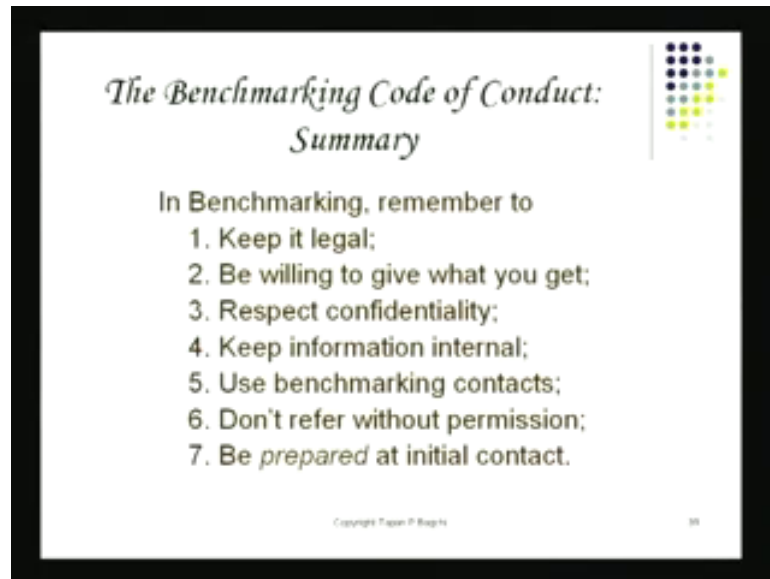**Six Sigma**
Prof. Dr. T. P. Bagchi
Department of Management
Indian Institute of Technology, Kharagpur

**Lecture No. # 31**
How to Benchmark

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Good afternoon, we are resuming our lecture on six sigma and the session that we have going now, it is the second lecture in the series on benchmarking. In this particular session, we will be discussing how to benchmark, something that I got to remind you of is remember the last slide I had in the previous lecture on benchmarking, that was basically summary of various things I said, keep it simple, be willing to give what you get, respect confidentiality, respect the source of information.

Keep information internal, use benchmarking contacts and do not refer to the material that you acquired without permission with any other place. Any other people, be prepared at the initial contact. These were the kind of things that you got to keep in mind.

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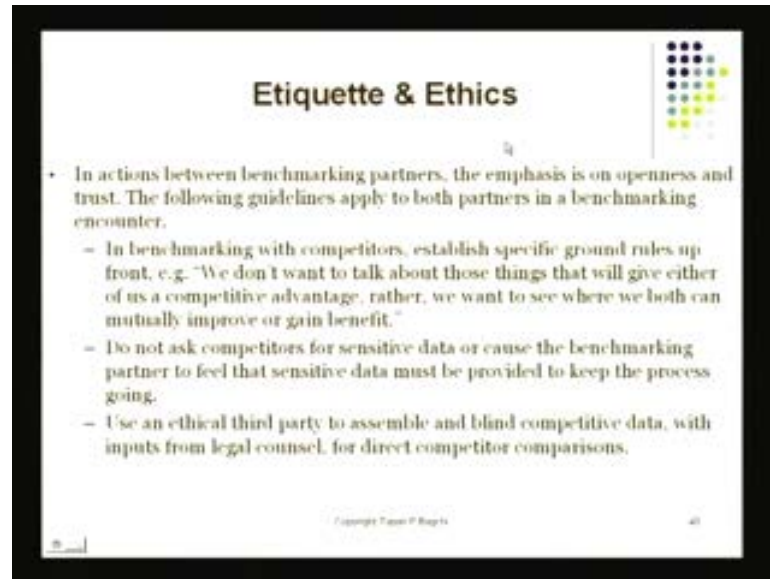
Now, I am going to be expanding on the couple of these things in next couple of slides. The first and foremost course is the etiquette and ethics, these are going to be very very important and how are they important? When you are in benchmarking competition, establish specific ground rule right up front, make sure you agree upon how you are going to be interacting. This is something you got to establish right up front for example, you will say, I do not want to talk about things that will give somewhere either (( )) competitive advantage rather we want to share materials where we can both mutually improve or gain some benefit. That is what we would like to be able to do.

So, you do not really want to draw up competitive advantage out of each other, that is not something that we are here for, we are here for sharing and learning and I will be hopeful that the benefits are going to be mutual and do not ask competition for competitors for sensitive data that is also something that you should avoid, this is not ethical. And in fact, it turns out that, if possible you might use a third party to acquire this data for you competitive data blind.

Competitive data and then of course, in such a case sometimes you need such information, you should really plan legal council, before you go into this. Because you should not do anything that is not legal, you do everything that is permitted within the realm of legal. You know requirements and so on and that is all right, but please do not do anything that is unethical or illegal.

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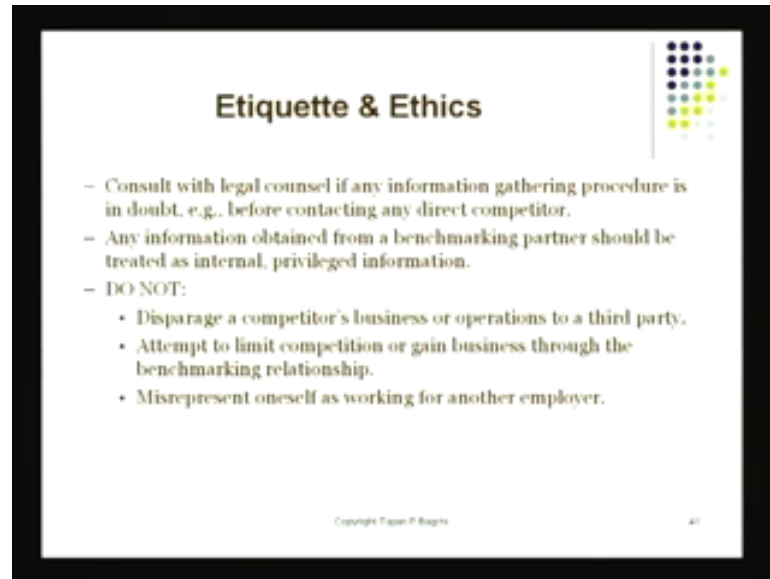
Consult with the legal counsel. If there is going to be any information gathering procedure that send out that. Where you got some doubt before you contact any direct competition and this is like something they got to be able to do. Go through your legal (( )) any information that you obtained from a benchmark partner, it should be treated as a internal and privileged information and that you must not share with anyone.

Do not really put someone down, this is like something that you should never do, attempt to limit competition or gain business through benchmarking relationship. Try to see if you could avoid doing this, because if you do that you will not get further co-operation, that is like something that you should not be able to, you should not, they should try to avoid. Mis-representing oneself to just to get information that is also not ethical, this is again something that you should not be able to do.
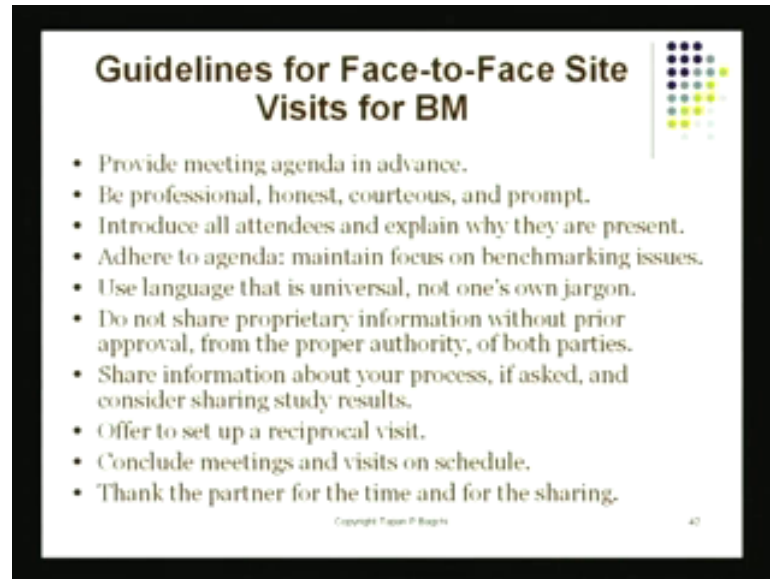
When you are in a face-to-face site visit situation, there are certain things that you should really do, provide the meeting agenda well in advance. Let people know, why you are going there. Be professional, be honest, be courteous and be prompt, show up on time, introduce all the attendance and explain why they are there, that is like something that is also required. Stick to the agenda and maintain focus on benchmarking issues only. Do not wonder off that, something you should try to avoid.

Use language that is universal and do not get into jargon because that makes the communication part kind of difficult and do not share proprietary information without prior approval from bosses and of course, on anyone who seems to have the right authority that you should not do and this applies to both the parties who share information about your process.

If asked and make sure that it is at a level when it is required for benchmarking, but certainly nothing more than that and offer to set up a reciprocal visit. Make sure that those companies, they are also allowed to come back and see your process. Conclude the meetings and of course visits also on schedule and thank the partner for the time they have given and for the sharing that they have done.

Let me give you an example, there was a company that again, I go back to the example where they made those electronic parts and they had a wave soldering machine, but they

were not able to operate and they struggled pretty hard for about a year and they could not reduce the level of defective that they were getting out of this new technology.

So called new technology and they were really at a loss, they were even thinking of selling the machine off or returning to the supplier at a cut price or whatever those things they were considering. They thought they should go back to their manual, you know soldering those the electronic parts on the PCB's. What happened was, I was able to locate another enterprise in a different line of business, but that also use wave soldering. So, here the situation that have been quiet straightforward, there was no competition really between company A and company B.

Company B was the other factory that I located and they were using that same technology, but the products were entirely different. These guys made the electronic parts for motor cycles and the other guys, they made telephone sets. So, in fact there was the business was totally disjoint, there was no real issue there.

The visit took place and of course, a lot of notes were taken and so on and so forth and no photographs, but lot of notes were taken. Lot of questions were asked and so on and so forth. Those things took place, then deviation was done in the evening and of course, there was this offer made by the company that came in, that the visitors they made an offer to the people who were the host. Please come back, please come to our town and please you know, look at our processes, we got some other processes, they are certainly better than process that we are trying to benchmark and you might like to see some neat things there.

So, that offer was also made and it turned out to be a case when there was a longer term relationship evolved that evolved. Through this they were able to identify for example, suppliers that provided the solders. The solder's were eventually melted and they were kind of, you know, used in that solder bath in the wave soldering machine. They look at it, the visiting company were able to find some good suppliers by the contract that they had with that the host company. So, that was something that was a real plus for them.
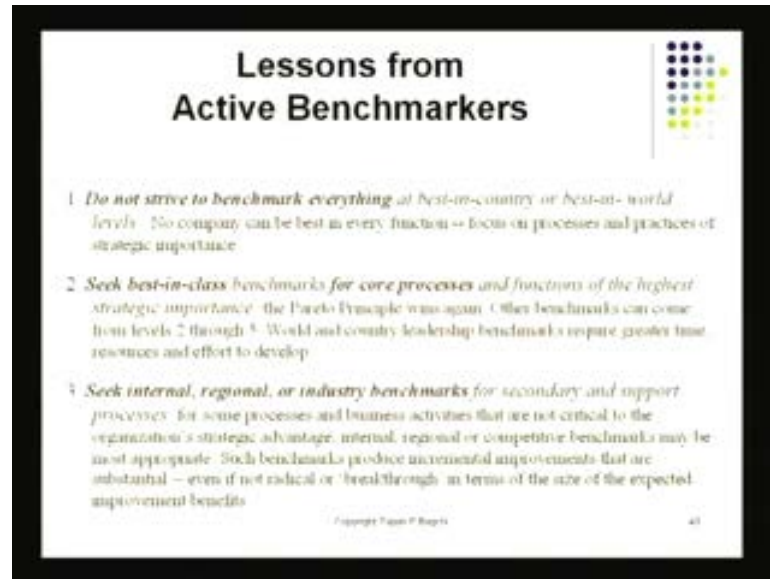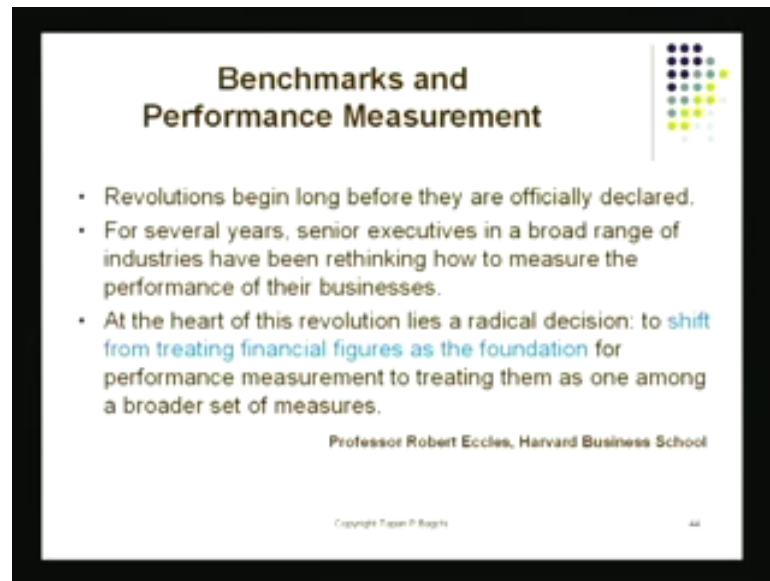
So, it is something while you really end up with a gain lessons from active benchmarkers. They are the people who do a lot of benchmarking. What do they gain? What do they site something? They try to avoid doing is, benchmarking everything that is something that they do not try to do and it is not necessary for you unless the marketplace decides that you are really way behind in everything.

Please do not try to benchmark everything that is not just necessary because benchmarking consumes a lot of resources. Something you should also try to do, try to seek the best in class for your core processes, not for everything, but for your core processes because certainly the best in class people. They probably will have a lower cost production, lower cost process this is something you should try to actively seek out and also from time to time trying to look for internal regional or industrial benchmarks, not necessarily global benchmark because there are perhaps other people, who are in your line of business or you they operate process like yours, they are not far from you, but their level of performance is far better than where you are.

So, why not take a advantage of it, you do not really have to go out to a Japanese auto plant. You could go to your neighbors plant, you go to a town that is probably you know, 500 kilometers away and you probably pick up some good practices there, instead of having to visit Japan.
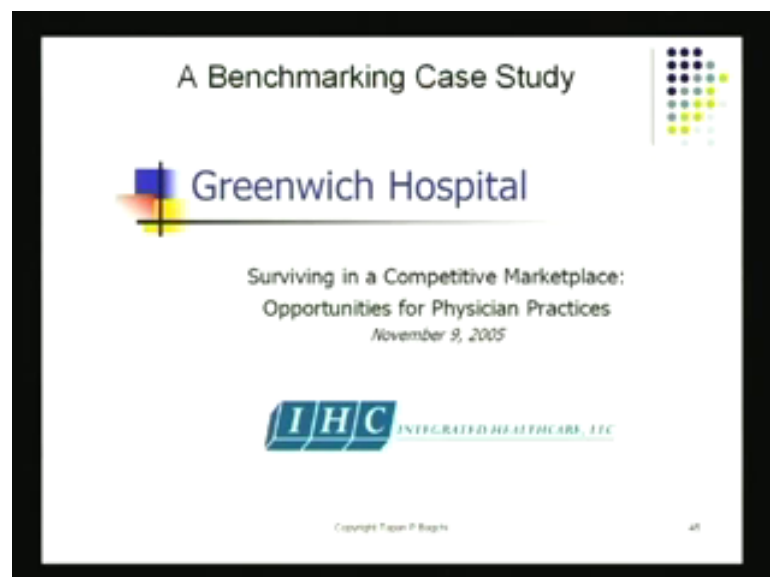
So, this is something you could probably do and you should try to do these. These are the lessons that are drawn from people, who are that are provided by people, who are active benchmarks also. Now, there is a shift now from treating financial figures only as the foundation for success. Performance measurement has now expanded. So, you do not just benchmark financial performance, you look at other aspect also.

And I am going to give you a glimpse of that, here is a case study and this case study is about a hospital and this hospital of course in the end they all wanted to make money,

but they were benchmarking different thing, they were trying to benchmarks certain practices and I am going to give you an idea of what kind of things they were trying to benchmark. The hospital is Greenwich hospital and they belong to a particular company that is the intimate health care company.

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And they had their problems and so on and they wanted to improve. They wanted to become more profitable, they wanted to utilize their, specialize better. So, lot of places where there were, they had the sense that perhaps things could be done better, but they decided that they would do benchmarking instead of trying to do, you know little bit of (( )) here and there or get into fancy six sigma program.

They would just try to benchmark there process, at least they wanted to make sure they understood the gap that was there between themselves and the best in town. So, the first thing they did was they identified the mission, they assess the their own practice and they measure performance there. So, they utilized certain self assessment tools. And they in that benchmark. Benchmarking the key indicators of performance, this came from their own management objectives.

Then of course, this was something where we could use a balance scorecard or any other measure of success that you have in your company that you could do and they also thought of collaborating to leverage resources, they wanted to make sure that they gave some and perhaps the (( )) would give some and in the end. They would end up with a

better process overall and they wanted to quantify the opportunity, this is something where they wanted to make sure that they quantified certain opportunities.

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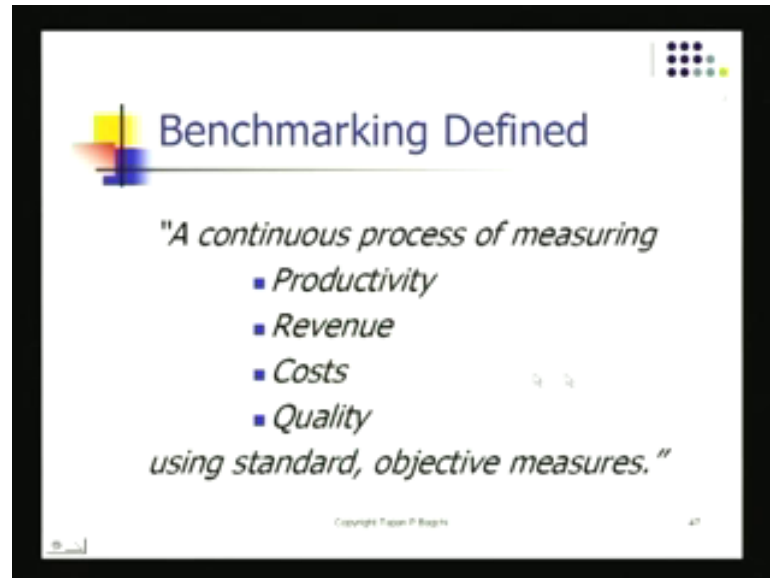
Now, if we go back to benchmarking if you recall, benchmarking various places where people trying to benchmark are these productivity, they are trying to benchmark themselves their own productivity with that of competition or that of best in town or the best in industry or perhaps even globally. They would like to do that lot of people do that, whoever are people who are involving. If they are utilizing manpower or capital resources or equipment and so on or land and so on. They always try to look for productivity.

What is the output per unit? Whatever the input many people, they also like to measure their revenue. I thinks that is probably a very common sort of thing most people they have some measure of revenue. That is like. (( )) not many people will have a very good understanding of their cost. So, this is also something that they would like to be able to do this and if you doing benchmarking, it is a great idea to put in measurement devices or measurement means or instruments to take care of these things and of course, today (( )) quality is also appeared here on this benchmarking list.

So, that is also something that you like to benchmark and that of course, goes without saying because this mission of six sigma is to try to raise your quality. So, there the benchmarks are cleaned the guys, who have got four sigma or five sigma or six sigma

operation today itself and you might be stuck at three sigma. So, there is a big chance to do your quality benchmarking. What I would like to be able to do is, I would like to be able to use standards and objective measures both of these things, I would like to be able to do for this company.

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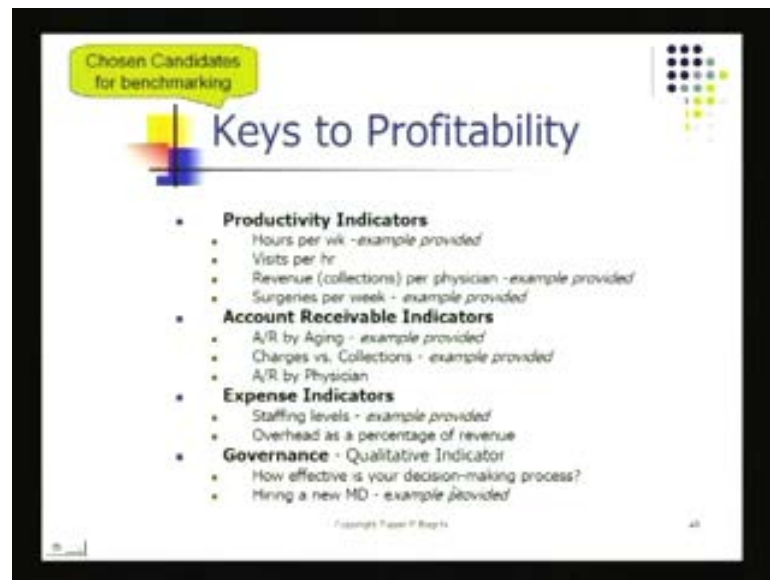
For this company they wanted to make sure they improve their profitability and they had these different indicators and lets go through these indicators one by one. Indicators of probability what they could measure was, hours per week and I will, I am going to give an example of this patient visits per hour. They wanted to measure to this revenue per physician because this is hospital they wanted to measure this and surgery is performed per week. They wanted to measure these were in their mind, indicators of productivity they wanted to make sure they measured this or they they would like to benchmark this. Accounts receivable, you know there is lot of money that is tied up in the receivables. So, you are really not making any interest money on that and that money if it is with you, would be you know putting it back in your business, you would be probably adding that to working capital for example, and even that you are not able to do.

If you are the account receivable, that account is huge that is also something these people wanted to measure. So, they had some good smart people who could see not only their direct per hour productivity kind of thing, they also wanted to get a financial picture of the thing, they also wanted to get an idea of their expenses. So, staffing levels for

example, they wanted to get an idea how would the staff that is compared to other people in the same line of business, they also wanted to get a sense of the overhead, they were consuming in providing their service this is the hospital.

So, a large, you know body of manpower in this hospital they were really not doctors, they were not really surgeons and so on. They were like overhead, they were this systems people and cleaning people and so on and so forth. And perhaps people who brought material in and out and that kind of thing, they were not really doing patient care. So, people who are doing patient care, they were of course rather few and they were the specialist, but even these people they cost some money overhead also cost a lot of money.

So, they wanted to do some benchmarking there and of course, the quality of management they had the kind of governance they had, they also wanted to make sure that the decision making process also was something that, they could compare to better one for example, if a new doctor had to be hired, what was the procedure they wanted to benchmark that process to the best in town for example, that they also wanted to do. So, these were the keys to their aspects that they would like to, aspects of the business that they would like to benchmark.
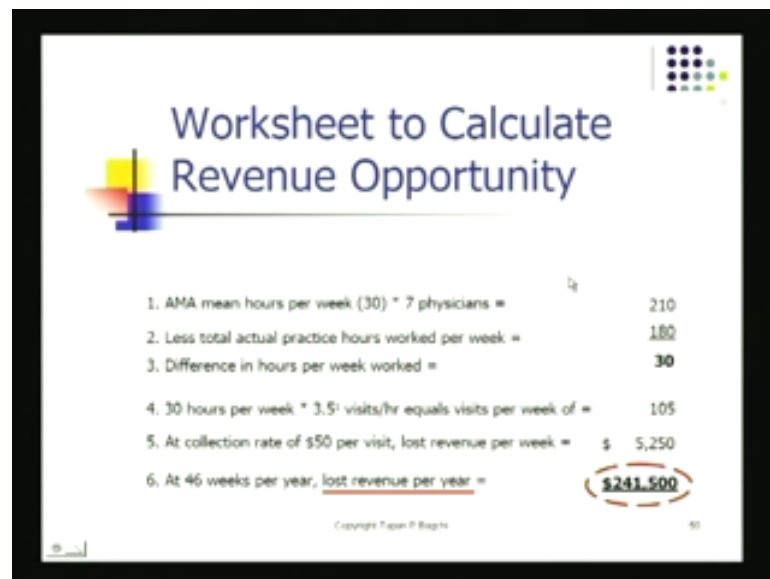
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Here is the first example I, only have a couple of them. This is of course, a large case study that you know, documents and lot of these stuff. And the office hours per week, it

turns out that the American Medical Association, it shows a much higher level of number of hours spent by the doctors in their offices. The average is higher up there and these are the different doctors, doctor A, B, C, D, E, F, G out of them except two doctors, which is like doctor A and doctor C. All the others they are below the national average. This is the direct example of benchmarking, this is direct and absolute direct example of benchmarking.

Now, this is something you have now, picked this up you got your own measurement done, you got the tally done and so on. And you produce this thing and obviously, the follow up would be for the hospital administrator. The chief to do a little follow up first find out why doctor D and doctor G. Why? They are not in the offices much?

Who? They live very far away. Do they have other business that is going on and so on and so forth. What exactly is the issue there? Because the more they are in the office the more treatment, they would be more patients, they would be looking at the more revenue there would be. In fact, the revenue opportunity turn out to be 2,41,500 dollars that is the annual revenue opportunity, that would be the difference between what the AMA average is and what these doctors would bring into this hospital, this is the direct example of benchmarking.

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And here is the quantification of course, I measure, I you know mention quantification. Couple of couple of slides back and here (()) the AMA, the American Medical

Association mean hours per week thirty times, seven physicians that are something to be. So, much that would be like you know, absolute benchmark; then you have got less, the total actual practice hours this is from the hospital from Greenwich.

The difference between these two is the hours per week that is, the extra that could be there and of course, the translate all of that into this money, this is the lost revenue in that red circle there that is the lost revenue, that also could be yours provided you work those hours you work those extra hours.

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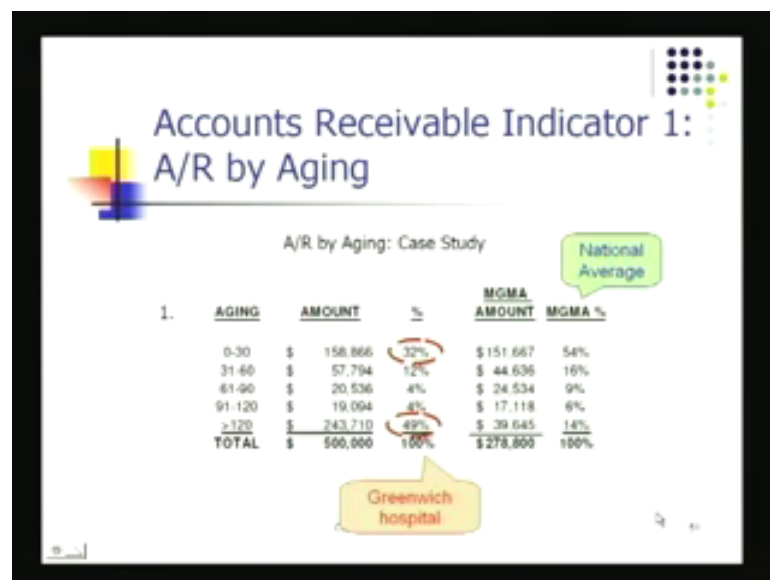
Here is another example and this is the accounts receivable. Remember I was mentioning the accounts receivable which like when you basically provide a patient treatment she goes away, she promises to give you this money and you send her a bill that sets up a receivable. She owes you this money now, how long does she take to pay that money back and it turns out that, if you look at the aging these have been done in 0-30 days.

About the third of the people they paid up within 30 days, within 2 months 12 percent people, within 3 months - 4 percent people within 4 months 4 percent of people and my god they were people, half of the people did not pay within what we call four months. They did not pay and you would be losing interest on this money and perhaps they were other uses, they could put this money to, but you, you did not have this compare that to the national average.

This is the national average more than half paid within, within 1 month and here more than half, they were paying after 4 months. So, there is like a clear difference between these two and that is the benchmark that is the, that is the one of the very reason, why you did your benchmarking this is almost 20 percent, below this number there. And this number is way, way more its 4 times more.

3 to 4 times more than what the national average is. So, this is now a direct example again of benchmarking. What is this done to you? It is highlighted a problem it also (()) quantified the extent of that problem there and this is your hospital this is Greenwich. Obviously, what you would like to be able to do is do problem diagnoses do, problem analysis and if you are doing DMAIC, If you are doing DMAIC define measure analyze then improve and then control right at the analyze phase itself. We have got this we have done some benchmarking and you got them you got the culprit there and would like to do some problem. Problem solving there, they would like do some diagnoses, would like to do some trouble shooting and hopefully come up with procedures and processes that will take care of this, perhaps you would like to provide some incentives for people to pay on time, but again try to find out the practices for billing and collection.

As it is practice by the more successful hospitals. How are they doing it? That is like another area, where you could do very easily, you could do benchmarking that something you should try to do.

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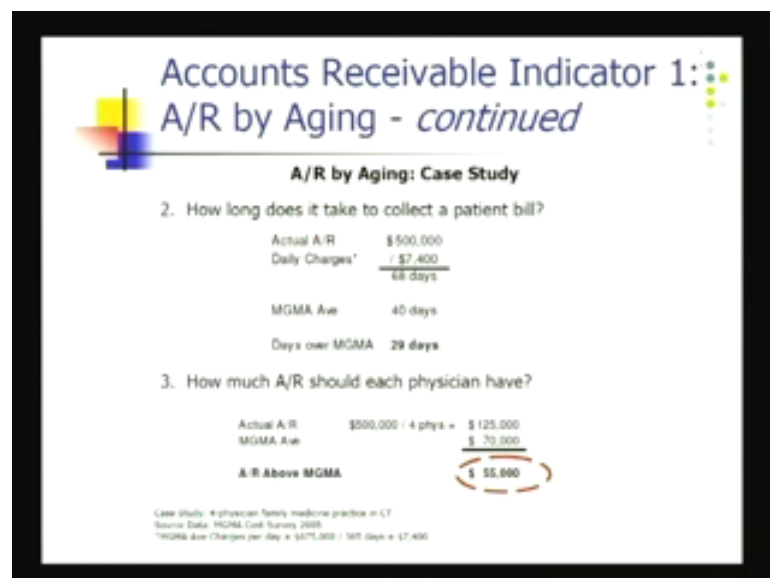
If I do this case study, if I follow up this case study the losses due to, due to the aging of the accounts receivable that turns out to be in this case 55,000 dollars that is a lot of money, that is a lot of money. When you look at this is per patient and that is a lot of money and it turns out that the interest on this lost is a lot of money there and this is again that gets established only as the result of the benchmarking that is done here.

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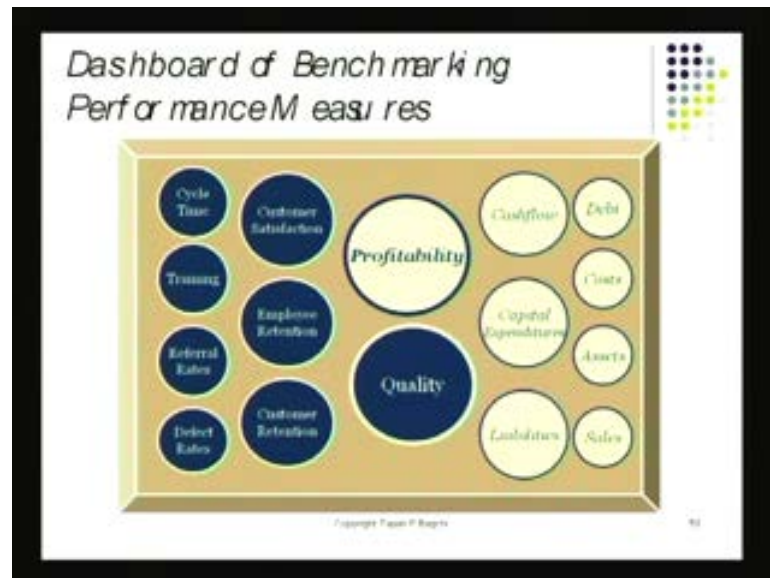
If you look at if you look at for example, the dashboard of benchmarking performance measures. What you would like to be able to do is, you would like to set up these. This sort of dash board in front of you and you got they, they have two aspects here they have got profitability and quality and notice here. There is a bit of blue in the yellow circle and there is a bit of bit of yellow in the blue circle, blue or the green circle as they appear here. In fact, it turns out profitability the indication there, the indication of profitability are cash flow or your servicing or debt cost capital, expenditures, liabilities assets and sales these are impacted by profitability quality they of course, those are impacted by all these drivers, these are the drivers of quality.

I have got cyclic time training referrals defect rates, customer satisfaction, employee (( )). so on and so, forth. So, these are the ones that I could really examine, if I am trying to improve quality. So, this dashboard is in front me, I could watch the readings here and then depending on the position of these readings. I could go out and start watching these

dials or these dials for example, this is something that is going to be very helpful. So, in fact, this one dashboard provides me a very compact view of the total business.

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There are other detailed measures of performance, this is; they are also utilized in benchmarking for example, in accounting they look at percentage rate of late payments time to respond to customer request number of billing errors. Number of payable errors these can easily be setup by benchmark and you could do benchmarking based on this. Marketing for example, the accuracy of forecast assumption, assumptions number of incorrect order entries overstock free supply contact errors and stuff like that.

If you look at quality control, the kind of stuff that you could benchmark against our percentage of lots that are rejected in error; not because they are bad, but you know something went wrong in the inspection process itself. Number of engineering changes detected after design reviews. Design review was done even after that there were whole lot of engineering changes, that is something that can impact quality. So, we would like to probably monitor this.

Errors and reports and the time taken to provide a corrective action that is also something that, that actually can be benchmark quiet easily. I have the same sort of thing for purchasing, I have got the same thing for product engineering and information services. Take a look at these details; there I left it for you, any of these things can be benchmarked.
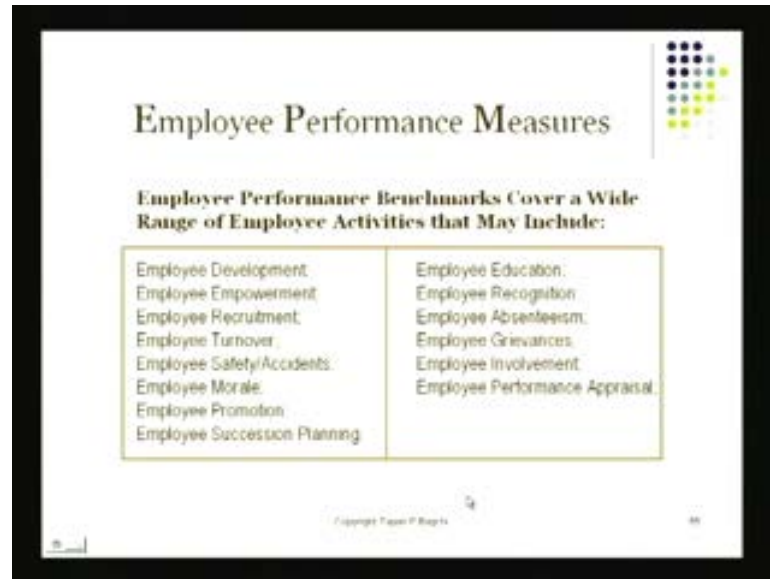
This is something that one could easily benchmark against in the domain of human resource management, you probably would like to track employee performance and what you would like to be able to do is, beside just the rating given by this (( )). These are the other things that might one, one could also benchmark against for example, many times companies these days they are measuring the number of, they are keeping a tab on the number of hours say, person is sent out for training it used to be not too long ago, but training was considered to be something that was really not necessary.

People would learn on the job. In fact, not many companies even now provide extensive training the problem is of course, these people they are not completely trained. So, they make mistakes or they commit errors or they commit sometimes even blunders a big problem or they have safety problems and stuff like that to try to take care of that you got to again keep an eye on these things and set this up on charts and try to have find out what about those companies, those are established companies and they are treated to be successful company.

How are they doing benchmarking of performance against; there also you would like to probably keep an eye on education. What kind of recognition you are providing half of the people absent or how I am treating with grievances? What is there number? How our company, how our people involved in the appearance of the company and of course, the

performance appraisal that is like something I mean it is very possible to set up benchmarking systems around these that is something you like to be able to do.

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Technology and innovation, this is like another area where you could do benchmarking for example, processing speeds network down time and error rates in a company that is using IT product development times employee suggestion rates. New product sales as a percent of total sales for example, process improvement rates, these are again activities that can be benchmarked because everybody else is also involved in the same sort of thing, if you are really going to comparing to best in town, you are going to make sure that you are also there with them. Well whoever are the better performers you would be there right with them.

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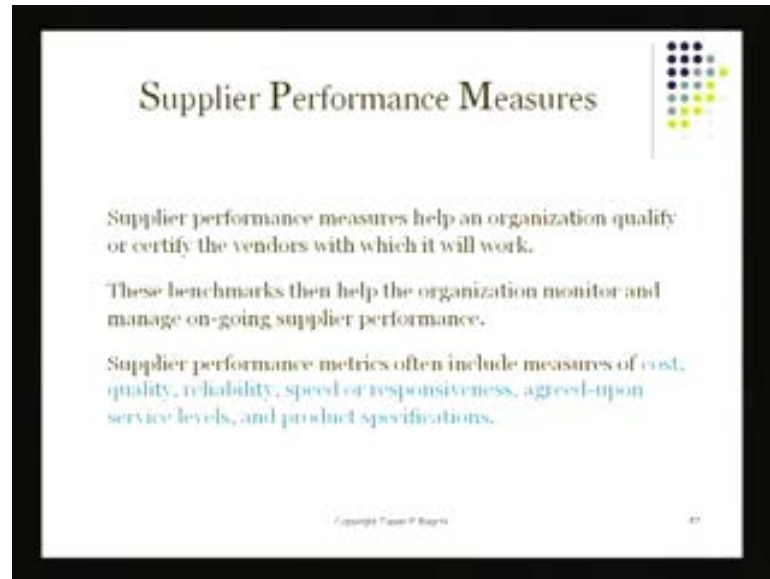
This is also something that you would like to be able to do supplier performance measure, this is also something where you could do benchmarking quiet easily cost, quality reliability, speed of responsiveness agreed-upon service levels and product specs. These again are aspects that can be quiet easily benchmarked. And if you got seven different suppliers it is not going to be difficult to keep, get a chart going on any of these things.

What I personally found is, the movement you start correcting data and start plotting a chart benchmarking, kind of also becomes you know an internal process. You will be start watching these curves and trends and so on and so forth there is something out of act even without the proper SPC control limits. It something looks high and high is not desirable then, they take some action. All I am doing here is, I am providing comparison that is exactly what benchmarking does. It compares you to someone who is better than you and it leads you ask the questions now. How are you there now? What have you done? What do you do differently?

From the way I do it and this would discover by doing the detailed questioning once you done the detailed questioning of course, lot of things could come out and this is exactly, what you are out there in the benchmarking situation to discover once, you come back do your debriefing make some notes and put them in your own training in your own operation and so on and the result is going to be hopefully better products better quality.

As superior quality performance for your customers and your own system there, that is something you like to be able to do.

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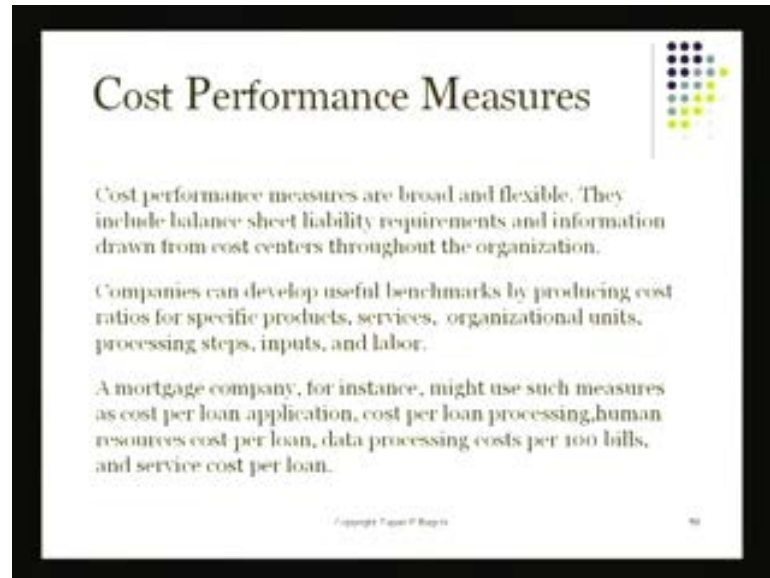
Cost performance measures they are again, are many different things. We got to make sure we have a pretty descent understanding of how it cost and there are many ratios that, also are there and one can again do benchmark against, those ratios there. For example, these could be tied to products or certain services or certain organization units and would, one could compare the one to the other. For example, the kilowatt hours spent per square foot area of the factory.

For example, I tried to find out if they are some that are not turning off the lights, fans and so on when the plant is not operating and stuff like that and they are in (( )) going to show up, the movement benchmarking is done and this is something, that is all internal it is not something, that for which we have to go out and so on. Of course, we could go out! Please make sure you find out, what are the best companies doing? What are the better companies doing? And particularly the once that are more profitable and then I have got a positive sort of a brand in the, in the minds of the customer.

How do they operate? What are their practices? That is something you would like to be able to do. There is a mortgage company for example, when they started measuring their cost they started benchmarking for example, the cost per loan application you know, when you produce a loan application you provide a certain amount of data, then the

company does a lot of checking they might call up pretty (( )). so on. And they may call up some credit rating companies and so on and this process takes time. There are efficient ways for doing this and there are not sufficient ways of doing this. If this is done by people who are experienced they can, with the few questions, they can probably get the answer.

If people are not experienced in doing this kind of work, make sure they get trained, but again benchmark their performance just so that you establish a case for it. Case for this change, there data processing cost per one hundred bills if you are in the mortgage business for example, you are probably send out sending out these different notices and so on. What is your cost? As compared to somebody else is there any lot of paper folding involved is there, lot of leaking and stamping involved or is there automatic machine.

Try to find out what is the service cost per loan? You know, loans also require certain services and what is your cost? What is that service cost there and how does it compare to the best in town? Again best in town is the guy who can be treated as your benchmark. Try to do this comparison, there this is also something that you should be able to do.

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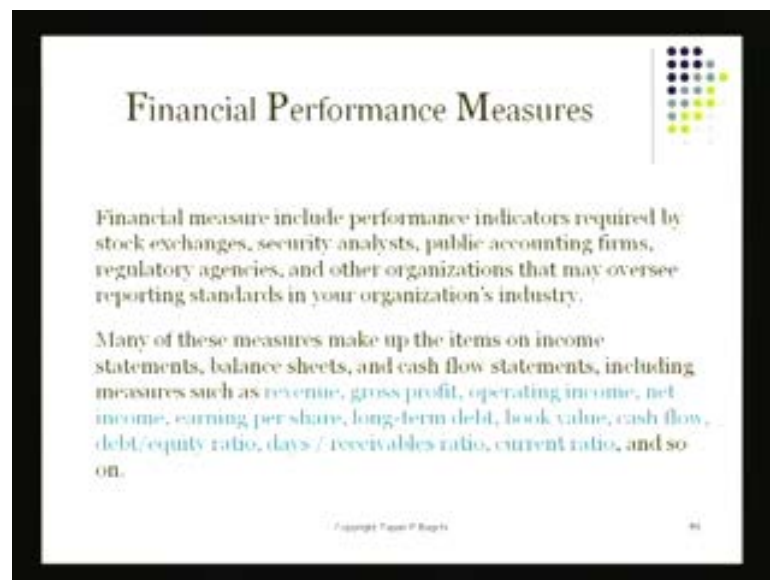
Financial performance, perhaps this is the most common one and this is. So, because we are talking about revenue, we are talking about gross profit, we are talking about operating income, we are talking about net income, we are talking about earning per share, we are talking about long term debt, we are talking about book value of the

company, we are talking about cash flow picture and these different ratios for example, that we equity ratio and days to receivable ratio current ratio and so on and so forth any of these things can be benchmarked.

In fact, the investment banking people they track a lot of these things and of course, this could be done by the company internally there are accounting people. They, probably can do this and they can find out why is that a particular company seems to be a better situation better position than we? What is the difference? How are they different from us? In what way are they different from us? This is that is that may be very revealing. In fact, it turns out to only when you started asking some questions done some calculations, you know, drawn a few graphs.

It probably jumps out the problem; kind of says that you have not been paying attention, but I have been bleeding, I have been bleeding from the side and its behind me. So, I do not even notice that there is some bleeding going on, I have a little scratch and I scratched it bad. Now, my pant is wet and that is sort of thing this is something, that I would like to. I would like to be able to avoid and that is why periodically, I must do benchmarking. I must find out how life is going on in other places and I like to be able to get up there.

What are some of the critical success factors in benchmarking? I have been talking about process of benchmarking. What are those things, which are good practices or perhaps close to the best practices?

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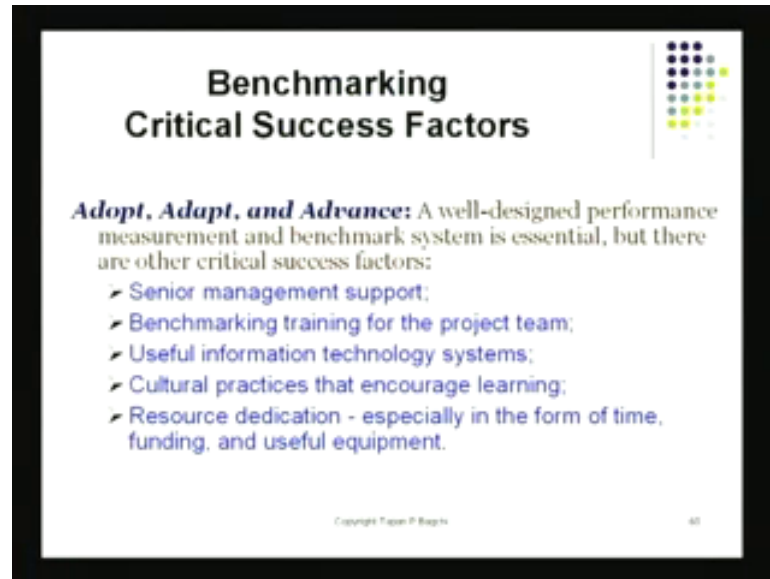
I noticed, I mentioned to you adopt adapt and advance certain things are required, besides if you want to be successful in benchmarking unlike in total quality management you got to have involvement of the top management, of top managers. Their thinking should be in sync with your thinking or your thinking should be in sync with them and if benchmarking is important for your company, you should be able to sell this idea to the top management. You should be able to do that by establishing some cases, you should be able to do that once you are able to do that hopefully, you will get the kind of support that you require to be able to do benchmarking.

Benchmarking cause resources, benchmarking cause money, benchmarking cause time. It is not going to be free, it is not that you walk by the place you drive by the other company and you can (( )) stop and at the gate and say hello to your pal and you ask some questions.

Benchmarking is far deeper than that, that is why it could require you to spend some time. It will require you to do some, you know planning and so on and so forth. It will require some additional resources perhaps experts in a company would be involved in this and so on and so forth. So, this is kind of important, it is kind of important that you acquire and you secure top management support very important. Then benchmark has a process, there are lot of measurements involved, lot of very tricky measurements

involved, questioning involved and so on and so forth and you might know that this is also something that is the specialized area and you might need some training in this area.

If you want to do benchmarking successfully you might, you know do this formally or you might require some special special skills. Any of these things are really launched as a project a benchmarking undertaking is really launched as a project.

What does the project comprise as a charter? It spends out the scope and then identifies the major deliverables and then it looks at the task required to perform in order to deliver those different deliverables, which are there that also has to be done, these tasks have to be sequenced, they had to be planned in the order in which they should appear. They have to be resourced then of course, you hand this over to the benchmarking team. They start executing, while execution is going on; this is just like a managing a project, no one is managing real formal project. So, you wll have a timeline, you will have resource requirements and various points in time.

You will have, you spend some money, do some transportation and so on. Do some travel then of course, in the process while you are doing benchmarking, you are asking questions meeting with people and so on. You expending some resources that also is going on you are acquiring information.

So, you making some notes, you are slowly building up your benchmarking literature, you are doing meetings, you are recognizing the references in the end, you come up with a probably a piece of document that says, these are the places where we are different from the other guys, we are actually worse than the other guys. Those then become the action plan for the I step. I is in that DMAIC- define I started with d measure, analyze, improve and control.

I have got to walk the full five steps unless, I have done that of course, improvement would not be there in the i-th step in the i-the step, that starts with, I which is improve, I really utilize the benchmark as my target, I utilize that as my target. I establish what the gap is, this has been done at the analysis step the a step and then, I have got my I have got my gap identified and I get into this. Now, I get into problem solving mode and I come up with different solutions there, that takes places as an activity that is distinct from benchmarking. So, bench marking means no mistake.

Benchmarking basically establishes where you are and how do you compare to the best in town and have you seen one, have you found out. What they do? You go that far with benchmarking the actual changes take place in the phase when you get into really changing your, you know thing and that is the time, where you might be doing some improvements also. And that really follows the first part which is like collection of data identifying the gap and then you know seeking through, the steps that will be required that would be required for you to go from one end to other.

And make sure you also at a step that is near the benchmark, you are also at a stage that is near the benchmark that you would like to be able to do. Technology systems information, technology systems those are also like a required in benchmarking. So, you cannot really do without this and perhaps some statistical software might be required. Of course, you could do a lot of work with excel, but at least you should have those tools in place. If you want to do proper benchmarking, you want to have data support and so on and so, forth.

The cultural orientation should be that of learning, that also goes without failing you may have all these different things I have got 5 pillars there and resource dedication that also is something that is required. So, I have got senior management support that is something very critical. I have some benchmarking training involved, then I have got use of information technology, that is something that I have got there and I have the learning orientation learning attitude and of course, I get some resources. These are required, these are the critical success factors in benchmarking without these being in place is not really easy, not even possible sometimes to do your benchmarking.

Let us now, walk through some of the processes. Lets now, walk through some of the processes which are good practices and they are used by leading companies in the world. Bristol-Myers and Baxter international, they are like one and they uses seven steps benchmarking process and you will find that they got the same. Pretty well, the same things that we have been discussing. So, so far in this last one and half hours, what we have been doing is we have been discussing various aspects of the same steps for example, determine which function to benchmark?

Well, we heard about that identify key performance variables to measure. Of course, we also heard about that. Identify the best in class, like we have to find out who are the best in class, was it a global benchmark, was it a national, was it a industry wide benchmark or was it a local internal benchmark. Whatever it was, I have got to really make sure I identify that and I sort of say, here is the benchmark that is the best here is a process that is better than my process. So, it could serve as my benchmark then of course, I measure performance of the best in class companies for this. I have to get out there and I have to really do this, do this bench marking process.

This is like some process that these guys used then of course, Bristol-Myers they also measure their own performance and this is how they establish. The gap, the gap is established after they measure the, the process or the performance at the benchmarking site and their own process. This is the gap that they try to identify and then they go ahead

and they specify programs and actions. Now, come to corrections step or the improvement step (( )) to meet and surpass the benchmark that, they have seen there and then they implement the new processes and they monitor the results.

This is almost like doing our DMAIC, almost like doing our DMAIC except, we did not do design of experiments, we did not do that. Notice here, the improvement step here is somewhat qualitative, but if necessary if need be, there then you could do DOE and the improvement step there because you identify the gap, you identified the gap and you know exactly that this gap has to be narrow and you might like identify. The causes for it should go back to your fishbone diagram and the orthogonal matrix and also those things, if you want to if they are needed then of course, you do those things, but the task of benchmarking is to identify, to identify the gap that is there between the best in town.

And I keep calling them the best in town because they could be the best in industry or they, they could be globally best whatever they are the better than us and we here and this is the gap that you would like to makeup. This is exactly what benchmarking doing. So, this was Bristol-Myers.

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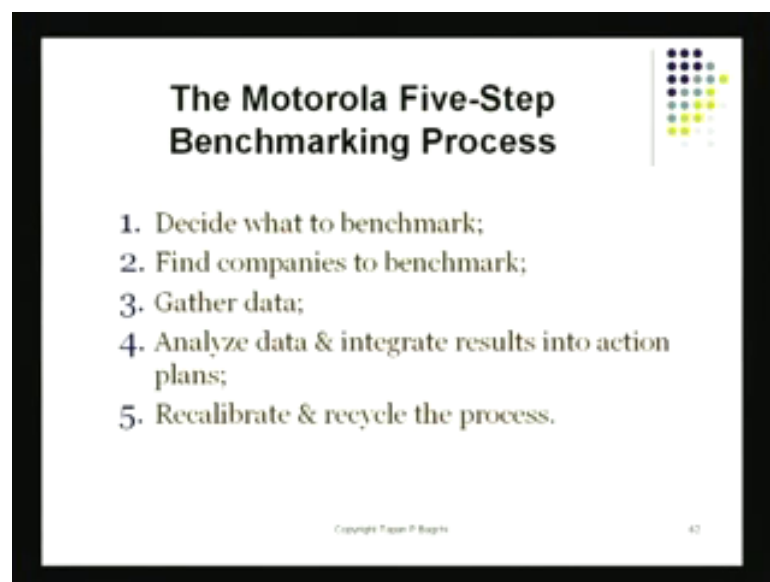
Let's see what some of the other people are doing. Motorola uses a five-step benchmarking process they decided. What to benchmark like, what we did before? Find companies to benchmark. This also is something, that we have done before you have seen them gather the data. This is the actual benchmarking process, when you apply data,

then you analyze the data. This is like the debriefing that takes place after you collected the data after you had interviews and the questionnaires were filled out, you come back and you take a look at your data itself and integrate the results into actions. These are action plan they are like going to take you in the system. So, that you can fill up this gap, you can meet this gap then of course, you re-calibrate and recycle the process.

Which is the Motorola way, their culture is they never stop. They will go up and up and they spiraling up. If you remember the Motorola story, the six sigma Motorola story they started with pretty poor level of quality and the Japanese wireless sets they had much, much better performance and Motorola lost its market share from being something like 90 percent plus to something that became ten percent. That was there, you know the time when they woke up suddenly then of course, they have been mocking the six sigma path and we have heard the story and so on and so forth.

And many people of course, people like General Electrical and so on; they picked up, picked up for Motorola and of course, they have also wonders with the six sigma approach.

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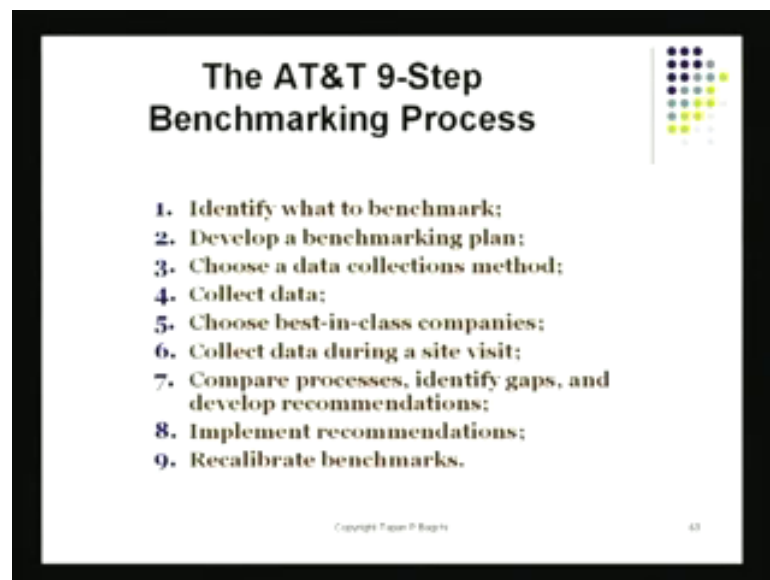
AT&T uses somewhat more elaborate approach, but let us try to see are they doing something that is radically different perhaps, they split something, that was combined into one step in the other, in the other situation. The previous company situation identify what to bottleneck, this is something we heard before they have a separate distinct step

called develop a benchmarking plan. They are pretty heavy on planning chose a data collection method that also is something that has been done. So, step two and three these are basically preparation steps.

Step number four is collect the data this is what really doing benchmarking then of course, we got chose the best in class companies. I believe this is really done, the collection of data is perhaps their own data. Collection of data is step four is their own data, step five is when they chose the best in class companies they are going to be collecting data from their and that is, that is step six they collect that data in site visit then they compare the processes, identify the gaps notice. Now finally, we near this word gap and develop recommendations.

These are the ways by which you would like to narrow the gap and of course, then they implement the recommendations and re-calibrate the benchmarks that I actually means. Now, I am already there perhaps, I need a higher level of benchmark to get up there, this is the nine steps. So, what is the distinct about this one. Well it turns out they have a planning method that is somewhat new they have very clear steps, where they collect their own data, then they collect the data from benchmarked. That is like something we done in this case they compared processes, identify gaps and develop recommendations that also is a formal step.

So, it is not where you need whole layer of, you know different level of activities they put it right up there. So, we can see very clearly that they respected pretty highly.
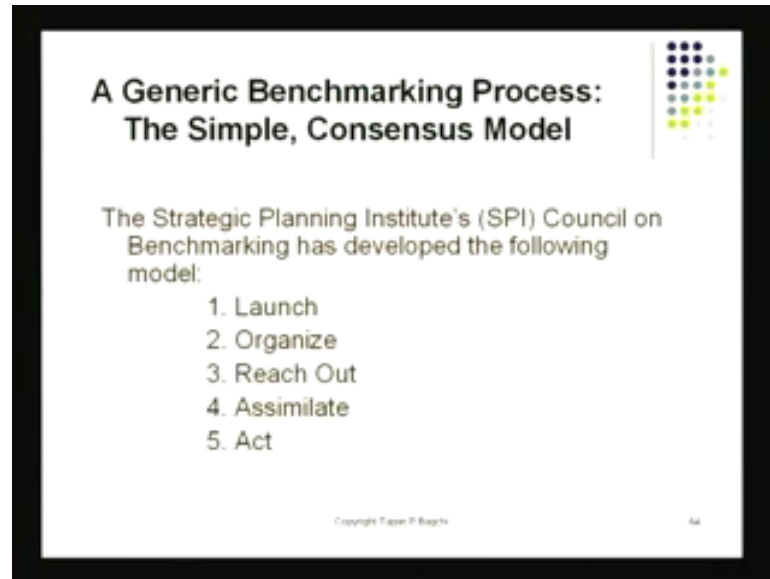
This is the generic model. What is the generic model? This is some model that this approach that will apply across the board, no matter of what process you are looking at, you could probably apply, if you apply at this process you still would be able to do benchmarking half decently. It is not going to be the as thorough as the Motorola method or the AT&T method, but still it will be pretty decent method.

I will show you a few examples of who are the best in the town, people and who are the globally best people and what are and why they are thought to be that way? So, there are benchmark companies that are respected worldwide as leaders, in their own area of operation. I am going to give you some examples of them now, what is this simple called it water down way quick in quick dirty of doing benchmarking. Launch the plan, launch the project organize, reach out, assimilate and act. Notice these things would be doing we lunch out; that means, we understood you know we understood the requirement and therefore, we understood the there is a need for us to change.

We organized say in that process, we look at it a company outside, we look at a company that will be the benchmark against. We establish the communication, we convey to them that we would like to come and visit to you then we went out did really did the reaching out and we collected data there that something that we did, then we did the assimilation, which is like we brought back the data; we did debriefing and we compared the performance, that we have observed and the performance that we have ourselves.

We compared that and that will be the assimilation in that process, we also generated ideas to perhaps take some action on our part and then we acted, if you do this you still doing benchmarking. You are probably not doing it as thoroughly as the other one, but you know half of the practices on the shop floor, they are sort of like of this. So, this is still you are following a particular order that is what you are doing there.

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The Xerox 12-Step Benchmarking Process (often regarded as "benchmark" of benchmarking in industry)

- Phase 1: Planning
  1. Identify what to benchmark;
  2. Identify comparative companies;
  3. Determine data collection method & collect data.
- Phase 2: Analysis
  4. Determine current performance gap;
  5. Project future performance levels.
- Phase 3: Integration
  6. Communicate finding and gain acceptance;
  7. Establish functional goals.

Xerox uses 12-steps process, I should just tell you before I going deep into this. Xerox is thought to be the company that is top-notching benchmarking say, if you are trying to benchmark you have to find out how does Xerox benchmark. Xerox is a company whose benchmark practices themselves a benchmark. I hope you understood what I said they have a certain way to do benchmarking and that may itself is a benchmark in industry. So, their benchmarking process itself is a benchmark for other people to follow. What is their process?

Let us take a look at this, they have this clear step called planning. Identify what to benchmark, a step number one of the 12-steps that they follow identity comparative companies. So, this is like when I am looking out and I am doing, I am trying to find out who else is doing, the same sort of thing. Determine the data collection method, then collect data, this is I am doing now, identify these two guys are, found out what is that I would like to benchmark with I have got some identification done, some located a

company then I would like to do benchmarking way and I have done my data collection method establishment.

I have collected some data then of course, I look at this current performance gap again the word gap comes in it is very important word, there project future performance levels. So, this is where I am trying to know! Shoot a target for you now, set a target for myself. So, if I am at four sigma level and my benchmark company is 5.5. I may set a target of five for example, five sigma level of quality that is like a certain parts per million level that is something, that I would like to able to. So, I have actually now, set a projected target for my own performance. Communicate the findings and gain acceptance.

Now, this has to be done internally. Once I have return with my benchmarking data the information and the notes and so on and so forth, I am going to communicate that within my own company. I have got to make sure that people appreciate that I have got to of course, come up with the incentive. Why I am doing this? There is an example and I would like bring up this example, that example comes from cost of quality that is like another item, where you could really do a performance measurement and you could really find out What kind of warranty service does this company have?

If it turns out the Toyota has very little warranty service and there is a another local auto car maker; they with lot of warranty services something is of course, that wide gap is there and they got to something about, the about the gap that is there. So, this is where it is very, very important for us to make sure we establish the reasons, Why we have change? why we have to have this thing there? So, we got to establish this what we call the incentive; that is very important, unless you do that the motivation would not be there for people to change. They just say, well things are going to fine, we are making we are selling car and so on.

Who cares what it cost be? So, again you come back to cost of quality and what are those components of quality? You got external failures? These are cars are breakdown when the customer is driving it on the road for example, or he has trouble after he purchase the car that is as an external failure, internal failure. While I am producing the car, I have a lot of scrap, lot of this, lot of that, lot of rework that is internal failure. Then I am got lot inspection going. In a typically, we got to an auto industry we will find a lot inspection lot of inspector there.
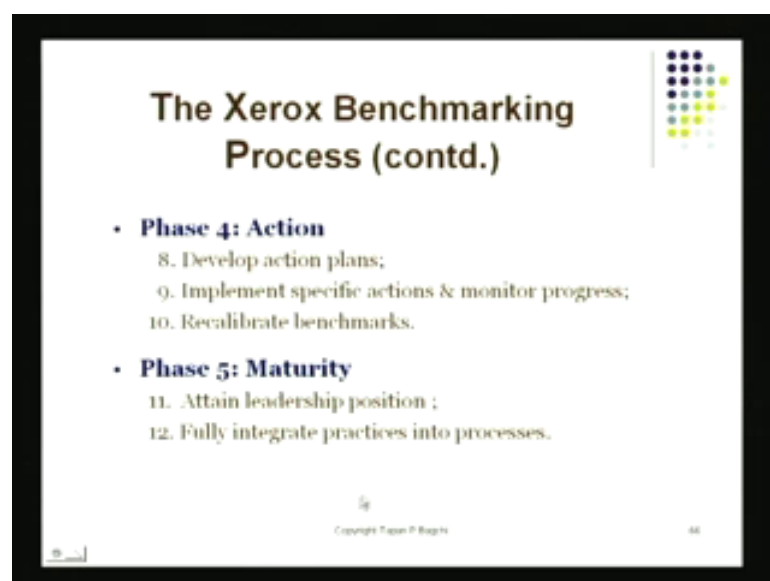
So, that is also something that cost you money, but the thing that can reduce all of these thing this is like the large cost of quality that you would like to avoid all together, is the preventive action and your preventive actions would involve. For example, SPC seven tools training and a whole lot of quality assurance methods and so on and so forth. And these are the one that are required to reduce your total cost of quality. In fact, the Japanese showed that economically it is justifiable, to try to reach zero defect, economically justifiable not that it cost you more money.

Overall to basically reach that perfection, that level of perfection, you do save money over all that is like something because there are fewer warranty, fewer rework, fewer scrap and so on and so, forth you end of saving money you save. So, much money that you actually the positive, the return on the effort that you putting in. If this positive return would not be there no six sigma project would be done anywhere in the world. Because every six sigma project must justify its existence, that is done by figuring out. What are going to be the returns of the preventive step? Where else depending?

Some money and some resources, benchmarking turns out to be, the you know is a, is the tool that is used in the a step to try to make sure that you got to understood, the gap that is there. So, then you get the incentive for tying to complete the gap. The other steps at, are there communication, communicate the finding and gains and establish of course, functional goals these are very important.

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So, that people will have something to do, the other steps that Xerox follows are develop action plans. Now, this is the follow up from benchmarking implement specific actions and monitor. The progress recalibrate the benchmarks. So far, So good, this exactly what the other people have been doing, but Xerox goes a little bit further attain leadership position, reach that level of global, global perfection leader in the global sense and fully integrate practices; then have got better practices make sure they get into your system computing, end to end you got perfection.

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Some things can lead to lead to failures and some, some things can lead you to success with benchmarking. First let us talk about failures sponsorship is uncertain that means, you do not know which manager supporting amorphous objectives, objectives are not clear. Why did you start this project? No strategic integration, they got lot of other initiatives in the company and they have benchmark has not be integrated with those that is like another big problem.

If it is there of course, your project is doomed, your only using performance metrics, which all you conversion metrics and you only using hard data that is all arbitrary casual approach is use incremental no real change keep going and going and going.

So, it becomes like a nonstop project and it is a La carte program that means, they are like a few steps laid out and you basically just follow the steps. If you do your benchmarking this way, you are not going to be successful. Look at the aspect that would
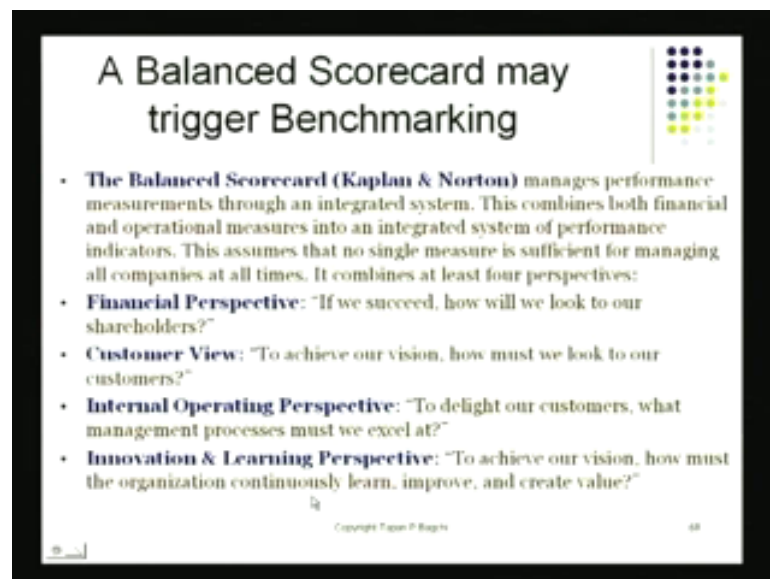
make you really a excel, in this area process owner involvement. Which is like there is a process owner, there is champion who says I am out my process to be improved and therefore, kindly go ahead and do what will you takes to benchmark.

This process customer driven objectives instead of vague objective link to strategic plan, these to corporate strategic plan that is, there for the company you are link benchmarking to that best practices and the best tools for you to use.

When I doing this, consider culture attributes this is like something that also have got to incorporate, in addition to have you hard data only to sell the project discipline methodology instead of doing it. Ad hoc quantum change, we should really look for breakthrough without this breakthrough of course, you know a little thing little improvement here and there that is not really benchmark that.

So, not really the successful benchmark something, this is something we got to be able to do clear project life cycle. So, we got to stop it also at a sudden point time and it is got to be integrated with my existing quality effort that also has to be there unless, this is there a project is not going to be successful.

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A balance scorecard, you might be aware of this that today's companies. They are measuring the success from something that is besides the financial perspective they now, look at the customer view they look at a internal operating view, they look at learning

perspective these are the different perspective that have that have been draw into, draw into running the company successfully and many of these, the readings on the reports on the balance scorecard. These can also lead to benchmarking because you again look at the same sort attribute in a, in another company and say that how much time at the spending on this? How much money they are making there? What are the different projects they work down and so on?

And so forth we start doing those comparisons you will also have an agenda, but doing benchmark

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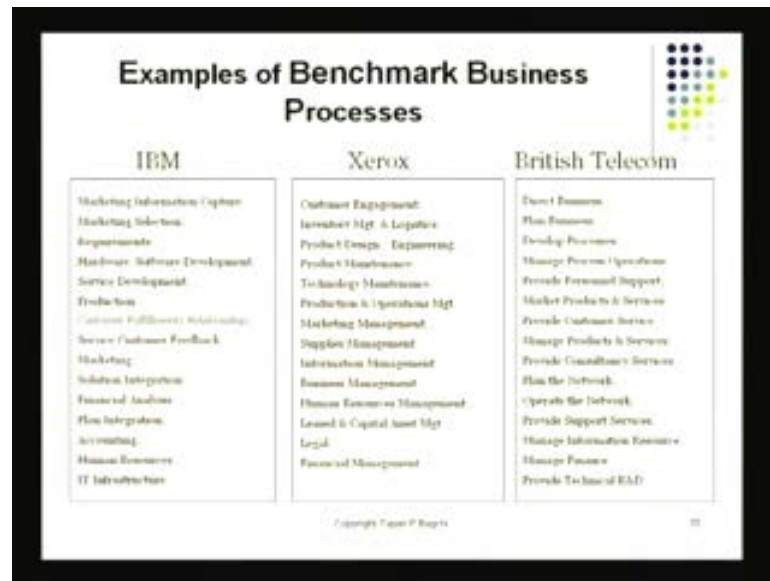
There are certain common performance measures. These are again, I am going to be listing them for you and please take look at. Later on, as you wish and you got to make sure you justify benchmarking, this is something that is a got to be done before you getting to project like this it is very important.

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There are examples of benchmark process and IBM gives you a whole lot of examples. Whole lot of steps, where IBM can provide benchmarks. Xerox there are various steps, for Xerox can provide you with benchmarks and British telecom, they are number of processes, where they can also provide with benchmark.

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This is something that is got to be done and once you done that, you got some challenge for you management for example, when management is a looking at benchmarking, they got to be able to commit resources. They should provide the time for training, they

should proactively manage the direction, the moment of benchmarking that is something we got to be able do. They should create visibility for anything that succeed with benchmarking, that is something they got to be able to do and also they should recognize and reward people for succeeding with benchmark that means, they providing they identifying these gaps.

They also generating the incentive for the company to change from that state here which is not. So, good to a state that is higher than that it is the identification this gap plus the effort require to get there. If you do that and making full use of this technique called benchmarking, which is also a method like your design of experiments, this also gets into your improvement you are doing. Most of your benchmarking at the analysis phase in DMAIC. Thank you very much!