Chapter 3
XYZ Technology (M) Sdn. Bhd. & Supply Chain Management

3.1 The Vision and Mission of XYZ Technology (M) Sdn. Bhd.

The core business of XYZ Technology (M) Sdn. Bhd. is manufacturing entertainment product such as TV and DVD player. The mission statement of the XYZ Technology (M) Sdn. Bhd. is:

"We, at XYZ Technology (M) Sdn. Bhd. will continue to set ourselves the challenge of excellence in the manufacturing and designing of technologically innovative products, moving into new frontiers to become world leaders in entertainment."

In line with the mission statement, management of XYZ Technology (M) Sdn. Bhd. has finalized the next 5 year plan as below: (refer to figure 3.3: XYZ direction)

a) Enhance the technological knowledge in the bigger frontier such as R&D and provide technical support to the newly developing countries such as China.

b) Expand the Supply Chain Management activity to sustain their core competency.

c) Produce cost competitiveness product.

It is to be believed that expansion of the Supply Chain Management is the pillar to support the other 2 strategies.
FIGURE 3.1: XYZ SDN BHD. DIRECTION

XYZ Direction

HV Global Operations
Tie Up with EMCS Kisarazu Tec

Promotion of EMCS

- Strengthen R&D & High Density Surface Mount Technologies
- Acquire network-digital new technologies
- Involve in China Operations ----- Control & Manage by XYZ

Expansion of SCM

- Procurement Innovation (Expand VMI & JIT)
- Production Innovation (Expand Sapphire Operation)
- Dealer Direct (Expand CDS & CIP)

Lengthen Cost Competitiveness

2000 2001 2002 2003 2004 2005
3.2 Supply Chain Management Strategy in XYZ Technology (M) Sdn. Bhd.

In view of the success story of the other multinational companies such as Dell and Hewlett Packard through the implementation of the Supply Chain Management, XYZ Technology (M) Sdn. Bhd. wishes to narrow down the gap. Since early 1990, XYZ Technology (M) Sdn. Bhd. has implemented a lot of supply chain activities, but due to poor coordination between these activities, the company did not enjoy the optimum “fruit” of their activities. As mentioned early, activities to optimize one function will no create an optimum result to the total company.

See on figure 3.2: “Concept of EMCS SCM”. The Supply Chain Management in XYZ Technology (M) Sdn. Bhd. is divided into 3 major scope; upstream Supply Chain Management activities (parts logistics), internal Supply Chain Management (related to the factory activities~ production) and downstream of Supply Chain Management (Finish good logistics).

For this research purpose, the framework of the study will be divided according to the concept of EMCS SCM, which is:

3.2.1 Downstream Operation
   Seihan Control ~ Finish Good Logistics

3.2.2 Upstream Operation
   Procurement ~ Raw Material Logistics

3.2.3 Internal Operation
   Production ~ Internal Supply Chain Management
   Inventory ~ Raw Material Logistics
3.2.1 Down Stream Operation

Down stream operation in the supply chain management is referred to finished good logistics, which involve order and delivery of finish. The cycle time compression is the focus point for this research paper. The research has been conducted through analyze the strategies that XYZ Technology (M) Sdn. Bhd. had implemented toward time compression activities.

In the rapidly changing business environment, ability to shorten delivery lead-time and flexibility of the company to adapt market change becomes a key factor to determine the survival of the company. The shorter the lead-time, the more accurate the market forecast. The ability of company to compress the cycle time will be a core competency to compete in future business.

Seihan Control carries out the cycle time compression activities. When Seihan Control receives job order from HQ (Tokyo) and dealers, they will then plans the production schedule to meet the job order. Seihan Control is frequently dealing with the customers and providing customers' support and to continuously seek for a better solution to fulfill the customer requirement.

Before proceeding with the discussion and analysis of the Supply Chain Management strategies in XYZ Technology (M) Sdn. Bhd., it is important to know who are XYZ Technology (M) Sdn. Bhd. customers. Refer to the figure 3.2 (A): DVD Area Wise Shipment Quantity Trend, the major customer of XYZ Technology (M) Sdn. Bhd. is SEL, which is located in Los Angeles, USA. In fiscal year 2002, SEL already make up 70% of the total DVD sales volume, followed by Asia (11%), Euro (9%), Japan (9%) and Latin America (1%). Due to the above distribution, the Supply Chain Management activities were concentrated on SEL.
FIGURE 3.2(A): DVD AREA WISE SHIPMENT QTY TREND

DVD Area Wise Shipment Qty Trend

% in Red: Weekly Seihan

1% Latin
9% Japan
11% Asia
9% Euro
70% NA

x 1,000 Sets

4000

3000

2000

1000

0

FY99(Act) FY00(Act) FY01(Act) FY02(Estimate) Mid Range

699 1589 1891 2545

13% 61% 59%
**Seihan Lead Time Comparison**

<table>
<thead>
<tr>
<th>Current Month “N”</th>
<th>N+1</th>
<th>N+2</th>
<th>N+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1, W2, W3, W4</td>
<td></td>
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</table>

**Present**
- WD6 to STM
- SEL Total Lead Time: 15 Weeks
- SMOJ Total Lead Time: 14 Weeks

**Proposal**
- ETD PK (SEL) Total LT: 7 weeks
- ETD PK (SMOJ) Total LT: 6 weeks

**Seihan Lead Time Reduced by 8 Wk!**
- SEL: 15 Wk => 7 Wk
- SMOJ: 14 Wk => 6 Wk
The activities that have been carried out by the Seihan Control are:

3.2.1 a) Weekly Seihan

Advancement in the ICT and shortening of product life cycle causes consumers demand to change dynamically. In order to capture this rapid change, Seihan Control has implemented the weekly seihan cycle (job order). Before weekly seihan, the processing of the job order was capture in monthly base.

From the figure 3.2(B): Seihan Lead Time Comparison, it is shown that N+2 monthly seihan will capture a monthly production quantity, any changing will in the monthly basis. Beside that, it takes up 15-week to delivered a cargo to customer outlet. With the implementation of the weekly seihan, the delivery cycle time has been compressed by 50% to 8-weeks. How this compression activity can be carried out? How weekly seihan works?

For the N+2 monthly seihan, Seihan Control received job order from the customers at the first week of the month and it will capture about 2-month sales quantity (current month "N" and "N+1"). No quantity changing is allowed within this 2 month. After completed production in N+1, it takes another month (N+2) for the shipping operation. Upon arrival in SEL, it takes another 3 weeks before reaching the dealer. The total operation cycle time takes up to 15-weeks for SEL customers. In the N+2 monthly system, sales company and factory do not have any buffer to react on market changes. This might cause the company to lose sales opportunity or might instead a high inventory of finish good if consumer preference has change.
Knowing the rigidity of the previous system, Seihan Control takes an initiative to compress the total cycle time. In the new weekly seihan concept, the customers will only release a job order for 2-week production quantity. The job only capture for W3 & W4 production quantity. The shipment from Port Klang will be on W+5. The period of time on water will be considered as the transit lead-time from SEL to the dealer. One reaching US, the cargo will be directly shipped to the dealer. SEL will not hold any inventory. By having this new method, customers only commit for the 2 weeks quantity, which indirectly will increase the forecast accuracy.

3.2.1 b) American Express (AMEX)

By using the build to order concept, seihan control has come out with American Express System (AMEX). Refer to the figure 3.2(C): SCM – American Express (AMEX). The AMEX system works like this:

On day 1, the dealer will release a purchase order with the minimum quantity of 24 sets to the XYZ Technology (M) Sdn. Bhd.'s sales company in US (SEL). SEL will check and confirm the order quantity to the factory. Upon receive the order from the SEL; Seihan Control will perform material planning, production schedule and shipping planning. The pull card for Just-In-Time (JIT) and Vendor-Inventory-Management (VMI) material is released to the supplier.

On day 2, the production will start the assembly operation. At the end of the day 2, the finished goods will be shipped out by air directly to the dealer.
FIGURE 3.2 C: SCM-AMERICAN EXPRESS (AMEX)

Deliver the RIGHT QTY of RIGHT ITEM at the RIGHT TIME (Direct to USA Dealer)

**Day 1**
- Dealer: PO
  - DVP-NS900V
  - US$999
  - MOQ: 24

**Day 2**
- SEL: Check/Confirm
- XYZ: Flight Booking
- XYZ: Material, Production,
  & Shipping Planning

**Day 3**
- XYZ: Pull System
  - JIT/VM Parts

**Day 4**
- XYZ: Auto Mount
- Study on SEL's Cost Saving vs Air Freight Costs
  - Air freight: approx. US$ 47/set
  - SEL cost saving: approx. US$ 22/set
  - Cost increase: US$ 25/set
    (3.5% of SEL S.Price)

Assembly (Sapphire Express Line)

Direct

Arrive
The dealer can expect to receive the cargo by *early morning of the day 4*

No doubt American Express System wills incur additional cost to the total operation (3.5% of the selling price), but it is an effective way to maintain XYZ Technology (M) Sdn. Bhd. market share. With the AMEX system, customers' confidence is increasing toward XYZ Technology (M) Sdn. Bhd.. They know XYZ Technology (M) Sdn. Bhd. will be able to meet their demand in any condition, With this it indirectly increases customer satisfaction.

3.2.1 c) Direct Shipment Operation

As discussed in the weekly seihan and American Express system, the compression of the cycle time in the distribution operation has reduced dynamically.

Although the weekly seihan and AMEX system is able to compress the order cycle time, but a strong distribution operation is needed to ensure the success of total supply chain management. Referring to the figure 3.2 (D): Direct Shipment To SEL Dealers, there was 2 different types of direct distribution channel: Container Direct Shipment (CDS) and Customer Import Process (CIP).

Under CDS operation, factory will perform a direct shipment to the dealers' outlet without any transit in the sales company. By performing this CDS operation, the total shipment lead-time will take only 7-weeks compare to conventional time of 15-weeks. Beside reducing the distribution lead-time, CDS also contributed to cost saving activity for the sales company. The sales company no
Direct Shipment To SEL Dealers

SEL Inventory & Logistics Cost Reduction by Direct Shipment

Container Direct Shipment (CDS)
- Target: 30%
- No. of Cont. Shipped to SEL
- 12% of Total Ship to SEL
- CDS (Happy-Matching)
- 01-1Q Actual
- Total: 17%

Customer Import Process (CIP)
- STM
- 1st. Shipment
- 16 Aug 2001
- Direct Shipment
- 5% of Total Ship to SEL
- TARGET W/H
- in Port Klang

01-2H Outlook
- CDS
- CIP
- Production adjustment on DVD Basic & DD models and VHS Entry HiFi models transfer to OSG will lead to low CDS ratio (CDS applicable to mainly BB & CC only)
- Except "TARGET", negotiation with key dealers hardly come to a conclusion

- PERPUSTAKAAN UNIVERSITI MALAYA
longer needs to pay for any storage cost. In order to support CDS operation, the factory has stationed 1 staff in United State to assist operations monitoring. At closing of the fiscal year 2001 1 quarter, the CDS operation takes up 12% of total shipment to SEL. The percentage is expected to increase in the near future.

Another distribution enhancement activity is CIP operation. The CIP operation requires the dealers to rent a storage space in Port Klang. The factory will directly ship the finish good to the dealers warehouse in Port Klang. Upon demand arise in the US; the cargo will be directly shipped from Port Klang to the dealer's outlet. No doubt CIP operation able to bring customers closer to the factory, but on the other hand it has created additional costs to customers (dealers). Due to this additional cost that is unfavorable, the operation only represents 8% of the total shipment quantity to SEL. Few dealers in US accepts CIP concept. By closing of the fiscal year 2001 1 quarter, only 1 dealer is implementing CIP operation that is "Target".

The distribution lead-time compression activity that was carried out by XYZ Technology (M) Sdn. Bhd with the purpose to reduce inventory handling and logistics cost, but on the other hand it has created additional operation cost to dealers especially in CIP operation. By the fiscal year 2001 1st quarter, both operations only represented 17% of total shipment quantity to SEL. There are still a lot of rooms for improvement in both activities.
OSG Europe ETA Operation

Sales & Purchase establishment

RTM Port

XYZ
HVE
Tokyo

SEIN

JKT Port

Shipment
3.2.1 d) Out Sourcing Operation

Continuous acceleration of the technology advancement and shortening of product life cycle has cause a lot of companies to look for better, faster and cost competitive way to produce the product. In the 21st century business landscape, the manufacturing technology has changed from under-one-roof production to the block configuration production. Cost competitive product and best practice of manufacturing become a core competency for the company's survival. The new paradigm of business created a new frontier of production operation management. The production operation management concept has changed from total internal production to outsourcing.

XYZ Technology (M) Sdn. Bhd. also embarks on the same strategy. For DVD product category, it is facing very strong competition in price war. Averagely, there is 25% price cut for every 6-months. In order to survive in this business, there is a need to seek high quality but cheaper ways to produce the product. Due to this competitive scenario, Seihan Control has decided to out source some of the products and processes.

There are 2 types of the outsourcing: process outsourcing and product out source (Original Equipment Manufacturer). First let us analyze about process out source. To produce a set of DVD player, it required going through 3 major processes.
The 3 processes are auto mount process (machine insert and surface mounting), hand mounting and general assembly (please refer to the figure 3.2 (G): DVD Process Flow). To produce a quality set of DVD player, auto mount processes is the key determination. This is due to the DVD product requiring high technology processing. In XYZ Technology (M) Sdn. Bhd, outsourcing has been carried out for the auto mount process. The need to outsource the auto mount is not due to lack of technology, but because of machine capacity shortage in certain peak months especially from July until September. In order to fulfill the order, in house auto mount machine capacity is not sufficient.

Due to the increasing demand the surface mount technology in Malaysia; the sub-contractor business has been growing healthily. Now days we can see a multinational company involve in the surface mount sub-contractor business, for example Flextronics from Singapore, Flairis from Singapore and Tru-tech (joint venture between Malaysia and Singapore). XYZ Technology (M) Sdn. Bhd.'s 3 majors sub-contractor are Flairis', Tru-Tech and Asahi. Due to confidential issue, the writer cannot disclose the price comparison between this 3 sub-contractor with the in-house price.
Generally, sub-contractors can offer 5% cheaper than the in-house processing cost. With the lower price, the sub-contractors are able to meet the in-house quality standards, which is below 20ppm (part per million) defect ratio.

As mentioned early, there is another type of outsourcing operation; that is original equipment manufacturer (OEM). Seihan Control group has decided to out source the videocassette recorder (VCR) under an OEM company.

From the figure 3.2 (E): Out Sourcing Operation Flow, the OEM operation has been carried out by Samsung Indonesia. XYZ Technology (M) Sdn. Bhd. will monitor the shipment schedule so that its meets customer demands. In this digital era, VCR products do not have any technology competitive advantage. The major advantages of this outsourcing operation are to gain cost effectiveness and reduce risk of holding inventory.

From the figure 3.2 (F): Sales & Purchase Establishment Flow, the sales and purchase is only considered established when the cargos arrive in the Euro port such as Amsterdam. By performing OEM operation, it saves XYZ Technology (M) Sdn. Bhd. around 23 days cost saving in terms of interest and storage cost. Beside that, OEM company able to provide a very price competitiveness to XYZ Technology (M) Sdn. Bhd..

Due to the above benefit that the XYZ Technology (M) Sdn. Bhd. gains from the outsourcing operation, the outsourcing operation is enjoying a strong growth. Outsourcing activity is growing 1,000 times higher comparing with fiscal year 2001. It is estimated that
the outsourcing production quantity hovers around 1.5 million sets in fiscal year 2002.

From the Seihan Group activities, it is shown that XYZ Technology (M) Sdn. Bhd put great emphasis to improve the down stream operation by enhancing and compressing the cycle time of the distribution channel. The more compressed of the cycle time, the more competitive the company is in the Supply Chain Management.

3.2.2 Up Stream Operation

The upstream operation is related to part logistics, which is usually carried out by the procurement department. The main objective in upstream operation is get suppliers committed to the factory operation. The suppliers-procurement relationship has shifted from arm-length to alliances; this created a few issues such as dependency and trustworthiness. But on the other hand, these strategies created value added activities for the total supply channel. The major task of procurement is to balance up the value added and the negative impact of strategy alliance; this will be the issue that this research attempting to analyze in upstream operation.

Parts logistics play an important role to determine the total manufacturing cost. This is due to manufacturing usually consisting of 60% cost parts. In order to be more price competitive, factory need to control the part cost. Besides the pricing issue, relationship between suppliers and procurement will ensure that the Supply Chain Management activities can be carried out smoothly. Knowing the important of supplier-procurement relation, there are a few strategies that had been carried out by the procurement department.
3.2.2 a) Tooling and Mould

Producing good quality and unique products require a lot of unique parts where XYZ Technology (M) Sdn. Bhd always emphasize. To meet XYZ Technology (M) Sdn. Bhd. standard, it requires good tools and moulds, which can be very costly. The investment in tooling and moulding is rather difficult to be carried out by the small and medium companies in Malaysia. In view of this, XYZ Technology (M) Sdn. Bhd. has implemented the partnership sourcing strategies. XYZ Technology (M) Sdn. Bhd. will supply the requirement tooling and moulding to supplier and supplier will produce the required product to XYZ Technology (M) Sdn. Bhd.. The partnership sourcing was carried out with the objective suppliers would commit on the quality standard and delivery.

Partnership sourcing created an issue of dependency toward suppliers, which may control the price and quantity. Base on “Porter’s 5 model”, increasing of supplier’s negotiation power will weaken the negations power of the manufacturer. But on the other hand, the single sourcing or strategic alliance will actually increase the survival of the manufacturer and suppliers. With strategic alliance, the value added activities might create to ensure the manufacturer’s success in their operation. Suppliers mutually believe their survival depend to the manufacturer’s survival as well.

XYZ Technology (M) Sdn. Bhd. has put in a lot of effort in tooling and moulding activities, this can be shown with the investment around 2.5 millions Ringgit Malaysia in the tooling and moulding for the 6th-generation DVD model. In return, XYZ Technology (M) Sdn. Bhd. can get a consistent and constant quality and delivery. This partnership sourcing has ensured XYZ Technology (M) Sdn. Bhd. able to maintain their 32% market shares in US.
3.2.2 b) Supplier Optimization

In order to get a good vertical integration, there is a need to have minimum number of supplier. Minimum supplier will ensure enough focused on the quality and delivery improvement is given. Starting from year 2000, XYZ Technology (M) Sdn. Bhd. has launched a Supplier Optimization project with the target to have not more than 3 suppliers for each category of parts.

Supplier optimization has been carried out with the objective to optimize the quality and the price. In order to bring down the price of each product, XYZ Technology (M) Sdn. Bhd will ensure supplier able to mobilize economy of scale by allocated sufficient quantity to each supplier. For instance, before “supplier optimization” project has been carried out, the chip resistor category had 6 suppliers, each of them holding an average 10% to 20% of the total XYZ Technology (M) Sdn. Bhd. consumption. After the “supplier optimization” project, there are remain 3 suppliers and the price has reduced 25%. This project has been carried with the principle of “win-win”.

3.2.2 c) ASAP Warehouse

Holding inventory is non-revenue generating activity. The cost involved in holding inventory is interest and storage. For XYZ Technology (M) Sdn. Bhd, 1-day inventory is equivalent to 500,000 ringgit Malaysia, XYZ Technology (M) Sdn. Bhd. need to pay 44 ringgit Malaysia for interest and 7.8 ringgit Malaysia for each square feet used.

Due to this expensive cost incurred when holding high inventory, the procurement department has come out with the idea of
implementing ASAP warehouse. XYZ Technology (M) Sdn. Bhd has 2 types of warehouse: ASAP and non-ASAP. For the non-ASAP warehouse, the payment is triggered upon receiving and all the cargoes in the non-ASAP warehouse are current asset of XYZ Technology (M) Sdn. Bhd. But for the ASAP warehouse, the payment date of the cargo is triggered upon supply to production. All cargoes in the ASAP warehouse belong to the suppliers. The biggest difference between ASAP and non-ASAP operation is the payment date, which involves the manufacturing cost.

By fiscal year 2001, the ASAP warehouse parts represent 60% of the total parts used in the DVD product. In terms of value, it represents 30% of the total inventory amount. The procurement departments target by the end of fiscal year 2002, ASAP warehouse will represent 70% of total parts and 45% of the total inventory value.

3.2.2 d) Part Purchase Lead-time reduction

Part purchase lead-time plays an importance role to determine the success or failure of the Supply Chain Management. Realizing the importance of the part purchase lead-time to support the rapid velocity change of demand, procurement department has come out with a strategy to compress the part purchase cycle time.

In order to compress the part purchase cycle time, the information sharing is important factor. The manufacturer should provide real time information to the suppliers about the market situation. This will assist suppliers to plan the production and deliver timely to XYZ Technology (M) Sdn. Bhd.
Knowing the importance of the real time information to supplier, XYZ Technology (M) Sdn. Bhd. has implemented "SPRIT" system. The "SPRIT" system replaces a conventional type of purchase order issuing (PO). The PO is issued by transmitting through the Internet to the supplier. The supplier can access through the Internet to retrieve their PO and delivery data. Beside the ability to retrieve the PO, "SPRIT" system allow the supplier to monitor the current stock level in XYZ Technology (M) Sdn. Bhd. thus will assisting suppliers to make prompt decision on the delivery timing. In the near future, this system would allow suppliers to monitor final consumer market situation.

With information sharing, the part purchase lead-time has reduced. From the figure 3.2 (H): Parts P/O Lead-time Innovation, it has shown great improvement of part purchase lead-time. In fiscal year 2000, 5 working days lead-time part p/o is 0%, it has increased to 83% in fiscal year 2001. This innovation of the part purchase lead-time is mainly to support the flexibility of weekly seihan activity. That was supporting the claim of this research that Supply Chain Management activities are inter-link with each other.

As mentioned earlier, any strategies that are implemented in the upstream operation will create 2 types of effect: negative and positive. No doubt, the single sourcing and strategic alliance will increase the dependency of XYZ Technology (M) Sdn. Bhd. to the suppliers, but in return it makes the product become cheaper and unique compare to arm-length relationship. By having the strategic alliances, the suppliers survival also depend on the XYZ Technology (M) Sdn. Bhd. survival. Suppliers will place effort to ensure XYZ Technology (M) Sdn. Bhd.'s success and survival.
Parts P/O Leadtime Innovation

Ratio of Parts (by LT wise)

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<td></td>
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- **FY00-2H Actual**
  - 2,294 items

- **FY01-1H Actual**
  - 2,300 items

- **FY01-2H As of Nov**
  - 2,300 items

Above 20 wd
- 20 wd
- 15 wd
- 10 wd

5 wd
3.2.3 Internal Operation

After analyzing the downstream and upstream of the Supply Chain Management, let us look into the internal activities of Supply Chain Management. The internal operation of Supply Chain Management is referring to the production activities. From the literature review, Supply Chain Management activities cannot be separated from production innovation activities. Similar with the downstream and upstream operation, the internal operation also emphasizes on the cycle time compression.

The production cycle time compression is referring to the lead-time to produce a product and change the model. Shorten production lead-time will support the weekly seihan activity and reducing model change lead-time will increase the flexibility of production to adopt fluctuation of the market. There are a few activities that production has carried out to compress the production cycle time:

3.2.3 a) Sapphire Operation

Sapphire Operation is referring to the production concept of speedy and flexible system to meet the market fluctuation. The main target of the sapphire operation is to reduce the production lead-time beside the normal target of the quality.

Figure 3.2 (I): Sapphire Operation. It is shown that by implementing the sapphire operation, the total production lead-time to produce a set of DVD only take about 1.5 hours. Compared to the conventional type of production it take 6 hours. The compression of the production cycle time indirectly will reduce the inventory of the semi-finish good. The production only produces on a need basis.
Sapphire Operation

PURPOSE

TO SET UP **SPEEDY AND FLEXIBLE** PRODUCTION SYSTEM TO MEET MARKET FLUCTUATION.

TARGET

* MINIMUM STOCK LEVEL
* SHORTEST LEAD TIME

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<td>QUALITY</td>
<td>0.35%</td>
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<td>L/TIME</td>
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<td>1.5 HRS</td>
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<tr>
<td>SPACE REDUCTION</td>
<td>98%</td>
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<td>70%</td>
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The “Sapphire Operation” is carried out by linking directly from auto mount to general assembly process. The linked operation eliminates a lot waste such as transportation waste and accumulation waste. By eliminating the waste, it indirectly increases productivity.

3.2.3 b) Cell System

Cell System is the production concept that emphasizes on block production concept. Each of the members in the cell system is given a responsibility to complete a certain process from the total process. Then finally, each block process is combined to become a complete process. The cell system is requires multi skill operators.

The major advantage of the cell system is shorten model change time. Compared to the conventional type of production, which takes 1 hour 45 minute to change a model, the cell system only requires 25 minute. The shortening of lead-time to perform model change in the cell system is due to the cell members being involves (the cell system is less (4 person) compare to conventional type of production (17 person)).

In the XYZ Technology (M) Sdn. Bhd., the cell system was establish to support the American Express (AMEX) system which require a short lead time of model change and small lot of quantity.

3.2.3 c) JIT operation

Material Control Department is the department that in charge of the inventory controls by implementing the JIT operation and enhances the material flow.. In order to support the Supply Chain Management activities, the material control department has
implemented JIT operation and VMI (vendor management inventory).

The philosophy of Just-In-Time is to meet demand through very quick response and avoid holding any unnecessary inventory. The JIT system works by the pull system and "kanban" to signal the requirement of the next process.

Referring to the figure 3.2 (J): JIT Development Chart, long before the implementation of the Supply Chain Management, JIT operation has already been in operation. During that period of time, JIT operation has been introduced to overcome the space problem. That is why most of the JIT part is in the bulky form that takes up a lot of space. But now days, the direction of JIT operation has change according the Supply Chain Management requirement. The implementation of the JIT operation is to support the fluctuation of the market. The materials are called in based on need only. During the discussion of the American Express (AMEX) system, the JIT system is one of the systems that are used to support the AMEX operation.

The JIT system is not solely for AMEX operation, but it also supports other production operations as well. By implementing the JIT system, XYZ Technology (M) Sdn. Bhd. was also able to reduce the space and inventory level of raw material.
JIT Development Chart

Year

1998 1999 2000 2001 2002 2003 2004

No of PM

70 60 50 40 30 20 10

TARGET ▏ ACTUAL ▏ □ VMI □ PO, SMALL, BULKY
3.2.3 d) Vendor Management Inventory (VMI)

VMI operation is a newly introduced concept in XYZ Technology (M) Sdn. Bhd.. The concept of the VMI is more or less similar with JIT. The inventory level of VMI is higher than JIT. For JIT operation, the stock level is 5.5 hours but VMI total up to 1 day. The VMI operation is the enhancement of the normal P/O operation. For the VMI operation, the supplier will monitor their stock level at the rented warehouse that is close to the manufacturer. They will replenish the stock when it hits a certain minimum stock level. The manufacturer will call in the material on a day-to-day basis.

Material control has implemented the VMI operation to support the Supply Chain Management activities. In the Supply Chain Management context, the VMI operation is supporting the market fluctuation where the manufacturers have a 1-day lead-time to respond to the market change.

The activities that the production and material control department carried out are to bridging the linkage between the parts logistics and finished goods logistics in the supply chain. The bridging process is to ensure that material flow is carried out smoothly.

Before the coordination of the Production Planning in monitoring the supply chain activities, the strategies that were implemented in each department is independent. There are no synergies on the activities and the result is below par. When the coordination took place, we can see the linkage of each activities and the result is much better than what has been expected. The issue is supply chain activities in itself is nothing, unless there is coordination across the functions putting the entire puzzle together. That is why the word, “management” comes into the picture.
For this case study, it has shown that greater effort has been put in to compress the cycle time. The total material flow from the suppliers to the customer has reduced by enhancing the upstream, downstream and internal operation. Generally, the coordination of Supply Chain Management makes each party involve in the supply channel share the risk equally.

Although the Supply Chain Management created a positive impact to the XYZ Technology (M) Sdn. Bhd., but on the other hand it created a negative impact to the smaller suppliers. All the negative impact activities have been transfer to the smaller suppliers. In the real condition, XYZ Technology (M) Sdn. Bhd.'s facility may be using JIT, the likelihood is that excess inventory will be held by the smaller supplier to cover demand fluctuation. This might result in the smaller suppliers suffering huge damages if the model is dropped.