

Systems analysis and Design
Prof. V. Rajaraman
Department of Super Computer Education & Research
Indian Institute of Science, Bangalore

Lecture - 03

We saw that there are six major functional areas, which are important in any organization. And when you design information systems, you have to be able to create a, to the requirements, in all these functional areas. These functional areas are we pointed out our production, marketing, materials management, finance, human resource development and research and development.

Among these, we did talk about production. Not every organization may have really production, but most organization will have. For instance, if you are really a company, which is retaining materials like food mart, then you do not really produce anything. You only get things from your suppliers and then, you market it. So, on the other hand marketing is an important part of any organization.

Whether, it be a organization like a motor car company, or it be a food world kind of company which does, these sales of all materials, they buy from their vendors. Or even a company, like Google, which is primarily based on web and their major product is a effectively search engine. So, they also have to have what I would call marketing. Because, marketing is very crucial in the case of any company.

Particularly so, if you are in the area of software design. And try to market the software products or even hardware design and hardware products. If you are making, say for instance some personal computers some PC's. Or something equivalent to that, the company's are future is very much depend upon, how well you are able to market the product you made. It may be the best product.

But, unless the marketing is effective, one will not be able to make any kind of a profit for the company. So, marketing is an important aspect a very company. Besides marketing of course, every company will have functional areas or finance. Because, without money nothing moves in this world. So, you have to have finance and you have to have materials, there is a materials ((Refer Time: 04:08)). I mean, but then materials may be there definitely in many most companies. Including, for instance a web based company like Google their materials are primarily the servers, which they have to buy.

And they have to maintain the servers, they have to have huge bank of servers and deployment and so on. So, materials are a part of many company. Then, apart from that human resource, no company can act without people. And people are the most important part of any organization. And the people, how smart they are, how satisfied they are, makes a lot of difference to particularly software companies. Software companies depend upon the intellectual labor of people.

So, their production is primarily software, or writing programs or developing systems. For them, these are all done by people. So, unless the people are satisfied and the people are productive, the company is not going to make a reasonable product in reasonable time. So, managing human resources in any organization is very important part. Research and development is extremely important, in all the newer technologies.

Particularly, in telecommunications, in computing, in even motor car, which are being made in search engines; and other types of web based products. It may not be all that important in companies like food mart, which really are just selling. The research and development may not be an important aspect for them. But, in general all the six functional areas will be there in most organizations. And at least four of them will be there in almost every organization. So, now we look at marketing at some length.

(Refer Slide Time: 06:37)

INFORMATION FOR MANAGEMENT
Marketing Management

Strategic Information

- Search for new markets and marketing strategies.
- Analysis of competitors strategy.
- Technology and demographic forecasts and product changes.

1.3.6 System Analysis And Design © V. Rajaraman 32 of 75

As usual, we look at the requirements of information, under the categories of strategic requirements, tactical requirements and operational requirements. And among these, the

strategic requirements are really requirement by top management, which are an overview of the business. And they want to kind of grow the business in the long run. And tactics are the second level of management, who having desire on a particular strategy; try to make the best out of the strategy.

In terms of what I would call tactics, which last hour I pointed out an example of a cricket team; where strategy is something, which is designed by the coach and the captain and the selectors and so on. And the tactics on the field by the captain to win the match. So, similarly to make the company profitable, tactics is extremely important. And the tactical information is what is the major work, which is done by the middle level managers.

And of course, operational information is luminous. And that is required for day to day running; and they require a lot of that operational information. In order to able to we have informed decisions at the tactical level, as well as the strategic level. Unless you passes, I will have a day to day information, people on the top will not know really what is going on day to day. They do not need to know everything.

But, they had need to have the digest of what is the state of operation. And how the strategy has important on the operations. Is the strategy left to better operations, or the strategy is left to worse operations. So, they can change the strategy based on the results of the operations, which is obtained by the operational information. So, coming to marketing, as I said marketing is the most important part of the working in every company.

And even in a company such as Google, the marketing strategy has been extremely important to make that company prosper. One may wonder, what does a search engine, where do they make money. And in fact, they have to make money to survive, because you have continuously improve their search engines. They get into new areas and so on. So, they have to have reasonable profit coming into their company, for being able to be there, for the long all.

And everybody is trying to compute with this kind of business. Now, this strategy which one has to look at is, what is the markets, what are the new market which are developing. And what are the competitors doing and what is the technology and demographic forecast and product changes. And these are the marketing, primarily consists of methods

of looking at what the competition also does. So that, you can appropriately change your method of working.

To look at an example of Google, what they started, when they started with this search engine, there are 20 search engine already in the market. And they have to make inroads into this market, where is already a lot of competition. So, what do they do, in order to get the market they give a free. So, they started giving away, the Google free in the sense even today, you can log on to Google dot com; and search the web.

And over sometime by word of mouth and by people actually using it. They found that, their first strategy in search engine was performing much better, than the existing search engines. So, there is a lot of people starting to move, to using Google. Now, when they start using Google that means, you have to actually improve it to survive. And in new way ((Refer Time: 11:41)), of course they cannot be developing all the software free of cost. And putting all the servers and so on; with no revenue coming in.

The original revenue of course, came from some so called venture capitals to give the money, to get something started. But, to sustain you have to mark it. Now, the marketing is very interesting in this case, because people are used to using this Google being free. Suddenly you say, in order to use Google, you have to pay some money, may be very quickly your marketing vanish. So, you have to take a strategy. So, their great strategic idea, was that they went to advertising people.

And then, as I said people, lot of people use of search engines. And they search for a particular item on the web, like for instance searching for say information about cars. When they search for the information about the cars, then I will give along with the results of the search a little add. Saying that, your car is one of the best in the market and so on.

But, not of course, it is not ethical in the sense that, he is only putting an advertisement. For you which synchronizes with the search which a person is doing. So, there is no point in giving some advertisement regarding, magi noodles, when somebody is looking for search. So, it is extremely important to kind of synchronize, what you being. So, that technology there is developed with the result that, they are able to synchronize with advertising with the search. And getting the, money from advertisers.

So, effectively they are getting money from the tutor and then, giving it to ((Refer Time: 13:54)). And as far as you are concerned, you are very happy to continue to receive free search. And we do not particularly mind those adds, as long as they are not intrusive. If they intrude and somebody gives a better search engine, without all those inclusions very quickly. People will desert Google and go to some other search engine.

So, these are to be people have to look out for this strategy. Or the company must be to continuously look out, for these problems. And, if you take an another example of a motor cars. The motor cars us as today in India, there are many company which are competing. On one hand, there is old Maruti, which is being there for the oldest company making many cars.

Then, there this Hyundai which came up and then, there is Tata which also give up a motor car. And there are other companies like Fiat and so on, which are there in the market. There are at least about half a dozen companies in the market making cars. So, the top management has to take a particular strategic decisions, of what do I do with different models of my car. And how do I look for new markets of my car, then how the Indian market is somewhat getting saturated.

In the sense that, there are too many competitors and so on. So, do I look for say market in Sri Lanka, do I look for market in South Africa or do I go to far East or do I go to Europe. So, these are issues in terms of looking for the markets. And doing some kind of a strategic decisions and either going to say a market like South Africa or Sri Lanka will decide not to. Because, the top management may be think, that the logistic are being able to send the cars, and getting profit out of that.

And the local competition there, to overcome that may be quite difficult. And another strategic decision you may take, is that the way in which car is sold. Car is sold through a lot of agents, who are there in the so called partners who market these cars. And they give service after marketing. So, some your car face after you buy it, then they essentially try to help you. And get the car set right free of cost.

And even take your car from your home, for free servicing or for free repairs, at least for the first 1 year or 2 years and so on. So, these are issues, the strategic people have to decide. And you have to also look at the competitive strategy. Suppose somebody else is giving, some kind of free service, he says 3 years it is free service. And I will give 1 year

free service, is it worth going for a 3 year service or it not worth going for a 3 year free service, that kind of decision one has to take.

And you also had a look at the demographic forecast. In other words, what I mean by demographic forecast is how is the population growing. And at what age groups are people there? In fact, India has a large number of young people, who are getting into the labor market, starting to make reasonable amount of money. And now you have to see, whether you had our strategy to meet the requirements of this younger people. And they may not require a large car, you may just try a small car, as a beginning thing.

So, Maruti strategy has to come up with a small car at lower cost. So, once you buy the low cost car and get used to it. Then, you will become slightly richer, and want money to dispose. Then, you may decide that, you go for a Maruti itself with a better model or more expensive model. And of course, they have a strategy is may be, if you are an x Maruti owner; and you want to abbreviate a new Maruti, I will take back your old car. And pay some money or I will give some concession in the new car.

These are the kind of strategies, which top management has to decide. So that, once they get a customer, they try to keep the customer happy, right through possible his career. So, that he goes on being loyal to you also. So, again give some called loyalty bonus some things of that type. So, this is essential what the companies try to use strategy.

(Refer Slide Time: 19:13)

INFORMATION FOR MANAGEMENT			
Marketing Management			
<i>Tactical Information</i>			
<ul style="list-style-type: none">▪ Advertising techniques and analysis of their impact.▪ Customer preference surveys.▪ Correlation of prices and sales.			
1.3.7	System Analysis And Design	© V. Rajaraman	33 of 75

Now, in order to do this strategy, you also have to look at the tactics of what you, how do the middle management to use the strategy and make it to work. So, you have to look at for instance, how to advertise, the fact the strategic decision is taken. That the, if you are the existing owner of a small car. And you want to abbreviate to a bigger model, then I will give you concession. Or I will take back your old car, ((Refer Time: 19:47)) advertise, people that should know.

So that technique should I use, how widely should I advertise, how is it going to cost me. Is it written in the advertising revenue, worth the cost. Also today, there are plenty of different avenues of advertising. You can advertise in TV, you can advertise in papers, you can advertise in on the web. As I said Google's major revenue is advertising revenue, you can advertise in the web. So, there are so many different areas to reach it you can advertise. But, you have to decide which is more cost effective.

So, you really have to have an information and analysis of information, in terms of intact of certain types of advertising on the increase in revenue. Suddenly you put a TV slot, and you found that, because the TV slot which you had, suddenly people start enquiring about your car. And you asked a feed back on that, then you that this TV slot has really helped. And so that is the kind of thing, which I mean by saying the analysis of impact. And also surveys of customer preferences, in other words you try to look at who prefers what type of car, you may go for Tata car or you may go for Maruti car and so on.

And then, you ask a question why you are doing this. And one way of doing this is by saying out question as to people, but nobody answers questioners, because it is bore. You know you have to fill up all that form and returning it so on. So, sometimes you use a tactic of saying that well, if you fill up a form and send it to us. And I receive the form, then you are eligible for a lottery, which free car and so on. So, little bit incentive for fill that form.

But, most people may not think to after you have possibility of getting lottery car is so little. That you may not worth, you may not think it is worth spending out time and doing that.

So, normally people what, you had to have a tactical method also of whether to use this form method, or to send people to enquire from house to house. But then, people cost a lot of money to go and enquire. So, this gain determining the cost benefit of all these

methods. And now what is the correlation between prices and sales. If I reduce the price is sales going up, or should I sometimes what happens is, if the price is made low, people think that it is a cheap product, they do not buy it.

They go for a expensive one, because they think an expensive product is better quality. So, there is also ((Refer Time: 23:12)) involved in this. So, to pricing at the right level is an important tactical decision one has to take. Like for instance, if you take say computer, you are trying to manufacture computers in the market. And sell computers in the market. Now, everybody talks about the sum 10000 PC and so on. So, is it really feasible to have that kind of a machine, even the people claim that sum 10000 is now available.

But, the question is what do you get with that sum 10000. And is that machine full fill all the requirements. So, one has to also look at the fact that by putting the sum 10000 PC in the market as many sale suddenly gone up. When it is gone up suddenly, because of this lowering of price, may be I can make a nice product the margin of profit is small, and get my money through margin. There is the margin is small by volume.

Huge volume is sold in a small margin to get a profit is quite high. Very interesting example of this, what is the tact which has followed by a Borland in the olden days, which came up with a compiler for Pascal. And when they came up with a compiler for Pascal, they sold it at 49 dollars. We just considered a very low price, compared to compilers already in the market, which are selling for 1000s of dollars.

Now, when it is a 49 dollar thing, immediately people started to looking at it. Because, first of all they are concerned, may be it is not very ((Refer Time: 25:19)) compiler. And started using it, because the companies are giving sample copies. When you start using it and you found, that is as good as any in the market. Suddenly the market size increased and lot of people millions of copies are sold. And so even the margin on the each copy is small, if you multiply a million even 5 dollars per copy, it becomes a huge amount.

And interestingly in software, the cost is not linearly proportional to the number of products which are sold. What I mean by this is, in a car there is a fixed cost for producing a car. And whenever you sell a car, the price of the car must be higher than the fixed cost of the car. And that is the profit margin. In the case of a software, the fixed

cost of fund, that is the amount of time you spend in developing the software. And the number of people who worked for it and so on.

So, all your money is already gone, in terms of clearing that product. So, now the larger you sell, that cost is not going go up for you. Whereas, your profit is going to go up for each new product, because the cost of a new software is one more copy of a software is cost of a CD. And CD cost no money at all really speaking, compared to cost of that software. So, the marginal cost of selling extra software is, in terms of production cost is almost 0.

Whereas, the profit is constant. So, profit can sky rocket, if your volume goes up. And that is essentially what they found. And these are lessons learned by lot of software suppliers. They said that, it is better to kind of price it, at a reasonable level and try to get volumes. And make your product good quality, so they sell by itself. And also the method of giving something free, as a so called a trial copy for something like a month. And a trial copy, if you use for a month and feel satisfied, then you pay for it and keep it.

Otherwise, I will kind of a make it go away from your machine. So, these are the kind of tactical methods, which people follow.

(Refer Slide Time: 28:03)

INFORMATION FOR MANAGEMENT

Marketing Management

Tactical Information

- Sales force deployment and targets.
- Exploring alternate marketing channels.
- Timing of special sales campaigns.

1.3.7 System Analysis And Design © V. Raja

Now, the other tactical thing one has to do is about, how to deploy your sales force. People have to in any product, you had to have some other sales. Do you really have

people go around selling or this advertising sufficient for selling. These are issues they really have to look at, in terms of the sales force. Like in the case of for instance, sale a books. The sales force, this goes to various book levels and college, teachers and so on. And tries to promote the book.

And so the sales force becomes very important, to make the book known to the public. And being available by producing it in book store and so on. So, where do I deploy this sales force, by deploying in North India or South India or East India or West India. For books for instance, many of the companies deploy lot more people in South India. Because, the number of engineering colleges in South India is huge, compared to that of colleges in North India.

So, there is again a decision, in terms of how to deploy. And what are the alternate marketing channels, do they sell books by the web or by book stores and so on. And you have a special sales campaigns, these are issues which tactics are important.

(Refer Slide Time: 29:35)

INFORMATION FOR MANAGEMENT

Marketing Management

Operational Information

- Sales analysis by regions, customer class, sales person.
- Sales target versus achievement.
- Market share and trends.

1.3.8 System Analysis And Design © V. Raja

The operational information, which is important in marketing management is as I said to feed the tactics in strategy. You looked at the sales force deployment, as a tactical decision. The operational decision is to, at operational information required to take this tactical decision is to find out a sales analysis by regions which customize, which sales person sold and so on. And the operational information is very important to be able to also reward a better sales person and so on.

Suppose a particular sales person in area did extremely well. What normally companies do is to give some quotas, to each sales person. Saying that, you are suppose to sale this much. And if they exceed that quota of considered amount, then you have to give a bonus and make him give an incentive. So, that information should be available to find out whether he exceeded quota or he is below quota. If he is below quota of course, you have to warn him and so on.

So, this is the computer continuously computes or determines, active of sales who is sales person in charge and so you have a table, which is operational information. And then, you give a exceptional report based on table, giving the people who have exceed the target, by considerable amount. And tactical people may have to tell you, anything which exceeds 20 percent of the base amount, you let me know. Or if it is below 10 percent of the base amount you let me know.

If it is below 10 percent that means, the guy is not doing too well. Above 20 percent means he is doing extremely well. So, then I can take corrective action. The person is just going straight ahead and keeping up his quota, and they do not inform at all, at the tactical level. So, the guy continues and that is the kind of thing, which because I do not require, I should not have too much of information. So, similarly the question of market share and trends, there is what the market share is again computed.

By looking at the how the other competitors, what their total market, how much did they sell. And then, this information is detailed information on how much they sold in Delhi. How much they sold in Chandigarh, how much they sold in Chennai, how much they sold in Hyderabad and so on. The lot of data is available at the operational level. And this data has got to be digested at the tactics.

(Refer Slide Time: 32:52)

INFORMATION FOR MANAGEMENT

Marketing Management

Operational Information

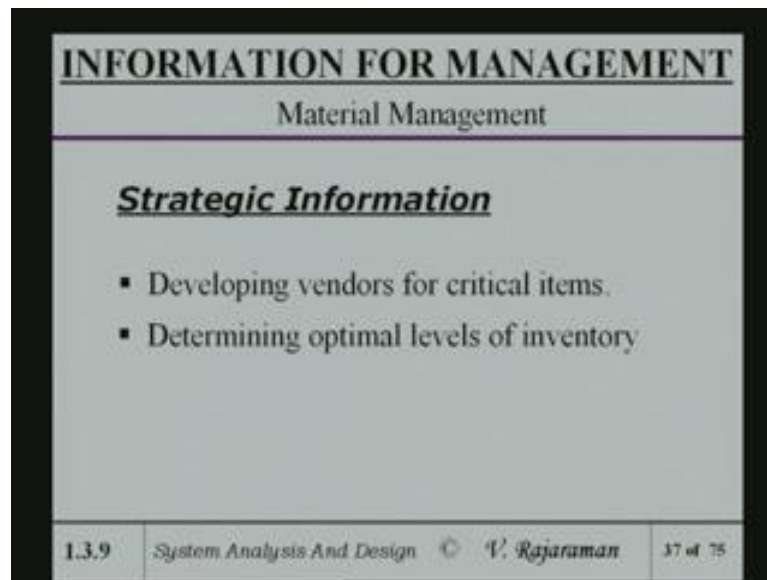
- Seasonal variations.
- Effect of model changes.
- Performance of sales outlets
- Costs of campaigns and benefit.

1.3.8 System Analysis And Design © V. Rajaraman 36 of 78

And operational information has seasonal variations, where we are selling gold jewelry for instance. Gold jewelry is always a variation in festival season, like Deepavali, there is a lot more sales of gold than the other parts of the year. And in South India during something like Sankaranthi there is lot more sale, or during new year Yugadhi or something there is lot more sales. So, all these things you have to look at the variations. And that is essentially done by collecting the data.

And when you change a model of a car, say Maruti for instance, when you rent from 800 to something else. And was there a perceptual change in the demand for that car. That again is a detailed information and one has to analyze that, and how your sales outlet doing. Or how they are performing is the way in detailed information. And one has to digest it and cost of the campaign, what exactly the campaign cost and how much is the benefit.

(Refer Slide Time: 34:09)



So, these are the things, in terms of what I would say lots of details, which has to kind of get digested. Materials management is really how to manage the requirements of the materials for the organization. Like if you are a car maker, then you require a lot of materials. Like on a sense, you require a seats of a car, you require steering wheels, you require horn, you require tires, you require head lights, anyhow ((Refer Time: 34:51)) items.

And so with the ((Refer Time: 34:56)) items which are there, you have to decide on whether what kind of development should I offer when they like. You know it is not possible for every car company to make all their materials in internally. Like suppose you want to make say a horn in your car, in your car company, a horn is a low cost item, but it is a crucial item. And it may not worth your while to do that, because your labor cost may be very high. And it may not be worth really putting that, if the quality is good.

So, you may take a strategic decision that horns are important. But, I do not want a kind of a invest a lot of money in that and break all these things. So, why do not I develop a vendor or a supplier, I get over a small scale person in the nearby area, entrepreneur. And tell him look here, I have a requirement for 50000 horns every 2 or 3 months. But, can you make the 50000 horns and also giving the know how to make it. Because, the small scale person may not have to know how, and train him today that and so on.

And then, you develop that vendor. Once he becomes a good vendor, then your headache is removed. That is he makes good horns for you apart to your specification. Also the horn maker, tries to sell it that horn to other companies also. And then, he will try similar advantage, because of if your volume goes up, then this cost will go down. And new also get the benefit. So, vendor development for critical items is an important part, of any new materials management.

Similarly you know. the development of for a publishing company. developing a paper vendor. So, saying I require this quality of paper. So, can you produce that quality of paper. And essentially trying to develop that person. And another important strategic decision is what the optimal level of my inventory. In other words, suppose I buy horns, for my car. And expect there is about, I will say 50000 cars.

Do I buy 50000 horns ahead of time. And if I do not sell 50000 cars and sell only 30000 I will be holding 20000 horns, for which I have paid and I am not getting any result. So, that is very bad thing to do. In fact, many of the Japanese companies, their major method is to so called just in time manufacturing. That is they do not keep anything at all as a buffer in their company, or inventory in their company.

They expect the vendor to supply the item as if when required, which there is in specified time. Like I say within 8 hours I require this item, they should be ready to sell it, send it to you. This possible in many areas, where the liability of the entire system is very good, in terms of transport, in terms of general situation and so on. Is somewhat like that, normally let me gave a very homely example.

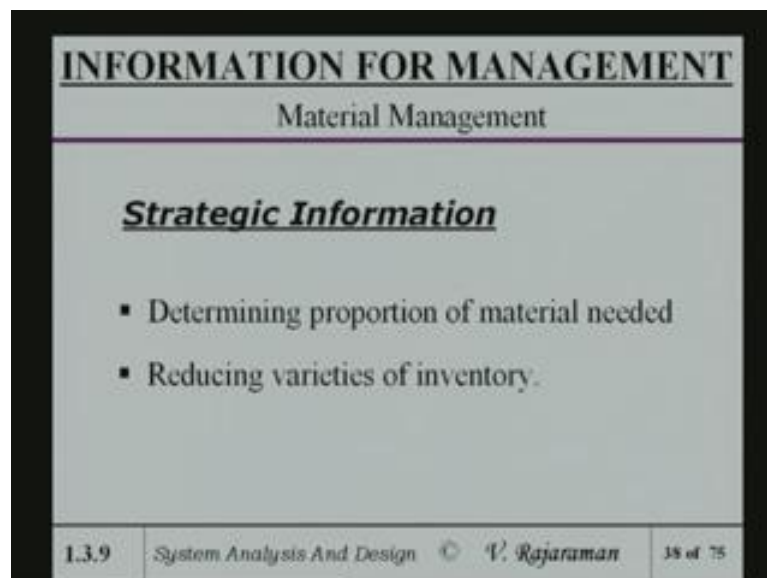
Suppose, that in your house, is going to be 24 hours of water coming continuously. And water is never fails, whenever you open the tape water comes. Then, what will you do, will never fill the buckets in your house, or you will not have a sump or over head tanks and things like that. So, as you open the tape, you can be assured that the water will come. That is called just in time water, when you require it the water comes.

But, if it turned out that the supply is irregular, for various reasons, the 2 days only you get, once in 2 days when you get the water. Then what you do, fill up all the buckets enough for 2 days. And this I would say in some sense waste one, because you may not use all the water. But, you you want to be error on the wrong side, because you do not want to be kept caught got without water. So, you will over stock water. Same thing in a

country, is suppose transport system is not very reliable, a lot of delay in transporting the items.

Then, I have to make a buffer stock or inventory to carry out for that transport delay. And also for un forcing disruptions, like strikes, bandh and things like that, which are not normally common things, like bandh are not common in countries like Japan. So, they do not have to worry about this law inventory. Many of the Indian companies are forced to keep the Coventry, because of this problem. Then, that is strategic decision, how much do you keep, how reliable is your system going to be and so on.

(Refer Slide Time: 41:05)



Determining proportions of materials needed, I mean and reducing varieties of inventory. In other words, another important thing in terms of proportion of material needed is also proportional items, which I specifically look out for. Has to be look at with some detail and reducing variety is extremely important. In other words, the more the variety, the more the different types of inventory I have to keep. In fact, one of the interesting thing which strategy, which every one use to adopt.

Even today many computer manufacturers adopt is that, they fully load up a machine. And then, they remove some features, the software and give it to you. Because, the varieties only one variety is there. And then, you order more things, then they will enable that part. Like in order to use to have a electric type writer which could supply, which

could type both Greek letters and English letters. And the design is such that, both Greek and English letters is possible.

So, when you did not ask for Greek ((Refer Time: 42:33)). But, the machine will be safe, the desired will that Greek part in the machine. And somebody wanted the Greek part, they enable that part. Because as you know, many of these machines are nowadays grew into software and you can do that. So, it is reducing variety, in terms of the profitability is better, because you only make one type.

(Refer Slide Time: 42:59)

INFORMATION FOR MANAGEMENT

Material Management

Tactical Information

- Developing vendor performance measures.
- Determining optimal reorder levels.
- Determining issues of items to shops versus standard needs.

1.3.10 System Analysis And Design © V. Rajar 75

Now, tactical information in material management, is in terms of the as I said the you develop the vendors. And when you developing a vendor, want to have monopoly vendor. Because, there is a monopoly vendor, then after some time you start asking for whatever price, you think you can pay. So, you really have to have multiple vendor development. The strategy may be too in fact, have more than one vendor developed; and tactics will be how many developed vendor.

How do I make up my orders, among these three based on their performance. So, come up with performance measures. Performance measures, may be in terms of quality of what they are producing. Responsiveness, with which the made by request and in terms of cost also. I mean are the free vendors one of them may cost more, little bit more, but his material may be much better quality. So, I have to have some method of measuring them.

And also optimal reorder levels, optimal reorder levels what it really means is that. When the inventory goes below certain value, at what value before will below, which it goes do I decide of reordering. This essentially related to the buffer. But, in just in time inventory business, then there is no question of reordering level. Reorder level is 0, whenever you know I get almost 0, I ask by phone to send this supplies.

But, if it is a situation when another ((Refer Time: 45:04)) supply for some reason, then you have to decide based on unavailability. Let water in all 2 buckets or 3 buckets and so on, depends upon your consumption pattern. And how quickly can the new supply come and items you shops versus standard needs. What it means is that, in a assembly shop which assembling cars, is the assembling 1000 cars a day, you need 4000 tires plus 1 spare tires. Now, you have to have that 4000 tires ready.

But, you may not put all those 4000 tires in front of you. But, you may submit in groups periodically, determining the period and how to issue, what is the standard deal in standard times in a tactical decision.

(Refer Slide Time: 46:08)

INFORMATION FOR MANAGEMENT	
Material Management	
<i>Tactical Information</i>	
<ul style="list-style-type: none">▪ Controlling high value of inventory.▪ Determining impact on material cost and procurement with design changes and new product introduction.	
1.3.10	System Analysis And Design © V. Rajaraman 40 of 75

Controlling the high value inventory. In fact, one of the interesting things the most companies do, is what is called ABC analysis. That is, they look at the costing inventory item and divided upon three groups. The A group which is a high cost item, B group is a medium cost item, C group is very low cost item, you do not have to worry too much

about it. About reorder level, that is not critical. C level may be nuts and bolts, B level may be horns and mirrors and so on.

A level may be gear boxes or engine box, which are very expensive. So, I pay more attention to the high value inventory and not asking ((Refer Time: 47:17)) to see. Because, they really matter too much to me. So, if I concentrate on the high value items, in the long run I will save lot more money. That is what is called controlling high value of inventory. Determining impact on material cost and procurement with design changes and new product information..

In other words, suppose I want to change the model of a car. Then to what extend will the old items work, do I require new materials, do you have to develop new vendors. How the cost of the materials will impact it, so these are things which one has to be concerned about, whenever a model is changed.

(Refer Slide Time: 48:10)

INFORMATION FOR MANAGEMENT			
Material Management			
<i>Operational Information</i>			
<ul style="list-style-type: none">▪ List of excess & deficient items received.▪ List of items rejected.▪ Critical items received.			
1.3.11	System Analysis And Design	© V. Rajaraman	41 of 75

And operational of course, as I said a lot of detail, in terms of excess and deficient items received from the vendor. List of items rejected, because of their poor quality. But, a critical items received, so I can immediately tell the manager, who waiting for the critical item, that is come you can start using it. So, quickly the information has to circulate upstairs.

(Refer Slide Time: 48:35)

INFORMATION FOR MANAGEMENT

Material Management

Operational Information

- Stores in transit and in inspection.
- Value of inventory in hand.
- Goods received, rejected and issued.

1.3.11 System Analysis And Design © V. Rajaraman 42 of 75

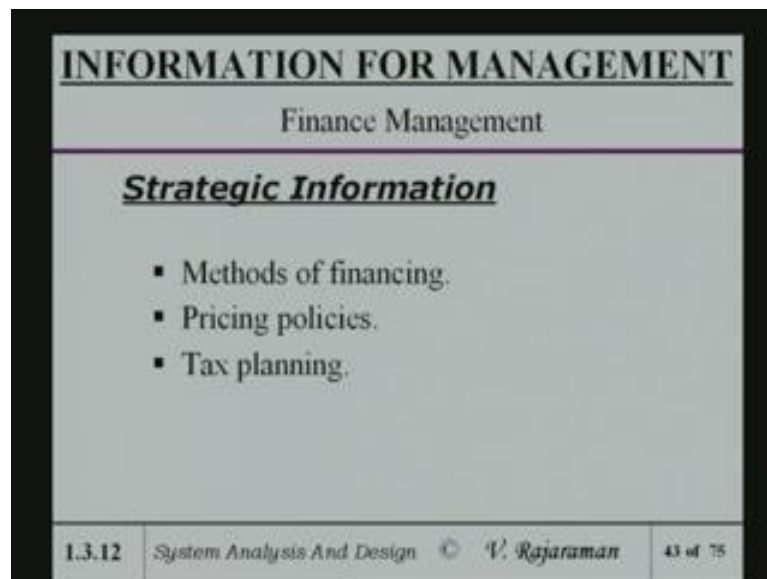
Stores in transit, because mainly for something for no dues and transit. I do not have to reorder many in a big hurry, now in order to to come and how much is already come is being inspected. I can expired inspection, if I am running out of that material. So, these are operational information, which day to day I will gave it to the, in terms of how the what I really mean by this is, more the critical item; the exception report can go to the tactical manager. Saying that critical item, which you are really looking at, it is in inspection.

So, now he has inspectors ((Refer Time: 49:24)), saying in a ((Refer Time: 49:25)) and other things do this first and send it back. So, this operational information is important. Value of inventory in hand, what is inventory which is in my hand. So that, I do not have too much of desk stocked. Because, too much of inventory in hand and it is too expensive, then I am losing money, because it is dead. The value has to be known to the to the, so that it could be exhort to top management.

From day to day, the value should be available. What are the goods received, what are rejected and what is issued. These are all details, which whenever some goods have come have or to have record. What is the rejected, what is the issued, it is taken into stock. Then, you have to inform the stores people, that is ready to be taken to the stock. And once it goes to the store, you have to tell the finance people, that money has to be paid because item has been taken into stock.

So, then he has to generate a cheque, this is operational information. Daily these things have to happen, as when an item is taken into stock and stored, the payment has to be made. If the payment is delayed, then you have a bad relations with vendor and so later on he start reducing on supplies, stopping your supplies like that. So, this operational information is very important.

(Refer Slide Time: 51:22)



Finance is the next major item, which you have to consider in some detail. Because, I said no company can really work without money. And so strategy is in terms of how do I finance my operation, as I said I gave an example of Google. The financing at the beginning is a whole year of venture calculus money. That is some fellows gave me venture capital and I use that venture capital money, to be able to finance my 1st year of operation.

After that, how do find out some method of financing, I have to get a revenue stream. Some income has to be generated. Now, the method of generating is an income is one the interesting top management strategy. But, how much do you require to sustain the operation, something which are finance manager has to worry about. How do I price, is another important part of any company.

I gave an example, in fact of the pricing idea of Borland or Pascal compilers. Similarly, in India now, what is the most important part, one of the most widely selling product is a accounting product called Tally. So, lot of people buy it for accounting. Now, those

people has to decide what pricing should I do, if this particular product is got to be adapted by small shops.

If I decide that the, if I tell the small shop keeper who has a computer, that to have accounting package from me. It is going to cost you 12000 rupees, he may say only computer itself cost 15000 rupees, why should I pay 12000 rupees for software. That is the normal reaction of any person. So, if you have to look at is the pricing appropriate for the customer to whom you are selling. So, strategy may be that, if you want to sell lot more, may be I make a special dispensation, in terms of kind of cutting down on features like ((Refer Time: 54:12)) and necessary features.

And give a bare bones or core, and priced I say 500 rupees or 1000 rupees whatever and survive of volume. So, these are kind of pricing policies. Tax planning, the tax planning means that, every year as taxes cannot be or inevitable. There is some body put it dead in taxes, of true certainties in life. And so you have to pay your tax and you have to find methods of planning for that. In fact, certain companies what they really do, is put their production in some small state.

Like Pondicherry or Goa or somewhere, where the taxation is very low. Or they sell make it there and sell it to another state, may be the taxation is not is lower. So, you desire on where to do this, and tax planning could be able to get some profitability. The important point is that, tax planning does not mean, that you try to cheat the government by not paying tax, that is wrong. That this means is that you follow the rules in a game.

Rules of a game as decided by the budget and the government. Within the rules of the game, what is strategy of follow to reduce my impact of taxes. So, that is essential what is tax planning. And tax planning is of course, there for both large company and even for individuals, one has to kind of have. So called tax planning guides, which are coming reduce your overall taxation burden, within the rules. So, these are the issues, which one has to be concerned about the finance management.

(Refer Slide Time: 56:27)

INFORMATION FOR MANAGEMENT

Finance Management

Tactical Information

- Variations between budget and expenses.
- Large outstanding payments/Receipts.
- Credit and payment status.

1.3.13 System Analysis And Design © V. Rajaraman 44 of 75

And tactics in the middle level, you normally come up with the budget every year. And you look at actually the what budget should be there, how do budget for various things. In other words, like if I am running a software company, how much do you have budget for buying new lap tops, or new desk tops. How much do I allocate for sales or marketing. How much to I allocate for people going to work for me the human resource.

So, I look at all the expenses, like human resource, marketing cost, the rental for the place where I am going to have that software company. And have to be concerned about that. But, in turns out that certain areas like, suppose you go to down town, that is Nariman Point in Bombay. The cost of 10 square feet of area for a small place, for a software engineer sit in work, in front of his PC. Cost more money for the company than his salary.

So, you may decide, if there is no point you have to budget it. If you budget it, you decide the budget is this much, you go to Nariman Point. So, you may decide, that it is not worth putting in Nariman Point. The strategic decision may be taken to kind of shift it, to out of a place. May be suburb, where the rental is much lower and many people are even happier to come to work there.

Or now the new trend is there is all internet and white band and all that, to say you do not have to travel to work. You work from home and you do always software development at home. And working from home is a gain something, which is possible, because of

software. So, you have to really look at that. In other words, the finance management would say that, if the cost of the location is becoming important. And I may decide to let my employees work from home.

But, have a meeting place for all of them to meet, say once in 2 days, once in 3 days, to assess progress look at other teams and things like that. So, there are many items of tactics one has to follow. And if many companies major problem is that, they already sold the item, but they have not received the money. So, you have to kind of track the what you have billed, or what you have received.

And large outstanding company has take care of that say. So, the top management must know, what is last large outstanding payment. We will give in the next modules.

Thank you.