business group should be established within the Planning Department and it should have stronger ties with MIS.

- A new function emphasizing the continuous search for new business development areas should be attached to the Planning Department.

iii. Establishment of an Evaluation System for New Development Activities

- In addition to their contribution to profit, the evaluation system for the performance of each unit or business group should include their contribution to new business development efforts.

iv. Reallocation of functions between CHQ and each Directorate of a business group

- The functions to be added or expanded in CHQ and in each Directorate of a business group are summarized and shown in Table VI-2-1.

- In CHQ, the Information Planning Department and the Technical Department are newly established.

- In each Directorate of a business group, the Procurement Section, the Production Planning Section and Marketing Section should be established.

3. Details of Profit Center Reforms

(a) Functions to be assigned to each Directorate of a business group

i. Marketing Section and Sales Offices

- Sales price decisions and price negotiations
- Sales promotion planning and promotion activities
- Distribution planning

ii. Technical Section

- Production technology development
- Quality control improvement
- New product development planning

iii. Production Planning Section

- Allocation of production orders for each unit
- Capital expenditure planning
- Annual production planning

iv. Procurement Section

- Central procurements of parts and materials for each unit

Table VI-2-1. The Functions to be Added or Expanded in CHQ and Each Directorate of a Business Group

| | CHQ | Directorate of BG |
|---|---|---|
| Planning | - Establishement of a basic guidelines for planning<br>- Examination of each business group or unit corporate plan<br>- Coordination and adjustment (Allocation of internal resources)<br>- Review and control of the progress of the plan | - Market research and market projections<br>- Establishment of business group based corporate plan and basic strategy |
| HRD Management | - Total corporate manpower planning<br>- Recruitement and HRD planning<br>- IR strategies<br>- Training and Development at macro levels | - Manpower planning and HRD planning in BG<br>- Guidance and training on personnel evaluation measures<br>- IR matters of entire Business Group |
| Management Information System | - Planning of total systems<br>- Integration of data-base<br>- Guidance for systems planning | - Guidance for each unit with the support of CSD and CHQ |
| Finace Management | - Total Financial Planning<br>- External Resource Mobilization<br>- Centralized Cash Management<br>- Audit | - Authorization of expenditure of each unit based on annual budget |
| Technology | - Centralized design technology development (CAD/CAM)<br>- Training of technology (Mechatronics Center)<br>- Promotion of technical tie-ups (Negotiation and evaluation) | - Product development planning<br>- Guidance of QC activities of each unit<br>- Guidance for the development of production technology |
| Production and Procurement | - CHQ procurement cordination | - Adjustment of production items among units<br>- Capital expenditure planning<br>- Annual production planning<br>- Production schedule adjustment<br>- Central procurement for BG |
| Marketing | | - Sales price decision<br>- Sales promotion planning<br>- Support for sales offices and dealers<br>- Distrib. and inventory control |

(b) Major Functions of each Unit (Factory)

As a cost center the basic functions of each unit would be confined to the following:

- Product production within specified costs
- Product production with specified quality
- Product production within specified delivery time
- Promotion of new product development or product diversification according to the schedule

(c) Expected Effect of the Reforms

i. Higher Emphasis on Market-oriented Business Operations

- The controlling power of the marketing section on production planning, product development and distribution planning would be strengthened.

- Quick marketing decisions would become possible.

- The change in pricing policy from the current cost-plus system to a market-competitive pricing system would become easier.

- With higher autonomy, the morale of the sales force would increase.

ii. Maximum Resource Allocation within Business Groups

- Joint research work, production co-operation and systems integration among units within a business group would become easier.

- Integrated distribution planning could be made.

- Central purchase functions could be strengthened.

- The marketing section would have easier access to such information as product inventories or production schedules.

- Flexible production adjustment among units based on individual operating levels could become easier.

- Extremely uneven distribution of incentives among units would be mitigated.

- The export business could be rationally distributed among units according to their potential.

iii. Concentration of responsibilities of each Unit on Production (Quality, Cost and Delivery - QCD)

(d) Other Related Changes

i. CHQ Procurement Co-ordination

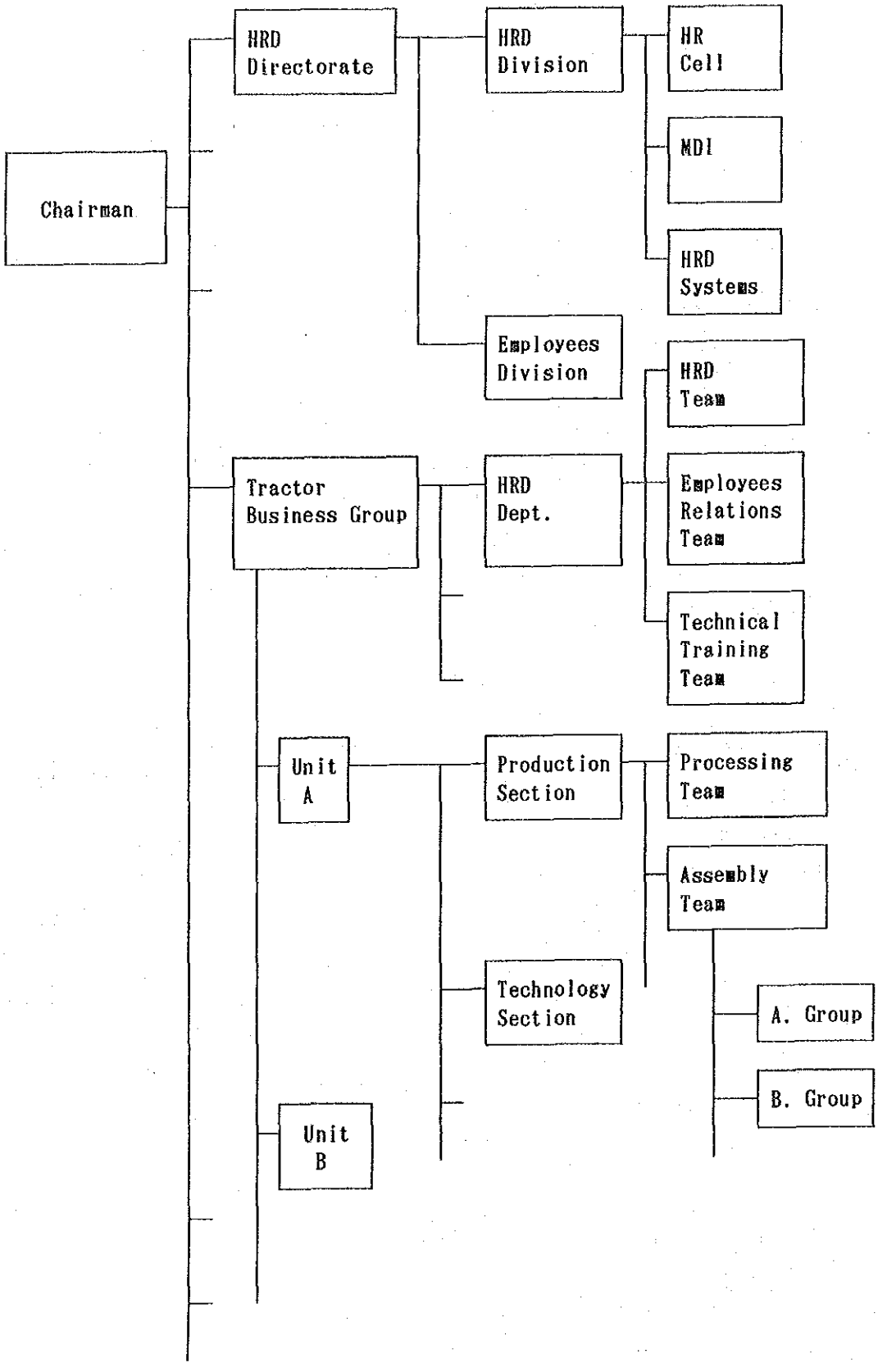
- For those materials that are to be mass-purchased or imported, a CHQ Procurement Coordinator should promote joint purchases among the business groups.

4. Detailed Measures for Simplification of Management Structure

(a) Restructuring of Corporate Hierarchy

The total corporate hierarchy as well as that in CHQ, the Business groups and units should be redesigned according to their roles and functions.
The tentatively proposed new hierarchy is briefly summarized and shown in Fig. VI-2-2.

Fig. VI-2-2. Proposed New Corporate Hierarchy of HMT



(b) Management Positions and Ranks

The ranks of the people who are eligible for each post should be pre-determined. However, the relationship between the two should not be as rigid as the current system in HMT. The tentatively proposed relationship is shown in Table VI-2-2.

Table VI-2-2. Delayering of Hierarchy

<table>
<tr><th colspan="3">Position</th><th rowspan="2">Rank<br>Title</th><th rowspan="2">P S</th></tr>
<tr><th>C H Q</th><th>Business Group</th><th>U n i t</th></tr>
<tr><td rowspan="2">Directorate Chief<br>(D, X)</td><td rowspan="2">Business Group Chief<br>(D, X)</td><td></td><td>Director</td><td>-</td></tr>
<tr><td rowspan="3">Unit Chief<br>(X, IX, VIII)</td><td>E D</td><td>X</td></tr>
<tr><td rowspan="2">Chief, Section<br>(IX, VIII)</td><td rowspan="2">Cheif, Section<br>(IX, VIII)</td><td>G M</td><td>IX</td></tr>
<tr><td>J G M</td><td>VIII</td></tr>
<tr><td rowspan="2">Incharge, Team<br>(VII, VI)</td><td rowspan="2">Incharge, Team<br>(VII, VI)</td><td rowspan="2">Chief, Section<br>(VII, VI)</td><td>D G M</td><td>VII</td></tr>
<tr><td>A G M</td><td>VI</td></tr>
<tr><td colspan="2"></td><td>Incharge,Team<br>(VI, V)</td><td>M</td><td>V</td></tr>
<tr><td colspan="2"></td><td rowspan="2">Leader, Group<br>(IV, III, II)</td><td>D M</td><td>IV</td></tr>
<tr><td colspan="2"></td><td>Officer</td><td>III, II</td></tr>
</table>

(c) Characteristics of the New System and its Expected Effects

i. Characteristics of the New System

- All employees are evaluated on their capabilities, and each is ranked according to the results of their evaluation. The basic salaries are to be linked with each Rank.

- Out of the group of people who are eligible, the Positions with 3 layers of hierarchy at CHQ and Business Groups and 4 levels at the Units should be created. A promotion in Ranks does not necessarily mean a promotion in Position.

- The relationship between Rank and Position is not necessarily one to one.

ii. Expected Effect of the New System

- The delay of promotion due to the lack of a position, or the creation of new posts for qualified employees would be avoided.

- By eliminating the one to one relationship between Position and Ranks, the range of employee choice for a specific Position would be widened.

(d) Other Related Reforms

i. Establishment of a Post Allowance System

- For those assigned to a management post, the application of Post Allowance which rewards the greater responsibilities should be considered.

ii. External Use of Rank Titles

- Along with the management Positions' names, the titles linked with Ranks (at present such titles are GMS, JGMs, DGMs, AGMs or Managers) could also be externally used.

iii. Establishment of New Promotion Criteria which are more closely associated with each employees' capabilities and achievements rather than his service years.

iv. Measures be adopted so as to retain the Optimum Age Structure of HMT

- Offer an attractive voluntary separation scheme and/or promote of early retirement with increased pension benefits.

- Establishment of various kinds of related service companies which make use of the accumulated skills and knowledge of aged employees, such as machine repair companies, technical engineering service companies or technical training companies.

- Promotion of the existing WETAX Development Scheme of HMT

5. Details of Re-organization of Business Groups

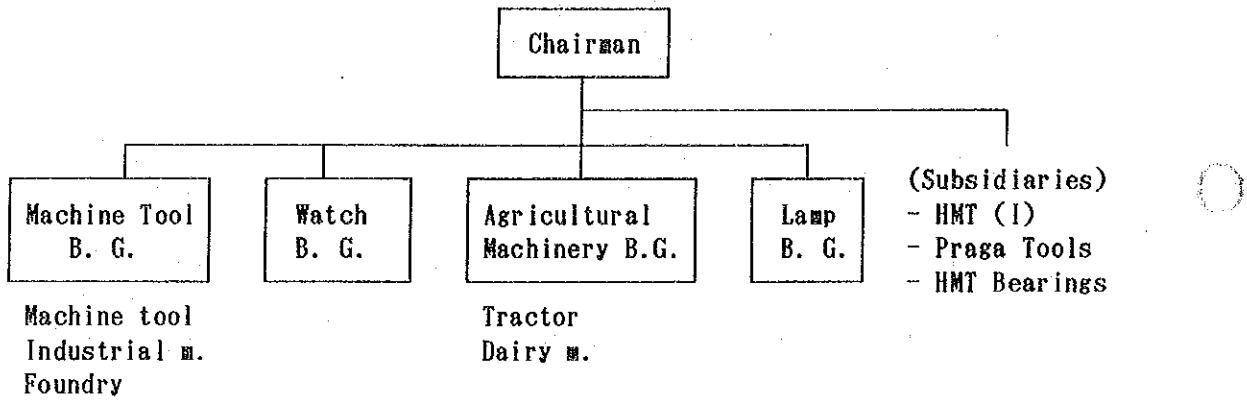
(a) Proposed New Organization Structure of HMT

The proposed new organization structure is summarized and shown in Fig. VI-2-3.

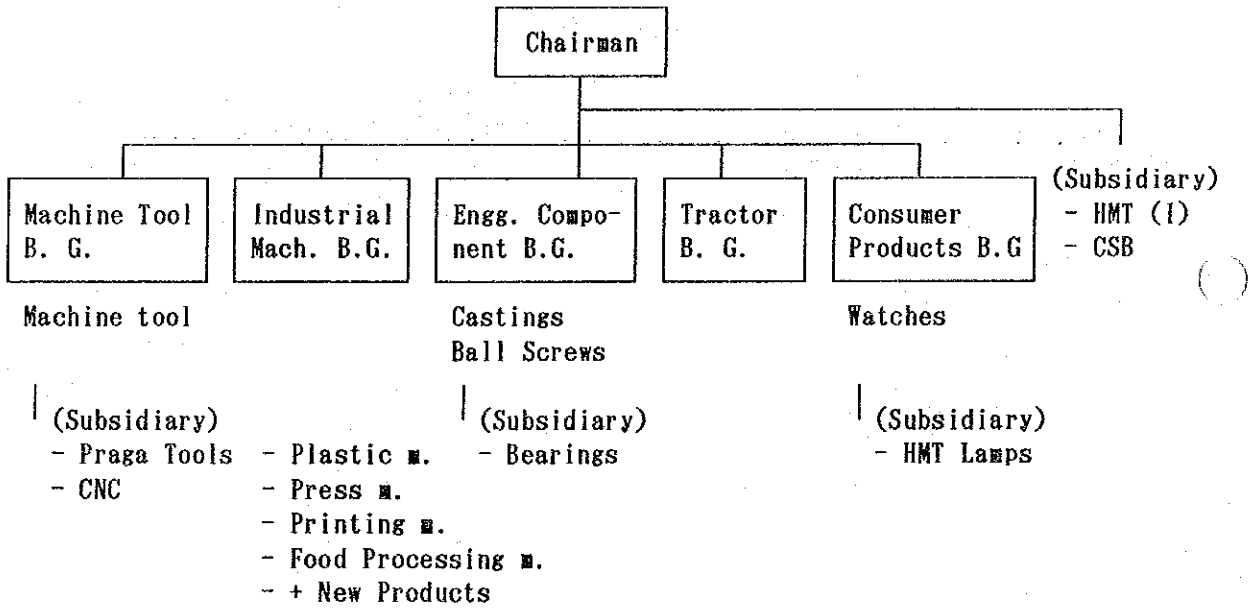
The size of each of the reorganized business groups is calculated at the base year of 1990/91 and is summarized in Table VI-2-3.

Fig. VI-2-3 Proposed Organization Chart of HMT

Present Structure




1st Phase (1991/92 - 1995/96)




2nd Phase (1995/96 - 1999/2000)

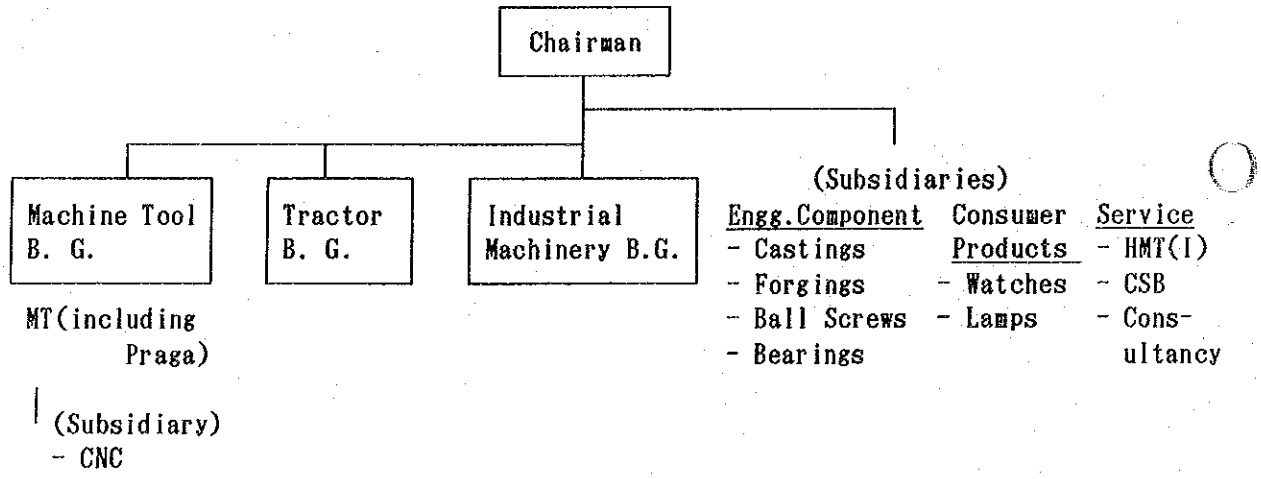


Table VI-2-3. Size of New Business Groups

(Based on 1990/91 Figures)

| Business Group | Total sales (Rs.million) | Net Profit (Rs.million) | Total No. of Employee |
|---|---|---|---|
| Machine Tool *1 | 2,633 | -70 | 12,649 |
| Industrial Machinery | 433 | 74 | 1,426 |
| Tractor | 1,886 | 225 | 3,121 |
| Engg. Components *2 | 257 | -9 | 1,499 |
| Consumer Products (Watch) | 2,478 | 73 | 7,300 |

Note : *1 Including CNC, Excluding Praga Tools
*2 Estimated figures for castings and ball screws, which are mostly double counted at present.
*3 Size of Subsidiaries

| Subsidiary | Total sales (Rs.million) | Net Profit (Rs.million) | Total No. of Employee |
|---|---|---|---|
| HMT Bearings | 305 | 16 | 917 |
| Praga Toos | 506 | -17 | 2,249 |
| HMT Lamps | 237 | -64 | 1,949 |

(b) Major Changes

i. Establishment of New Subsidiaries

- The Watch Business Group should be separated as an independent subsidiary company of HMT. Along with the listing of the stocks of HMT Holding Company, the stock of the new subsidiary company should also be listed on the capital stock market.

- The Lamp Unit should also be separated from the main HMT as a subsidiary company. In advance to the separation, the enhancement of the profitability of the unit by modernization investment and strategic alliance with world leading companies in the field is essential.

- The separation of CSB as a subsidiary computer service company should be promoted, after their service capability for companies outside HMT has been considerably expanded.

ii. Establishment of the Industrial Machinery Business Group

- Divisions such as DCB, PMK, PRH in the current Machine Tool Business Group and DMU in the Agricultural Business Group should be separated from each business group, and a new independent business group should be established.

iii. Establishment of the Engineering Components Business Group

- All foundries attached to each machine tool unit (including Praga foundry & forge) and tractor factories should be separated and unified into a new independent business group. Ball Screws and Bearings Subsidiary will also form part of this group.

(c) Characteristics of the Industrial Machinery and Engg. Components Business Groups and the Expected Effect of its Establishment

i. Characteristics of the Business Groups

- The characteristics of the Industrial Machinery and Engg. Components Business Group are widely different from the other Business Groups. While each of other Business Groups is supposed to be a profit center, each unit of the Industrial Machinery and Egg. Components Business Group would be a separate profit center.

- The major functions of the Directorate of Industrial Machinery and Engg. Components Business Group are different from those of other business groups which are each profit centers. They are mainly as follows:

  a. To incubate each unit to a desired size to be an independent business group or to decide to withdraw from some specific business area or to diversify into new business areas.

  b. Most of the key management decisions within the group are made by the Head of the Business Group, who should be delegated most of the powers from the Board of Directors or Chairman.

  c. Coordination with other business groups.

  d. Evaluation and guidance on the business and marketing plans of each unit.

- Those sections such as technical, marketing, sales or production planning, which are attached to the Directorate in other business groups, are attached to each unit in the Industrial Machinery Business Group. The sections attached to the directorate would be limited to such areas as personnel management, finance and planning.

- In order to avoid the increase of indirect administration expenses, each unit of the Industrial Machinery

and Engg. Components Business Groups should try to make maximum use of the facilities and administration services of larger units of other business groups, for which the support of the Regional Coordinators would be expected.

ii. Expected Effects

- By separating various kinds of diverse business units from major business groups of machine tools and tractors, the development of each of these small units would be accelerated by the following:

  a. Fair allocation of necessary internal resources;

  b. Establishment of an operation system which would most fit their own specific business area; and

  c. Quicker business decisions for each unit.

- The major business groups of machine tools and tractors would be able to concentrate their efforts on their specific areas.

- The higher autonomy of each small unit would create a higher working morale and increase the sense of responsibility of their employees.

(d) Other Related Changes

i. Appointment of Regional Coordinators

- In those regions where more than one unit belonging to separate business groups are located, regional coordinators are to be appointed.

- Regional coordinators should plan and promote the joint purchasing of parts and materials, joint use of common facilities or production assistance from one unit to another.

(e) Measures for Transition Period

i. The Consumer Products Business Group

- Until it is separated as a subsidiary company, the Watch Business Group retains the same position as other major business groups of machine tools and tractors.

- Along with the measures to strengthen market competitiveness, the Watch Business Group should start all the preparatory work to be an independent and stock listed company.

- Until the Lamp Unit is separated as an independent subsidiary company, it should be controlled by the same directorate.

ii. The Computer Service Department

- By the time that the activities of CSB can be expanded and could be separated as an independent company, CSB should be put under the control of the Information Planning Department of CHQ.

## VI-3. POSSIBILITY OF PRIVATIZATION OF HMT

### A. General

At the time of independence, India selected a socialist pattern of development. The Industrial Policy Resolutions of 1956 and 1977 reaffirmed that the state would design and direct the economy to prevent the concentration of wealth, to remove regional imbalances, to establish social justice and to achieve self-reliance. During the period from 1950 to 1980, a large number of public sector enterprises (PSEs), including HMT, were set up not merely as a commercial activity of the state, but to achieve the above goals.

By the early '80s, however, there was a growing disenchantment with PSEs because of the perceived inefficiencies of many PSEs, the inability of the government to meet the growing investment demand and the emerging aggressive capital investment in the private sector.

The two major causes of the inefficiencies of PSEs are considered to be (1)the lack of autonomy and (2)the multiple goals cast on PSEs. Generally, they are said to induce the following problems:

- the absence of strategic management and innovative actions due to the frequent change of top management for political reasons;
- the existence of overemployment, the selection of disadvantaged locations and the adoption of outmoded technologies;
- delay of investment decisions which would lead to an increase in investment costs; and
- low working morale of workers due to the monopolistic nature of the company and the bureaucratic way of management.

Considered to be one of the best managed of the PESs, HMT is rated very highly for its contribution to the industrial development of India, for the aid in developing hinterland

areas and for fostering growth in high-tech development. HMT has also tried to establish a management structure which would minimize the above disadvantages in the public sector companies.

In spite of the above, HMT is still not completely free from the inherent problems of PSEs in general. Under the circumstances that the Indian economy is rapidly changing from a planned economy into a free market economy and that greater competitiveness and efficiency in the capital goods industry is given higher priority than employment or other social objectives, it has to be again reviewed whether or not HMT should still continue to remain one of the Public Sector Enterprises.

## B. Recent Indian Government Moves for Privatization of Public Sector Enterprises

It is evident from recent Indian government moves that the pace of privatization of PSEs is likely to pick up in the years to come. However, the actual cases of privatization of PSEs under the control of the central government are still very limited.

Considering actual cases of sales of central government shares of PSEs to the private sector in the last couple of years, the cases of Scooter India Ltd. (two-wheelers) and the Taloja Unit (Black and white TV picture tube shell manufacturer) of Bharat Electronics Ltd. have come up for public discussion. Both of these cases did not materialize mainly due to the opposition of workers to transfer moves.

Though no overall policy has developed, the privatization of specific activities within some PSEs has been pursued. Among numerous such cases, Coal India Ltd. decided to contract out all of its transport functions, and the Oil and Natural Gas Commission built up a fleet of off-shore service vessels and then, later, decided to privatize them. In another case, Hindustan Zinc Ltd. decided to sub-contract its new mine development work and internal material handling work to private sector parties.

In a few recent instances of dilution of the central government equity holdings in PSEs through the issuance of fresh equity to the public, there are the cases of Industrial Credit and Investment Corporation of India (ICICI) and Shipping Credit and Investment Corporation of India (SCICI). In both of these cases, the direct and indirect holdings of the government still remain over 51% after the dilution. Another initiative is that by Maruti Udyog Ltd. (MUL), a joint venture between the government and Suzuki Motor Co. of Japan. Suzuki, which holds 26% of MUL's equity at present, has proposed to raise its share to 40%. There has been no opposition to this move from the government and the change is expected to be implemented as a means of financing MUL's planned capacity expansion. It is reported that there has also been some talk of issue of equity to the public in this regard.

The practically first policy move by the Government of India to divest some of its stake in selected PSEs was initiated in the Interim Budget of 1991. In this budget, the Finance Minister proposed divesting the 20% of the government's stake in certain PSEs, and selling their shares to financial institutions, mutual funds and workers, with the aim of improving the Government's resource position, encouraging wider public participation and promoting greater accountability. The budgeted resource mobilization through the measure is estimated at Rs.25 billion during 1991/92.

Furthermore, the New Industrial Policy announced by the new government in Parliament in July 1991 mentions that the government will review the existing portfolio of public investments with greater realism. It proposes that in the case of select PSEs, part of the government's equity should be disinvested in order to provide further market discipline in the performance of public enterprises.

## C. Pros and Cons in the Privatization of HMT

### 1. The Merits of Privatization of HMT

The privatization of PSEs (transfer of government shares to the private sector) in itself does not create any direct tangible effects on the management of the company. The key issues to be investigated would be the objective of the privatization and the kinds of management systems which would be established after privatization. Thus, the merits of privatization of HMT would differ largely according to the form of the new HMT organization after privatization, the extent of privatization (share held by the Government after privatization), the types of new share holders (financial institutions, employees, foreign entities, etc.) or the timing or schedule of privatization.

In spite of the above, the expected merits of the privatization of HMT are generalized and listed below:

1) Freed from various kinds of social and political requirements, HMT could put higher emphasis on efficiency and on increasing competitiveness;
2) By avoiding the frequent changes in top management based on political decisions, top management could promote strategic management based on a longer-term perspective;
3) Given more autonomy, the HMT could be more result-oriented and could be free to follow their own initiatives;
4) More autonomy for HMT as a whole would make it possible for each section of HMT to be delegated higher responsibility and autonomy, and for each employee of each section to enhance their working morale;
5) Each section of HMT could make quicker investment decisions and other management decisions according to the changes in the market;
6) The establishment of a participative work culture, in which all those who contribute to the economic activities are collectively equal to management and responsible for the results, would become easier;
7) Generation of necessary investment funds through the capital markets would become possible, as long as the

investment projects are sound; and
8)Capital or technical tie-ups with foreign enterprises would become easier.

## 2.The Demerits of Privatization of HMT

The primary demerit of privatization would be the loss of protection and privilege given to the PSEs by the government or other public sector organizations. Thus, this is more direct than the expected merits of privatization. With the progress of the liberalization of the Indian economy, however, the level of the protection and privilege given to PSEs is going to be lowered whether or not HMT is privatized.

The major projected demerits associated with privatization of HMT are listed as follows:

1)The market competitiveness of HMT products in such public sectors as defense, railways or other public utilities would be weakened (HMT would no longer benefit from the preferential purchasing system);
2)The recruitment of funds with interest rates below market rates would become difficult;
3)It would become difficult for HMT to keep the present monopolistic position in the market under the protection of the governmental control of investment license;
4)There would be no preferential treatment for the allocation of foreign exchange;
5)The negotiation power with related governmental or other public sector organizations would become weaker; and
6)The present good communication network with related government organizations would be difficult to maintain.

## D. Alternative Structures and Measures for Privatization

### 1. Alternative Structures

(a)General

As alternative structures for privatizing HMT, the following options would be considered:

1)To privatize HMT retaining all of the major business areas within a single entity;

2)To separate HMT into a certain number of autonomous business activities and privatize all or selected activities; and

3)To establish a holding company having current major business groups as subsidiary companies and then privatize that holding company

Among the above, the third option would be considered to be a variation (possibly an intermediate structure) of the first and second options. This option would not only have most of the disadvantages of splitting up the company (2nd option) but also preclude the subsidiaries from taking full advantage of their independent company status. Thus, in this section, the pros and cons of the above 1st and 2nd options were investigated based on following aspects:

1)Financial considerations
- a. Financial performance
- b. Inter-unit business and services
- c. Taxation

2)Organizational synergy, in
- d. Marketing and distribution
- e. Production process and technology
- f. Personnel and employee motivation

3)Others

(b) Financial Considerations

i. Financial Performance

The three business groups of machine tools, watches, and agricultural machinery and the lamp unit, at present, comprise all of HMT excluding subsidiaries. The current financial performance, however, shows a grave mismatch between the capital employed, the value of sales turnover and contribution to profit, as shown in Table VI-3-1.

Table VI-3-1. Comparative Performance of Business Groups

( Unit : Rp.Million )

| | BGM | BMW | BGA | Lamp |
|---|---|---|---|---|
| Capital Employed | 2,251 | 2,609 | 473 | 128 |
| Gross sales | 3,066 | 2,211 | 2,063 | 239 |
| Net Profit (BT) | 3 | 77 | 225 | -62 |

Note : No adjustment made for unallocated expenditures

It is also clear that a certain number of units or business groups are not viable at present and possibly could have had to write off their entire net worth if they had been independent operations. Thus, any scheme for hiving off certain activities will have a direct impact on the profitability of the residual activities. To illustrate, if lamps could be hived off into a separate entity, HMT's net profit would increase by almost 25% in terms of its 90/91 performance. On the other hand, if the agricultural business activities were separated, HMT would return a net loss after the adjustment of unallocated expenditures.

ii. Inter-unit Transactions

Internal businesses of HMT are comprised of equipment and components manufactured for other units, job work for other units as well as facilities and services

provided by one unit to another. While just over 1% of the turnover of the machine tool business group is accounted for by the transfer of machines to other business group, the proportions are higher for internal job works, component manufacturing and facilities/services provided. Because not all of these transactions are made on a market price basis, any proposal to hive off certain units/business groups from the main company will need to take into account the implications of inter-unit business on the viability of the respective units.

iii. Taxation

Under Indian tax Laws, when businesses are divested, there is a danger of losing the benefit of carried forward losses and unavailed incentives (such as unabsorbed depreciation and investment allowance). Because all carried forward losses and allowances have been adjusted in computation of tax for the accounting year 1990/91 in HMT, it is not a significant issue for HMT at present in assessing the options. However, any scheme involving divesture by sale of equity or assets will need to give due consideration to the incedence of tax on capital gains arising from transfer.

(c) Organizational Synergies

i. Technology and Production Processes

The technology used/required by the various business areas of HMT has different characteristics in terms of complexity and pace of change. These differences require differences in management emphasis, styles and organizational cultures, which may be more easily pursued in the form of separate entities. In terms of production processes, there are at present limited synergies among the different business activities in HMT.

ii. Marketing and Distribution

Because the product range of HMT is so wide, covering

capital, semi-capital and consumer goods, the business groups of HMT are required to have different marketing approaches and distribution networks. Thus, there is little synergy across business groups. In fact, certain disadvantages are seen in the present structure in that the needs of the lower volume business units may not be taken into account in determining the overall marketing and distribution strategies of HMT.

HMT is a respected brand name in many markets. In making any decision to break off certain business areas, it will need to be decided whether the resulting separate entity or entities will be allowed to continue to use the brand name.

Similarly, in breaking up HMT, the business will be losing certain economies of scale inherent in shared infrastructure and support services for the marketing organization. This will also be true for exports which are at present channeled through HMT (I) for all the business areas.

iii. Personnel and Employee Motivation

At present, HMT has a common personnel management and remuneration system throughout its units and departments. HMT, being one of the PSEs, is bound by government direction in regard to remuneration. On the other hand, there are significant differences in personnel practices and remuneration levels across the industries in which HMT is operating.

While splitting up the company into two or more entities may facilitate attempts at motivating the workforce, less flexibility in personnel management might be expected in the case that resulting entities continue to be PSEs compared with the majority share being transferred from the government to the private sector.

(d) Other Issues

Some of the other issues which are relevant to the

determination of whether or not HMT should retain its major business areas within a single entity would include; (1)flexibility for privatizing the different business lines through different means, or (2)flexibility for financial tie-ups with different foreign collaborators for different business areas.

Clearly, the alternative of hiving off certain activities is superior to that of retaining HMT as a single entity in this regard.

2. Alternative Measures

(a) General

As alternative measures for privatization, the following would be considered in general:

1)Dilution of equity through disinvestment or issuance of fresh equity to public;

2)Sale of assets; and

3)Full or partial divestiture to a joint venture partner.

Other theoretical options are possible such as leasing or contract management. However, the effects of these measures are partial when compared to other options. Thus, in this section, the pros and cons of the above three alternatives were investigated.

(b) Dilution of Equity through Disinvestment or Issuance of Fresh Equity to the Public through the Capital Markets

HMT could be privatized either by the divestment of the Government of India's holdings in HMT or by the issuance of fresh equity to the public through the capital markets.

Either of these measures would allow the privatization

of HMT in steps, giving time to the workforce and public to get used to the idea, and would be suited for the privatization of HMT as one entity.

The expected effect of these measures would be (1)to mobilize resources and (2) to expose HMT to market forces by inducing operating efficiencies. However, in the case of disinvestment by the Government of India, the funds newly recruited may not directly be channeled to HMT if the government decided not to do so.

These measures could also be applied for the privatization of the subsidiary companies of HMT. However, present levels of sales or profitability of HMT subsidiaries would not be sufficient for the use of the capital markets.

(b) Sale of Assets

Privatization through the sale of assets would be a practical measure only in the case of very small units of HMT. This measure may be simpler to implement in case of non-operating or marginally operating units with small workforces.

The disposal of loss-making units through this measure would achieve a limited purpose as long as the liabilities (including obligations towards the workers) remain with the parent company.

(c) Full or Partial Divestiture to a Joint Venture Partner

This measure would also not be suitable for the privatization of HMT as a single entity or for the privatization of such major business groups as machine tools, watches or agricultural machinery.

However, this measure may be useful for bringing in (1)Indian joint venture partners from the same or related industries for those business areas in competitive industries where HMT's units are currently not performing well, or (2)foreign equity partners for

units in business areas where foreign participation is considered critical for reasons of technological or export marketing support.

## E. Conclusion

### 1. Basic Strategies for Privatization of HMT

#### (a) General

Based on the results of the investigation in the preceding sections, the following three basic strategies are recommended:

i. The privatization of HMT as one entity should be gradually promoted through the issue of new equity to the public making use of the stock capital market, and at by the long-term target year of 2000 (at the latest) full privatization of HMT should be achieved.

ii. In spite of the above, if the watch business activities are separated and a separate company were established, that company should also be privatized in the same way as the main HMT.

iii. The establishment of joint ventures with foreign companies having advanced technology and international marketing capability should aggressively be promoted, for which the privatization of some units of HMT would be accomplished through the sale of assets or shares of minor units or subsidiaries of HMT to joint venture partners.

#### (b) Reasoning for the Privatization of HMT as one Entity

The manufacturing of machine tools, watches, tractors and lamps are the major business activities of HMT at present. Among these, the watch and lamp businesses are in the weakest position to be handled by such PSEs as HMT. From the managerial viewpoint, however, HMT's excellent performance has been supported by the success of diversification into these various areas.

Thus, the option to separate both the watch and tractor businesses, if it were not for the lamp business, from HMT and their privatization would not be recommendable since the management base of HMT after separation would

be considerably weakened. Furthermore, it seems that the Government of India presently does not have any intention to support those PSEs whose financial positions were weakened.

Given the possibility that HMT would not be able to maintain their monopolistic position any more in their major business fields, more flexible response toward changes in market demand and further aggressive investment for modernization of their production facilities would be needed. The privatization of HMT in the near future is considered to inevitable from the following aspects:

1)To recruit funds for strategic investment for modernization;
2)To increase flexibility in market-oriented management; and
3)To raise the working morale of employees by giving them more autonomy and responsibility.

(c) Reasoning for the Issuance of New Equity to the Public through the Stock Capital Market

It is reported that the Government of India has decided to divest 20% of its equity in PSEs to mutual funds and financial institutions. However, in India, mutual funds are mainly controlled by the banks, and banks and financial institutions are directly or indirectly owned by the government. As such, the above measures are essentially off-budget resource mobilizations by the government and would meet limited privatization objectives.

In order (1)to promote the private sector participation in management, and (2)to secure investment funds for HMT, the issuance of fresh equity to the public through the stock capital market would be more appropriate. The divestment of the government equity in HMT through the stock capital market should also be promoted. In this case, government policy should be that the funds thus obtained are to be exclusively used for the investment needs of HMT.

The use of the stock capital market would have the following advantages:

i. It is possible to raise funds according to the absorptive capacity of the market and the needs for funds in HMT. Thus, the privatization could be achieved in steps.

ii. The performance of HMT, including both past and future, would be evaluated by the market and the results clearly shown in the stock price. This would make the management objective of HMT clearer.

(d) Reasoning for the Promotion of Establishment of Joint Ventures with Foreign Companies

The Government of India has recently announced the New Industrial Policy to promote foreign investment by allowing majority shareholding by foreign companies. Many of the units of HMT, such as printing machinery, diary machinery, die casting machinery and plastic machinery, are facing an urgent need to introduce advanced technologies from leading companies in the international markets.

An aggressive policy to promote the establishment of joint ventures in high-tech areas in collaboration with foreign companies could be implemented making use of the existing resources of various units of HMT.

2. Marketability of HMT Shares

Once the enlistment of equity shares of HMT in the stock capital market has been decided, consideration needs to be given to the marketability of the shares to potential investors.

The marketability of shares to the public depends on various quantitative and nonquantitative factors, including inter alia:

- past financial performance
- past dividend record

- future prospects

A company like HMT having a good image in the high-tech industry is expected to get a reasonable response from the market despite the recent poor profitability and the absence of a dividend record, if it were to go to the public with a convincing development plan. However, it would still difficult to realize a price commensurate with its book value if HMT cannot achieve higher financial performance.

The well diversified Indian private sector companies in the capital goods sector have price-earnings (P/E) ratios in the range of 10 - 20. HMT's earnings per share (EPS ; Nominal value of per share of HMT is Rs. 1,000) which was about Rs. 106 in 1988/89 went down to Rs. 70 in 1989/90 and has increased to Rs. 211 in 1990/91. On a three year average basis, the EPS works out to Rs. 129. At this earning level, taking a P/E ratio of 12 (which is considered reasonable in HMT's current context), the market price works out to be Rs. 1,550, as against HMT's book value (without revaluation) per share of about Rs. 3,700.

Thus, if a price of Rs. 3,000 is considered fair for the Rs. 1,000 share, the financial achievement of HMT should be further improved to the level of a sustainable EPS of Rs. 250.

# VII. DIRECTION OF THE HMT'S MID-TERM AND LONG-TERM PLAN

## VII-1. General

HMT has a structured system and organization to formulate long range (usually 5 year) corporate plans. The latest results of such efforts have been summarized as the Fourth Corporate Plan for the period 1990/91 - 1994/95. This Fourth Corporate Plan is further updated and rolled over to 1991/92 - 1995/96.

The existing corporate plan of HMT is still insufficient from a strategic viewpoint and lacks a long range perspective. This is partly because of the fact that the present corporate plan was established by simply accumulating the unit-based plans, but mainly because of the fact that the business environment surrounding HMT is swiftly changing.

Until now, the operation of HMT has been largely affected by the following business environmental factors, which are unique from an international viewpoint:

(1) The Indian economic structure is mainly based on the planned economy;

(2) The Indian economy is still under-developed in general; and

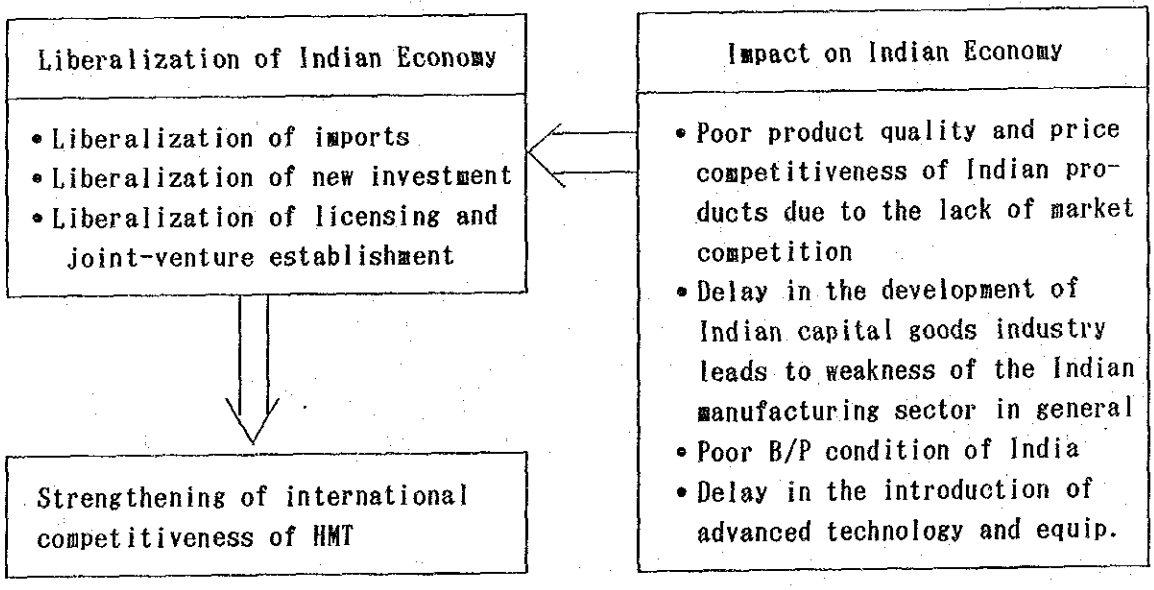
(3) There are a variety of socio-political requirements for HMT as a public-sector enterprise.

The above basic fundamentals of HMT's operations are presently going to shift rapidly, due to the inherent problems induced from its current structure. The key factor for these changes could be summarized (Refer to Fig. VII-1-1) in one phrase, " Liberalization of the Indian Economy".

Under the above circumstances, the corporate plan of HMT requires a longer-term perspective, and needs to initiate further drastic changes in order to strengthen its international competitiveness.

Fig. VII-1-1. The Current Business Environment of HMT and the Direction of Changes

| Current Business Environment Surrounding HMT and its Problems | | |
|---|---|---|
| Planned Economy | • Domestic market is protected from imported products.<br>• Entry of newcomers into the market is restricted by Industrial License. | -Domestic market competition is not severe. |
| Underdeveloped Indian Economy in General | • Poor infrastructure<br>• Requirement level for product quality is generally low.<br>• Limits on the introduction of the world's latest technology and equipment | -Poor international competitiveness of products |
| HMT as a Public Enterprise | • Low incentive for factory modernization due to the targets of employment generation<br>• Low direct incentive for workers to improve productivity<br>• Political intervention in new investments or plant locations | -Limits on productivity or efficiency improvements |



## VII-2. Framework of Long-Term and Mid-Term Corporate Plan

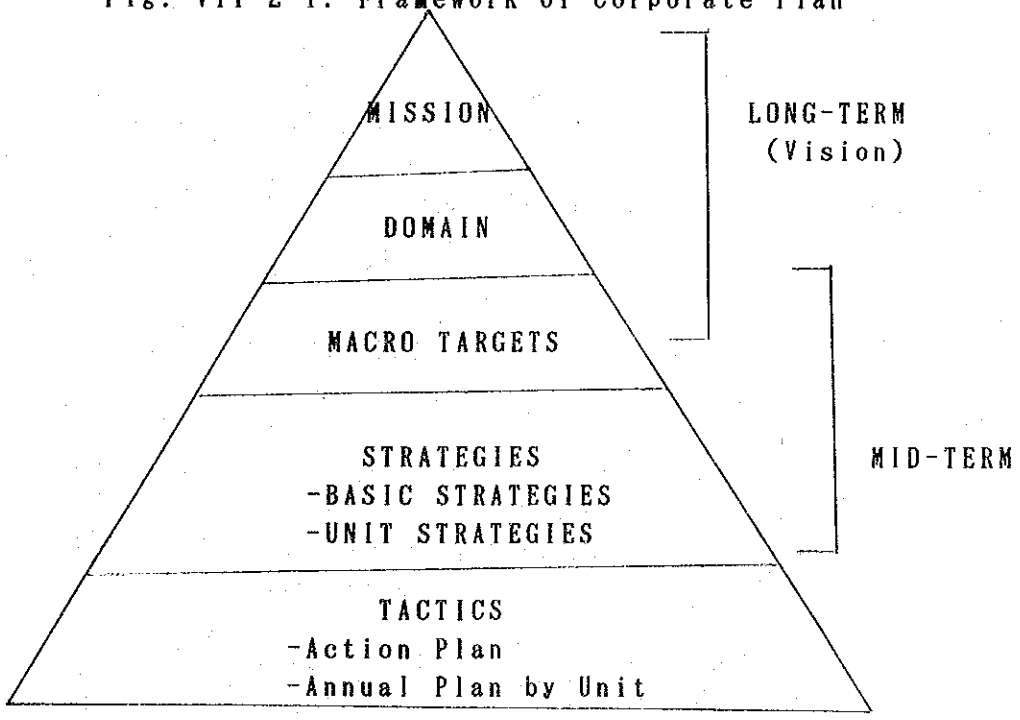
The corporate plans should consist of (1) a long-term plan with a target of around 10 years, (2) a mid-term plan with a target of around 5 years for achieving a long-term plan, and (3) a short-term plan which should be put into action immediately.

The long-term plan should be rather broad-based so that it would not be affected by day-to-day or annual changes of circumstances. It mainly consists of (1) a corporate mission and objectives, (2) a business domain, (3) macro targets, or (4) long-term strategies.

The mid-term plan should give clear guidelines to each unit of the company. It consists of (1) mid-term macro target figures divided into each unit, and (2) mid-term strategies to be taken.

Based on the above long-term and mid-term corporate plans, (1) the short-term action plan should be established, and (2) the action plan has to be incorporated into annual planning or annual budgeting.

Fig. VII-2-1. Framework of Corporate Plan



## VII-3. HMT Long-Term Corporate Plan

### A. Corporate Mission and Objectives

As a public-sector enterprise, HMT was established with a clear mission. However, with the progress of business diversification and the change of emphasis in national priorities, the corporate mission and goals have been slightly changed, and have been announced at the stage of the establishment of each corporate plan. These are summarized in Table VII-3-1.

Taking into consideration the recent economic environment changes in India, the existing corporate mission and objectives, and the stated vision of the will time Directors of HMT for the future, the long-term corporate vision of HMT for the 21st Century was established:

> CORPORATE MISSION OF NEW HMT INTO THE 21ST CENTURY :
>
> 1) To lead Indian industry in the establishment and modernization into high-tech manufacturing areas;
> 2) To establish itself as one of the world's premier companies in the engineering field having strong international competitiveness; and
> 3) To present an active and a pleasant working environment.

Arising from new corporate mission of HMT, the corporate goals of HMT could be re-stated as follows:

1) To achieve market leadership in India by ensuring customer satisfaction by supplying internationally competitive products and services;

2) To encourage the modernization of Indian industry through the supply of engineering goods and

services of world class excellence;

3) To maintain technological leadership through continuous efforts to update product technology and manufacturing methods;

4) To globalize the company's operations by developing a mix of international markets and businesses;

5) To ensure a satisfactory return on capital employed to meet the growth needs and the aspirations of the Company's stakeholders;

6) To improve and sustain the quality of worklife for employees through enhancement of human skills and working morale; and

7) To encourage the development of ancillaries and small industries and to improve the environment in the vicinity of the company's operations.

The proposed new corporate mission, objectives and strategies of HMT to respond to environmental changes are summarized in Fig. VII-3-1.

## B. Business Domain

In order to identify the direction of future business diversification, the business domain in which HMT should survive and enter into in the future, should be identified. The identification of the business domain would enable HMT to concentrate its limited internal resources on the development of identified areas. However, the domain should also be large enough so that it would enable HMT to grow with the desired speed.

The identification of the future business domain of HMT should also be made keeping in view: (1) future projections of current business lines, and (2) direction of future business expansion.

From the above, the business domain of the NEW HMT could be defined as follows:

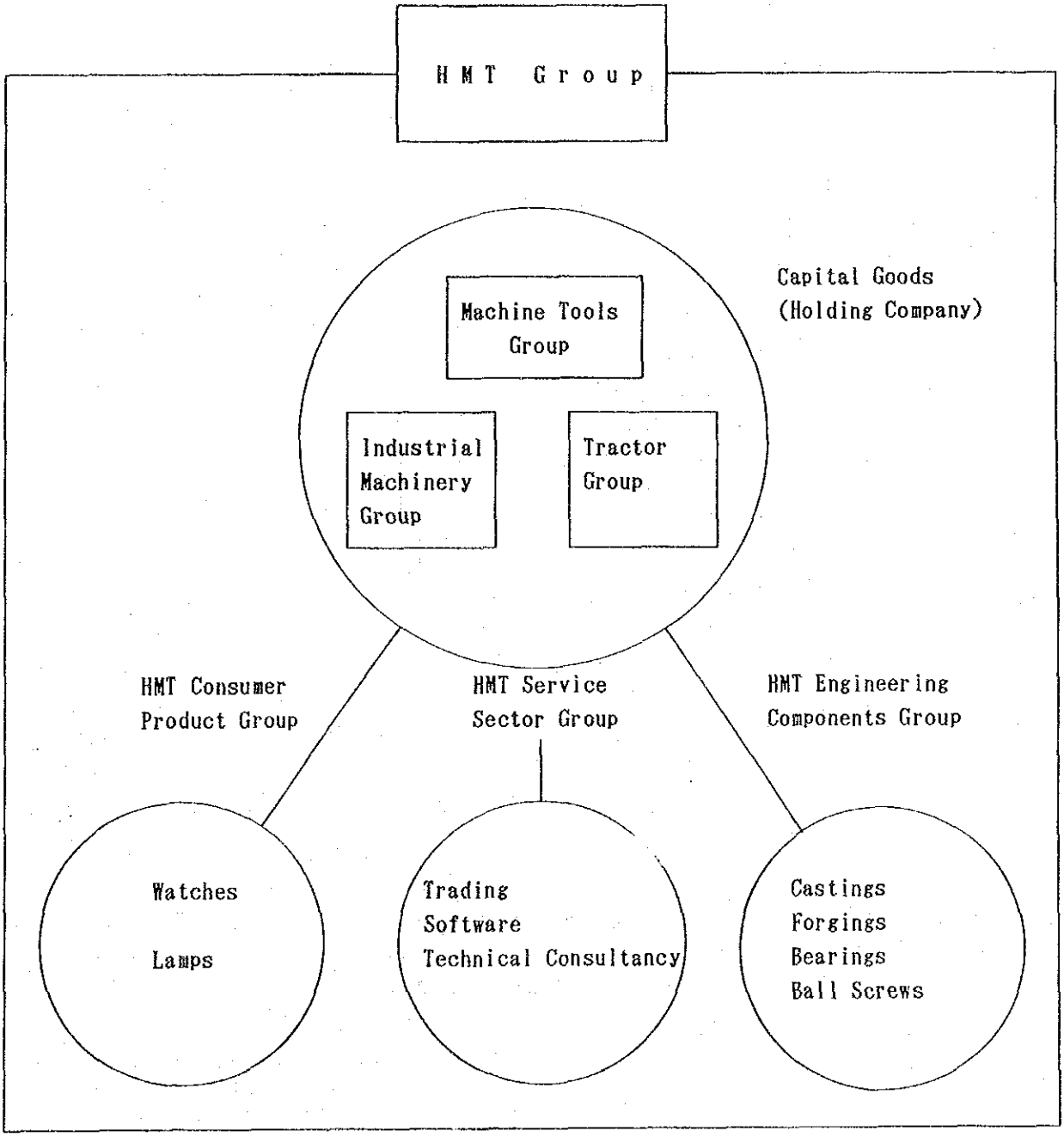
> The Business Domain of the NEW HMT is an upgrading of the country's engineering production technology level, which is mainly based on mechatronics technology.

Starting from the manufacturing of machine tools, HMT has succeeded in diversifying its product range to such areas as watches, tractors, dairy machinery and lamps. These diversifications have not only contributed to the growth of the company, but also provided substantial advantages in the upgrading of machine tool and high-tech manufacturing technologies.

The above re-definition of New HMT's business domain should not exclude the possibility of product diversification of HMT in the same manner as in the past. While defining clearly the business domain of HMT, it should also pursue the direction of capturing the business potential in other areas which require high-tech investments or upgrading the country's engineering production technology level as a whole.

The business domain of HMT as a Group (including subsidiary companies) should also be defined in a broader perspective, which is summarized and illustrated in Fig. VII-3-2.

Fig. VII-3-2. Business Domain of HMT Group



C. Macro Targets

In order to make the long-term target of HMT's operations more concrete and visible, an effort was made to identify the major financial and other business indices to be achieved in the targeted year 1999/2000.

As preparatory work for the above, the unit-based corporate plans from all of the existing HMT units were collected, the results of which are summarized as follows:

Table VII-3-2. Summary of HMT Unit Corporate Plans

( Unit : Rs.million )

| | 1995/96 | | | 1999/2000 | | |
|---|---|---|---|---|---|---|
| | Sales | NPBT | No. of Employees | Sales | NPBT | No. of Employees |
| Machine Tools | 5,956.6 | 504.6 | 14,114 | 9,776.1 | 976.8 | 15,019 |
| Watches | 6,154.7 | 395.7 | 9,500 | 8,938.6 | 716.3 | 8,999 |
| Agri.Machinery | 4,178.7 | 214.3 | 4,304 | 7,851.1 | 432.2 | 5,977 |
| Lump | 2,466.4 | 121.5 | 1,858 | 4,336.5 | 256.2 | 2,007 |
| Adjustment | -508.5 | - | n.a. | -971.5 | - | n.a. |
| Total | 18,247.9 | 1,237.9 | 30,228 | 29,930.8 | 2,381.6 | 32,002 |

Furthermore, a comparative study of the size of major machine tool manufacturers in the world market was made, the results of which are summarized as follows:

Table VII-3-3. Comparison of Key Financial Indices among the World's Major Machine Tool Manufacturers

| | Cincinnati Milacron (USA) FY1987 | Toyota Machine Work (Japan) FY1989 | Toshiba Machine (Japan) FY1989 | Hitachi Seiki Co. (Japan) FY1989 | HMT Limited (India) FY1989 |
|---|---|---|---|---|---|
| Total Sales (in US$ million) | US$828 mil. (828) | ¥156.6 bill. (1,118) | ¥120.4 bill. ( 860) | ¥51.8 bill. ( 370) | Rs.6,294 mil ( 350) |
| Net Profit (BT) (in US$ million) | -US$80 mil. (-80) | ¥9.5 billion (68) | ¥7.8 billion (56) | ¥4.7 billion (34) | Rs.58.1 mil. (3.5) |
| Total Number of employees | 8,996 | 4,376 | 3,330 | 1,180 | 28,592 |
| Sales/Employee (in US$ 1,000) | 92.0 | 255.5 | 258.3 | 313.6 | 12.2 |
| Line of Business | Machine Tools 45%<br>Plastic Mach. 28%<br>Other 27% | Machine Tools 36%<br>Auto Parts 57%<br>Other 7% | Machine Tools 35%<br>Plastic Mach. 34%<br>Other 11% | Machine Tools 92%<br>Parts & tools 8% | Machine Tools 37%<br>Watches 32%<br>Tractors 27%<br>Other 4% |

Note : US$1.00 = ¥140 = Rs.18

Based on the above results, the long-term macro target of HMT was set as follows:

Table VII-3-4 Macro Target of HMT Group

(Unit:Rp.million)

| | 1990/91 | 1996/97 | 1999/2000 |
|---|---|---|---|
| Annual turnover | 8,730 | 24,000 | 40,000 |
| No. of employees | 30,870 | 28,500 | 26,500 |
| Net profit in target years | 145 | 720 | 2,400 |
| Major business lines | | | |
| Machine tools | 36% | 30% | 28% |
| Tractors | 22% | 21% | 22% |
| Industrial Machinery | 5% | 15% | 20% |
| Engineering Components | 6% | 10% | 12% |
| Consumer Products | 31% | 24% | 18% |

## VII-4. Basic Strategies

### A. Basic Strategies

Based on the above long-term corporate plan of HMT for the 21st Century, the following 5 basic strategies are identified:

1) Organizational Restructuring;

2) Modernization of Manufacturing Plants;

3) Promotion of Productivity-improvement Activities;

4) Promotion of Mechatronics Technology Development; and

5) Intensification of Export Promotion and Expansion of International Operations.

The relationship among (1) the Corporate Mission, (2) the Corporate Objectives and (3) the 5 Basic Strategies is illustrated in Fig. VII-4-1, which is further broken down in Fig. VII-4-2, Fig. VII-4-3 and Fig. VII-4-4.

Fig. VII-4-1. HMT Corporate Misssion, Objectives and Strategies

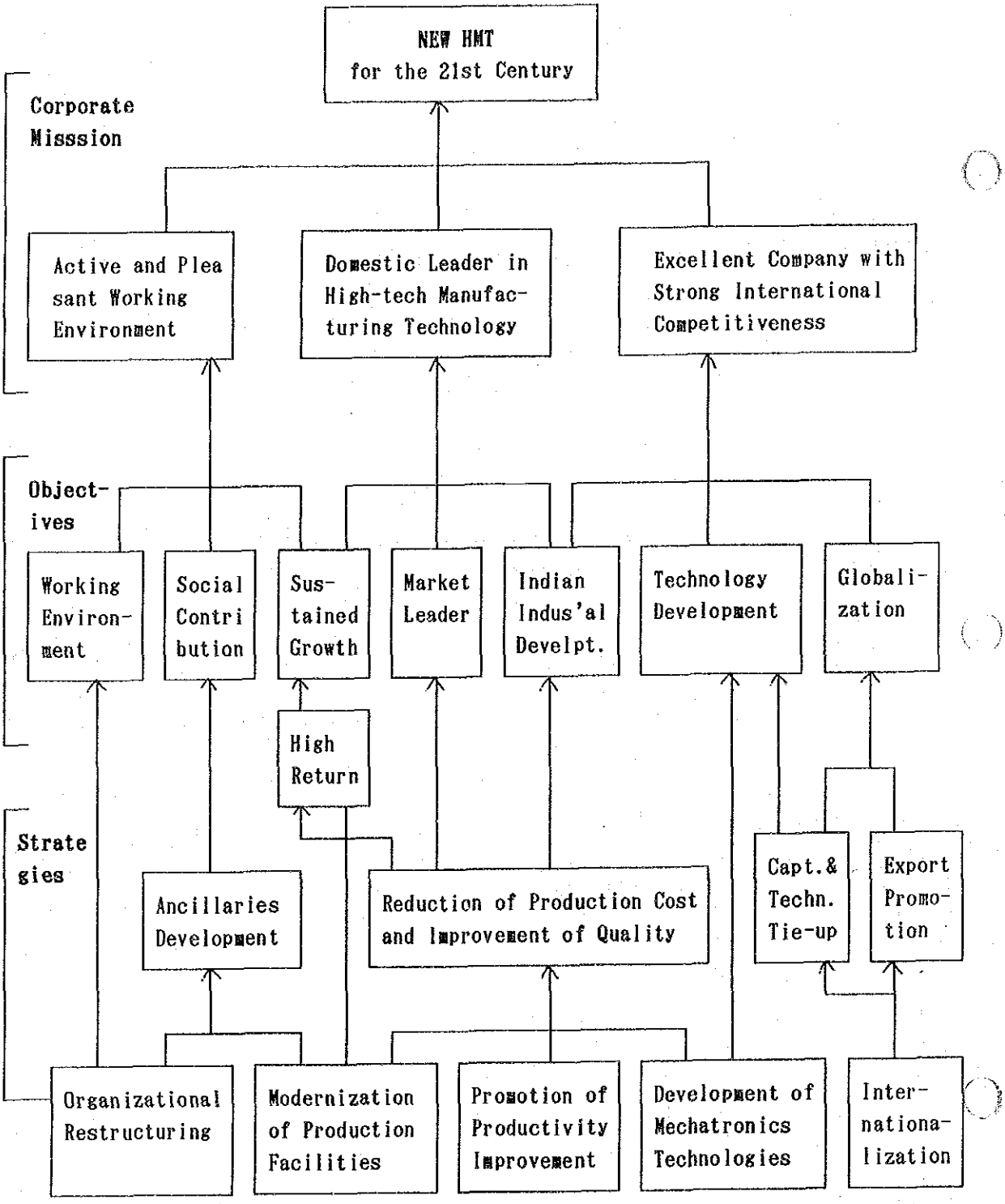


Fig. VII-4-2. Strategies to Increase the International Competitiveness of HMT

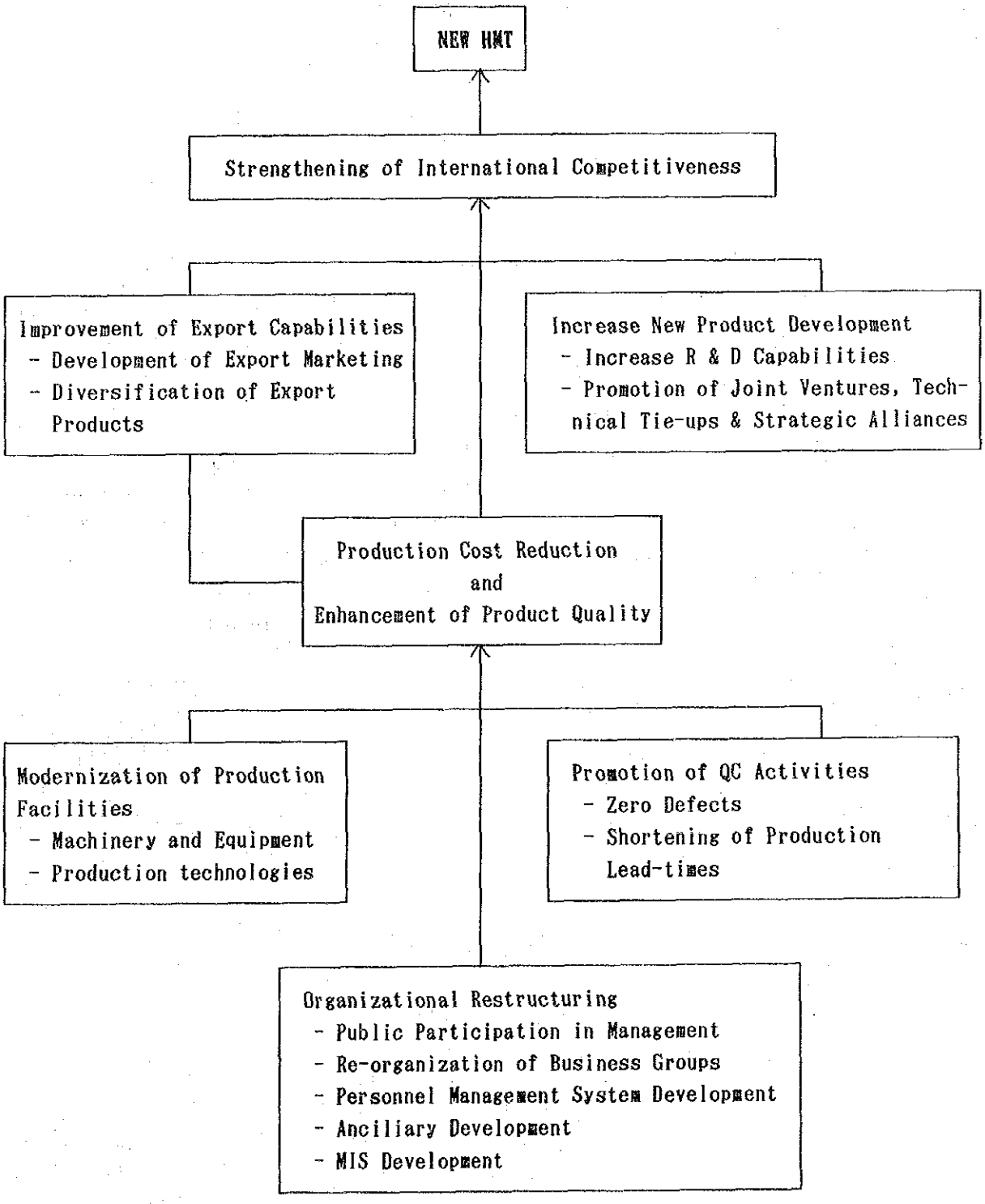


Fig. VII-4-3. Strategies to be the Domestic Leader in High-tech Manufacturing Technologies

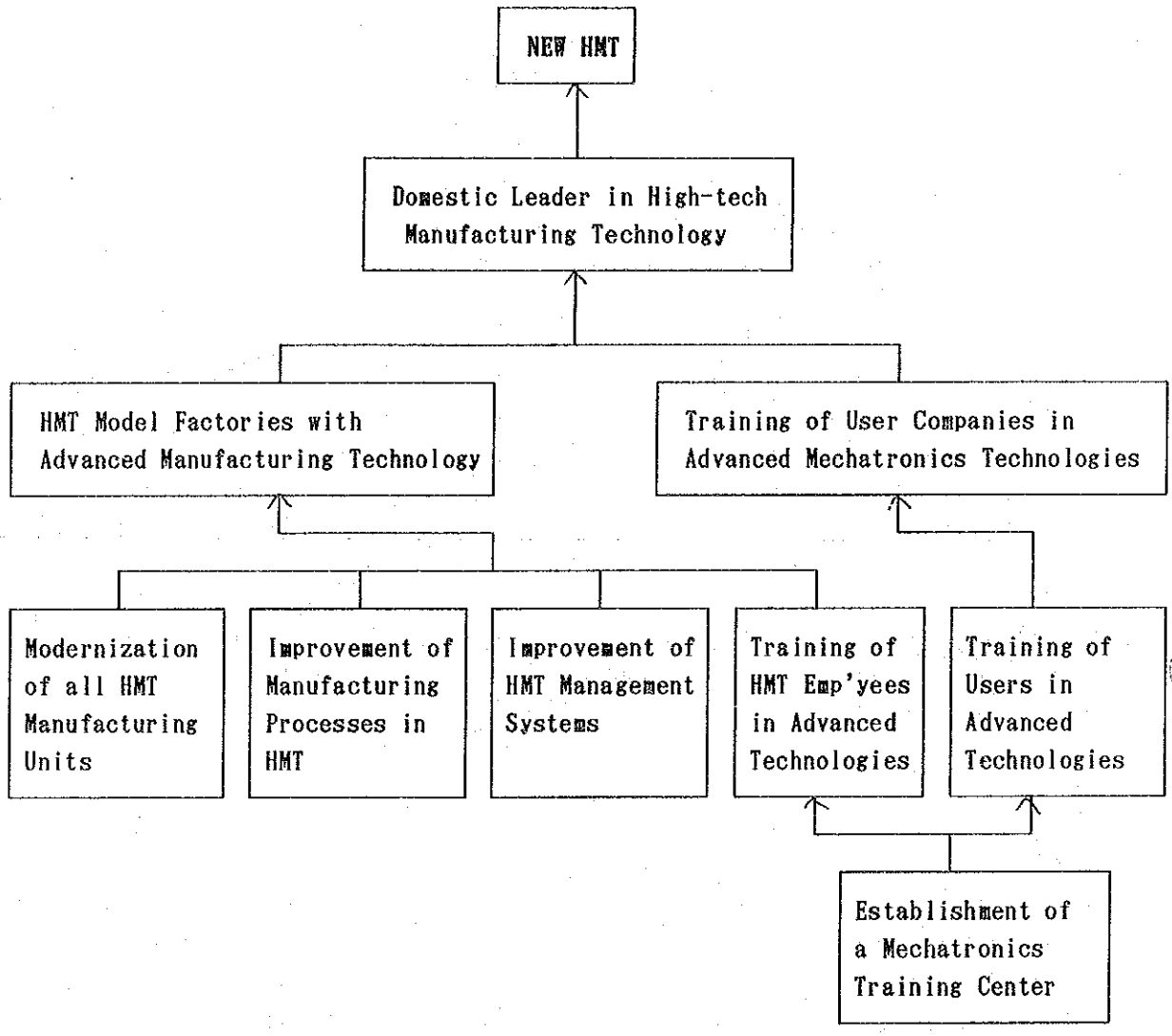
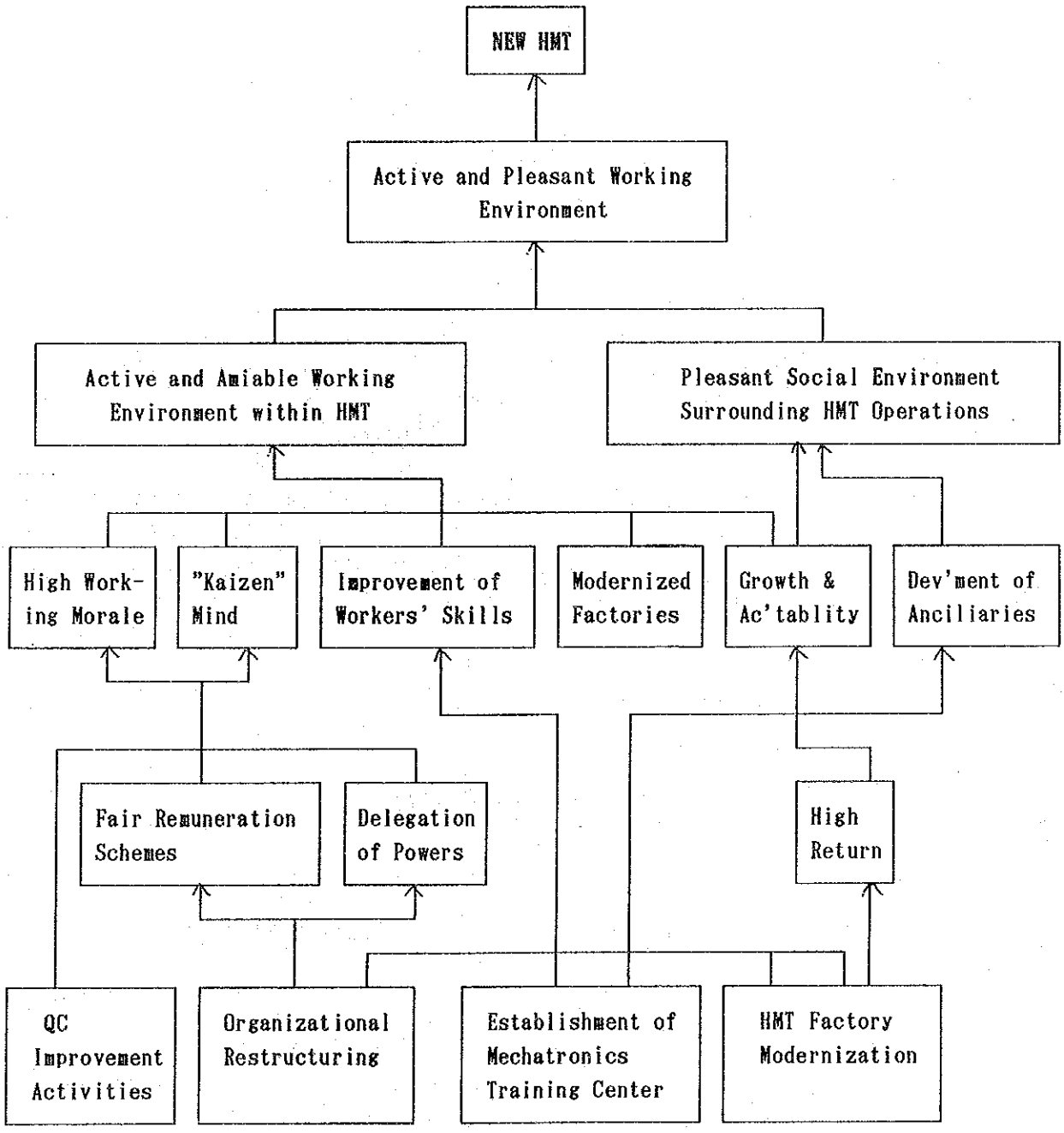


Fig. VII-4-4. Measures to Establish Pleasant and Amiable Working Environment



1. Organizational Restructuring of HMT

(a) Listing of Stock of HMT on the Capital Market and the Gradual Privatization of HMT

The privatization of HMT should be promoted in steps through the issue of new equity to the public in the capital market, and, at least by the long-term target year of 1999/2000, full privatization (the majority share of the government would be transferred to the private sector) of HMT should be achieved.

(b) Reform of the Organizational Structure of HMT

The following reforms in the organizational structure of HMT should be conducted as soon as possible:

1) The current business groups should be recast into new Business Groups.

2) In major Business Groups of machine tools, watches and tractors, the unit of the profit center should be shifted from the current unit (factory) to each business group. While in the newly established Industrial Machinery Business Group, each unit should still keep the status of profit centers. Each profit center thus created should be given higher autonomy than at present.

3) The management structure of HMT to each section should be made simpler by reducing the number of management positions.

(c) Improvement of the Personnel Management Systems

The personnel management system should be improved immediately, with major emphasis on the following:

1) A more result-oriented personnel remuneration system should be introduced.

2) The present incentive scheme, mainly based on the standard hour output, should be changed into a genuine productivity-linked system.

3) A more result-oriented promotion system and bonus system should be established.

(d) Establishment of Strategic Management Information System (MIS)

The establishment of a strategic MIS should be promoted with major emphasis on "standardization,""integration" and the introduction of "EDI."

(e) Establishment of Joint Ventures with Foreign Companies

The establishment of joint ventures with foreign companies having advanced technology and international marketing capabilities should be aggressively promoted, for which the privatization of some units of HMT would proceed through the sale of shares or assets of minor units or subsidiaries of HMT to joint venture companies.

(f) Development of Ancillary and Other Related Industries

With the twin purposes (1) to extend the benefits of expansion of HMT 's businesses into its neighboring society, and (2) to increase HMT products' quality and cost competitiveness, support to ancillaries and other related sub-contracting companies should be further promoted. The Worker Entrepreneur Tiny Ancillary Complex (WETAX) scheme which has already been launched by HMT should be further expanded. The support to other sub-contracting companies in terms of technical know-how, management skills, procurement of critical raw materials, jigs and fixtures or in training should also be increased.

2. Modernization of Production Facilities

(a) Modernization of All Production Facilities of HMT in Phases

The production facilities of almost all units of HMT should be drastically modernized in phases with the aim of (1) raising efficiency, (2) expanding production capacities, and (3) making them "model factories of advanced manufacturing technologies."

(b) Urgent Modernization of Strategic Factories

Because of limited internal resources in HMT, certain strategic factories should be selected for modernization, focusing on efficiency improvement, production capacity expansion and setting a precedent to other factories. Investments for such modernizations should be implemented immediately.

3. Promotion of Productivity-improvement Activities

(a) Change of Work Culture of HMT

For building into the system steps which are necessary for continuous productivity improvement, a productivity improvement scheme should be developed in which all management elements are integrated. The scheme should be upgraded step by step from a basic improvement program to a complete change of work culture of HMT.

(b) Initiation of Productivity Improvement Program (PIP)

Making use of a basic program, an experimental introduction of a Productivity Improvement Program (PIP) should be implemented, and a complete PIP best suited for HMT should be established.

(c) Extension of PIP to All Units of HMT

The application of PIP should be extended to all units of HMT, and be sustained up to the level that the im-

provement activity will become routine and customary behavior throughout the organization.

4. Promotion of Mechatronics Technologies

(a) Establishment of a Mechatronics Center

A Mechatronics Center both for training and promotion of R & D in advanced mechatronics technologies should be established.

(b) Intensification of Training of HMT Employees in Mechatronics Technologies

Together with the modernization of HMT factories, an intensive training program should be implemented for HMT employees.

(c) Intensification of Customer Training in Mechatronics Technologies

Customer training in mechatronics should be intensified in order to increase sales of CNC machines, FMC, FMS and other factory-automation related engineering products.

(d) Promotion of Integrated R & D Activities within HMT

Centralized R & D activities in CNC (Mechatronics) technology should be promoted primarily with the aim of developing such technologies as basic design for CNC machines, FMS and FMC software, auxiliary equipment for FA, and software for CIM design preparation by the host computer.

5. Intensification of Export and Promotion of International Operations

(a) Export Promotion

Through the following measures, the export capability of HMT should be strengthened:

1) The development of exportable products based on the analysis of international market needs.

At the initial stage of development, higher emphasis will have to be placed on those cost-competitive products such as GPMs, mechanical and automatic watches, and castings. At the latter stages, the development of exportable high-tech products would be necessary.

2) The strengthening of marketing capabilities of HMT(I).

Together with the expansion of an exportable product range produced both by HMT and other Indian companies, the international marketing strength of HMT(I) would be increased.

(b) Promotion of Capital and Technical Tie-ups and Strategic alliances with Foreign Companies

With the aim of acquiring the most advanced technologies and also international marketing skills, capital and technical tie-ups with world leading companies in respective fields should be aggressively sought.

(c) Increase of Overseas Investments

In order to achieve international cost competitiveness, the selection of production bases should be examined from a global perspective. Also, for the establishment of an international marketing network, it is necessary to establish sales or maintenance service companies in major overseas countries. Overseas investments should be made taking the economic viability for each project fully into consideration.

## B. Long-term and Mid-term Strategies

The basic strategies need not be divided into long-term and mid-term strategies. However, the priority of the basic strategies would be slightly changed according to progress in the development stages.

The establishment of the NEW HMT into the 21st Century would proceed by dividing the development stages into the following two phases:

1st Phase ( 1991/92 - 1995/96)

| | | |
|---|---|---|
| Development Stage | : | Stabilizing the Foundation of Business Operations |
| Development Target | : | Adjustment to the liberalization of the Indian Economy |
| Measures to be Taken | : | 1) Product cost reduction<br>2) Product quality improvement |
| Strategies Stressed | : | 1) Modernization of strategic manufacturing units<br>2) Promotion of productivity improvement activities<br>3) Organizational reform |

2nd Phase ( 1995/96 - 1999/2000)

| | | |
|---|---|---|
| Development Stage | : | Measures to become one of world leading companies in the engineering field |
| Development Target | : | Adjustment to the integrated world economy |
| Measures to be Taken | : | 1) Promotion of technology<br>2) Promotion of international operations |
| Strategies Stressed | : | 1) Promotion of mechatronics technologies<br>2) Modernization of all manufacturing units of HMT<br>3) Intensification of export promotion activities |