Applied Ergonomics
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Module – 04
Lecture – 17
Worker behavior

Hello and welcome to this lecture on applied ergonomics lecture 17. We were talking in the last lecture about the various aspects of worker motivation, and how motivation can be sort of induced by changing various strategy applying various strategies like job specialization job enrichment job enlargement so on so forth. Today we will be looking at a slightly different section one about the social behavior of organizations. What are the reasons why there is a social behavior? Or how you can influence that social behavior? We would also like to look at the aspects of individual behavior of human subjects associated with work systems there can be a lot of formalism which is documented which is by the rule books and then lot of informal behavior as well.

Which is not mentioned, but then it is an essential part. So, it basically induces these motivational effects. And so therefore, this study needs to be very in done in a very organized manner as to how human subjects would behave or what is the social behavior of the organization as such. Would probably try to look at some of these issues and then go into the domain of job evaluation, try to find out how jobs could be categorized as in different grades and different strategies to evaluate them, where you can use approaches typically in a well designed manner so that you can actually rate them in terms of wages etcetera, And create a wage structure as in.

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So, looking at worker behavior basically we all are aware that human subjects are very important from a works work systems point of view. And therefore, human subjects would have behavioral issues behavioral issues lot of it depends on the state of the mind at a certain instance of a particular person particular human subject. And that also in correspondence to certain specific environmental stimuli which is given by the job at hand or tasks at hand. So, or in a very well defined manner we can state that the manner in which workers conduct themselves usually correspond to their response to environmental stimuli of various kinds. And basically there are 2 aspects of behavior one is the formal behavior where we are talking about you know formal rules and regulations or well laid well established behavioral patterns which are defined, in the process of defining tasks for jobs in an organization.

And then another completely unknown domain of informal behavior which is actually the aspect related to the social side of the organization. And basically there is always a tag of war between this informalism and formalism in the behavior. Sometimes both can be utilized to the advantage of the overall success failures that an organization or a work system would have in place. And so one needs to understand what are those mix and matches or combinations of in informal behaviorism and a formal behaviorism So that an organization can accomplish it is task.

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Formal Behavior

Behavior in which members conduct themselves according to standards that have been established in the formal organization
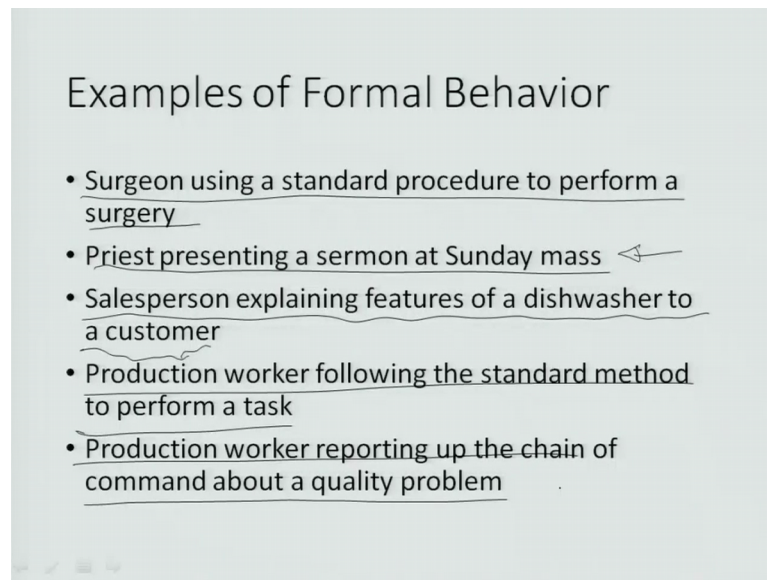- The standards are documented in the official policies and operating procedures of the organization
- They also include undocumented rules that are learned as the accepted ways in which the organization and its members carry out their business

So, let us look at formal behavior. So, basically in definitions this kind of behavior can be recorded as one in which members conduct themselves according to the set up standards that have been established in formal organizations. So there are rules there are documentation there are official policies, there are sort of standard operating procedures which have to be utilized for all behavioral issues related to human workforce. If there is violation of any of them it may it may result in some unpleasantness in terms of the administrative structure looking at you in a with a different site etcetera. So, apart from these well defined standards or official you know, sort of operating protocols there also undocumented rules which are sometimes used that are learned as accepted ways in which organization and it is members carry out their business.

For example, let us say if there is somebody who has an expertise in a certain repair activity or a task basically guides one of his subordinates who is having a problem with executing a repair and he is not able to understand the defect that has come in as a as a work schedule to that concerned person. So, the idea here is that in an informal way although in a formal rule based system one has to be accountable for his own job there is some crosstalk between an experience sharing member and relatively inexperienced new members. So, this is some kind of a informalism which is undocumented which is not in the rule books.

But can be utilized for efficient working within an organization let us look at informal behavior. So, let us now look at some examples which talk about formal behavior of different human subjects.

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Examples of Formal Behavior

- Surgeon using a standard procedure to perform a surgery
- Priest presenting a sermon at Sunday mass
- Salesperson explaining features of a dishwasher to a customer
- Production worker following the standard method to perform a task
- Production worker reporting up the chain of command about a quality problem

For example a surgeon using a standard procedure to perform a surgery could be considered to be a formal behavior a priest, presenting a sermon at may be a Sunday event could be again another example of you know having a formal behavior similarly a sales person explaining features of let us say a dishwasher to a customer. That is again something which is in the protocol which is in the operating practice and well documented so that is again a formal behavior.

So, the production workers following standard methods to perform their tasks or work at hand, or production worker reporting up the chain of command about a quality problem these are set practices there are set recording means and information translation means which have to be followed in a routine manner. And so, all these are examples of formal behavior. When we talk about the social elements which are involved in such formal behavior.

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Social Elements in Formal Behavior

- There may be social elements in the formal behavior that are important in achieving the work objectives
  - Surgeon spending time with the patient prior to surgery explaining the procedure and discussing the prognosis
  - Priest injecting humor into the sermon to keep the attention of the parishioners
 - Salesperson exchanging pleasantries with customer during the initial encounter

So obviously, there may be social elements in formal behavior that are important in achieving the work objectives, which otherwise are not recorded or documented let us look at for an instance that let us say before the surgery a surgeon spends quite a bit of time with patient prior to the surgery explaining the procedure And discussing the prognosis which is carried out.

Or maybe the priest while just before giving sermon induces some humorous ways and means to sort of you know, seek attention so that people pay attention to the sermon that he is going to deliver. So, these are some instances or for example, a salesperson exchanging pleasantries with customers during initial encounter saying asking about who the customer is where it belongs to where does he work So, those kinds of things. So, basically you can say such informal behavior on the part of the concerned human subject is more to set the stage for a documented procedure to be in place, or a documented ruled execution of some tasks in place.

And so, they set the stage kind of activities which are there although informal and carried out in all different manner by different human subjects. Would definitely give a very important impetus to the work at hand and how it is carried forward. So, these are social elements which gives a certain informalism although they are not on they are not documented or recorded in a formal manner and, but still it is very, very important. So, let us talk now about informal behavior. So, just as formal behavior is all about what is in the rulebook and what is standard operating procedure. Informal behavior is basically

that which is not prescribed by the policies or procedures you know, and the rules of the formal organization.

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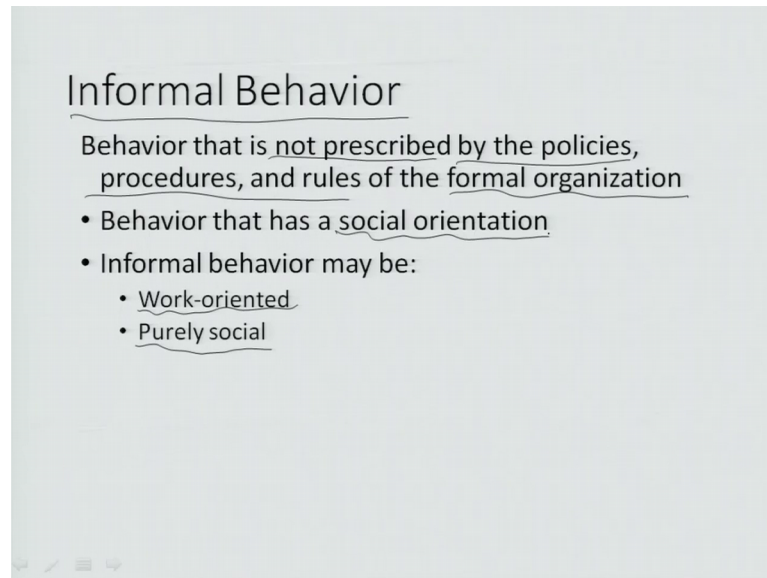
So, something that has probably either you know in a work oriented manner or the purely social manner, just coming out because human beings by nature have their social behavioral pattern when they work together in groups or come together to execute a task. Or even come together in a gathering in. So there are these aspects which cannot be recorded anywhere because it varies widely between human subjects, based on their perception of how they look at the whole system and the environment. So, these are behavioral incidents which are not prescribed by the policies procedures and rules, that otherwise are there in formal organizations. And most of these has a social orientation you can say, that is what you define or how you define the informal behavior.

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Work-Oriented Informal Behavior

- Professor temporarily taking over the course of another professor who is away at a conference
- Production worker giving advice to another worker who is having difficulty keeping up with the pace of the task
- Car salesperson completing a sale for another salesperson when the other salesperson's spouse arrives unexpectedly

So, let us look at some work oriented informal behavior among different stakeholders. For example, when we talk about professors temporarily taking over a course of another professor who is on a vacation or something, you know you can consider that to be an informal behavior. May be that the professor whom he is pitching for you know maybe a different you know maybe having an expertise in a completely different domain, but just because somebody has to pitch for somebody's absenteeism. It is a sort of an informal taking up of work and doing some activities with the students which may be sort of related to the to the basic agenda of the course of the structure of the course.

So, that can be a informal behavior. For example, again a production worker giving advice to another worker who is having difficulty in keeping up pace of the task is an another sort of an informal behavior. Or a car salesperson completing a sale for another salesperson when the other has sneaked away because of the arrival of a spouse suddenly or something or some family issue, it could also be categorized under the informal behavior. So, such informal behavior does exist helping each other out trying to make shift for an other during vacations or giving absenteeism, because of some otherwise socially relevant events which take place around human subjects is common place. In organizations and therefore, it has to be categorized as the broad category of informal behaviourism.

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Purely Social Informal Behavior

- Foreman stopping by a production operation to ask the worker how her sick mother is doing
- Two office workers chatting about last night's baseball game while waiting for the elevator
- Car salesman telling a joke to another salesperson while waiting for customers to arrive in the dealer showroom

So there could be other examples of purely social informal behavior just as I mentioned about work oriented informal behavior. For example, once in a while you may have seen a supervisor or a foreman talking to a subordinate about the sickness of ones mother or one family member or something, which kind of initiates a good cordial relationship between the authority to which a person reports and the person himself. So, such kind of informal chitchat sessions are almost always there in any organization, just because you want to take a person in confidence so that he can do his best he can be motivated to sort of give a reasonably good level of productivity.
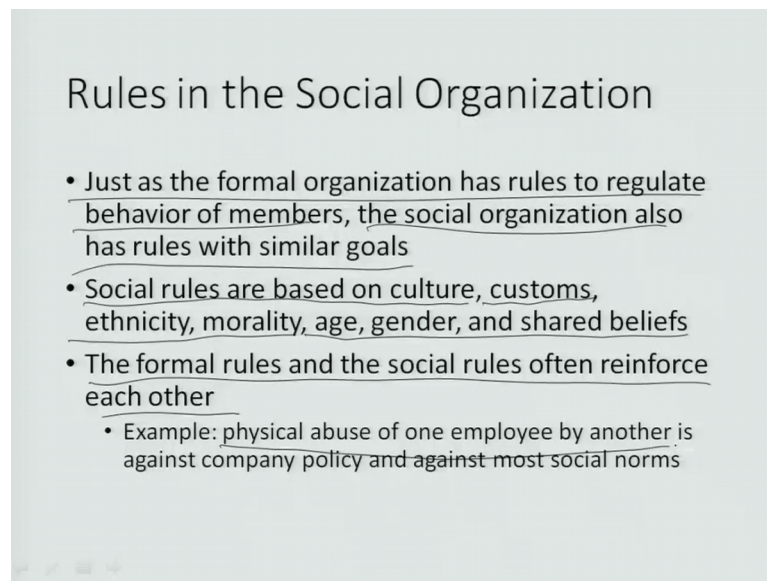
So, similarly there can be other social informal behaviors where let us say office colleagues are chatting with each other and the left or while during lunch breaks about some events which took place outside the domain of the work. For example, one can discuss for example, the cricket game or the baseball game which happened. You know, so these are kind of informal chat sessions which otherwise are important. For defocusing the attention from the task sometimes breaks or relaxation factor is important for execution of work in timely manner if person is always thinking and doing work there may be an efficiency issue associated with his overall productivity level. So, such kind of socially relevant purely social informal behavior behavioral patterns also exist among human subjects.

It could also be a for example, a salesman you know sharing a joke with another salesman while some routine operating procedures are on about selling something to a customer so that can also be a sort of informal behavior. So therefore, now you have

categorized informal behavior into is one which is work oriented which is related to task at hand another which is more from a social aspect; obviously, there are certain rules in such social organizations to be followed, because when it comes to too much of informalism and a lot of you can say, misbehavioural deliberations may result in you know, un pleasantries and that is not acceptable at any administrative level any time.

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Rules in the Social Organization

- Just as the formal organization has rules to regulate behavior of members, the social organization also has rules with similar goals
- Social rules are based on culture, customs, ethnicity, morality, age, gender, and shared beliefs
- The formal rules and the social rules often reinforce each other
  - Example: physical abuse of one employee by another is against company policy and against most social norms

So there has to be a stop to the way the informalism goes into you can say unethical or immoral kind of activities. And so therefore, just as the formal organization as rules to regulate the behavior of it is members. The social organization also has rules which are set up to ensure how much of informalism can be tolerated within the set up the organizational setup. So, social rules are typically based on the culture for example, of a place or some routine customs which are there may be the ethnicity or morality, the age or gender and maybe shared beliefs of the group that we are targeting while developing you know the or structuring the social organization. So there can be formal rules and social rules sometimes would exist in a manner.

So, the reinforce the formal rules for example, look at this particular case of physical abuse of one employee by another it is admonished in either of the systems, neither the formal structure would take not of any such physical abuse or nor the social organization would take not of such physical abuse. So, so there are rules on both social as well as formal which would reinforce each other in a manner in certain cases you know which

allows the things or which disallows the things completely from either the social organization level, or the let us say the formal organization level; however, there is also a case where these 2 would conflict with one another. And there may be in a way pressures built up, Because of conflicting formal rules with respect to the social rules let us look at.

For example, a case where we talk about formal rules being introduced to increase or enhance productivity. So obviously, if you look at the socially defined nature of organizations if such productivity increase does happen within organizations there are almost always job cuts. And it basically gives a threat you know or among it is stakeholders or let us say the human subjects about job security. So, as such in those kind of situations the social rules may not go hand in hand with the formal rules, because there may be some conflicting interest between the social and the formal rules and workers may resist methods or changes in methods work methods which would associate themselves with productivity increase ok.

So, such is the spate of the you can say the reinforcements or conflicts between the formal and the social rules of an organization. We would like to look at a different aspect now which is about job evaluation in organizational ergonomics. And obviously So far we have had a very good illustration of how human subjects are motivated what is the kind of job satisfaction level, how you can classify the different associate the different causes of job satisfaction or motivation. And then how you can actually look at human subjects working within an organization in terms of their behavioral patterns. But ultimately the goal of all such systems will have to have a tangible outcome. And the study in this organized manner of the human aspect of any work system automatically leads to a very, very important tangible output which is the wage system design which is basically related to who gets paid for what he does.

And therefore, it is important that we need to be able to evaluate jobs in terms of let us say, the nature of the work that is being delivered nature of the work in terms of the mental effort the physical effort the skill sets the various other factors which human beings would sort of provide to achieve a task or a job that is at hand. And evolution is done these days or probably even you know from quite some time in a very fair and square organized manner. The purpose of this section of the lecture now would be dedicated to how do you evaluate different jobs there are different methods standard

methods for doing such job definitions so that you could ultimately align all the jobs or tasks which are being created within an organizational framework to wages or salary.
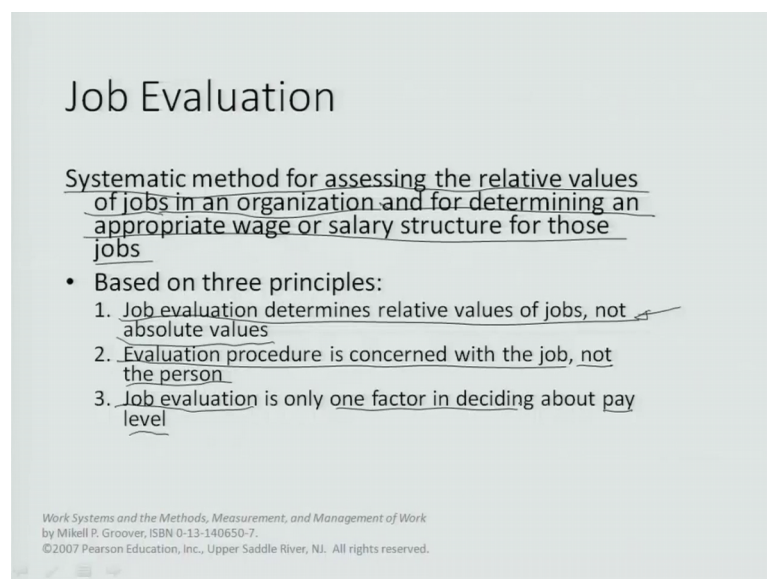
So, when we talk about job evaluation as such the definition; obviously, we will also be covering another area of performance appraisal depending on the amount of time available for this section.

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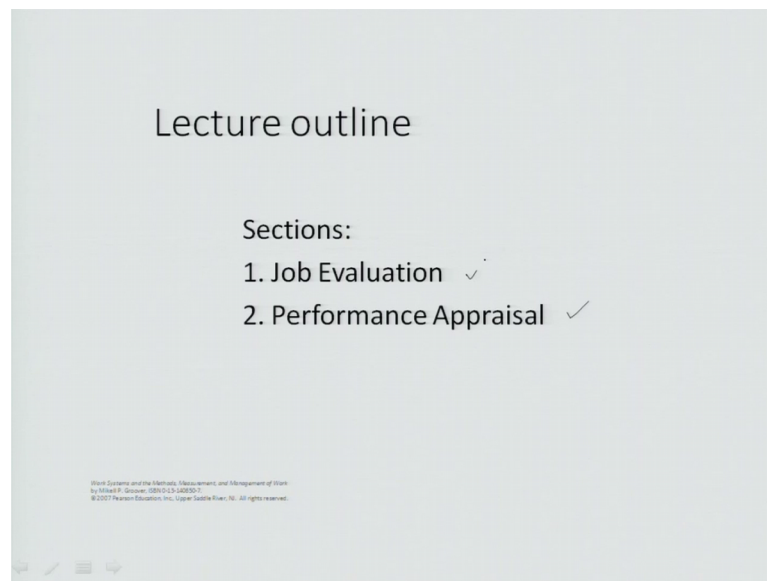
So, let us now look at job evaluation first. And so, if I really wanted to define how what you should what is job evaluation.

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So, it is really a systematic method for assessing the relative values of different jobs which exist in an organization and also for determining an appropriate wage or salary structure for those jobs. So, basically it is about grading the jobs into highly paid or relatively lower paid jobs. And therefore, an objective evaluation which should be away from the subject which is undertaking the job.

Has to be done at a priori before even the work system starts getting into operational operation. Now there may be a possibility that there are always human factors associated which may change the way that person thinks in terms of wages or salaries. But while planning for the job at the very beginning without associating any human factor. There is a basic salary structure which has to emerge. Now if supposing somebody is well performing after the salary structure which is the basic salary structure has emerge, you can always have incentives in terms of his performance.

So, that is how your basic strategy should be when we talk about job evaluation. And basically the evaluation is carried out on 3 different principles. One is that the job evaluation should typically determine the relative value that the job provides over each other. So, we should not really consider the absolute value there is nothing called absolute value of a certain job. So, it is only the relative value whether something is going to add more value or lesser value to the overall job structure, that is to be seen here. And obviously, the second principle on which such evaluation is carried out is normally that the procedure should the procedure for evaluation should be concerning only with the job not with the person as I think mentioned before. And the pay level of a particular job is sort of determined quote unquote through this evaluation route.

So, this is the single handed factor which is responsible for determining the wages or the salary structure at the very beginning of laying out the organizational design. So, why do we need really job evaluation? What are the different reasons for using job evaluations? So obviously, there is a general desire of any organization to have this equitable wage structure among all it is stakeholders.

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Reasons to Use Job Evaluation

- Organization desires to have an equitable wage structure
- Organization wants a wage structure that can be defended against claims of unfairness, favortism, gender, or age bias
- Current wage structure is no longer consistent with jobs actually performed
- Organization's pay levels are not competitive
- Organization is changing its compensation system, and a sound wage structure is a prerequisite for making the change

So, it could basically mean that as far as possible distribute the job in a manner which is almost equal in terms of it is contents and pay everybody similar kind of a wage or salary. But somehow this factor does not happen because the nature of jobs are quite varied in some jobs more planning more analysis is involved.
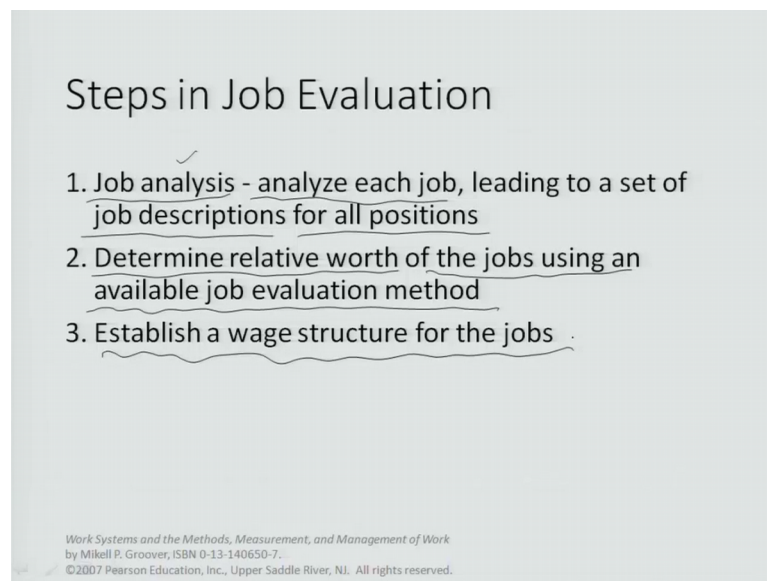
And in some jobs there may be relatively lesser amount of planning or analysis and relatively more physical effort which may be involved. And so obviously, there has to be an evolving wage structure which comes out. So, equitable wage structure does not mean that you pay everybody equal salaries, but depending on the similar categories or grades of jobs which are there in organizations by enlarge one should try that the renumeration which is there are more or less on a equitable norm. So, organizations of course, would like to have such a wage structure so that it can defend claims of unfairness favoritism also gender or age you know based on their wage structures; obviously, if we looked in the current domain and see how the wage structure is planned.

So, the current wage structure; obviously, is not very consistent with the jobs actually performed and that needs a revaluation or relooking of the jobs at hand. And resetting of this salary or wage distribution system or wage structure associated with that job. Sometimes the organizations pay levels may not be very competitive so that there is always a possibility of draining out of resources human resources from one organization to another may be a migration is done towards an organization which is more, reasonable in terms of it is pay structure. So therefore, some evaluation some prorating some change

in salary structures from time to time needs to be carried out to not lose the share of the human resources that a company would have in a business environment.

Obviously there is always a as need to evolve the compensation system based on external influences like, legal prerequisites or even you know, sometimes a decision of the adversative structure to be more competitive in the business. And so therefore, there is always a need by organizations to change the compensation system, and develop a more and more sound wage structure. So therefore, it is important that we always consider this task of job evaluation and accomplish that in a proper manner so that we are able to give a good standing to the overall wage system or structure. So, let us look at the various steps which are to be carried out in defining such job evaluations. So, the first task that is in hand while evaluating jobs are is known as job analysis.

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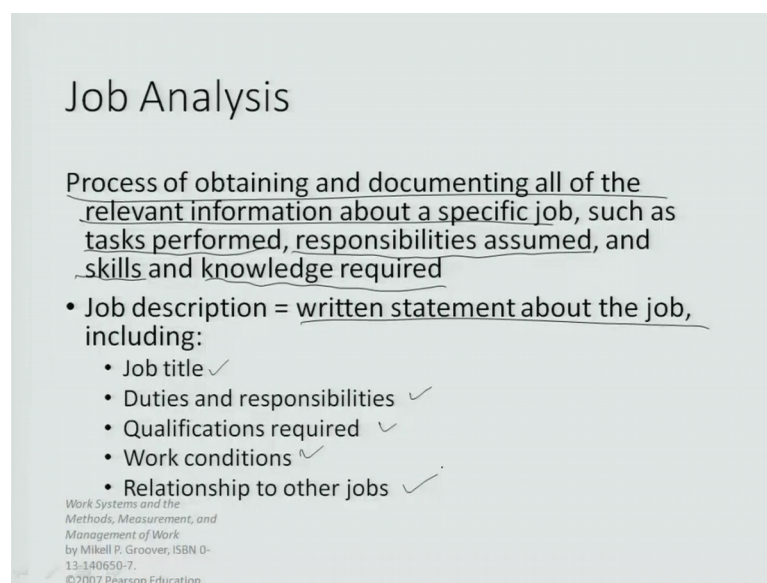
So, the basic purpose here is to analyze each and every job. And you know, analyze of analysis of these jobs are carried out by setting or by sort of different job descriptions I would say for all the positions and levels which are there operating levels which are there in an organization. So, it is an organized way of looking at what is the content of the job and labeling each and every portion of tasks which contributes to do that job in a very organized manner. So, the first step is this analysis. So, you are defining down to the level of even a single action or a set of actions done by a certain job description, or defined by a certain job description and you trying to get a database of all such

descriptions together for defining the job structure. Then of course, there is a relative worth which need to be computed for the variety of different jobs which have now been analyzed in the last step. And the relative evaluation of the jobs again are done in a very standard manner there are certain organized methods again which are used, in terms of maybe the basic human efforts that go towards the accomplishment of a task, and trying to rank them or rank these efforts in all these job processes trying to even establish relative merit demerit between the different jobs of same type. In the same department or same type in different departments or different let us say job specializations. And so there is always this relative comparison between 2 jobs at a time which is better than what which gives you the overall basis of the hierarchical job structure in terms of efforts.

What is better and what is probably down the order. Once you have done this then you have to establish of course, a wage structure associated with the overall ranking of such job descriptions which have formulated among each and every job of an organization. And in order to look at these and little more specific terms the job analysis can be defined as a process of obtaining and documenting all the relevant information about a specific job Such as let us say the total amount of tasks which are performed the responsibilities which are assumed.

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The skills which are needed the knowledge that is required. So, you can typically write statements about each job where it would include job title, it will include duties and responsibilities associated with this title, you would require the qualifications So there is some requirement, qualification requirement.

This is pre knowledge which needs to be routed in order to ensure that the human factor which is engaged with such a job, delivers the to the duties and responsibilities indicated in the job title. And then there are work conditions which are also defined for a particular job title sometimes people who are doing hazardous duties, would get compensated more for example, look at the ground staff to the you know staffs which operates flights. There are definitely differences in their compensation structures because the ground staff is probably not risking their life more in comparison to those were actually flying. And so there has to be some differentiation some demarcation between the compensation structures of both these categories of people.

So, the work conditions do matter for defining or for describing the jobs. And then of course, the relationship to other jobs also is very important. So, once these work conditions are defined. So, you need to sort of give a descriptive about how this job at hand relates to the other jobs you know associated or parallely being executed in the same organization. So, once this analysis process is taken care of then we need to evaluate about which is better which is lesser in terms of the different human factors which need to be put in order to accomplish the jobs. And so there are different methods again for doing evaluations. So there are some qualitative methods Where the comparison would merely by examining each job in it is entirety, And trying to use experiential knowledge of administrative means to rank the jobs in terms of better jobs and lesser jobs.

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Job Evaluation Methods

- Qualitative methods - compare jobs by examining each job in its entirety
  1. Job ranking method
  2. Job classification method
- Quantitative methods - analyze component factors of each job and assign a numerical score to each factor
  3. Factor comparison method
  4. Point factor method

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Or job classify the jobs into different grades, something like that. And then there could be even quantitative methods where we analyze the component factors of each jobs in terms of certain human forte or human contributions, and assign numerical scores and ranking so that we could have a basis of you know rank based evaluation of the jobs quantitative basis. There are other methods for a job evaluation for example, there is a factor comparison method and point factor method, and I am going to come to all these different methods in relatively higher level of details in the following slides. So, let us first look at the job ranking method which is a qualitative method for comparing different jobs.

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Job Ranking Method

Qualitative evaluation in which jobs are ranked in order of increasing value and then organized into a hierarchy of job grades
- For organizations with multiple departments, the jobs within each department are ranked
  - Then comparisons are made across departments to determine job rankings for the larger organization
- Paired comparisons = ranking technique in which all jobs are compared two at a time to identify which of each pair is of greater value

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So, when we talk about the qualitative evaluation, we basically mean that you have to rank the jobs in increasing order in terms of value and then organized into hierarchy and create grades into which you can classify these jobs. So, basically you can create jobs with certain definite valuations in terms of a qualitative ranking, and group them together and put them into different grades and each grade could therefore, serve as a pay band or a pay structure. So, for organizations with multiple departments the jobs within each department are first ranked, and then comparisons are made between departments after that in such kind of paired comparisons.

So, basically a paired comparison leads to a technique which is more ranking technique in which all the jobs are compared almost 2, at a time to identify which off the pair is has a greater value in terms of the overall deliverable listed in the organization. Let us look at an exam.

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So, let us say for example, there are different machine shops and we want to compare based on different job descriptions of such a machine shop, which is a higher sort after job and which is a lower sort after of job. And so, you have to do again a paired comparison between first of all lists you know all the jobs in 2 different types. So, in this case for example, there could be several job types one could be that of the machine operator, then a material handler then tool and die maker drill press operator a milling operator a lathe operator and setup operator.

So, these are the different kind of job classifications each of them has a job title a description a certain set of qualifications which I have already given earlier. Now you do a paired comparison between let us say 1 and 2 and find out that one is better in most of the cases. And similarly you do it for all. So, for example, 1 and 2, 1 and 3 1 4 you know similarly 2 and 3 again 1 and 5 and so on and so forth, you do the different combinations of the different jobs which are listed here. And see for how many number of times in such combinations. 1 is rated higher in comparison to the other. For example, you can have the machine operated rated exactly 4 times higher than the other. The material handler report rated almost in no cases to be high.

So, they are always on the low side tool and die maker is more or less in 6 cases, it has been reported higher than each other and similarly drill press operator only in one case milling operator in about 3 cases the lathe operate in about 2 cases and setup person about 5 cases. So, this kind of gives you a basis for the ranking. So, the one which is having the maximum number of times where it is rated highly becomes the highest quality job. And similarly the one which has the lowest number of ratings or lowest number of times it has been rated higher is the lowest quality job. And then all the other jobs are ranked commensurately between these 2 ranks. So, these are paired comparisons which are made for such a machine shop to create an overall job ranking strategy.

So, I think I will close down this particular lecture in the interest of time. And then in the next lecture we would talk about the various advantages and disadvantages of such paired comparisons, and then maybe look at some classification methods etcetera.

Thank you very much.