

Customer requirements and product characteristics engineering



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- 4 Mentions

One of the chief functions of any fabrication works is to bring forth merchandise that caters to the demands of the market, and the best manner to understand the market needs is to separate what is of import to the customer/consumer. This apprehension of the client gives the maker a competency border, as he knows more or less what the demands of the client is, when he sells his merchandise in the market. This competency border can be distinguished into assorted factors, for e. g. Quality, Speed, Dependability, Cost, and so on. A peculiar manner of separating which factor gives us more competency border is to separate between what Prof Terry Hill calls as “ order winners” and “ order qualifiers” . (Pycraft et al 1997)

[Online]

But before we dive into categorizing the assorted competency factors into order victors and order qualifiers, it will be helpful if we knew where the merchandises lie in the Puttick Grid. The Puttick Grid, devised by the Warwick Manufacturing Group, defines merchandise market place with regard to the complexness of the merchandise and the degree of uncertainty in the market. A point to observe about the Puttick Grid is that over a period of clip, merchandise tends to travel about in the grid and hence may alter after a period of clip.

The Specialist DBPs have a really fickle demand profile, they are fundamentally manufactured either one by one, or if they is more demand they likely in batches of 10. There is a extremum in demand during the

spring and summer seasons as a batch of people get back to siting their motorcycles after the winter, and therefore go desirable during these seasons amongst the people who own vintage motorcycles. Besides since these are vintage motorcycles, they do n't mind passing a spot for acquiring replacing parts.

The Aftermarket DBPs have a instead hushed demand as compared to the Specialist DBPs. Since these are DBP that are no longer in standard productions, there are a batch of administrations that have come out with their ain version of the DBP and therefore the client has more pick. So, in such a instance, the client will travel by trade name image, monetary value and the quality of the merchandise.

The Original Equipment DBPs on the other manus, will hold a really stable demand that will be known to Friction Materials good in progress. Quality and monetary value become really of import for such a merchandise and hence they become more of a trade good.

Therefore harmonizing to the above treatment, the merchandises have been placed in the Puttick Grid as shown below in Figure 1. 1. 1

**Super Value
Product**

**Responsive/Jobbing/
Fashion**

Specialist DBP

**Consumer
Durables**

Commodities

Original Equipment DBP

Now that we have an apprehension of where the merchandise lies with regard to the Puttick Grid, we can separate which competency factor is an order victor and which is an order qualifier.

Characteristic	Aftermarket Specialist	
	DBP	DBP
Design	-	-
Brand Name	60	60
Monetary value	40	40
Speed (Lead Time)	Q	-
Dependability (Availability)	QQ	Q
Quality (Fit to aim)	Q	QQ

Table 1. 1. 1: Order Winners and Qualifiers. (Adopted for Hill 2000)

[Note: Order Winners are marked out of 100.

Q: – Order Qualifier ; QQ: – Order Looser.]

Features	Original Equipment	
	DBP	
Design	40	

Brand Name	10
Monetary value	40
Speed (Lead Time)	10
Dependability (Availability)	QQ
Quality (Fit to aim)	QQ

Table 1. 1. 2: Order Winners and Qualifiers. (Adopted for Hill 2000)

[Note: Order Winners are marked out of 100.

Q: – Order Qualifier ; QQ: – Order Looser.]

1. 1. 1 Design

The links between design, operations and markets are the really kernel of the concern. The manner that these integrate, hence, is cardinal to sound scheme development and execution. Both design and operations ‘ purpose is to supply merchandises harmonizing to the proficient and concern specifications. (Hill & A ; Hill 2009)

In instance of Aftermarket DBPs, the dimensions of the DBP are calculated from the tantamount OE constituent and so some alterations are made so as to avoid patent violation. So in this instance, the design of the DBP is non really of import as it is merely rearward engineered from an bing merchandise.

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In instance of Specialist DBPs, the dimensions are taken from records if they exist or taken from the constituent and so designed as a custom-built part. So in this instance excessively, not much work goes into the design of the DBP as they are already available to the maker. Hence, design of the DBP does not give the merchandise any competitive edge over other rival merchandises.

In instance of Original Equipment Manufacturer, ab initio specifications will be given by the bike maker. But if Friction is selected as the preferable OE for DBP, it will be expected to plan the brakes to run into the demands given by the maker. Hence, if not ab initio, over a period of time the designing of brakes for the OE merchandise scope will go to the one of the biggest competitive edges that the company could acquire in winning the order.

1.1.2 Brand Name

Through a assortment of activities, companies try to set up a trade name for their merchandises in the market. Where this has been achieved and maintained, companies will win orders partially due to the image that has been created in the market. (Hill & A ; Hill 2009)

In instance of Aftermarket DBPs and the Specialist DBPs, the trade name, " Stop-Rite" , play a major function in winning orders for the company. Since these parts are no longer in standard production by the OEM, there is a lack of competition in the market to win orders for these merchandises. And therefore the trade name image, which Friction Materials Ltd has maintained for the last 20 years, becomes the biggest competitive edge in the market to win orders.

In instance of the OE DBPs, ab initio Friction Materials is seeking to win orders and hence it does not hold a trade name in the OE market as of now. But as they start to win orders and set up them in the market, their trade name will get down to assist them win orders and therefore, as clip will come on, trade name will go an order victor.

1. 1. 3 Monetary value

In many markets, peculiarly in the growing, adulthood and impregnation stages of the merchandise life rhythm, monetary value becomes a really of import order victor. When there is a scope of merchandises to take from, monetary value comparings with options becomes an built-in portion of the client ' s rating of the merchandise and hence monetary value dramas a really of import portion in winning orders. (Hill & A ; Hill 2009)

In instance of the Aftermarket and the Specialist DBPs, since there are a batch of options in the market, monetary value finally go one of the chief grounds why the client chooses to purchase the merchandise, as if there are two merchandises run intoing his standards, they are bound to purchase the cheaper merchandise. Hence they become an order victor.

In instance of the OE DBPs, since the maker is traveling to purchase the merchandise in majority, he is traveling to desire to purchase them from a maker who is able to bring forth them in the cheapest possible manner and who besides meets their demands. Hence monetary value in this instance becomes one of the biggest factors for pick.

1. 1. 4 Speed (Lead Time) and Dependability (Availability)

A company may be able to measure up for an order/win an order based on how rapidly they are able to provide the merchandise or if the merchandise is already available for delivery/purchasing for the client. Hence is it really of import that the Operations Lead Time must be able to fit the Customer Lead Time. (Hill & A ; Hill 2009)

In instance of the Aftermarkets DBPs, the ability to present the DBP faster than others may impact the spares shops to do an order to the maker. This is possible if the lead clip for the merchandise is less and therefore lead clip becomes an order qualifier. With regard to the clients, the merchandise being available on the shop ego become an order qualifier, i. e. they consider the merchandise as a possible bargain. But in instance the merchandise is non available on the shelf, means that even though their merchandise is better than the competition, they will lose an order and hence this becomes an order loser.

Similarly, in instance of the Specialist DBPs, since these are largely custom-built points, the lead clip does non give an influential competitory border over the competition. But at the same clip, availability/delivery of the merchandise has to be on clip and this becomes an of import factor that the client will take into consideration when he/she is looking to purchase a DBP for his/her Vintage Motorbike. Hence handiness of the merchandise on clip becomes an order qualifier in this instance.

In instance of the OE merchandises, the bike maker will be looking for a maker who can bring forth the parts and present them in the shortest

possible clip. Hence velocity or lead clip becomes an order victor. Besides, being a local provider to the local bike industry will give them a competency border over other outside rivals as they will be able to react to the demand much quicker. But, in add-on to this, being able to present the merchandises on clip is traveling to be a really of import factor. So of import that ab initio, some late bringings may take to the maker traveling to an surrogate provider as you are non able to run into his demands on clip. Hence dependableness becomes an order loser.

1. 1. 5 Quality

Quality or Quality Conformity can be defined as ability of a maker to industry merchandises harmonizing to the client ' s demands. (Slack et al 2002)

In instance of the Aftermarkets and Specialist DBPs, no 1 is traveling to see purchasing the merchandise unless you are certain that the DBP is fit to utilize on their peculiar bike theoretical account. Hence for both these merchandise ranges, quality becomes an order qualifier. That is, merely if the DBP is fit to utilize on a peculiar clients motorcycle, they will see purchasing that DBP.

In instance of the OE merchandises, since now they are seeking to go providers of OE merchandises for the first clip, quality has to be bang on mark. It has to run into all the client demands. Any oversight of quality may take to a arrest in the maker ' s assembly line and this is traveling to be them a batch of money. Hence any oversight in quality of the OE providers ' portion will give a bad feeling and hence may take to the provider losing the order. Hence quality for the OE merchandise scope becomes an order loser.

1. 2 Deductions on Operations

The Polar diagram (above) shows all the competency factors for all the merchandise scope and their relevant importance for winning orders. Hence, in a manner, the diagram besides helps understand where Operations should concentrate more so that they will be able to bring forth more merchandises that will be able to win the orders in the market.

From the above diagram, we see that for all the three merchandise ranges, Price, Quality and Dependability are the common public presentation objective that can assist give them competency border in the market. Hence operations has to concentrate more on cut down the cost of the merchandise and at the same clip seek to maintain quality at a good degree and ever present the goods on clip. Besides, we see Brand Name is really of import for the Aftermarket and Specialist market. But if operations is able to keep monetary value, quality and dependableness ; it will keep and possibly even built up the trade name name of the merchandise. Besides, by concentrating on dependableness, operations is traveling to maintain the lead clip (velocity) of the merchandise to every bit low as possible to run into the bringing times and hence velocity is besides taken attention of. Hence by concentrating more on monetary value, quality and dependableness, operations will be able to cover all the order qualifier and victor factors of all the 3 merchandise scopes.

2 Manufacturing Strategy for the OE merchandise

2. 1 Model

Hill, T. (2009) breaks down the procedure of developing an operation/manufacturing scheme into 5 simple aims.

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2. 1. 1 Specifying the Corporate Aims

The recent future Corporate Objective of Friction Materials is to seek and interrupt into the OE merchandise sector. This will assist them insulate the fiscal load that they have to transport due to the of all time diminishing monetary values because of inexpensive Far Eastern Aftermarket DBP available in the market. Hence another Corporate Objective is to do them more stable financially by come ining a extremely profitable and long term contract merchandise scope. Other general corporate aim like Net income and Growth and ROI besides apply to Friction Materials Ltd.

2. 1. 2 Specifying the Market Strategies to run into these aims

As said in the Corporate Objectives, Friction Material Ltd. is now seeking to come in the Original Equipment merchandise market. Volumes ab initio (during trying phase) will be low, to the order of 300. But one time their samples get approved, they will get down bring forthing these merchandises in really high volumes, to the order of about 3000 DBP/week.

Keeping these facts in head, the Marketing Strategy for the OE merchandise scope is to bring forth and present high quality – low cost DBP on clip, every clip.

2. 1. 3 How do merchandises win orders in the market topographic point?

As mentioned in Section 1, the major factors that win orders for the OE merchandise is Price, Quality and Dependability (in footings of bringing) . Once Friction Materials becomes the pick for OEM for DBPs, they will hold to plan the brakes themselves and therefore Design besides becomes an of import order victor.

2. 1. 4 Establishing the most appropriate manner to fabricate these sets of merchandises – Procedure Choice

We are in procedure of acquiring samples accepted for the new OE merchandise scope. Currently we are fabricating merely the Spares and Specialist merchandise ranges and this is done in a batch procedure flow layout. This is all right for these scopes as they are in little measures of about 300 DBP/week. But the new OE merchandise scope is traveling to necessitate about 3000 DBP/week. Hence the Batch layout will non do to run into this measure demand. The most appropriate procedure pick for such a immense demand is the Mass Layout or the Continuous Layout. But the uninterrupted layout calls for a bigger investing in footings of the money involved. Since Clash Materials is merely get downing to seek to set up itself in the OE market, it would non be wise to bind up a batch of the Companies money into something that might non work out to the magnitude expected. Hence the Mass Layout seems to be a more reasonable pick.

2. 1. 5 Provide the fabrication substructure required to back up production

Supplying the substructure to back up production of the new OE merchandise is traveling to affect some sum of trade off in the sense of a balance between the assorted competitory factors that will impact the ability of the merchandise to win orders. For case, from the polar diagram (Sector 1. 2) we see that dependableness and cost of merchandise drama a really of import function in assisting the merchandise win orders. In order to ever present the merchandise on clip, we must ever hold adequate stock with us to run into the demand. This can intend that we make-to-stock the merchandise. But if we have a batch of stock list, it means that we have a batch of money held up as stock list and this may take to increase in the

monetary value of the merchandise to assist insulate this cost. But this addition of cost may take to loss of an order. Hence what sum of stock list would be sufficient to ever run into client demands and non keep a batch of money in stock list would be the trade off that we will be acute to look for. This procedure of trade off balance will assist the manufacturing/operations to aline itself with the corporate scheme. (Slack et al 2002)

2. 2 Analysis of Current Operations System

Before we can get down formulating and doing alterations to the production system, we must foremost specify what the current system is. We can make this with the aid of assorted tools. We are traveling to utilize the SWOT analysis tool to make the same. Once we know where the current production capablenesss are, we will be able to do determination taking into history the current scenario.

2. 2. 1 SWOT Analysis

Strengths

- The trade name name “ Stop Rite”
- Established manufacturer of aftermarket DBPs in the UK and Western Europe
- Competence in

Failing

- * Bad production planning system even though a MRP system is in topographic point for the same

doing the

brake tablet

mixture

- * Good

liquidness and

turnover

Opportunities

- OE market will take to more chance in the EU market.

- OE market will assist insulate the competition and market portion

because of the Far Eastern Competition

- * Turning to a medium graduated table company will assist in

Menaces

- * Competition for cheaper Far Eastern Competition

being capable
of managing
more clients

Table 2. 2. 1: SWOT Analysis Tool

The trade name name “ Stop-Rite” is one of the chief strengths of Friction Materials Ltd. This is what is assisting them win orders in the Specialist market and the aftermarket market. This trade name name that they have, they have been able to set up it because of being one of the chief sure DBP maker in the UK and Western Europe market. This is besides one of the strengths that they should work. They have a competence in making their ain mixture for the DBPs, which helps maintain the cost of the merchandise down. Besides, as we can see from the financials, their Quick Ratio is about 1. 03 and their Current Ratio is about 1. 8, both of which are really near the acceptable values and hence the company is making really good financially. And as they say “ Cash is King” , this is their chief strength.

But even though they are strong in these countries, their production planning system is non really good, or up to industry criterions. Even though they have a MRP II system in topographic point, the Planning Controller has to fire fight state of affairs that should non originate because of the system. This shows one of the two state of affairss, either the Planning Controller is non familiar with the system or there is something incorrect with their planning system. This can do a batch of jobs if they are to get down production for about 3000DBP/week for the OE merchandise.

Opportunity wise, the OE merchandise can assist derive more market portion in the Western European market and therefore better their trade name name even further. Besides, since this will be a more steady market, this will assist insulate some of the market portion loss due to the cheaper Far Eastern Competitor merchandises in the Spares market. This will assist the company turn financially which is ever the chief purpose of any administration. Once the administration has more market portion and money, they can easy transition to a medium graduated table company and therefore cater to more clients.

The lone menace that the company faces is due to the Far Eastern merchandises. They are about every bit good as their DBPs, but they are far cheaper than Friction ' s DBPs and therefore this sometimes leads to loss of market portion. Entry to the OE merchandise market will assist them to insulate this loss.

Now that we are clear on where the administration current strengths and failing prevarication, we can develop our fabrication scheme to complement the strengths and contradict the failing of the administration.

2. 3 Elementss of Manufacturing Strategy

Miltenburg (2005) divides fabricating scheme in six chief sub-systems and footings them as Manufacturing Levers to reflect the construct that each sub-system can be adjusted to aline harmonizing to market demands and corporate mission.

2.3.1 Sourcing

Current list of all the providers to Friction Materials Ltd. are mostly UK based. This is good as this aid in diminishing the fabricating lead clip of the constituent. Since presently, their production demands are really low, to the order of 300DBPs/week ; they were unable to convert their providers to present Just-in-Time. But now since they are looking to bring forth to the order of about 3000DBPs/week ; they should be able to convert the providers to present Just-in-Time. Along with this, they should convey the list down in figure and likely subscribe long term contracts with their most dependable provider as the demand for the OE market is really stable and this long term contracts will assist with the demand and besides better dealings with their providers. But attention should be taken when such contracts are framed, so that if the provider does non do the bringing, so Friction Materials is free to purchase that demand from another provider. (Quinn and Hilmer 1995)

In footings of the merchandise scope, since doing DBPs is their chief expertness, I feel that they should go on to bring forth all their existing merchandise scope so that they do non lose their current market portion and client base. The degree of perpendicular integrating should be kept to a lower limit and Friction Materials should concentrate on its chief competence of doing the DBPs. Smaller parts of the merchandise like the wadding stuffs should be bought from an external seller.

2.3.2 Process Technology

Hill (2009) uses a profiling method to assist make up one's mind what sort of production procedure is good for a peculiar type of merchandise depend on the profile of the merchandise. We will utilize this profiling attack to make

up one's mind the type of procedure that we will implement for the OE scope of merchandise.

Relevant Aspects	Features of Process	
	Choice	
	Occupational	Batch Line
Type	Particular	Standard
Scope	Wide	Narrow
Merchandise	Order Size Small	Large
	Degree of Change	High Low
	Rate of NPD	High Low
	Order-Winner	Delivery Speed
	Technology	Monetary value
Procedure	G. P.	Dedicated
	Flexibility	High Low
	Volumes	Low High

	Meet	
Key Tasks	Spec.	Cost
Investing	Low	High

Table 2. 3. 2. 1: Hill ' s Profiling Approach

(Beginning: Hill and Hill 2009)

For the OE merchandise scope, we know the followers:

- The order volume is traveling to be really high ; hence the merchandise is traveling to be standardised. Since the merchandise is standardised, it is logical to hold machinery dedicated to the merchandise so that it can churn out more merchandise and assist run into the high demand. This in bend will diminish the flexibleness of the procedure, but that is a tradeoff that has to be taken to run into the high demand.
- We are traveling to bring forth merely a certain types of DBPs, hence scope is really narrow.
- The fluctuations in the design of the DBPs are traveling to be minimum.
- New designs will merely be developed when there is a demand for it, therefore the rate for new merchandise development is besides low.
- Order-winner for the OE merchandise as discussed above is a balance between bringing velocity and cost. Hence the cardinal undertaking for the procedure is conveying the cost of the merchandise down.

Hence we see from the above tabular array, most of the profile of the OE merchandise fits the Line Process pick. Hence in our instance, for the OE merchandise scope, it is advisable that we go for a Line procedure.

Presently, the Spares and Vintage DBPs are being produced in a Batch Equipment Paced Line Flow.

They are presently running operations with 3 machining Centres, each consisting of a brace of inter linked CNC machines with magazine provender. But even with a demand of lone 300 DBPs/week compared to a demand of 3000 DBPs/week, the 3 machining Centres are running at full capacity and frequently require overtime to run into the demand. Hence it is merely logical for Friction Materials to in some new machining Centres for the new OE production line that will be chiefly be used for OE production, as they will happen it really hard to get by up with the demand with the bing substructure available. In fact, Friction Materials should look to get down to put into some of the other machines that they require for the production of DBPs to assist get by up with this new OE demand. It is besides advisable to do this new investings into the store floor as the OE market is a profitable market which has a really stable demand and this demand will be at that place for rather a few old ages and therefore this investing can be easy recovered during the life rhythms of non OE merchandise, but likely two or three OE merchandises.

The current fabrication procedure layout should be adopted for the OE production besides. The procedure has been setup taking into consideration the capacity of the sociable, setup clip on the imperativenesss and stock degrees and hence they are designed to give the whole procedure a flow.

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But putting up a wholly new production line demands a batch of capital being invested and it will take rather some clip before you will be able to interrupt even for this investing. Hence the logical thing to make for Friction would be to put in some new machining Centres, so that they would be able to able to get by with the demand. But these new machining Centres should be dedicated to merely for the OE merchandises. And over clip, with increasing net incomes from the OE concern, they can maintain adding more machining Centres to make a separate line for the OE merchandise.

2. 3. 3 Production Planning and Control

The production of DBPs has been broken down majorly into two procedure ; viz. Pressing and Finishing. The Pressing squad takes attention of doing the brake tablets ; the Finishing squad takes attention of machining the DBPs to guarantee consistence of the physical dimensions of the tablet. Since both these procedures are independent of each other, they are connected to each other with some decoupling or WIP stock list (Miltenburg) . In our instance, the baking procedure is the uncoupling procedure.

The two bin system can be used for stock list control for natural stuffs. In this system, the buffer stock is kept in the 2nd bin and the current stock is kept in the first bin. Once the first bin is emptied and the buffer stock is brought into usage, the purchase squad should put orders to the several stuff provider for refilling the stuff.

For quality control, the administration is already running on Statistical Process Control charts for the Spares and Specialist market. But this is acceptable for these merchandises as their production volumes are non

really big. The OE volumes are traveling to be really immense and therefore SPC may not be the right pick for quality control. SPC looks at keeping the quality of the merchandises that the procedures inside the administration. Since OE is such a large market and where it is ever of import to “ get things right the first clip, every time” ; it is better that Friction Materials looks into implementing Entire Quality Management (TQM) . TQM non merely looks into the quality of parts being produced inside the administration, but it takes the whole supply concatenation into history and sees to it that non merely are the portion being produced are up to quality criterions, but besides parts come ining into the system are of optimal quality as it is improbable to merchandise good quality parts out of sub-standard parts. (G & A ; E Systems) . Besides in TQM, each worker becomes responsible for maintaining the quality of their end product up to standard. Hence this virtually removes the demand of a quality control squad in the administration.

2. 3. 4 Human Resources

The major machines, that require preparation in the whole fabrication procedure at Friction Materials, are the imperativeness machines and the machining Centres. The current work force employed at Friction Materials is really good trained and are flexible plenty to work on any procedure within their block. But we see that there is considerable clip that goes into the apparatus of the imperativeness when there is a demand to alter the design of the tablet. So the employees can be farther trained in how they can cut down the set up clip for the imperativeness.

Regular care is being carried out at Friction Materials by the current work force itself, but they have to convey in a specializer for major alterations and new tooling for the machining Centres. So since this does impact their concern in a manner, Friction should look into a development programme to develop some of their employees in tool development. This can be one of their employee preparation strategies where they can advance talented and experient workers with adequate cognition of the machining Centres.

The spray picture of the DBPs are being carried out manually and therefore they will necessitate a minimal degree of accomplishment so that the DBPs are up to client criterions. Hence they can besides develop their work force for this.

The packaging country does non necessitate a really skilled labor. But to maintain workers interested in this procedure, they can split the undertaking into sub-task, for e. g. a group to set the brakes into the box and a group to lodge the spines onto the boxes. To avoid people acquiring bored, they can utilize a rotational policy and maintain exchanging people between the two undertakings.

Besides, since we are traveling to implement a TQM system into the administration, workers should be trained to see how they can continuously maintain their end products up to quality criterions.

2. 3. 5 Administration Structure and Control

The current organizational construction of Friction Material Ltd. is given below.

Friction Materials Ltd. – Administration Chart

The current administration construction is reasonably decentralized and simple for such a little graduated table industry, which is ever good. There is a separate design squad that takes attention of the design and the quality of the natural stuffs ; a separate purchase squad that is involved with buying. There is a separate squad that handles the IT and finance of the administration. There are squads in the operations division that take attention of the two major procedures. Hence the functions and duties within the administration are good defined and therefore there is no confusion due to improper communicating between sections. With the add-on of a few more forces on the store floor and the gross revenues squad ; the administration construction will be adept for the OE fabrication besides.

2. 3. 6 Facilities

The current company site has the excess room required for enlargement and apparatus of a separate production line for the OE merchandise scope. Since the merchandise is a standardized design, this line installation should be dedicated to merely the OE merchandises, and the already being installations can be used for the other merchandises.

The company is presently located in Lutterworth. There is a batch of skilled labor available in nearby towns and therefore skilled-labour wise, the company is at a really favorable location. Besides, since the town in nearby the expresswaies, it is really easy accessible from the logistics point of position. Besides a batch of re-creational Centres and lodging composites are coming up in the town and hence this will assist in pulling the younger

coevals of skilled work force, who prefer to be in town that have a spot of recreational activities.

For the OE merchandises, since the orders are traveling to be placed one twelvemonth in progress, the demand profile is traveling to be really stable and hence we should use a capacity program that anticipates the demands, as we already know the demand profile. Because of this nature of the demand profile for the OE merchandise, we will be able to be after to utilize the new equipment bought to assist run into the OE demand. In this manner, we will ever be able to provide to the market demands. This will assist in timely bringings and make more client satisfaction.

But putting up a wholly new production line demands a batch of capital being invested and it will take rather some clip before you will be able to interrupt even for this investing. Hence the logical thing to make for Friction would be to put in some new machining Centres, so that they would be able to able to get by with the demand. But these new machining Centres should be dedicated to merely for the OE merchandises. And over clip, with increasing net incomes from the OE concern, they can maintain adding more machining Centres to make a separate line for the OE merchandise.

(Note: Not exact representation of the layout)

As shown in the figure above ; presuming that the current layout is the same ; machines in the single stores that will be dedicated to merely the OE DBP production.

3 Performance Measurement utilizing the Balance Scorecard for the OE merchandise

3.1 Introduction to Performance Measurement

Developing and implementing a fabrication scheme is merely the beginning procedure in an administration ' s strive for excellence and alteration. This scheme has to be measured to look into if the scheme is so traveling the administration towards the aims it had set up when it was coming up with a fabrication scheme. This measuring of the scheme is called public presentation measuring. This measuring is fundamentally broken down into 4 separate measuring sub-systems (Kaplan and Norton 1996) .

<p>Fiscal Position</p> <ul style="list-style-type: none"> • Percentage addition in gross • * The Cash-to-Cash rhythm: Check to see if this has increased or decreased 	<p>Customer Perspective</p> <ul style="list-style-type: none"> • Customer Satisfaction • * Customer Acquisition
<p>Internal Business Process Perspective</p> <ul style="list-style-type: none"> • Quality cheques • * Asset Use 	<p>Invention and Learning Perspective</p> <ul style="list-style-type: none"> • Employee Satisfaction and keeping

and Per

Employee

Contribution

- * Motivation

and

authorization

of the work

force

Table 3. 1. 1: The Balance Scorecard.

(Beginning: Adopted from Kaplan and Norton 1996)

3. 2 Financial Perspective

To see the fiscal position of public presentation measuring, we can categorize the merchandises into 3 chief categorizations ; Growth-stage, Sustain-stage and Harvest-Stage (Kaplan and Norton 1996) . See the above categorization ; we can safely state that the OE merchandises will fall under the Growth-Stage merchandise categorization.

For such a merchandise, Kaplan and Norton (1996) say that the most common public presentation measuring system should be the per centum addition in the gross and the gross revenues growing in the targeted market of the merchandise. Besides another step can be the per centum of gross generated by the new merchandise entirely. Fiscal steps like Cash flow addition and ROCE will non give a clear message of the public presentation because normally with new merchandises, there is capital investing that is involved which may ensue in low ROCE and sometime negative hard

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currency flow excessively. Hence these do not give a clear message about the public presentation of the system. Big MNC 's like Hewlett-Packard and the 3M Corporation are known to hold implemented such system, when they have come up with new merchandises.

Another step from the fiscal position can be the Cash-to-Cash rhythm clip. Cash-to-Cash rhythm is fundamentally the clip taken by a company to change over hard currency payments to supplier inputs to hard currency gross from clients. The smaller this clip period, the better is the hard currency liquidness of the company and hence this is ever good for any company (Kaplan and Norton 1996) .

3.3 Customer Perspective

In the client perspective constituent of the Balance Scorecard, an administration tries to place the client and market section that will assist bring forth the gross for the fiscal aims of the administration. Of the many possible public presentation measurings, concentrating on two peculiar can give Friction Materials the proper step of how the alteration is the system is impacting their client, viz. Customer Satisfaction and Customer Acquisition (Kaplan and Norton 1996) .

Customer Satisfaction fundamentally deals with market study and feedbacks from the market and client to happen out how they feel about the merchandise and service they are having from the administration. This can be done in several ways, to call a few monthly feedbacks, mail studies, telephone or personal interviews with the client. Sending out a study is really easy, but if it is not designed specifically to acquire the replies you want

organize the client, they can give a incorrect step of the client satisfaction. Hence it is really of import that the study are designed for the intent of acquiring the proper feedback from the client. This sort of method is used by many administrations like British Airways, Boeing, Proctor and Gamble, Xerox, 3M, PepsiCo to call a few (Kaplan and Norton 1996) .

Another step of the procedure from the client position can be Customer Acquisition. This is a step of the rate by which the merchandise attracts new clients in the targeted market section. Since the OE concern is a new section for Friction Materials is new, this could be a good step to warrant its investings to acquire into this concern (Kaplan and Norton 1996) .

3. 4 Internal Business Process Perspective

This position of the Balance Scorecard fundamentally deals with placing procedures within the administration that can add value to the client ' s and the fiscal aims of the administration.

Other generic factors like Quality can besides give a good step of how the scheme has affected the overall quality of the system. There are assorted ways to mensurate quality, for illustration Statistical Process Control.

Directors should hold a good estimation of the overall plus use of his/her works. This use can assist him nail to indicate of constriction in the production line. This includes assorted factors such as set-up clip, breakdown clip, etc that affect the overall efficiency of the machinery at the store floor. But the of import thing to observe about this step is that it needs a batch of attempt from the store floor employees and hence may non ever give a

really accurate step if the employees are non comfy with the assorted nomenclatures involved with such a survey.

3. 5 Innovation and Learning Perspective

This constituent of the Balance Scorecard develops the steps to drive organizational acquisition and growing. Some of the steps to make so are Employee Capability, which is broken down further into Employee Satisfaction, Productivity and Retention ; and Motivation and Empowerment of the work force (Kaplan and Norton 1996) .

Employee Satisfaction can be measured in assorted ways like studies that can be done yearly or a rolled study can be done which involved a random group of employees taking portion in the study. This study can be done across all degrees of the administration (Kaplan and Norton 1996) .

Since most of the machinery is being controlled by homo operators, employee productiveness contributes to the value add-on to the merchandise and therefore this can be one of the steps that directors can utilize to better the per employee productiveness to fulfill both the administration ' s fiscal and the client ' s demand. This per employee part can be calculated by subtracting the cost of external stuffs and service from the entire gross generated. This value is so divided by the employee compensation to give the per employee part (Kaplan and Norton 1996) .

At the terminal of the twenty-four hours, if the employer is non able to retain employees, so it is a loss of rational investing for the administration and hence this must be measured. It is normally measured by per centum of cardinal staff turnover (Kaplan and Norton 1996) .

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Another step of the acquisition and invention position of the Balance Scorecard is the Motivation and Empowerment of the work force. This can be in ways such as doing the work force feel involved with some of the concern determination that are taken in the administration. These concern determinations can be something that affects their work or working environment. This can be done by inquiring the employees to set forwards suggestion as to what they think will assist better a portion of the concern procedure that can assist accomplish both the fiscal and client aims. Then after serious review of the good suggestion, some of them can be applied. These suggestions should at the same clip be displayed to the employees to do them experience that their suggestions are taken earnestly and besides acted upon if they are good plenty. This gives the employees both motive and a feeling of authorization ; that even they can lend to the development of their administration is a bigger and better manner (Kaplan and Norton 1996) .

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