

HUMAN RESOURCE PLANNING (18MBA301C)
(e-Material supplements prepared as per R18 Syllabus of Biju
Patnaik University of Technology: Odisha)

By

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(Note: This is just a supplementary material; students are advised to refer the relevant text books a comprehensive study of the subjects)

MBA 2Yrs Syllabus from Admission Batch 2018-19 onwards

3 rd Semester	18MBA301C	Manpower Planning	L-T-P 3-0-0	3 Credits	35 hrs
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Course Objective: To enable the students to acquire knowledge and skill necessary for preparing the manpower plan of the business enterprise or to understand such a plan drawn up by the manpower planning cell of company.

Module – I :

Manpower Forecasting: Introduction, Manpower Planning Objective (Micro & Macro Levels), HR Planning linkage with other HR function, Influencing factors in Manpower Planning. Forecasting, Necessity for forecasting, Steps in forecasting, Demand and supply forecasting, Demand & Supply Forecasting techniques, Forecasting accuracy, Benefits of forecasting – Manpower Planning, Strategic staffing–HR planning process,–Job analysis and description. Problems in HRP, Guidelines for effective HRP, Recent trends in HRP.

Module – II :

Developing a Manpower Plan: Introduction, Developing a Manpower Plan, Qualitative Side of Manpower Planning, Behavioral Event Interviewing, Standard Interviews, Competency Mapping (Skill Inventory), Sample Manpower Plan Competency mapping – procedures and steps, methods of data collection for mapping, developing competency models from raw data. Use and applicability of Statistical and Mathematical Models in Manpower Planning: Cohort Analysis, Census Analysis and Markov Models

Module – III :

Strategic HRP : Definition & Concept, Benefits of strategic manpower planning (SMP), strategies, methods, and tools for SMP, key steps in SMP: Assessing competencies, Gap analysis and strategy development. A Business process approach to HRP.

Books :

- Human Resource Planning and Strategic Change –Acharya, Tripathy-Himalaya
- Manpower planning and the development of human resources by Thomas Henry Patten published by Wiley–Interscience, 1971
- Human Resource Planning by Dipak Kumar Bhattacharyya, Excel Books
- Manpower Planning and Strategic Change- Acharya and Tripathy, HPH


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HUMAN RESOURCE PLANNING

Module 1: Manpower Forecasting

Learning Objectives

After Reading this module, the students will be able to learn:

- 1.1. Introduction
- 1.2. Definitions and Objectives of HRP
- 1.3. Levels of HRP
 - 1.3.1. Macro Level Plan
 - 1.3.2. Micro Level Plan
- 1.4. Factors affecting HRP
 - 1.4.1. External Factors
 - 1.4.2. Internal Factors
- 1.5. HRP Process
 - 1.5.1. Forecasting Demand
 - 1.5.1.1. Quantitative Techniques
 - 1.5.1.2. Qualitative Techniques
 - 1.5.2. Forecasting Supply
 - 1.5.2.1. Internal Sources
 - 1.5.2.2. External Sources
- 1.6.3. Interlinking HRP with HR Functions
 - 1.6.3.1. Managing Manpower Shortage
 - 1.6.3.2. Managing Manpower Surplus
- 1.6.4. Control and Evaluation
- 1.7. Problems in HRP
- 1.8. Guidelines for Effective HRP
- 1.9. Recent Trends in HRP

1.1.Introduction

The word “resources” refers to productive power of natural goods. Human resources are, therefore, the productive power in human beings. If human beings working in an organization are the sources, the ability, skills, knowledge and other characteristics (ASKO) like leadership quality, motivational potentials etc, inbuilt in them are their resources. Any discussion on the manpower planning is to have its basis to start with the discussion on the functions of management. As we already know, planning organizing, leading and controlling are four major functions of management. Planning is the process of deciding in advance what is to be done, when and where it is to be done and how it is to be done and by whom. It is the planning function that supplements rest of the managerial functions keeping the objectives vivid and focused. So Manpower Planning or Human Resource Planning (HRP) is all about deciding in advance who will do what, when and where. In other words, it refers to the process of determining right candidates at the right places at the right time. In this unit, we discuss human resource planning

and its linkages with several other HR functions, process and problems associated with it. We will also discuss some guideline and recent trends in HRP.

1.2. Definitions and Objectives of HRP

Vetter defines HR Planning as “the process by which management determines how the organization should move from its current manpower position to its desired manpower position to carry out the integrated plan of the organization.” There are, indeed, a lot of activities involved when the organization anticipates its man power requirements for accomplishing its strategic objective. These activities are related to movement of people into, within, and out of the organization. To simplify what has been mentioned above, HRP anticipates the movement of people into, (through Recruitment, selection), within (through promotion, demotion, transfer) and out (retirement, separation, death) of the organization.

According to **E.B Geisler**, “Manpower planning is the process –including forecasting, developing and controlling by which a firm ensures that it has-

- The right number of people,
- The right kind of people,
- At the right places,
- At the right time, doing work for which they are economically most useful”.

HRP can be defined as the task of assessing and anticipating the skill, knowledge and labor time requirements of the organization, and initiating action to fulfil or ‘source’ those requirements. Geisler prioritised on the organizational need to be rightly staffed. The HR planners must forecast its manpower requirement both in terms of quality and quantity, develop manpower through training and development interventions and monitor that the HR plan is properly executed.

The objectives of Man Power Planning are to

- 1. Bridge the gap between manpower availability at present and manpower requirement in future:** The HR personnel must find out the HR gap by comparing HR demand and HR supply sides and design appropriate HR interventions like recruitment and selection or training and development, outsourcing for manpower shortage or retrenchment or lay-off or redeployment in case manpower surplus.
- 2. Ensure optimum use of manpower and capitalizes on the strength of HR:** The organization should plan for a reservoir of required talent to carry out the necessary tasks and use the same optimally.

- 3. Forecast future requirements and provides control measures about availability of HR inventory:** The HR personnel must maintain Human Resource Information System (HRIS) to keep track HR mobility and employee turnover. In case, the organization expands its scale of operations, it can look into competency inventory and forecast future skill set requirement. It can also take control measures to minimize talent attrition through periodic or contingent feedback mechanism.
- 4. Help determining and designing recruitment and induction program:** HRP helps HR managers to design HR procurement interventions such as recruitment and selection and induction program to suit the organizational requirement.
- 5. Anticipate redundancies/surpluses/obsolescence by looking into the issues relating to right sizing:** HRP helps organization in anticipation of manpower redundancies, surplus and obsolesces.
- 6. Determines training needs and works as a foundation for management development programs:** If manpower falls short, external hiring is not always the right intervention to resolve the issue. At many times, training and development programs upgrade organizational required skill set.
- 7. Help in making out the cost of manpower if there is a new project being taken up:** In cases of expansions or opening of a new factory, for example, the organization would naturally require more human resources; hence a budgetary allocation can be made in advance for the new strategic move. Planning facilitates preparation of an appropriate manpower budget for each department or division. This, in turn, helps in controlling manpower costs by avoiding shortages/excesses in manpower supply.
- 8. Assist in productivity bargaining:** For example, if a firm is going fully automated, it can negotiate for lesser workers as required for the same amount of the jobs through manpower forecasting. It can offer higher incentives (VRS) to smoothen the process of voluntary layoffs. This, indeed, happens when banking and insurance industries were computerized in 1990s’.
- 9. Prepare people to meet future challenge:** The competent personnel of the organization can be picked up, mentored and kept ready to bear the responsibility of leading positions in future. Generally, MNCs prepare the “hot list” of promising candidates, assess and assist them continuously for future management positions. Wipro Infotech, for example, is continuously conducting Leadership Development

Programs as part of the Management Development Programs to prepare the forerunners of the organization to take future responsibilities.

An organization may incur several intangible costs due without HRP. For example, inadequate HRP can cause vacancies to remain unfilled which can create problems in execution of organizational plan. The resulting loss of efficiency can be costly, particularly during the lead-time. Situations also may also occur in which employees are laid off in one department while applicants are hired for similar jobs in another department. This may cause over hiring and result in the need to lay off those employees to make effective plans for career or personal development. As a result, some of the more competent and ambitious ones may seek other employment where they feel they will have better career opportunities.

1.3.Levels of HRP

Broadly speaking HRP is formulated at two levels: Macro and Micro. Macro level plans include the planning made at International, national, sectoral level and industry level. Micro level planning refers to the planning made at organizational planning. The organizational planning includes corporate level planning, intermediate level planning, operations planning, planning short term activities. Both macro and micro level of HRP are, indeed, closely interlinked.

1.3.1 Macro Level Plan

International level Plan: After World War II, United Nation Organization (UNO) came into being with the objective of saving the mankind from the scourge of war. It has been doing many developmental works in the areas of health and education in member nations. For examples, United Nations International Children Emergency Funds (UNICEF) has been aiding to improve the health, nutrition, education and general welfare of children. Similarly, World Health Organization (WHO) is a specialized agency of the United Nations responsible for International Public Health.

National level plan: National level plans are prepared by the central governments. Plans at this level include population projection, program of economic development, educational and health facilities, occupational distribution and growth, mobility of personnel across industries and geographical regions.

Sector level plan: This would cover manpower requirements of a particular sector like the agricultural sector, industrial sector and service sector. Different sectors require different quality of people.

Industry level: This would forecast man power requirement for specific industries, such as engineering, heavy industries, textile industries, plantation industries, etc. For example, software industries need IT professional where as heavy industry requires more number of management professional. Depending in the Job trends, several courses may be designed by the educational institutions to cater to the manpower requirement of the particular industry. During Industry 4.0, for example, jobs relating to data science, business analytics, Technology, robotics, artificial intelligence are trending. Many of the academic institutions across nation are offering these courses, so that the industry stay competitive.

1.3.2. Micro Level Plan

Micro level plans are formulated at organization level. It relates to the manpower requirement of a particular enterprise. Like Nalco, Reliance etc.

- a) Corporate level planning: Corporate level HRP takes into consideration the changing market situation, strategic plans of the organization, the technological changes anticipated etc., at the macro level. The role of HRP at this level is to identify the broad policy issues relating to human resources. The various issues discussed at this stage are the employment policy, the welfare policy, development policy etc.
- b) Intermediate planning: This plan is done at Strategic Business Unit level (SBU). A SBU is a single business or a collection of businesses that is independent and formulates its own strategy. The HR planning at this level is based on the corporate level HR plan. The decision here should complement the decisions at the higher level and help the SBU achieve its goals and objectives. HR planning at this level includes determining the recruitment/lay off strategy, retaining strategy etc.
- c) Operation Planning: These plans are made at the operational level and as in the case of planning at other levels, are made in pursuit of the organizational objectives. These include simple plans like plans for training and development of resources; recruitment etc. to match the requirements lay down at a broader level.
- d) Planning short-term activities: Planning at this level includes management of day-to-day activities like grievance handling. Planning at this level and operations level are very critical because these plans practically ensure the success or failure of the corporate plans. If these plans fail, the corporate plans are likely to fail.

1.4.Factors affecting HRP

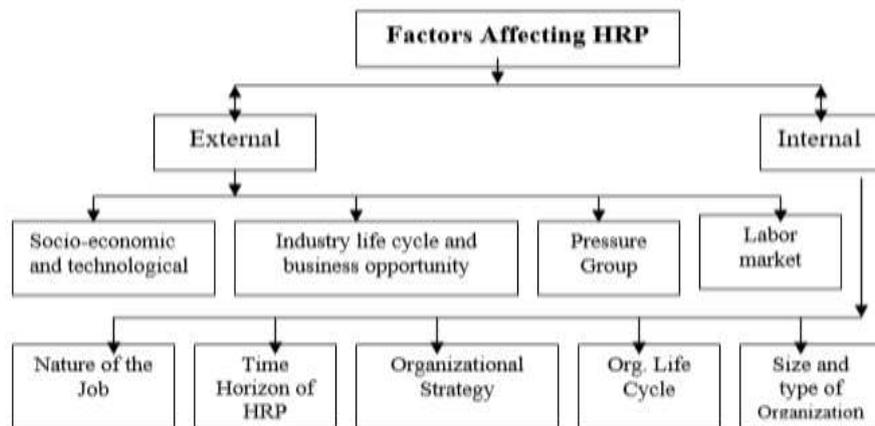
Broadly speaking, there are two factors that influence HR planning of a business enterprise: External and Internal. External environment includes socio-economic environment of the country or the locality where the business is operating its business, technological advancement, life cycle of the industry, scope of business opportunities in the market, pressure group etc. Internal Environment includes size and type of the organization, organizational life cycle, organizational strategy, time horizons of the HR plan, nature of the job etc.

1.4.1. External Factors

Socio- Economic and Technological environment: A systematic study of these environments helps the marketer find the business opportunity in the market and design business and HR strategy. Technological changes impacts the workforce composition and proactive organizations develop their talent pipelines through suitable HR programs like recruitment and selection, induction, training etc.

Industry Life Cycle and Business opportunity: Industry life cycle impacts the organizational HRP to a large extent. For example, during recession, when the aviation industry and the software industry were affected by the business trends, many of the companies like Jet Airways, TCS etc. continued lay-off to a large extent. Similarly, when the market booms, organization starts recruiting people on a massive scale to encash the market opportunity.

Figure 1.1: Factors affecting HRP



Pressure Group: Sometimes, pressure group like project affected people, displaced families, human rights activist, woman activist, media etc. put pressure on the company to recruit some vulnerable class of people. This has happened in case of the manufacturing company like Tata Steel in Kalinganagar Industrial areas, Jajpur, Odisha which have acquired large quantities for projects displaced many local inhabitants.

Labour Market: Labour market situation plays a vital role in HRP. For example, during recession or during current Covid 19 pandemic situation, there has been large scale loss of jobs resulting in high level of unemployment. On other hand, when market booms, there is likely more job opportunities. Employee hiring gets affected. HR Planning at macro level to some extent should focus on the following aspects:

- Population, labour force and workforce,
- Unemployment and underemployment
- Man power requirements by occupations, education and experience
- Wages and earning structure
- Job search pattern
- Formal and informal sector entry requirements, occupational profiles and horizontal relationships among occupation.
- Work environment and industrial relations.
- Stocks and output of different education/skill categories.

Smooth flow of information on the aspects mentioned above and easy access to such information not only facilitates detail labour market analysis but it has also helps design of HR programs.

1.4.2. Internal Factors

Nature, size and types of organization and HRP

Nature and types and size of organization influence the HRP of the organization. For example, service organization requires different skill sets than the manufacturing organization. An academic institution needs teachers. A hospital needs doctors and nurses. Software Company requires software professionals and so on. Similarly, small company requires less number of people than the large company.

Time Horizon of HRP

HRP is formulated on a time scale. There can be short-term and intermediate term and long term HRP. When HR professional formulates HR plans, they, at best, realize the business prospect on a time scale. Whether a company should hire new recruits, or subcontract or outsource a particular HR function or design a training program for talent development, understanding HRP time scale matters. Many times, It is easy to plan HR for the short-term period looking into the current trends. But very often, it is very difficult to contemplate on what business trends are likely in long term. But this essential to foresee these business trends before formulating HR strategy.

Organizational Strategies

Organizational strategy largely impacts its HR strategy. Suppose a bank formulate its strategy to become the market leader in India and abroad, focus on two main issues:

- (1) To adopt a global focus and
- (2) To improve service.

It can broadly opt for

- (1) Cost-leadership strategy in a relatively stable in environment or
- (2) Differentiation strategy in a volatile environment

Table 1.1: Linkage of Organizational and HR Strategies

Organizational Strategy	Strategic Focus	HR Strategy	HR activities
Cost Leadership	<ul style="list-style-type: none"> • Efficiency • Stability • Cost Control 	<ul style="list-style-type: none"> • Long HR planning horizon • Build skills in existing employees • Job and employee specialization efficiency 	<ul style="list-style-type: none"> • Promote from within • Extensive training • Hire and train for specific capabilities
Differentiation	<ul style="list-style-type: none"> • Growth • Innovation • Decentralization 	<ul style="list-style-type: none"> • Shorter HR planning horizon • Hire the HR capabilities needed • Broader, more flexible jobs and employees 	<ul style="list-style-type: none"> • External staffing • Less training • Hire and train for broad competencies

Hence, each strategy evolves certain HR needs and to fulfil these needs, different approaches are available. For instance, the first strategy may be appropriate in a relatively stable business environment. It counters competition through its low price and high quality of product or service. The cost-leadership strategy requires an organization to “build” its own employees to fit its specialized needs. This approach requires a longer HR planning horizon. When specific skills are needed for a new market or product, it may be more difficult to internally develop them quickly. But if the company faces a dynamic- turbulent and hostile environment characterized by constant changes then the second strategy will be more apt. Then one needs to be more proactive and innovative and thus keep searching for new products and new markets. Keep in mind that the two are not mutually exclusive, because it is possible for an organization to pursue one strategy in one product or service area and a different one with others. In contrast to the cost leadership strategy, here the HR planning is likely to have a shorter time frame, and greater use of external sources will be used to staff the organization.

Business strategy and HR strategy reciprocate each other. As, James Walker, a noted HR expert, very aptly stated, “Today, virtually all business issues have people implications; all human resource issues have business implications.”

Organization/Industry Life-Cycle Stages and HR Strategy

The culture of an organization affects the way external forces are viewed. One culture can view one event as threatening whereas another culture may view it as opportunity. For example, when India endorsed Globalization and open door policy in 1990's, many of the companies reacted differently. Some companies foresaw globalization as opportunity whereas many others were afraid that they may not be able to cope with market dynamics and may subsequently perish. The cultures, which view each development in the environment as a challenge, are the one to survive and exploit the opportunity. Thus, this gives them a competitive advantage, especially if it is unique and hard to duplicate. This is especially true as an organization evolves through the life cycle in an industry.

Like a new born baby, when an organization evolves, there is a limited finance available, everything is done on a need basis. Once their presence is acknowledged in the market and customer response is favorable, the organization can now think of expansion of its operations to meet the growing demands. To accomplish this, efforts are put into marketing, production quality and quantity, and appropriate human resources. Thus the attention now is broadened to include more factors. The company might face backlog and scheduling problems because they did foresee the demand and supply correlation. Extensive efforts are put to counter all forthcoming problems of increasing demands. Thus, organization here will look for more investment in recruitment, competitive pay packages, investing in career planning and development, and marketing and operation facilities. Planning is of utmost importance here at this stage.

Organizational Culture and HR planning

“Organizational culture is a pattern of shared values and beliefs giving members of an organization meaning and providing them with rules for behaviour. Much as personality shape an individual, organizational culture shapes its members' responses and defines what an organization can or is willing to do and impacts HR strategies. The degree of flexibility and rigidity of the organization influence its HRP.

As Mathis and Jackson say, “Managers must consider the culture of the organization to develop more compatibility between the strategies and the culture. If there is high compatibility, the strategies hold a better chance during implementation. Numerous examples can be given of key technical, professional, and administrative employees leaving firms because of corporate cultures that seem to devalue people and create barriers to the use of individual capabilities. In

contrast, by creating a culture that values people highly, some corporations have been very successful at attracting, training, and retaining former welfare recipients.”

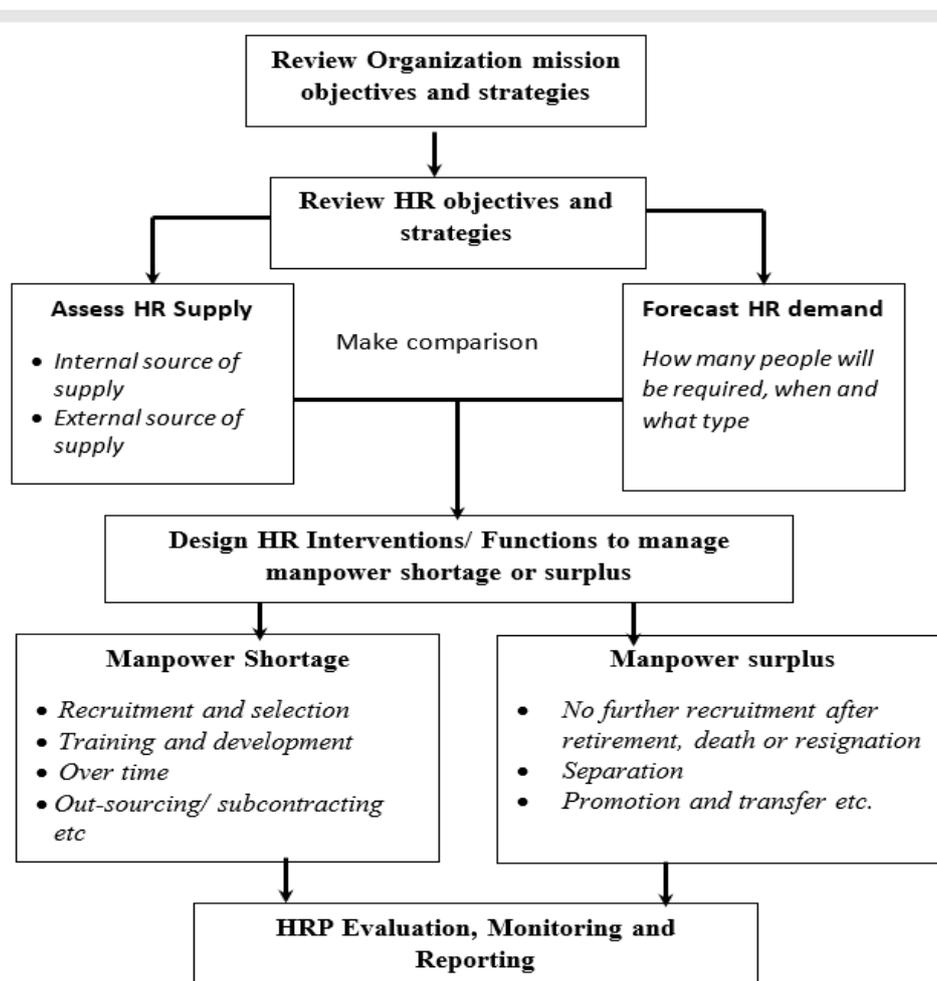
1.5. HRP Process

HRP is a process of bridging the gap between HR demand and HR supply. The actual manpower requirement (HR Demand) and availability (Internal supply of manpower) within organization is normally compared to find out the *manpower gap*. This manpower gap analysis may provide a picture that the organization may be understaffed (HR shortage) or overstaffed (HR surplus) or manpower position is okay. HR strategies and plans must be developed to address the imbalance both for short- and long-term time horizons.

Thus, the three key elements of the process after the review of organizational and HR objectives are

- Forecasting the demand for labor,
- Performing a supply analysis, and
- Balancing supply and demand considerations.
- Departmental heads and supervisors must pay due attention to each step to meet their staffing requirements. Each of these elements can be blended with the overall process in the following manner.
- Once the Corporate strategy and objectives are clear, estimates of demand and supply can be made with the help of certain approaches and methods. When each projection is formulated, the difference between them is determined. This difference is termed as known as *Manpower gap*. The whole purpose behind human resources planning is to bridge this gap.

Figure 1.2: HRP Process



1.5.1. Forecasting Demand

A key component of HRP is forecasting the number and type of people needed to meet organizational objectives. Many organizational factors, including competitive strategy, technology, structure, and productivity can influence the demand for labor. For example, utilization of advanced technology is generally accompanied by less demand for low-skilled workers and more demand for knowledge workers. Similarly, the external factors like market environment (which tells us demand for particular demand or service) can also influence manpower demand forecasting.

Reasons for Demand Forecast

- Quantify jobs necessary for producing a given number of goods or offering a given amount of services.
- Determine what staff-mix is desirable in future;
- Assess appropriate staffing levels in across the departments to avoid unnecessary costs;
- Prevent shortage of people where and when they are needed most
- Monitor compliance with legal requirements such as reservation for certain categories.

Table 1.2: Typical Division of HR Responsibilities in HR Planning

HR Unit	Line Managers
<ul style="list-style-type: none"> • Participate in strategic planning process for the entire organization • Identifies HR strategies • Designs HR planning data systems • Compiles and analyzes data from managers on staffing needs • Implements HR plan as approved by top management 	<ul style="list-style-type: none"> • Identifies supply and demand needs for each division/ department. • Review/ discuss HR planning information with HR specialists • Integrate HR plan with departmental plans • Monitor HR plan to identify changes needed • Review employee succession plans associated with HR plan

1.5.1.1. Quantitative Techniques

Manpower requirement analysis at micro level refers to manpower demand analysis at organizational level. Broadly speaking, there are two kinds of methods to assessing manpower requirement at this level: quantitative and qualitative.

Quantitative Techniques are

1. Analysis of work load factors
2. Ratio-Trend Analysis
3. Regression Analysis
4. Modeling or multiple predictive techniques

1. Analysis of work load factors: This technique can be used when it is possible to apply work measurement to calculate the length of operations and amount of labor required. The steps involve in analysis of workload factors are:

- Classification of work
- Forecasting the number of job

- Converting the projected jobs in man hour
- Converting the man hours into man power requirement

Example:

Planned Out for next year	20,000 units
Standard hours per unit	5
Planned hours for the year	1,00,000
Productive hours per man/ year	2,000
(Allowing normal overtime, absenteeism and idle time)	
Number of direct workers required	50

2. Ratio-Trend Analysis: Ratio-Trend Analysis: The technique involves studying past ratio, say, between the number of workers and sales in an organization and forecasting future ratios making some allowance for changes in the organization or its methods. Following steps typically do trend analysis:

Table 1.3: Demand Forecast-Inspectors

Inspector	Year	No. of employees		Ratio Production : Inspector
		Production	Inspector	
Actual	-3	1500	150	1:10
	-2	1800	180	1:10
	Last Year	2000	180	1:11
	Next Year	2200*	200**	1:11
Forecast	+2	2500*	210**	1:12
	+3	2750*	230**	1:12

*Calculated by reference to forecast activity levels

** Calculated by applying forecast ratio to forecast activity level

Source: A Hand Book of Personnel Management Practices by Michael Armstrong

Table shows how an analysis of actual and forecast ratios between the number of routine proposals to be processed by an insurance company's underwriting department and the number of underwriters employed could be used to forecast future responsibilities.

Steps in Ratio-Trend Analysis

First, select an appropriate business factor. This should be the best available predictor of human resources needs. Frequently, sales or value added (selling price minus costs of materials and supplies) is used as a predictor in trend analysis.

Second, plot a historical trend of the business factor in relation to number of employees. The ratio of employees to the business factor will provide a labor productivity ratio (for example, sales per employee).

Third, compare the productivity ratio for at least the past five years.

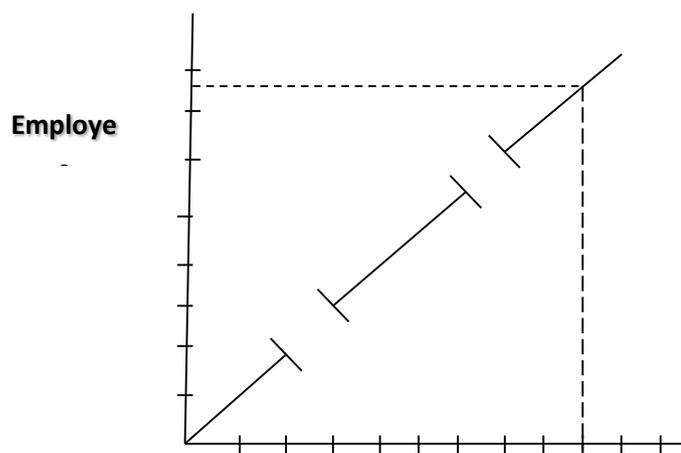
Fourth, calculate human resources demand by dividing the business factor by the productivity ratio.

Finally, project human resources demand out to the target year.

3. Regression Analysis: It is a form of predictive modelling technique which investigates relationship between a dependent (e.g. sales) and independent variable (s) (e.g. workforce size, product inventory etc.). Dependent variable is called target and independent variables are also called predictors. This technique is used for forecasting, time series modelling and finding causal effect relationship between variables. Regression model would incorporate a rate of change based on historical productivity improvement trends. These models also can be used to evaluate the required mix of the employee categories. The valuable forecasting enables us to plan and execute recruitment, selection, training and development programs in planned, proactive fashion to ensure the trained marketing staff are on hand exactly when the organization requires. In companies, linear regression technique is used to predict the number of employees to be recruited each year according to the projected sales. In call centres, linear regression technique is used to predict the number of employees required as per the no. of calls that need to be responded so that they do not loose their customers because of being understaffed.

This is similar to ratio-trend analysis in that forecast is based on the relationship between sales volume and employee size. However, regression analysis is more statistically sophisticated. A firm first draws a diagram depicting the relationship between sales and workforce size. It then calculates regression line- a line that cuts right through the centre of the points on the diagram. By observing the regression line, one can find out the number of employees required at each volume of sales.

Figure 4: Regression line showing the relationship between sales and employee size



4. Mathematical Modelling or multiple predictive techniques: Several mathematical models, with the aid of computers are also used to forecast HR needs, e.g., optimization models, probability modelling, budget and planning analysis. Whereas trend analysis relies on a single factor (e.g., sales) to predict employment needs, the more advanced methods combine several factors, such as interest rates, gross national product, disposable income, and sales, to predict employment levels. While the costs of developing these forecasting used to be quite high, advances in technology and computer software have made rather sophisticated forecasting more affordable to even small businesses.

Difficulties in HR Forecasts Using Quantitative Tools

- It is often difficult to quantify jobs like as productivity increase cannot always be attributed to increased human effort. Increase of productivity due to technological upgradation or the sum total of operational and managerial efficiency (total factor productivity approach) are the factors, which need to be integrated for HR forecasting. But developing such models integrating multiple productivity variables is not so easy.
- Effects of factors such as new technology, incentive schemes, etc. may not be consistent over a time period. Therefore, projecting HR requirement, considering the effect of such factors may be inaccurate.
- How can HR jobs be quantified? Though, in recent times, certain quantitative measures and matrices have been developed to measure qualitative jobs, but, very often, the effort to quantify qualitative jobs has been futile.

Therefore, in some of the cases, qualitative techniques or combination of both quantitative and qualitative techniques are used for demand forecasting.

Qualitative Techniques or Judgmental Techniques

1. Managerial Judgment
2. Delphi Technique
3. Nominal Group Method

1. Managerial Judgment: In this method, managers sit together, discuss and arrive at a figure which would be the future demand for labour. The approach to managerial judgement can be top down, bottom up or both (composite). In the former approach, line managers submit their proposals to top management who arrive at the company forecasts. In the latter approach, top management prepare company and departmental forecasts. Many companies also practice composite (both top-down and bottom up) approach. Departmental heads are provided with broad guidelines. Armed with such guidelines and in consultation with the HR department, departmental managers forecast their respective departmental manpower requirement. Simultaneously, HR managers prepare company forecasts. A committee comprising departmental managers and HR managers will review two sets of forecasts; arrive at a consensus which is then presented to top management for their approval.

Exhibit 1: Problem at Saregama India Ltd.

Saregama India Ltd. (SIL), the music entertainment company in the ROG fold faced a major crisis when the cassette market started shrinking with the availability of CD at cheaper rates 2000-2001. The manufacturing unit of SIL at Dum Dum had a workforce of 730 employees and manufactured only cassettes. The market for cassettes was badly affected by piracy and a fast-growing CD market. So the management at SIL, which had already downsized by 700 employees over two years through VRS again considering the idea of man power reduction the union, however, opposed this idea strongly. The management at the plant was in a fix as to how can it reduce the costs.

SIL could not forecast the demand for its products in the market. It failed to foresee the technological changes in the market and the influence of such changes on their product. The music industry itself was fast becoming stagnant. Had the management at SIL prepared itself to face these challenges, it would have averted the current crisis. At this stage, it can neither relocate the employees nor lay-off, nor can it bear their burden and run into red.

2. Delphi technique:

The **Delphi Technique** refers to the systematic forecasting method used to gather opinions of the panel of experts on the problem being encountered or manpower requirement for a planned period. In other words, a set of opinions pertaining to manpower requirement, obtained in writing usually through questionnaires (often sent through mail) from several experts in the specific field is called as a Delphi technique.

In a Delphi technique, the group facilitator or the change agent aggregates all the anonymous opinions received through the questionnaires, sent two or three times to the same set of experts. The experts are required to give justification for the answers given in the first questionnaire and on the basis of it, the revised questionnaire is prepared and is again sent to the same group of experts.

The experts can modify their answers in accordance with the replies given by other panel members. The objective of a Delphi technique is to reach to the most accurate answer by decreasing the number of solutions each time the questionnaire is sent to the group of experts. The experts are required to give their opinion every time the questionnaire is received, and this process continues until the issues are narrowed, responses are focused, and the consensus is reached.

Steps involved in Delphi Techniques

Step 1: Choose a Facilitator

Step 2: Identify Your Experts

Step 3: Define the Problem

Step 4: Round One Questions

Step 5: Round Two Questions

Step 6: Round Three Questions

Step 7: Act on Your Findings

In a Delphi technique, the identity of the group members is not revealed, and they are not even required to gather for a physical meeting. Each member is free to give his/ her opinion with respect to the problem, thereby avoiding the influential effect that a powerful or authoritative member can have on the other group members.

This technique is quite advantageous as diverse opinions can be gathered from the large pool of experts who might be geographically separated. Also, the quality of decision gets improved as the expertise of each group member is capitalized to reach to a final solution.

3. Nominal Group Method (NGM):

NGM is different from Delphi technique in the sense, unlike Delphi technique, in NGM; experts are given the opportunities to discuss among themselves, for assessing the questions. Under this method, the coordinator assumes the role of a facilitator, allowing the experts to sit together to discuss their ideas and records of such discussions are made on a flip chart. After this, a round table discussion on ideas, experts are asked to rank their ideas according to their perceived priority. The group consensus is then derived mathematically in terms of individual rankings.

Ideally, HRP should include the use of both quantitative and qualitative approaches. In combination, the two approaches serve to complement each other, thus providing a more

complete forecast by bringing together the contributions of both theoreticians and practitioners. Whatever technique one might utilize, they need to be done systematically.

HR planners many times go further and analyze the demand on the basis of the followings:

Job analysis: Job Analysis is the process of obtaining information about jobs by determining what the duties, tasks, or activities of jobs are. HR managers use the data to develop job descriptions and job specifications that are the basis for employee performance appraisal and development. The ultimate purpose of job analysis is to improve organizational performance and productivity.

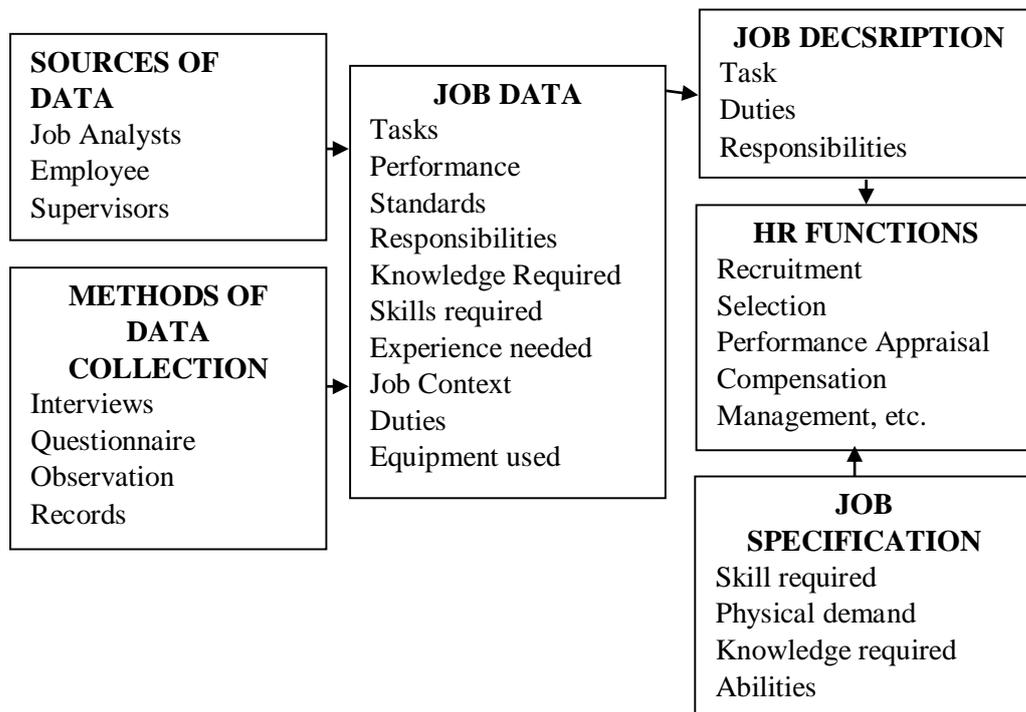
Job Analysis and Essential Job Functions

Statements in the job description of job duties and responsibilities those are critical for success on the job. A job function is essential if:

- The position exists to perform the function.
- A limited number of employees are available to perform the function.

The function is specialized, requiring needed expertise or abilities to complete the job

Figure 1.5: Job Analysis Process



Job Description and Job Specification of a manager, Technical, BPO Operation, New Delhi

Job Description	Job Specification
<p>Job Description:</p> <ul style="list-style-type: none"> • Ownership of the technical consulting operation, providing technical services to clients with regard to connectivity, specific application support, etc. • Lead the team (of Asst. Mgrs, Team leaders, Quality Coaches, Trainers and technical support associate to actualize on innovative business solution in a cost- efficient manner. • Manpower planning, recruiting, scheduling, training and appraising ensuring optimum resource utilization. • Process planning and improvisation • MIG generation and analysis for customer and organization analysis to track performance trends • Coordinate with other departments in order to assure the smooth running of operations 	<p>Job specification</p> <ul style="list-style-type: none"> • 5-7 years of experience with at least 2-3 years in BPO • Customer service / Care BPO experience is essential • Experience of handling technical processes in a call centre • Knowledge of quote / order to delivery cycle • Excellent analytical, management and communication skills • Must be open to work in night shift

Exhibit 2: Job Description and Job Specification

- **Job Title**
 - Provides status to the employee.
 - Indicates what the duties of the job entail.
 - Indicates the relative level occupied by its holder in the organizational hierarchy.
- **Job Identification Section**
 - Departmental location of the job
 - Person to whom the jobholder reports
 - Date the job description was last revised
 - Payroll or code number
 - Number of employees performing the job
 - Number of employees in the department where the job is located
 - “Statement of the Job”
- **Job Duties, or Essential Functions, Section**
 - Statements of job duties that:
 - Are arranged in order of importance that indicate the weight, or value, of each duty; weight of a duty is gauged by the percentage of time devoted to it.
 - Stress the responsibilities that duties entail and the results to be accomplished.

- Indicate the tools and equipment used by the employee in performing the job.
- Should comply with law by listing only the essential functions of the job to be performed.
- **Job Specifications Section**
 - Personal qualifications an individual must possess in order to perform the duties and responsibilities
 - The skills required to perform the job:
 - Education or experience, specialized training, personal traits or abilities, interpersonal skills or specific behavioral attributes, and manual dexterities.
 - The physical demands of the job:
 - Walking, standing, reaching, lifting, talking, and the condition and hazards of the physical work environment

1.5.2. Forecasting Supply

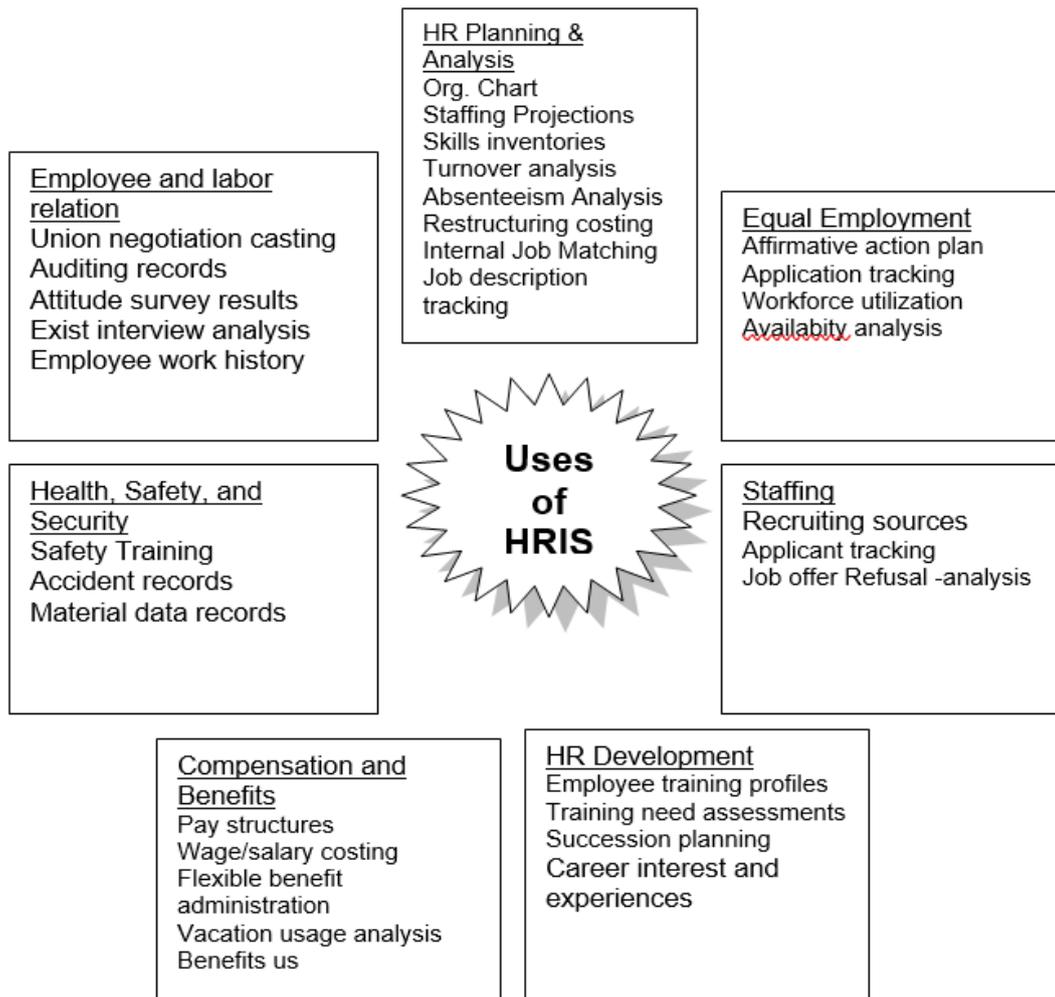
Supply forecasting means to make an estimation of supply of human resources taking into consideration the analysis of current human resources inventory and future availability.

Forecasting Supply at Micro level: There are two sources of supply: internal and external. Forecasting manpower supply at micro level is the internal source of supply of the organization.

1.5.2.1. Internal sources:

The most popular approach to be followed by all managers is to look within the organization among its cadre first. Profiles of the employees in terms of age, experience, capabilities, gender, education, training, experience, job level, past performance and future potential is continuously needed to be maintained in Human Resource Information System (HRIS) for analysis, assessment and requirement of HR in future use whenever required. The HRIS is not just useful in HRP, its uses extend to whole gamut of HRM.

Figure1.6: Uses of HRIS



Thus, if the requirements in terms of growth/diversification, internal movements of employees (transfer, promotions, retirement, etc.) are determined in advance then the data can be very

useful. But while provisioning for the above corporate movements, one must keep an eye on the internal movement, such as, attrition, absenteeism, promotion, etc of the workforce as we have discussed earlier, through the workforce analysis. In addition to workforce analysis, the organization needs to maintain replacement charts or succession plans. Regular manpower audits are the best option to keep track of the available talent in terms of skills, performance and potential.

Estimation of Internal Supply for a Word Processing Job

Sources of Inflows	No. of People		Sources of Outflows	No. of People
Transfers In	12	Current Personnel Level	Resignation	13
Promotion In	10		Discharge	2
			Demotions	4
			Retirement	10
			Promotions	13
Total Inflows	22		Total Outflows	42

Current personnel level-Outflows+ Inflows=Internal supply of word processors
 $250-42+22=230$ Processors

An internal supply analysis is done with

- Staffing tables** are graphic representations of all organizational jobs, along with the numbers of employees currently occupying those jobs and future (monthly or yearly) employment requirements, which can be derived from demand forecasts. A **manning table** is a listing of the positions or number of workers to be used in the operation of a particular machine or process. For example, a **manning** list might be used in a school to communicate with Personnel for any changes in assignment: subject, grade level, etc.
- Markov analysis**, which shows the percentage (and actual number) of employees who remain in each job from one year to the next, thus keeping track of the pattern of employee movements through various jobs. Thus this analysis results in a composite matrix of supply.

Table 1.4: Markov Analysis for a Retail Company

2002	2003	Store Managers	Asst. Store Managers	Section Managers	Dept. Managers	Sales Associates	Exit
Store Managers (n = 12)	90%	11					10%
Assistant Store Managers (n = 36)	11%	4	83%				6%
Section Managers (n = 96)			11%	66%	8%		15%
Department Managers (n = 288)				10%	72%	2%	16%
Sales Associates (n = 1440)					6%	74%	20%
Forecasted Supply		15	41	92	301	1072	351

■ Transition percentage ■ Actual number of employees

- Skill inventories:** A skill inventory is a list of an individual’s professional competencies or skills. Such an inventory might also include education and professional experience. An employer might request a skills inventory from a current employee or potential employee to gauge how well that individual is likely able to meet company goals. What’s more is a company can use skills inventories to improve strategic planning efforts. Besides recruiting and training, skills inventories can also be used for succession planning.

Exhibit: IT Employees Skill Matrix

Description: The IT Employee Skills Matrix is a spreadsheet that you can use to quickly assess the skills you have in your IT organization. You can use a format like this to get as detailed as you want. The skills you have in your IT organization. You can use a format like this to get as detailed as you want. The list of skills that I have included on the spreadsheet are typical of what you need in an IT organization to be successful. For every department within the IT organization, the manager will want to be more specific For example, the IT Infrastructure Manager may want to include certain certifications. You can use a tool like this to maintain an inventory of skills by resource.

Instructions:

Step 1

List the skills you need to operate your IT department successfully in the heading sections for each column. If you like, you can group them into logical groups. You can also be as specific as you feel necessary to help you monitor and evaluate the skills of your team.

Step 2

You can use the first row to define the quantity of each skill set that you feel is needed for your department. For example, assume you manage the R&D effort of a company and you have three separate application organizations. You might list a need for three managers, one for each of the software application groups.

Step 3

List each employee and his/her responsibility in the respective columns. I like to list employees in groups, or teams. It makes it easier to see what you have in a specific area of expertise such as looking at your programmers as a group. Another thing that is beneficial is to leave a couple of rows blank so you can insert new employees when they are added to your group. You can also fill in the skill sets for a "New Employee" that helps you fill in gaps or add skill depth in identified areas when you hire new employees.

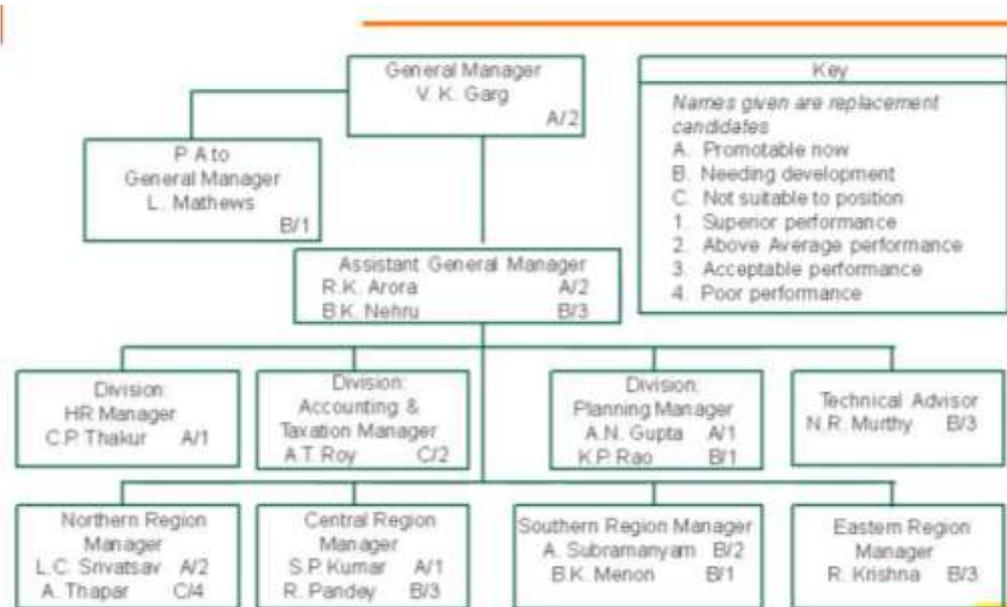
Step 4

Work through each employee and identify the level of skill (from 1 to 3) for each skill. **Final Comments:** You have an opportunity to improve your team every time you hire a new employee. Having quantifiable insight into what you have can help you target the skills you need to be a stronger organization. Priority one should be to fill skill gaps that are critical to your operation. Priority two should be to add additional depth in positions that are critical and that you need backup in. Priority three is to add needed, but non-critical skills

MDE Enterprises, Inc. MDE Employee Skills Matrix.xls		IT Employee Skills Matrix																						
Name	Responsibility	Management	Leadership/Supervisor	Client Service	Communication	Project Mgmt.	Industry Knowledge	Business Analysis	Application Design	Programming	Implementation	Training	Documentation	Help Desk	Network Admin.	Telecom	PC /Desk Top	Servers	Internet/Intranet	Computer Operation	Administrative	Web Applications	Other	
<i>IT skills needed</i>	<i>not applicable</i>																							
1																								
2																								
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4																								
5																								
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8																								
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16																								
17	TOTAL		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	GAP		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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4. **Replacement chart** that helps us derive the profile of job holders, department-wise and reveals those who could be used as replacements whenever the need arises

Figure 1.7: Replacement Chart Example



1.5.2.2. External sources

External hires need to be contacted when suitable internal replacements are not available.

Followings are the factors to be taken into consideration while forecasting HR supply:

- Net migration for an area
- Individuals entering and leaving the workforce
- Individuals graduating from schools and colleges
- Changing workforce composition and patterns
- Economic forecasts
- Technological developments and shifts
- Actions of competing employers
- Government regulations and pressures
- The attractiveness of an area
- The attractiveness of an industry in particular place.

Thus, HR planners need to keep themselves abreast of the Labor market conditions such as local employment, trends of relevant categories of employees, competition for such skills, availability of part time labour, migration trends of labor, etc.

Therefore, to summarize what information should be available for a comprehensive supply forecast and analysis?

1. The skill base, potential trainability and current and potential productivity level of the existing work force.
2. The structure of the existing workforce in terms of age distribution, skills, hours of work, rates of pay and so on.
3. The possible changes in the productivity, size and structure of the workforce due to resignations and retirements, promotions and transfers, absenteeism and other external factors (economic and cultural), which may induce such changes.
4. The availability of the relevant skills in the external labor market for present and future use. The HR planner will have to assess and monitor factors such as: market value, image/preference of the existing labor for the company, motivation factors that could invoke of the prospective candidates to join the company.

1.6.3. Interlinking HRP with HR Functions to manage manpower shortage and surplus

A comparison chart can be developed to find what is available and to what extent it can fulfil the demand forecast. A reconciliation of demand and supply forecasts will give us the number and types of people to be recruited or made redundant. This forms the basis for preparing the **manpower plan**. The human resource requirements are identified and translated into a concrete manpower plan, backed up by detailed policies, and other human resources instruments and strategies. A series of action programmes are initiated as a part of HR plan implementation to bridge HR demand-supply gap. Some such programmes are recruitment, selection and placement; training and development; retraining and redeployment; the retention plan; the redundancy plan; and the succession plan.

1.6.3.1. Managing Manpower shortage

After job vacancies are identified, the company looks for sources of recruitment as per its HR policy. The factors that influence hiring decision are organizational mission, strategy, objectives, stages of industrial growth, financial condition of the organization on the one hand and nature of work or activities to accomplish these on the other. Hiring new employees would be unwise if there is a likelihood of a short-term demand for products and services. Over time of employees or subcontracting certain activities may be a wise and cost-effective decision. Sometimes, training programs enhance skills to meet organizational requirement. Employers might also

encourage employees approaching retirement age to continue working by making an increment in the pension formula to reward extra years of service more heavily, or they might rehire retired employees on part time basis. Alternatively, employers may choose to subcontract some work to another company during the peak demand or acquire temporary workers from firms specializing in such services. If the organizations experience high attrition, the employers should identify the causes of attrition and employ remedial measures like sound and attractive compensation package, motivating employees through Employee Stock Option Plan (ESOP), quick grievance redressal system. The organization may also decide to groom the limited human resources through training and development programmes to carry on future activities to accomplish organizational objectives. Performance appraisal must be done at least in everyone year to gauge the potential and performance of the employee and promoting him/ her at the right time. Finally, the entire way the work is done can be analyzed and modified for greater efficiency, so that fewer staff is needed. Business Process Reengineering (BPR) helps firm eliminate unnecessary activities and steps through time and motion study, thus eliminating employee requirement.

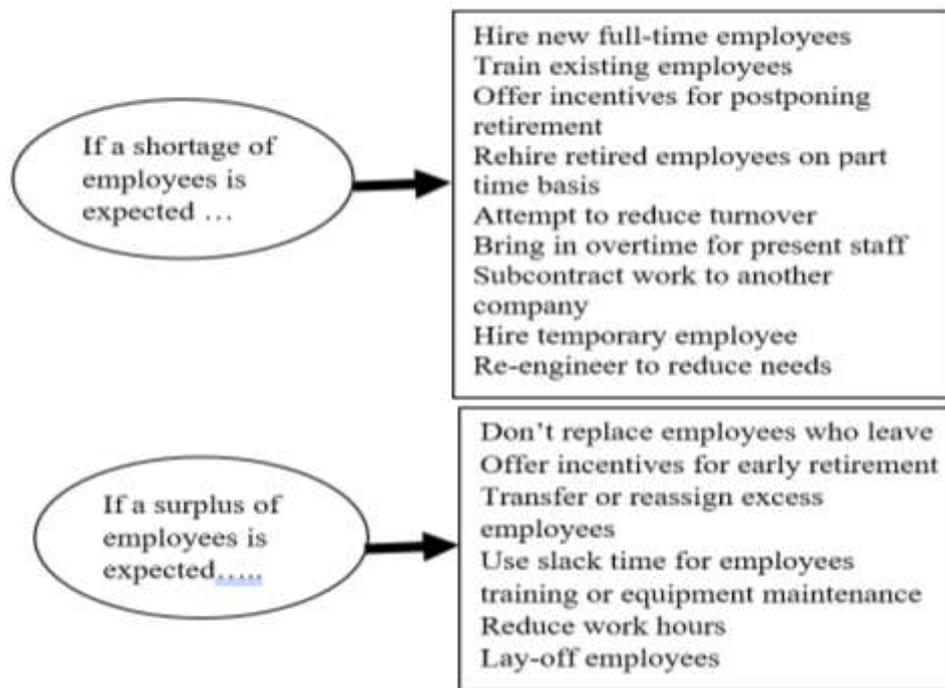


Figure 1.8: Interlinking HRP and HR Functions

1.6.3.2. Managing Manpower Surplus

The company should also carefully design HR interventions to manage manpower surplus. If a surplus of man power is expected, the organization may take different strategic move. Again, the

top management must ponder over the fact whether it needs to expand its line of business in near future. If yes it must retain surplus employees.

Work sharing is a good concept to retain loyal and dedicated employees during slack period. This is more suitable for the employing at the operational levels and lower levels of management. Two workers share the job at the salary of one. They may operate in short shifts and receive comparatively low salary. This may happen during recession when there are less job opportunities and employees may find difficulties in getting employment.

Exhibit 2: How Do You Ask Your Colleagues To Leave?

According to an HR manager, “the hangmen of old had it easier than the firing managers of today: They were allowed to a mask to cover their identity. When you fire someone, there is no disguising the fact that you are the bearer of ill tidings.” You can’t hide from your responsibilities; can you help create an atmosphere that makes the process as minimally stressful and as little humiliating as possible? How to set the stages for firing, how to do the deed, and how to handle the aftermath- are some of the questions for the HR manager.

Setting the Stage:

- After determining that an employee must be fired, a manager must set stage for the firing by planning who will give the news, the place for the meeting with the employee, the timing of the firing and who in the company needs to be informed before the firing. Finally, it is also necessary to carefully prepare the logistics of the firing and what to say to the employee. What to say to the employee and how to say it, makes all the difference to the employee. It is necessary that the employee leaves the organization with minimum bitterness and with a positive impression of the organization.

Loaning is another option top to retain middle and top- level during stagnancy. The Organization may loan their managers for a specified period to other organizations, usually government or quasi government. The employees work on projects with these organizations but continue to be on the payroll of their parent organization. The employees return to the parent organization at the end of the loan period.

Otherwise it may lay-off the surplus workforce in due compliance with labor legislation. It may introduce golden handshake scheme like Voluntary Retirement Scheme (VRS) with attractive retirement package to lay-off employees. It is wise not to replace employees who leave the organization. The organizations that are exceptionally employee friendly employ another tool named “Outplacement” to separate employees from the organization. They may look for other

employment opportunities for their displaced employees and offer them assistance in getting new jobs. This assistance might be in terms of preparing their resumes; helping the employees prepare for interviews etc. This also helps the organization in winning the good will of the employees even during hard times. The organization may also take a strategic move to downsize the organization.

Workforce Realignment:

“Downsizing” or “Reduction in Force” (RIF) -means reducing the number of employees in an organization. The reasons for which the organization implement these strategies are mostly economic (weak product demand, loss of market share to competitors) and structural (technological change, mergers and acquisitions) in nature. Workforce alignment has both positive and negative consequences. It yields positive results in the sense that it increases competitiveness and productivity. It also yields some negative consequences which include cannibalization of HR resources, loss of specialized skills and experience, loss of growth and innovation skills. It poses great challenges for the organization while managing survivors. The challenges include how to provide explanations for the current and future actions and how to involve survivors in transition/regrouping activities.

Downsizing approaches

- Attrition and hiring freezes (Not replacing departing employees and not hiring new employees)
- Early retirement buyouts (Offering incentives that encourage senior employees to leave the organization early.)
- Layoffs (Employees are placed on unpaid leave until called back to work when business conditions improve. Employees are selected for layoff on the basis of their seniority or performance or a combination of both.)
- Outplacement services provided to displaced employees to give them support and assistance through personal career counseling, resume preparation and typing services, interviewing workshops, referral assistance, severance payments, continuance of medical benefits, job retraining

Dealing with Downsizing

Following guidelines are to be followed while dealing with downsizing

- Investigate alternatives to downsizing

- Involve those people necessary for success in the planning for downsizing
- Develop comprehensive communications plans
- Nurture the survivors
- Outplacement pays off

1.6.4. Control and Evaluation

Control and Evaluation represents the final phase in HRP process. The HR plan should include budgets, targets and standards. It should also clarify responsibilities for implementation and control and establish reporting procedures which will enable achievements to be monitored against the plan. These may simply report on the numbers employed against establishment (identifying both those who are in post and those who are in pipeline) and the numbers recruited against the recruitment targets. But they should also report employment costs against budget, and trends in wastage and employment ratio.

Monitoring, evaluating, and reporting (internally and publicly) performance results advances our capacity to measure performance, set targets, and, most importantly, to integrate results information into decision making processes and determine future priorities.

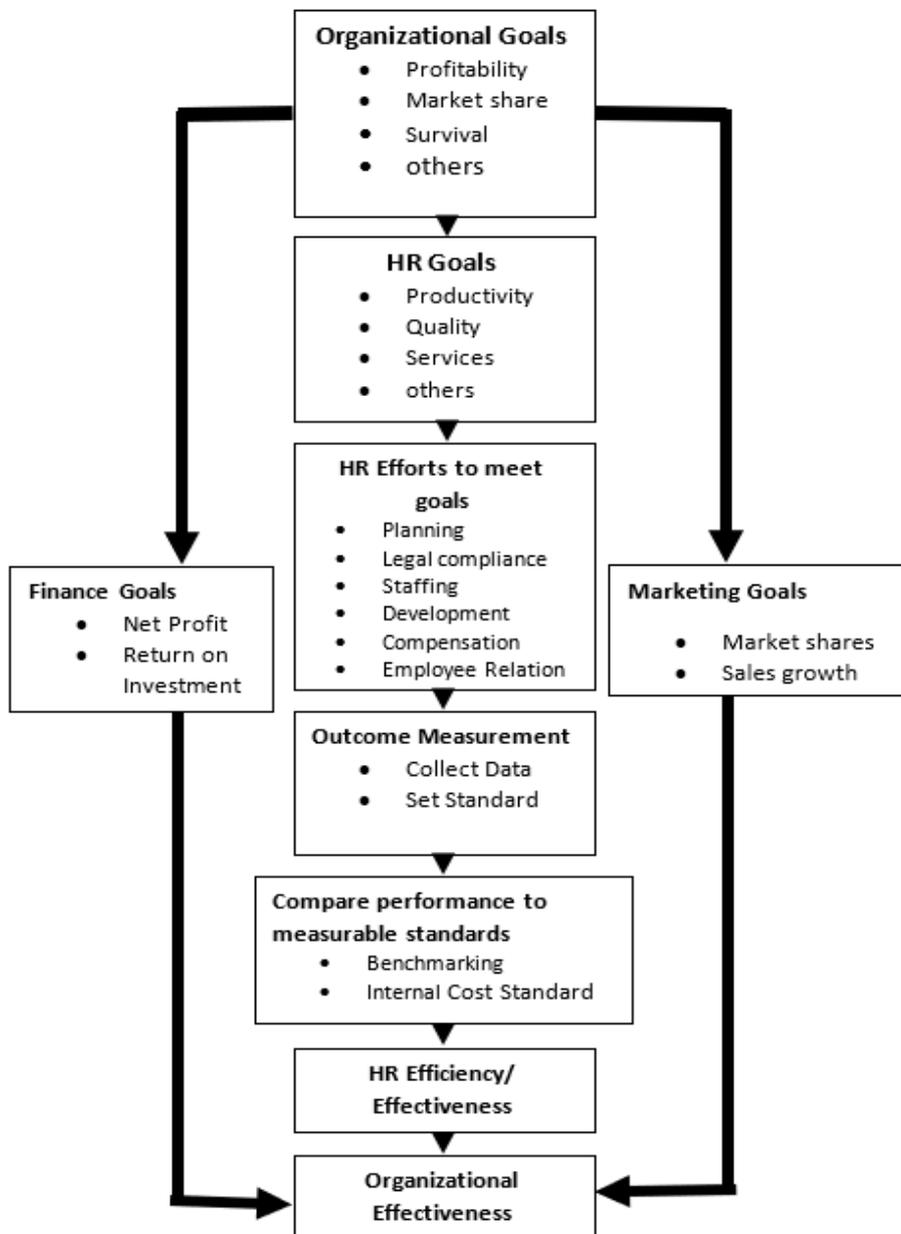
At this stage, the HR planners need to follow:

- The assessment of plans to know to what extent they are turned to the workforce problems and opportunities and clarify the priorities;
- Assessing the working relationships among HR specialists and the line managers;
- Assessing the integration of business plan and HR plans and recommendation; and
- HR planners perceive on the importance of HR plan.

Systematic comparison of the objectives and action plans with measured performance helps in monitoring and evaluation. The important factors need to be compared are:

- Actual staff position against the forecast requirements;
- Actual labor productivity against anticipated level;
- Actual HR flow rates against planned programmes;
- Labor and action programmes costs against budgetary provision; and
- Ratio of action programme benefits to action program costs.

Figure 1.9: Evaluation and Control



1.7. Problems in HRP

Planners face significant barriers while formulating an HRP. The major ones are the following:

- HR practitioners are perceived as experts in handling personnel matter but are not experts in managing business. The personnel plan conceived and formulated by the HR

practitioners when enmeshed with organizational plan might make the overall strategic plan itself defective.

- HR information often is incompatible with the information used in strategy formulation. Strategic planning efforts have long been oriented towards financial forecasting often to the exclusion of other types of information.
- Conflict may exist between short-term and long-term HR needs. For example, there arises a conflict between the pressure to get work done on time and long-term needs, such as preparing people for assuming greater responsibilities. Many managers are of the belief that HR needs can be met immediately because skills are available on the market as long as wages and salaries are competitive. These managers fail to recognize that by resorting to hiring or promoting depending on short term needs alone, long-term issues are neglected.
- There is conflict between quantitative and qualitative approach to HRP. Some people view HRP as a number game designed to track the flow of people across the departments. These people rely on a strictly quantitative approach to planning. Others take a qualitative approach and focus on individual employee concerns such as promotion and career development. Best results would accrue if there is a balance between the quantitative and qualitative approaches.
- Non-involvement of operating managers renders HRP ineffective.

HRP is not strictly an HR department function. Successful planning needs a co-coordinated effort on the part of operating managers and HR personnel.

1.8. Guidelines for Effective HRP

As observed from various studies Indian organizations are not so much efficient in HR planning due to poor HRIS and radical changes in technological, political, social and economic cycles. But the problems can be minimized:

- Through proper integration between the organizational objectives and HR objectives;
- Top management support
- Maintaining Proper and objective HRIS
- Through proper coordination between the various wings of the organizational units.

1.9. Recent Trends in HRP

The last decade brought an avalanche of change to the HR industry

- **Automation via Artificial Intelligence (AI) and Robotics Process Automation (RPA):** The truth is that Artificial Intelligence (AI) has taken a strong foothold in recruiting and will likely continue to take over some of the more repetitive aspects of your job. For example, there is already software (including LinkedIn Recruiter) that lets you automate candidate searches and quickly find prospects that match your criteria. Other technology can help you screen these candidates before you even speak to them. Chatbots can respond to candidate questions so you don't have to. The presence of Artificial Intelligence doesn't devalue human work but makes it more focused and strategic.
- **Virtual and Augmented Reality:** Both VR and its cousin augmented reality (AR) are gaining traction as viable tools in the HR practitioner's toolbox. They aid front-end processes like recruiting and onboarding, with numerous applications:
 - ✓ Setting up a simulated environment that tests a candidate's job-specific skills
 - ✓ Sharing a virtual tour of your office space
 - ✓ Using VR to bolster recruiting efforts

It can be applied to improve recruiting and training efforts. Virtual and augmented reality also extend to training scenarios, either as part of the onboarding process or to provide current employees with additional training.

- **Employee experience** was the third most important key initiative among HR leaders in 2019, according to Gartner. It will remain top of mind through 2020 as companies seek ways to drive engagement and foster employee-centric cultures. Focusing on the experience that employees have with the company, much as a brand focuses on the customer experience, can:
 - ✓ Boost productivity
 - ✓ Improve satisfaction
 - ✓ Lead to greater employee loyalty
 - ✓ Encourage investment in the company's vision

- **HR Guidance:** HR will become more focused on offering guidance in 2020. Dave Ulrich, a professor, author, speaker and HR thought leader said that one trend will take hold in the coming years is the concept of HR guidance via Organization Guidance Systems (OGS). “I see HR delivering value by offering more ‘guidance’ rather than simply scorecards, dashboards or predictive analytics,” he says. In essence, an OGS identifies desired outcomes related to four spheres that are critical to business success: talent, organization, leadership and human resources
- More than 80% of Millennials and Gen Zs show an active interest in joining the **Gig Economy**, either with a side hustle or as full-time freelancers.
- **Real Time Performance Feedback:** In today’s fast-paced world, the traditional performance review cycle is outdated. Thanks to tools like pulse surveys and real-time feedback channels, managers no longer need to schedule time-consuming meetings or evaluate performance only once a year. Employees can receive regular, consistent feedback. Beyond the logistical benefits, real-time feedback “provides ample opportunity for managers to have meaningful and forward-looking conversations about personal and professional development with the employee, resulting in better engagement and improved productivity,
- **Generational Shifts:** Millennials and Gen Zs are entering the workforce while more baby boomers retire, causing disruption as companies seek to adjust to a new normal. The new generations have their own unique values and expectations when it comes to how their employers operate, the technology they use and the impact their jobs have. Understanding this new paradigm will help companies successfully navigate the shifting worker landscape. Knowledge retention is another key aspect, companies must consider.

Besides, Workforce diversity, rise of Industry 4 and people analytics will continue to dominate HR in coming days.

Summery

HRP is a process of bridging the manpower gap by forecasting HR Demand and Supply. This manpower gap analysis provide a picture of organization being either understaffed (HR shortage) or overstaffed (HR surplus) or manpower position is okay. A series of action programmes are initiated as a part of HR plan implementation to bridge HR demand-supply gap. Some such programmes are recruitment, selection and placement; training and development; retraining and

redeployment; the retention plan; the redundancy plan; and the succession plan. There are some internal and external factors influence the design of HR intervention strategies. HRP can be formulated at macrolevel and microlevel. Macro level HRP includes human development plan made by international body such as UNO, National Body like HRD Ministry, a particular sector like manufacturing or service sector and industry level such as IT, Insurance etc. Micro level plan is generally formulated at company level. The HR plan should include budgets, targets and standards. It should also clarify responsibilities for implementation and control and establish reporting procedures which will enable achievements to be monitored against the plan. Due to rise of Industry 4.0, AI, RPO, VR and AR, employee experience management, effective HR guidance, Real time performance feedback, emerging workforce expectations are also trending which also impact HRP.

Review Questions

Long type Questions (16 Mark)

1. Discuss the growing importance of manpower planning at macro and micro level.
2. Why do you think about the challenges of long-term manpower planning? How does technology help in manpower planning?
3. Discuss the factors affecting manpower planning.
4. Discuss various forecasting techniques used in manpower planning.
5. Do you think, employee hiring is the only solution to manage HR imbalances/ gap? If yes, why; if not, what are the other HR programs?
6. Discuss 4 recent HR trends and how do they influence manpower planning.
7. Discuss manpower planning process.
8. Why is skill inventory significance? List out and discuss the skill set required for a sales person example.
9. Develop the job description and specification of a LIC agent.
10. Is HRP only relevant to the large companies or should small businesses do manpower planning?

Medium Length Questions (8 Mark)

1. Explain macro level planning with examples.
2. Explain micro level planning with examples.
3. How are micro and macro level manpower planning interlinked?
4. Explain internal mobility with examples.

5. Explain the uses of demand forecasting techniques in manpower planning.
6. Explain the uses of supply forecasting techniques in manpower planning.
7. Explain various kinds of manpower wastages and how do you assess them.
8. Explain three objectives of manpower planning.
9. Explain job analysis and its essential functions.
10. Explain the importance of skill inventory for an organization.
11. Explain the skill set required for HR professional.
12. Why is control and evaluation important in manpower planning? How is done?
13. What are the problems associated with manpower planning and how can these problems be remedied?
14. How do Artificial Intelligence and Robotics Process Automation impact manpower planning?
15. What are the uses of HRIS in manpower planning?
16. Distinguish between projection and forecasting.
17. Distinguish between training and development.
18. Explain the role of labour market in manpower planning.
19. Explain the role of line manager in manpower planning.
20. When we do internal scan for the purpose of manpower planning, what questions should we need to address?
21. When doing an environmental scan for the purpose of manpower planning, what things should we look at?
22. Where does training and staff development fit with manpower planning?

Short Type Question (2 Mark)

1. Why is study of manpower planning significant?
2. Write 2 objectives of manpower planning.
3. Write an example of macro level manpower planning.
4. Write an example of micro level manpower planning.
5. Why is identification of HR gap significant?
6. Write two recent trends in employee hiring process.
7. How does regression model help manpower planning?
8. Distinguish between projection and forecasting.
9. Distinguish between training and development.
10. Write two advantages of outsourcing.

11. Write two recent trends in manpower planning.
12. Why is job analysis significant?
13. Outline HRP process.
14. How does HRIS help manpower planning?
15. Distinguish between staffing and manning table.

Module 2: Developing a Manpower Plan

LEARNING OBJECTIVES

After going through this module, students will be able to understand:

2.1. Introduction

2.2. Developing a Manpower Plan and its Qualitative Sides

2.3. Competency Mapping

2.3.1: Competency Mapping Process

2.3.2. Methods of Data Collection

2.3.3. Developing Competency Model from Raw Data

2.3.4. Use of Competencies in Employee Performance Management System

2.4. Use and Application of Statistical and Mathematical Model in Manpower Planning

2.1: Introduction

Manpower planning has in the past relied too much on the forecasting of manpower requirements in an organization or a society. Usually one thinks of manpower planning as being synonymous a number game. But, in reality, manpower planning is far more than that. It relates to people and their development in any organization or society which is also qualitative in nature. Manpower planning incorporates or not only centres around the forecasting of manpower requirements within the organization, but also focuses on designing appropriate HR interventions as solutions to the “imbalances” resulting out of demand- supply forecasting analysis.

2.2. Developing a Manpower Plan and its Qualitative Sides

The broad objectives of manpower planning are to attract, develop and retain manpower while addressing the problems of “imbalances” resulting out of demand-supply forecasting analysis.

Figure 2.1: Understanding “Imbalances” in Demand- Supply Forecasting Analysis

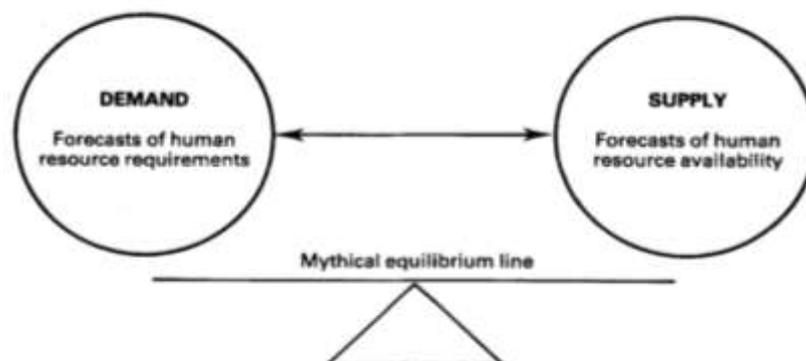
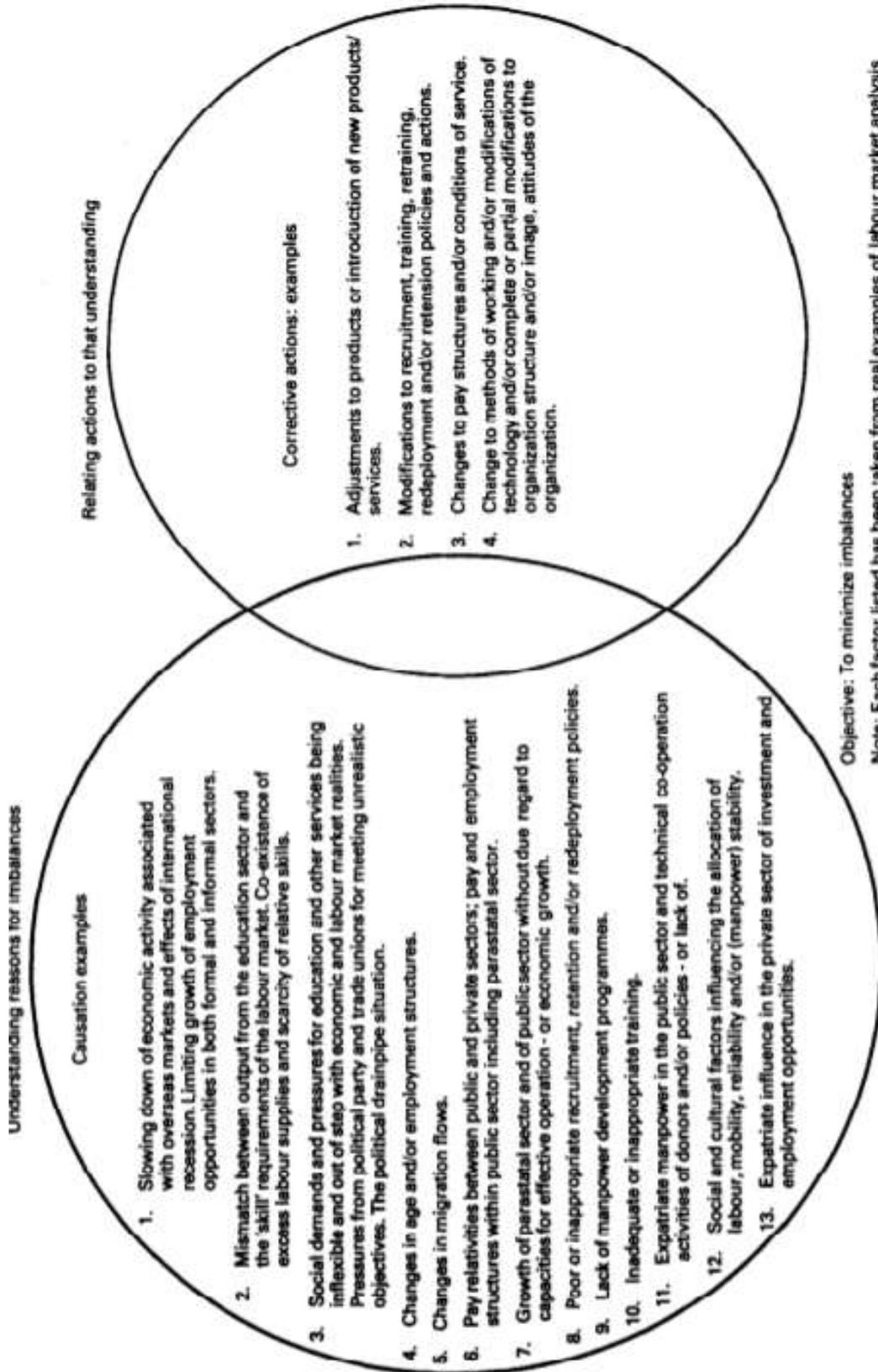


Figure 2.2: A diagnostic Approach to Manpower Planning



Manpower planning is not always the number game. The imbalances may be caused due to social and other non-economic constraints. For example, if the organizational ineffectiveness is caused due to poor interpersonal relationship among the employees, the solution could be sensitivity training or training on JOHARI WINDOW or TRANSACTIONAL ANALYSIS. An organization should not think of the minimum contractual obligations upon an employer. Rather it should think of a more positive side of human resource development with clearly defined training development programmes for the people it employs. It largely benefits society, organizations and individual employees as well.

In the broader context, HRP must encompass a range of activities on prediction of future skill requirements and some knowledge about existing workforce in the organization. This requires a strategy for the acquisition, utilization, improvement and even the preservation of an enterprise's human resources.

When we discuss about manpower data, it includes both quantitative and qualitative data. If quantitative data use *numbers* to tell a story, qualitative data use *words* to tell a story.

Qualitative data involves actions and behaviors that are observed, not measured. And though quantitative data are typically viewed as more dependable, objective and generalizable, qualitative data offer more in-depth, illuminating and descriptive information, often adding context and clarity behind those numbers. For example, data-driven analysis of employee retention may reveal a spike in turnover over in the previous year. But the instrument like *exit interviews, stay interviews or an opinion survey or a brainstorming session, a case study analysis and observation* can help the HR planners understand reasons why people leave.

The HR planners may rely on technology and obtain data via telephone, Skype, mail surveys, twitter, linkedIn and Facebook.

The benefits to using qualitative data are that it produces very detailed information. This means qualitative data are vital to HR decisions, because it can provide the reasons to the how, why, what, where, and when.

How can morale be sustained through a reduction in force?

Why do employees leave the company?

What produces high morale?

Where do employees go for training?

When do employees feel most supported?

Behavioral Interviewing

In implementing accurate and fair selection methods that include interviewing, employers can select from a variety of interviewing techniques. It is important to choose the right kind of interviewing technique that matches the performance and retention needs of the organization and position as well as the culture of the organization/team.

Behavioral interviewing focuses on a candidate's past experiences/ incidences by asking candidates to provide specific examples of how they have demonstrated certain behaviors, knowledge, skills and abilities. Answers to behavioral interview questions should provide verifiable, concrete evidence as to how a candidate has dealt with issues in the past. This information often reveals a candidate's actual level of experience and his or her potential to handle similar situations in organization. Behavioral interview questions tend to be pointed, probing and specific.

In addition, the behavioral interviewing method falls under the category of *structured interviews*. The main purpose of structured interviewing is to objectively match candidates to and compare candidates for positions by asking a specific set of job-relevant questions and using the same set of pre-determined rating scales to evaluate all candidates. This straightforward approach limits the amount of discretion for each individual interviewer, making it easier for the employer to evaluate and compare applicants fairly because all applicants are asked the same questions and evaluated using the same criteria. Thus, structured interviewing is not only effective for making a hiring decision, it can be crucial in defending against allegations of discrimination in hiring and selection. Beyond their structured approach, there are additional benefits to using behavioral interviews. Because behavioral interviews are based on an analysis of job duties and requirements of the job. Bias and ambiguity are reduced in this case as the candidates are evaluated on job-related questions. Over and above, job relatedness and consistency of the interview process may increase the perception of fairness among candidates. The job-related questions may also help candidates obtain a realistic perspective of the job. The following is an example of a behavioral interview question:

- Describe a situation/ Event/ Incidence in which you used persuasion to convince someone to see things your way. If answers seem to be thin on detail, the interviewer can ask follow-up questions:
 - Can you tell me a little more about the situation?
 - What exactly did you do?
 - What was your specific role in this?
 - How did this turn out?
 - What other challenges did you come across? What did you do to address those?

The premise behind behavioral interviewing is that the most accurate predictor of future performance is past performance in similar situations. To evaluate this most effectively and fairly, the main interview questions are delivered to every job candidate with the same wording, in the same order, and using the same scoring system. Because of this, the behavioral interviewing technique can take a great deal of effort and planning before an interview can ever take place.

2.3. Competency Mapping

In using any method for hiring new employees, one of the first things that an employer needs to determine is what exactly it is looking for in candidates. This can sometimes be challenging; however, Behavioural interviewing is specifically designed to make that decision more straightforward.

When we think about the

Behavioural interviewing process, we typically start by asking the question:

- What knowledge, skills, abilities, and other characteristics (KSAOs) are most critical for success in this position?
- What behaviors are important or strategically critical to my organization?

From the responses, it can be decided:

- What competencies (i.e., clusters of KSAOs) are most strategically important to my organization when evaluating candidates?

Ultimately, behavioural interviewing typically follows a competency-based approach for identifying the requirements of a job.

“Competencies are specific employee behaviors that relate to an organization’s strategic goals, are correlated with job performance and can be measured and strategically leveraged across multiple HR and other business systems to improve overall performance.”

This helps the HR Planners to develop Key Performance Indicators (KPIs) of the Jobs.

Competencies mapping through Behavioural interviewing offers many *advantages*:

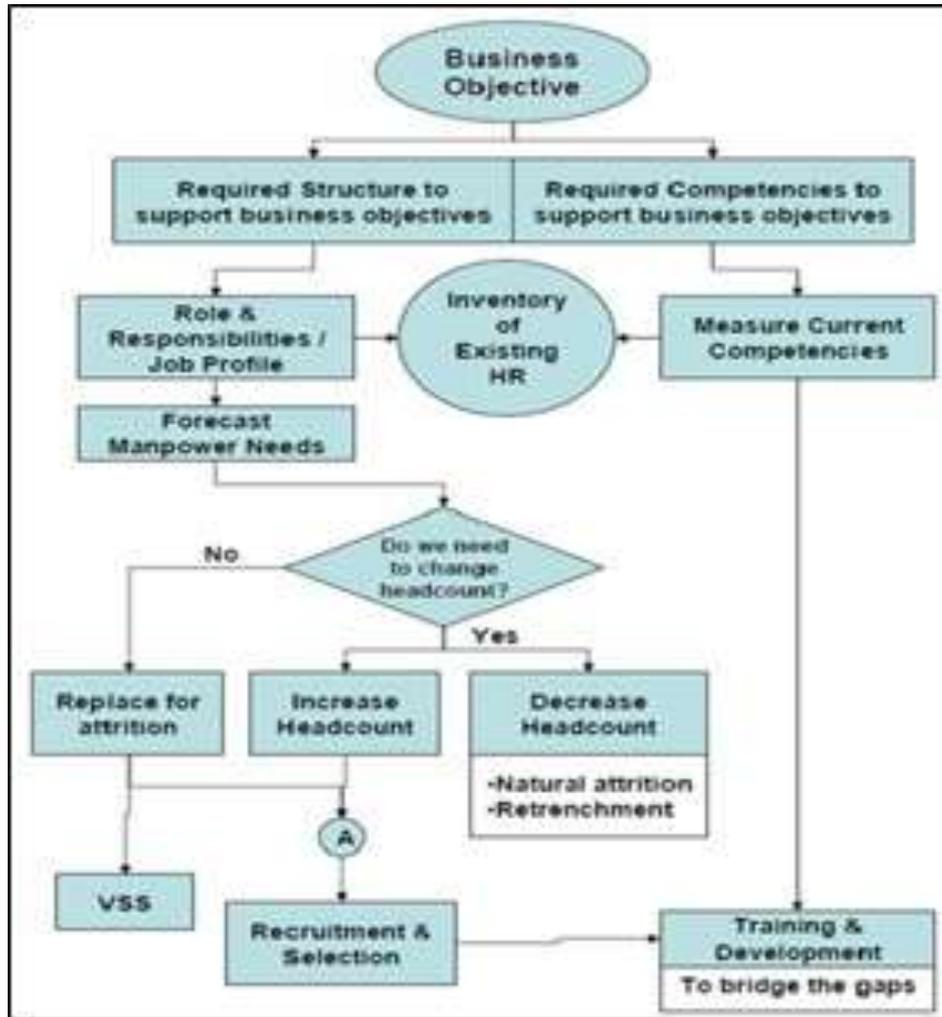
- *Competencies provide direction.* Competencies provide organizations with a way to define—in behavioural terms—what it is that people need to do to produce the results the organization desires, in a way that is in keeping with its culture.
- *Competencies are measurable.* Competencies enable organizations to evaluate the extent to which employees demonstrate the behaviors that are critical for success and are critical for strengthening an organization’s capacity to meet strategic objectives.
- *Competencies can be learned.* Unlike personality traits, competencies are characteristics of individuals that can be developed and improved.
- *Competencies can distinguish and differentiate the organization.* Competencies represent a behavioural dimension on which organizations can distinguish and differentiate themselves.
- *Competencies can integrate management practices.*

Table 2.1: Types of Competencies

Types of Competencies	
Behavioral Competency	A competency is behavior, knowledge, skill, ability or any other characteristic that contributes to the employees' success in performing their identified duties and areas of responsibility e.g. Teamwork, Accountability, Driving change etc...
Core Competency	These competencies describe in behavioral terms the key values of the organization and represent those competencies that all employees must possess to enable the organization to achieve its mandate and vision (e.g. customer focus, effective communication etc...)
Job Family Competency	These competencies are common to the group of jobs that tend require similar employee behavior, knowledge, skills and abilities. (e.g., Project Management)
Technical Competency	The technical/professional competencies tend to be specific to roles or jobs within the Job Family, and include the specific skills and knowledge (know-how) to perform effectively (e.g. ability to use particular software, domain knowledge proficiency etc...)
Leadership Competency	Mostly senior roles require these competencies which are critical for the attainment of the strategic objectives and development of organizational capabilities (e.g. strategic thinking)
Competency Cluster	Competency cluster is the logical grouping of the actual competencies based on their focused areas e.g. People focus, Delivery focus etc...
Proficiency Level	This describes the progression of proficiency of the behavioral indicators per job grade that describe what each competency looks like in action. The level of sophistication and complexity of the competency will gradually increase from one level to another.
Behavioral Indicators	These descriptors provide information and details on specific behaviors for the competency at each level, providing examples of how the competency can be demonstrated, observed and measured in practice

Competencies can provide a structured model that can be used to integrate and align management practices (e.g., recruiting, performance management, training and development, reward and recognition) throughout the organization. By interviewing for job and organizational fit based on competencies, employers can gather important information regarding whether a job candidate is capable of successfully performing all the necessary requirements for that job while also being a good fit for the organization.

Figure 2.3: Manpower Planning based on Competency Mapping Model



2.3.1 Competency Mapping Process

The job role or the task at hand and the employee represent the two puzzle pieces that needs to be matched based on the “fitment” of the employee for the job role or the task. The basis of matching are competencies. The procedure of Competency Mapping is approximately the same across organizations, using the following 8 major steps highlighted by Sharma and Khanna (2015) as follows:

1. Identify the department for which competency mapping needs to be conducted
2. Identify the organizational structure and list down the grades and levels followed in that organization
3. Conduct job analysis and prepare a job and role description
4. Using any suitable method of competency mapping collect data about the core competencies of the employee
5. Classify the obtained data into required skill set and further identify the skill levels
6. Evaluate and confirm the identified skill set with immediate supervisors and heads of other departments
7. Prepare the competency calendar
8. Map the competencies

2.3.2. Methods of Data Collection for Competency Mapping

Some of the methods widely used in competency mapping are:

a) Competency-based Interview:

Face-to-face interview/ Behavioral Event Interview (BEI) is the most convenient tool to obtain large amount of information. These competency-based interviews may be of various types such as structured, semi-structured or unstructured depending on the person conducting the interview. The questions prepared must target each competency and highlight the tangible skills and knowledge possessed by the employee which the representative of employees' behaviour under certain conditions. The questions must focus on relating past job performance with future on the job performance.

As interview is subjective, it may result in bias and distortion. Therefore, due care should be taken to avoid these. However, Interviews, If handled effectively, can be an effective technique for obtaining accurate information which is not possible to obtain if quantitative technique is used.

b) Competency-based questionnaires:

Competency-based questionnaires comprises of a list of questions either standardized or developed solely for the purpose of competency mapping. Questionnaires can be developed to develop competency-based performance model for the employees across different job positions. A sample of competency-based questionnaire is the Common Metric Questionnaire (CMQ) that include five domains, namely, *background, contact with people, decision making, physical and mechanical activity and work setting* to examine competencies which would assist in improving work performance.

Another example is Functional Job Analysis (FJA) which is a qualitative analysis for competencies and breaks the job down to seven parts: *things, data, worker instructions, reasoning, people, mathematics and language*. Questionnaires like this can be utilized along with interviews in order to substantiate the collected information.

c) Assessment centres:

Assessment centres help to determine the degree of “fit” or suitability of employees to a specific type of employment or job role. An essential feature of assessment centres is that different elements of the job are simulated in the form of validated test series. The candidates are instructed to complete a number of assessments that are job-role specific in order to determine whether the key competencies of the candidate are aligned with the competencies required on the job. The series of tests focus mainly on assessing the individual based on their knowledge, skills, attitudes and other behaviors (KSAOs). For managerial personnel, In-Basket Exercise, Case Studies and simulated games are used to explore their competencies. Along with this, personality and aptitude is also determined using interview and psychometric tests.

d) Critical Incidents Technique:

Developed by Flanagan (1954), this technique involves direct observation of the employee in specific on-the-job situations. As a prior step, a list of good and bad on the job behavior is prepared. These behaviors could be in terms of competencies needed and not needed on the job. The crux of the procedure involves observational skills which the supervisors and managers should develop with training.

The supervisors and managers are required to note down critical incidents on-the-job when the employee was successful or not successful in meeting the job requirements. It is imperative that the recording of observations is done as accurately as possible since the recorded data would be further used to identify and predict competencies that would contribute to success or failure of individual in a specific situation. At the end of the year, a balance sheet for each employee is created to find how well the employee has performed and what further training is needed (Balaji, 2011).

e) Psychometric Assessment:

Psychometric assessments in competency mapping are aimed to assess aptitude, reasoning, achievement, and personality of the employees. Aptitude tests help to determine the capacity of the individual to acquire particular type of skill or knowledge. Reasoning tests help to determine the critical and analytical thinking of the individual. Achievement tests help to determine the level of proficiency an individual has achieved in a given area and personality testing gives a

description of the unique traits and characteristics that drive the employee's behavior. Apart from these, competency mapping rating scale may also be used as a part of assessment.

It should be noted that it is not a single technique but a combination of more than techniques should be used to explore the different aspects of employees' competencies.

2.3.3. Developing Competency Model from Raw Data

Developing single job competency model starts with identifying critical job that line or HR sees as needing better selected or developed incumbents. The data collection usually includes both a focus group of the job incumbents and/or their managers and interviews with the job holders. Sometimes data points could also be customers, direct reports, surveys of additional job holders (peers) and direct observation at work. The next step is to analyze this data and come up with a list of 8-10 skill sets each accompanied with a list of specific behaviors that describe what effective performers do and how they achieve effective results.

Some of the organizations that use this model are:

- Honda's core competence is motors due to which they diversified their product line from engines, generators to lawn movers.
- Gillette's core strength is in razors due to which they have diversified variety of products ranging from Lady Sensor to Mach III.
- Bose whose core strength is in sound system, most of their products deal with high quality precision speakers.

Following is an example of influencing skills for sales engineers from a company selling boilers used in process industries:

- Asks questions to identify common bonds (sales turnover, steam bill, expansion plans, new projects, issues in plant pertaining to steam distribution, etc).
- Develops relationship with at least 3-4 key people at the same level and level above the decision maker.
- Works to develop breadth of relationship with the staff in the customer's organization (e.g., purchase head, maintenance head, stores head, etc.)
- Makes presentation regarding the product/service to key people, especially to those higher up, in the client organization.
- Invites the clients to visit the manufacturing facility to get a 'real time' feel about the product—specification, application and trouble shooting.
- Compares competitor data with one's existing products with specific reference to percentage savings in fuel bill, dryness fraction of steam, ease of trouble shooting, etc.
- Contrast the operational costs of installation and commissioning of similar product offered by competitors.
- Validates the savings by encouraging the customers to provide testimonials certifying the benefits accrued by using the product.
- Explains the decision maker using validated data rather than remaining with operational level within the account.
- Discuss the upcoming projects—either improving the existing system or expansion plans of the client with key decision makers and all stages of the project.

Exhibit 1 is an example of technical skills required for sales engineers from a company selling boilers used in process industries: Increasing proficiency levels indicate the increasing competence required by the job.

These competencies are assigned for each role performed by the sales engineers: Level 1- Novice Level 2- Basic Level 3- Intermediate Level 4- Advanced Level 5- Expert Here the assumption is made that as an individual moves up the ladder, his technical proficiency also increases correspondingly and he fulfils all the requirements of the previous levels. E.g., A product manager would be required to possess technical competencies at Level 3 and also fulfil the previous criteria (level 1 and level 2) as a qualifier to be in this level.

Exhibit 1: Technical Competency Grid for Sales Engineers in Division & Field					
Competencies	Level 1	Level 2	Level 3	Level 4	Level 5
a. Steam Engineering Knowledge	<ul style="list-style-type: none"> • Properties of steam • Basic equations used in steam system design • Application of steam in industry 	<ul style="list-style-type: none"> • Steam and condensate loop understanding and trouble shooting • Fuels used in steam generation/cost of steam • Payback calculations 	<ul style="list-style-type: none"> • Energy and mass balance for steam systems • Equipment hookups and application knowledge • Understand specific fuel consumption factors. 	<ul style="list-style-type: none"> • Indepth knowledge of industry process • Defining and keeping track of new developments in steam systems • Ability to do an audit independently with proper recommendations 	<ul style="list-style-type: none"> • Waste heat recovery possibility • Optimizing 'Pinch Analysis' on process equipments • New industries knowledge—Pharma, Chemical, etc. with respect to specific fuel consumption
b. Application/ Industry Knowledge	<ul style="list-style-type: none"> • Basic understanding of steam and condensate loop • Understanding of each component of steam and condensate generation, utilization, recovery 	<ul style="list-style-type: none"> • Understanding the objectives of using steam in pressure • Calculations relating to steam consumption for equipments in process application plants. 	<ul style="list-style-type: none"> • Well-versed with specific fuel consumption benchmarking exercise for all industries • Gap analysis for textiles, paper, solvent extraction plants- related to utilities 	<ul style="list-style-type: none"> • Process equipment and original equipment manufacturers information • Impact of process technology/ automation on specific fuel consumption 	<ul style="list-style-type: none"> • Ability to troubleshoot in steam system problems • Defining industry trends with respect to specific fuel consumption • Publishing papers on new trends in steam systems
c. Product Knowledge	<ul style="list-style-type: none"> • Need of the product • Principle of operation • Specifications 	<ul style="list-style-type: none"> • Application • Alternatives • Benefits/ROI 	<ul style="list-style-type: none"> • Referencing • Troubleshooting • Detailed competition information 	<ul style="list-style-type: none"> • Expert/owner for a product range/family • Modifications/ improvement in specifications for a product 	<ul style="list-style-type: none"> • New product concepts • Value engineering inputs

The Generic Competency Model In this model, one set of competencies are defined for a broad range of jobs (e.g., all team leader jobs or all delivery managers job). The first step is to identify the population for whom the model is applicable—in this case, team leaders and delivery managers. A team responsible for developing the model typically selects factors from individual job competency models, books, articles in business and organization development. This team ensures that factors are in alignment with the current business model, strategy and practices. The senior management reviews and revises the model to ensure that it is in alignment with the organization’s mission, values and culture. Most organizations also develop HR programs based on this model.

Some of the organizations that use this kind of model:

- General Electric’s 4E Competency Model—Energy, Energizer, Edge and Execution. McKinsey 7S Framework—Strategy, Structure, Systems, Staff, Style, Skills, Shared Values or Subordinate Goals.
- Essar Oil’s—PENNOC—Project Management, Entrepreneurship Orientation, Nurturing, Customer Focus, Organization Orientation, Negotiation.
- Zensar—INNOWET—Innovate, Win, Execute, Team.

- KPIT Cummins’ competency model is based around its values CRICKET— Customer Focus, Respect for Individual, Integrity, Community Contribution, Knowledge Worship, Entrepreneurship and Innovation, Teamwork and Boundarylessness.

Exhibit 2 is an example of Planning and Organizing Competency defined at a generic level. From the description for planning and organizing all managers (say) would be evaluated on similar parameters. However, specific behaviors for, say, drawing strategic framework for projects in alignment with departmental goals, would vary for a purchase function vis-à-vis a sales or design function. For a purchase department, this would mean planning resources to meet for contingencies, develop alternative sources of vendors to optimize cost for a particular raw material. For a sales function, this would mean identifying possibilities (increase sale of different products to existing customer or acquire new customer), developing alternative client bases to meet the target, while for design function this would mean develop models to save costs in material, maximize efficiency by suggesting alternative fuel, recirculate flue gases and condensate to save fuel costs, etc.

Exhibit 2: Planning and Organizing				
It is the ability of an individual to plan, prioritize, allocate and organize resources efficiently and effectively. Study the external and internal scenario to strategize, plan and organize a project efficiently.				
Level 1	Level 2	Level 3	Level 4	Level 5
Ability to work with available resources. Identifies the resource and uses it in an efficient, safe and appropriate manner. Ability to accomplish the task assigned within the desired time. Ability to follow instructions and work in a structured manner. Is process-oriented and plans to meet time, cost and quality expectation.	Plans the required resources well in advance depending on the task and project accomplishment. Ability to set priorities and to concentrate single-mindedly on one thing at a time. Ability to design a structured framework for implementing project plans. Has the knowledge of time, cost and quality required for a particular project.	Prioritizes the usage of resources depending on the importance of the project and availability of the resources. Ability to successfully manage multiple tasks of equal priority at one point of time. Ability to draw a strategic framework for the projects in alignment with the departmental goals. Monitors time, cost and quality. Is able to explain the fundamentals of the project and provides support to implement the project.	Ability to develop work plans and supervise the usage of resources. Ability to suggest alternate resources in order to get advantage in terms of cost, time, etc. Ability to accomplish tasks prior to the desired time enabling him to work on upcoming tasks. Ability to develop work plan and supervise the implementation, also is able to implement the exclusive projects independently. Vision to foresee the implication of project in line with the organization finances.	Manages balance between resource allocation and changing goals. Is able to strategize in order to have efficient and effective usage of resources. Ability to control time and develop and manage processes to increase efficiency and productivity across the department. Plans framework for the organization in alignment with the business strategy. Coordinates the projects at the organization level. Ensures contribution to the organizations finance.

An Alternative Model: The Multiple Job Approach to Develop Competency Models

This model is based on the concept offered by Patricia McLagan (1988) ‘job competency menu’ or building block of competencies. This facilitates matching of individuals to the job.

E.g., If an individual is assessed on building block of competencies his profile can be compared with the requirement of any other job for which the model is prepared. This approach also allows comparing one job to another aiding in job evaluation. E.g., A training module on negotiation skills can be used effectively by both purchase engineer and sales engineer. Since the scope of defining technical competencies is large, the building block competencies tend to include only nontechnical competencies.

However, while defining a role, it would include the technical and behavioral competencies along with their proficiency levels. It is important to distinguish at this point between a role and designation. While designations purely indicate the reporting structure from an administrative point of view, role actually specifies what the people are actually expected to do on the job in terms of their roles and responsibilities, extent of interaction with customers, decision making authority, etc. A role gives a more holistic view of the person's responsibility and accountability than a job description. To identify the technical competencies, HR staff should identify the core competence of the organization and then relate specific skills associated with each function within the organization. For example, a company that is into manufacturing of boilers would have 'knowledge of steam' as a core competence for the entire organization. However, for the sales engineers in this organization, it would be knowledge of steam cycle and condensate recovery system; while for the design engineer, it would be knowledge of thermal and mechanical design with respect to steam generation; for the manufacturing engineer, it would be designing boilers as per mechanical design and knowing the critical aspects to be kept in mind while fabricating the pressure parts. For each of the technical competencies, proficiency levels get defined on the basis of basic, intermediate, advanced and expert levels required to perform the job effectively. If the same organization is also into control instrumentation (where instrumentation is used to control and regulate the flow of steam) then the technical competencies would have to be defined separately. Following is an example of the technical and behavioral competencies required for an area manager in a company selling boilers used in process industries:

Role: Area Manager

Technical Competencies Steam Engineering Knowledge – Level 3

Application and Industry Knowledge – Level 4

Product Knowledge – Level 4

Behavioral Competencies Influencing skills – Level 4

Planning and Organizing – Level 3

Negotiation skills – Level 3

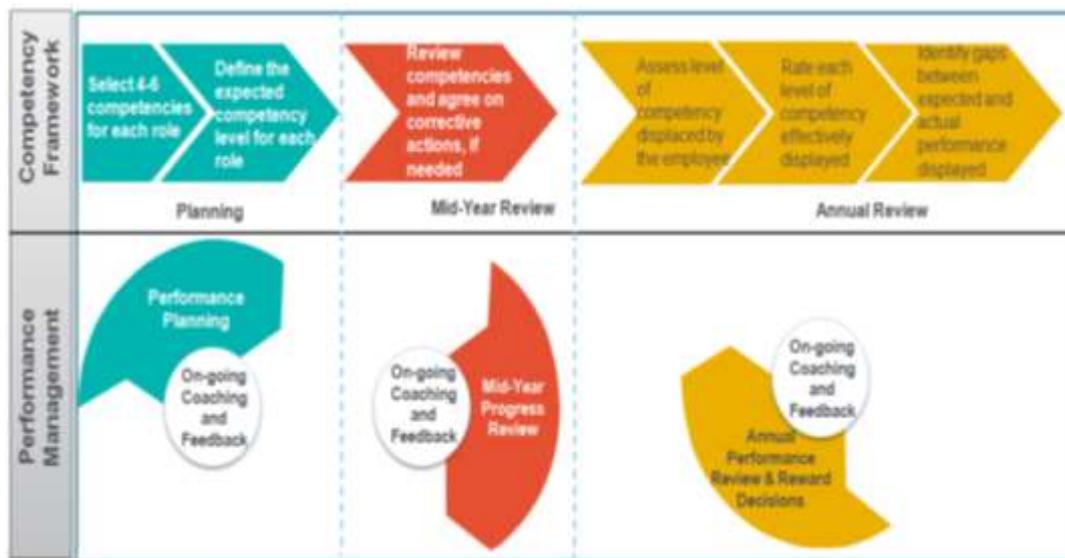
This model allows for customization which helps in describing specific behaviors associated with each competency. From the generic behavioral competency dictionary defined, specific behaviors need to be defined.

2.3.4. Use of Competencies in Employee Performance Management System

Table 2.1: Sample Competency Mapping Model

Job category	Grade	Proficiency Level	Core Competencies				Leadership Competencies			
			Delivery Focus		People Focus		Strategy Focus			
			Customer Focus	Result orientation	Resource Management	Accountability	Teamwork / Networking	Effective communication & Influencing	Empowerment / Talent Development	Driving Change
Leadership Roles	OO CEO	PL7	NA							
	Senior Management Roles	Special A		PL6						
Special B		PL5								
1										
2										
Supervisory Roles	3	PL4								
	4									
	5	PL3								
	6									
Support Roles	7	PL2								
	8									
	9	PL1								
	10									

Figure 2.4: Use of Competencies in Employee Performance Management System



a) Competency Planning

During the planning stage will be asked to define 6-8 competencies in consultation with HR managers that are most relevant to the employee's role using the following guidelines

Table 2.3: Planning Phase

Job category	Competencies category	Minimum no. of competencies
Leadership Roles DG /Undersecretary CEO/ Assistant Undersecretary	Core	3 - 4
	Leadership	3
Special A - Grade 2 Senior management roles reporting to DG and/or CEO (e.g. Division Director, Deputy Division Director, etc.)	Core	3 - 4
	Leadership	2-3
Grade 3 – Grade 6 Supervisory roles reporting to GD and/or CEO. (e.g. section heads, team leaders, supervisors)	Core	5 - 6
Grade 7 – Grade 10 Support roles such as administrative and operational staff	Core	5 - 6

- b) **Mid-Year Review:** As part of the Employee Performance Management System, line managers are required to provide ongoing support and feedback on performance to their employees. Performance review meeting is usually held on an individual basis to provide all employees with the opportunity of receiving valuable input and feedback on how well they are doing in pursuit of their present performance objectives and in demonstrating the target competencies. As an outcome, employees will be more aware of their current progress and any immediate actions to be undertaken in case of deviation in performance from the target levels. Please refer 'Learning & Development' policy and in particular 'Individual Development Plan' to learn more on structured ways to enhance the performance and address the shortfall.
- c) **Annual Review:** In annual review stage of the Employee Performance Management process, line managers will be required to review and assess their employees against the competencies selected in the previous stage and identify how effectively those were displayed. Line managers will evaluate their employees' competency performance using the following rating scale:

Points	Rating	Achievement of competencies
4	Substantially Exceeds Expectations	The employee exhibits all required behaviors indicators of his/her agreed required proficiency level for his/her job. (S)he also exhibits most of the behavior indicators of the <u>next level</u> at all times
3	Exceeds Expectations	The employee exhibits all required behaviors indicators of his/her agreed required proficiency level for his/her job. (S)he also exhibits some of the behavior indicators of the <u>next level</u> most of the time
2	Meets Expectations	The employee consistently exhibits all of the behaviors indicators required for his/her current job level
1	Improvement Needed	Sometimes the employee does not exhibit a majority of the behaviors indicators required for his/her current job level or he/she is new to the job role . This may result in significant inefficiencies or issues that negatively impact the work or the team. Improvement is required in most critical behaviors

2.4. Use and Application of Statistical and Mathematical Model in Manpower Planning

a. Cohort Analysis:

Cohort means, “A homogeneous group of employees who joined the organisation during a fixed period of time”. Cohort analysis involves the drawing of the graphs based on leaving pattern of the Cohort group. On the basis of these graphs, wastage rate or stability rate can be determined. This technique is developed by K.F. Lane and J.E.Andruo.

Eg.

No of employees engaged in the beginning of the year = 50

No. of employee leavers for different length of service as

Year	Length of service	No. of Emp. Remaining	Survival as % of leaving
0	0	500	100
1 st	50	450	90
2 nd	45	405	81
3 rd	40	365	73
4 th	35	330	66
5 th	30	300	60

$$\text{Survivor Analysis} = \frac{\text{No. of emp. Remaining at a given time}}{\text{No. of emp. Engaged at the beginning of the year}} * 100$$

b) Census Analysis:

In Cohort analysis, the stability or instability of a homogeneous group is observed; while in Census method, a section is selected from the whole labour force and its behaviour is examined for a short period, usually a year. The histograms are drawn to show the length of services of those persons who have led the organisation, i.e., leavers.

Length of services on 1.1.2019	#of emp. As on 1.1.2019	#Emp. Separated during 2019	Turnover Rate	Survival rate
5-6	18	3	0.167	0.833
6-7	24	4	0.167	0.833
7-8	10	2	0.2	0.8
8-9	15	3	0.2	0.8
9-10	8	1	0.125	0.875
10-11	16	1	0.16	0.84
11-12	18	1	0.555	0.445
12-13	10	0	0	1
13-14	17	0	0	1
14-15	7	1	0.143	0.857
Total	218	34	0.156	0.844

C) Markov Analysis

Markov analysis, which shows the percentage (and actual number) of employees who remain in each job from one year to the next, thus keeping track of the pattern of employee movements through various jobs. Thus, this analysis results in a composite matrix of supply.



Cohort analysis, census analysis and markov analysis is largely used to understand internal mobility which is very much significant for manpower supply forecasting. However, many other mathematical and statistical models like trend analysis, projection technique and regression model are also used in predicting manpower requirement for organization. These are discussed in module 1.

Summery

Manpower planning need both quantitative and qualitative data. If quantitative data use *numbers* to tell a story, qualitative data use *words* to tell a story. Qualitative data involves actions and behaviors that are observed, not measured. And though quantitative data are typically viewed as more dependable, objective and generalizable, qualitative data offer more in-depth, illuminating and descriptive information, often adding context and clarity behind those numbers. In Employee selection, behavioural Event is most frequently used. Behavioural interviewing process, we typically start by asking the question:

- What knowledge, skills, abilities, and other characteristics (KSAOs) are most critical for success in this position?
- What behaviors are important or strategically critical to my organization?

There are several methods by which employees' competencies are assessed. Most frequently used methods are (a) Interview; (b) questionnaire; (c) Assessment Center; (d) Critical Incidents techniques; and e) Psychometric technique. Based on the data obtained, Competency model is developed. Competency mapping also helps in performance management. There are many Statistical and Mathematical Models, used in manpower planning. Some of these models are: a) cohort analysis; b) census analysis and; c) Markov analysis.

Review Questions

Long Type Questions (16 Mark)

1. Assume that you are conducting interview for the post of "Marketing Executive" of a company. Describe how you will perform this job by considering the guidelines provided in the above section.
2. Develop a competency mapping questionnaire of the job of your choice.
3. Discuss the concept of "Competency Mapping" and describe the roles that are necessary in group discussion citing suitable examples
4. Describe the roles of competency mapping in performance management system.
5. Describe various uses of competency mapping in manpower planning.
6. Discuss various methods used for collecting data for competency mapping.

7. Describe the uses and application of statistical and mathematical models in manpower planning.
8. Describe the reasons for resulting manpower gap. Provide some corrective actions with examples.
9. “Competencies are specific employee behaviors that relate to an organization’s strategic goals, are correlated with job performance and can be measured and strategically leveraged across multiple HR and other business systems to improve overall performance.” Justify
10. Describe competency mapping process.
11. If quantitative data use *numbers* to tell a story, qualitative data use *words* to tell a story. Justify the statement from the perspectives of manpower planning.

Medium Length Questions (8 Mark)

1. Explain the role of behavioural interview in HR.
2. Explain the advantages of behavioural interviews.
3. What is competency-based interview and how does it help in competency mapping?
4. What is competency-based questionnaire and how does it help in competency mapping?
5. Explain the role of assessment center in competency mapping.
6. Explain the role of psychometric test in competency mapping.
7. How does competency mapping helps HR hiring?
8. How does competency mapping help employee performance management system?
9. Explain two qualitative methods used frequently in manpower planning.
10. Why is cohort analysis significant in manpower planning?
11. Why is census analysis significant in manpower planning?
12. Why is Markov analysis significant in manpower planning?

Short Questions (2marks)

1. Why is study of qualitative dimension of manpower planning significant?
2. Write two interview questions having relevance for manpower planning.
3. Write two instruments of collecting qualitative data.
4. How is behavioural event interview conducted?
5. Why is Behavioral interview conducted?
6. Write two competencies of a sales person.
7. Write two advantages of competency mapping.
8. Write two methods of competency mapping.

9. What are the roles of assessment centre?
10. What are the uses of competency mapping in performance management system?
11. Write two of the statistical models used in manpower planning.
12. Why is census analysis carried on?
13. Why is Markov analysis carried on?
14. What is Cohort?

Module 3: Strategic Manpower Forecasting

Learning Objectives

After Reading this module, the students will be able to learn:

3.1 Introduction

3.2 Definitions of SMP

3.3 Benefits of SMP

3.4 Strategies for SMP

3.5 Tools for SMP

3.6 Key Steps For SMP

3.7 Business Process Approach to Manpower Planning

3.1. Introduction

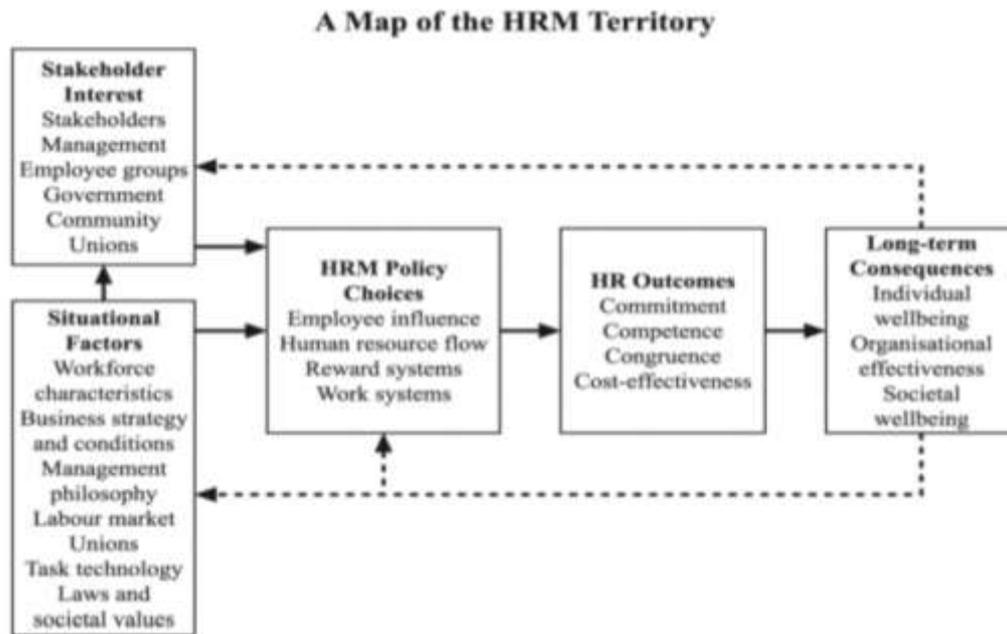
Strategic Manpower Planning (SMP) links HR management directly to the strategic plan of your organization. Most mid- to large-sized organizations have a strategic plan that guides them in successfully meeting their missions. Organizations routinely complete financial plans to ensure they achieve organizational goals. SMP is a self-motivated, practical, continuing process of analytically attracting, developing, and retaining human resources to hold up organizational goals. SMP focuses exclusively on proactive planning to meet probable and unanticipated vacancies for those classes of employees that serve as indispensable elements.

3.2. Definitions

A significant trend today is for HR managers to adopt a strategic approach of their jobs and to recognize critical links between the organizational and HR management strategies. Basically, strategic human resource management (SHRM) highlights the growing change in the HRM function from being prescriptive, reactive and administrative to being descriptive, proactive and executive. Sahoo et al. (2011) noted that the concept of SHRM is related to the appropriate integration of HRM activities with the business strategy of the company (Allui and Sahni, 2016, p. 363).

Strategic Manpower Planning is defined as:

“Integrating human resource management strategies and systems to achieve the overall mission, strategies, and success of the firm while meeting the needs of employees and other stakeholders.”



On the other hand, from a managerial point of view, the attraction of qualified employees is more urgent today than ever before. An array of evolutions, such as globalization, increasing knowledge work, accelerating technological advancement and rising competition, makes it vital that institutions acquire distinctive human capital for competitive advantage and organizational success (Holtom et al., 2008, p. 232). Also, the retention of those valuable employees becomes a paramount strategy for HR managers in this environment. There is a wealth of evidence that the retention of talented employees has been of serious concern to managers in face of the ever-increasing high rates and costs of employee turnover (Samuel and Chipunza, 2009). In response, managers worldwide have enforced HR policies to actively lessen employee turnover and promote retention (Hom et al., 2008).

3.3. Benefits of SMP

- a. Anticipate and plan for change: As the strategic manpower planning links itself to organizational strategic planning, the purpose is to foresee what organizational changes are taking place in future and prepare itself to ensure that HR department support business from HR perspectives. For example, are labor costs anticipated to rise over

time as the business grows? Are there employees that are setting up to retire shortly, and how will that have an effect on the operations of the company? What's the standard churn rate by department and how can a manager put a process in place to preserve levels for workflow?

This information will facilitate to advance business planning and financial forecasts by quantifying talent requirements to meet short and long-term organizational objectives.

- a. **Decrease hiring costs:** One of the objectives of HR is to utilize manpower optimally, so that HR does not become a liability on organizational. This may reduce recruitment expenses and help the company operations run more efficiently, which will have encouraging effects all over the business (employee self-esteem, production, revenue).
- b. **Improve recruitment processes:** Strategic manpower Planning can help to draw the characteristics and qualities of the high performers in each department and try to inform find candidates that are most expected to suit the business objectives and culture. This may advance employee's retention rate, save time in staffing procedure and reduce recruitment costs.
- c. **Align HR with business strategy:** Align business's HR program and policy with the Strategic Workforce Planning, such as:
 - data protection
 - employee assistance
 - employee benefits
 - wellness programmes
 - career development programmes
 - learning and development

This will guarantee that goals are supported in the best way possible and reinforce the organization's culture. As a result, employee retention rate will be improved, which will completely influence the company's growth.

- d. Drive allocation of talent investments: Strategic manpower Planning will help to establish which groups of workers deliver the maximum ROI for the company and deserve better investment in their training and development. By the same token, it'll delineate which areas require additional resources to arrive at its full potential and add more to the business. in addition, this will also inform what roles are significant for the augmentation of the business, so you can execute steps to protect that and decrease threat.
- e. Identify gaps in your talent chain: If workforce strategy and business objectives are aligned, company can effortlessly categorize what hires it will require in the future when the company reaches a significant point for expansion. Organization can also easily spot any existing gaps in workforce.
- f. Implement informed retention tactics: Without proper tools, HR and managers can use raises, bonuses and promotions in place to avoid resignations. Strategic Workforce Planning may help to influence predictive analytics to correctly recognize top performers and people in key roles, who are at risk of departure. From here, one can execute a retention strategy to reduce risk and move forward.

3.4. Strategy for Strategic Man Planning

Some of the long and short-term strategies that may support the SMP process may include:

a. Retention:

Employee Retention is a practice in which the human resources are encouraged to stay with the organization for the long period of time. Preservation of employees is part of Human Resource management and planning efforts. It is the organizational objective of keeping talented workers and decreasing turnover by nurturing a constructive work atmosphere to encourage engagement, showing admiration to employees, and providing competitive payment and benefits and healthy work-life balance. Retention strategies are policies and plans that organizations pursue to decrease employee turnover and attrition and ensure employees are engaged and creative in long-term. The key challenge for businesses is to ensure a retention strategy which is aligning with company goals to guarantee maximum return on investment.

b. Induction:

Induction is the method of receiving and welcoming an employee when he first joins the company and giving him fundamental information, he needs to settle down promptly and happily and start work. The induction process is a technique by which the new employee is rehabilitated into the new organizational surroundings. The major rationale of induction training is to incorporate new employees into the company and make them realize the systems and events followed by the organization. Induction helps new workers settle down promptly in the new work environment and gives them a sense of belonging. *It is a process to make him experience at home and generate in him a feeling of belongingness to the organization. In the course of induction, the new comer is explained his duties and responsibilities, company rules, policies and regulations so as to make him known to the organization.*

c. Flexible working schedule:

A flexible- work schedule permits employees some level of independence to construct their own schedules and find a work-life balance. Rather than a traditional, 40 hour nine-to-five work week, a flexible schedule allows employees to differ the times they begin and end their work day.

Examples of flexible work arrangements?

- Flex time. Flex time is an arrangement where employees work a full day but they can vary their working hours.
- Reduced hours/Part-time.
- Compressed work week.
- Telework/Telecommuting.
- Job sharing.
- Banking of Hours/ Annualized hours. ...
- Gradual Retirement.
- Leaves and Sabbaticals.

d. Child care program:

Child care is important to help employees uphold their work-life balance and amplify their engagement. It also helps with employee retention. Child care, also known as day care, is the care and custody of a child or multiple children at a time, whose ages range from six weeks to thirteen years. Child care is the act or ability of looking after children by a day-

care center, nannies, babysitter, teachers or other providers. The study shows that when the standard *childcare* support score increases, the average employee retention score also increases proportionately. The study reveals positive correlation and significant connection between Employee Retention and *childcare* assistance. When an employer provides on-site child care, employees work hard, stay with their jobs, miss fewer work days and talk big about the places they work. A 2014 study published in the Journal of Managerial Psychology, found that employee performance was higher, and absenteeism was lower among employees using on-site child care than employees using an off-site center. After all, a company's most vital asset is its people who will move the organization ahead through creativity and innovation. The less distractions, the more engaged and creative they will be. The on-site child care benefit retains existing workers, but also works as a recruitment device to attract new employees that may have just started a family or planning in the future.

e. Employee recognition program:

Employee recognition programs are employer inventiveness to reward its employees for accomplishment, new behaviors, and landmark. Employee recognition programs may include various actions that employers take to **recognize value and reward** its employees for superior performance. Employee recognition programs are frequently joint with rewards. That is why, as an alternative of just "Recognition" programs, we see companies enforce "**Rewards & Recognition**" programs. In the past, employee recognition programs were generally unofficial and they were associated with staff or team member acknowledgment programs, employee of the month programs, or thank you programs. Today, most companies are implementing **formal** recognition programs in which employees can **nominate, be nominated, recognize and reward** each other using a point system and ramifications. This novel approach and the **introduction of new technologies** have enabled employers and employees to **give meaningful appreciations**, celebrate common success and enforce employee engagement.

f. Employee suggestion program:

A program enforced by an organization to tap into employee ideas in hopes of augmenting the organization's processes and products. When implemented well, organization can attain new heights. An employee suggestion program can guide companies to accomplish everything from saving money to creating innovative products. It creates a win-win situation. It ensures more contribution and involvement from employees and enhanced competence and cost saving for employers. When implemented well, an organization can accomplish new heights.

Implementing a Successful Employee Suggestion Program requires:

1. Appoint a Cross-functional Suggestion Review Team. ...
2. Establish Guidelines for Your Employee Suggestion Program. ...
3. Keep the channel open and flowing. ...
4. Rewards and Recognition in Your Employee Suggestion Program. ...
5. Feedback in Your Employee Suggestion Program.

The most common business benefits of a staff suggestion scheme are listed below:

- Improve staff morale
- Increase job satisfaction
- Create a feeling of ownership and engagement
- Build team spirit
- Reduce costs and increase profitability
- Increase revenue
- Improve customer satisfaction

g. Employee engagement program:

Employee engagement is a workplace approach resulting in the right conditions for all members of an organization to give of their best each day, dedicated to their organization's objectives and principles, motivated to contribute to organizational accomplishment, with an superior sense of their own well-being. **David MacLeod:** *"This is about how we create the conditions in which employees offer more of their capability and potential"*.

Employee engagement is a workplace technique intended to improve an employee's feelings and emotional affection to the company, their occupational duties, and position within the organization, their fellow workers, and the company culture. Employee engagement is the degree to which employees experience passionate about their work, is dedicated to the organization, and place discretionary endeavor into their work. Employee engagement goes ahead of regular activities, and procedures. It drives performance. A good employee engagement policy includes locating existing problems, working with employees on solutions, and then introducing changes to help advance employee satisfaction. When workforces are engaged, they are more expected to invest in the work they do which may result in a higher quality work. Employees who are really engaged will be willing to do their best work and continue with an organization who is taking employee engagement sincerely.

Three ways HR managers can improve employee engagement

1. Communication and Feedback. First, it's imperative for managers to have a word with disengaged team members and let them know you appreciate their feedback on what is going well and what is not.
2. Incentives and Recognition.
3. Continuous Learning & Support.

The 8 Elements of Employee Engagement

- Leadership. **Employees** are desperate to have meaningful relationships with their managers.
- Communication. Wondering what makes a good manager?
- Culture.
- Rewards and recognition.
- Professional and personal growth.
- Accountability and performance.
- Vision, values and Corporate Social responsibility

3.5. Tools for Strategic Manpower Planning

One can use these tools throughout the different steps of the strategic manpower planning process. They can assist in analyzing the capability of current staff and determine future needs.

a. SWOT Analysis

SWOT stands for strengths, weaknesses, opportunities, and threats. It can be utilized as a tool for self-evaluation by individual workers, or as a strategic tool to appraise the current state of the organization.

Table 3.1: A Sample SWOT Analysis

Strengths	Weaknesses
What do you do well? What unique resources can you draw on? What do others see as your strengths?	What could you improve? Where do you have fewer resources than others? What are others likely to see as weaknesses?
<ul style="list-style-type: none"> • We are able to respond very quickly as we have no red tape, and no need for higher management approval. • We are able to give really good customer care, as the current small amount of work means we have plenty of time to devote to customers. • Our lead consultant has a strong reputation in the market. • We can change direction quickly if we find that our marketing is not working. • We have low overheads, so we can offer good value to customers. 	<ul style="list-style-type: none"> • Our company has little market presence or reputation. • We have a small staff, with a shallow skills base in many areas. • We are vulnerable to vital staff being sick or leaving. • Our cash flow will be unreliable in the early stages.
Opportunities	Threats
What opportunities are open to you? What trends could you take advantage of? How can you turn your strengths into opportunities?	What threats could harm you? What is your competition doing? What threats do your weaknesses expose to you?
<ul style="list-style-type: none"> • Our business sector is expanding, with many future opportunities for success. • Local government wants to encourage local businesses. • Our competitors may be slow to adopt new technologies. 	<ul style="list-style-type: none"> • Developments in technology may change this market beyond our ability to adapt. • A small change in the focus of a large competitor might wipe out any market position we achieve.

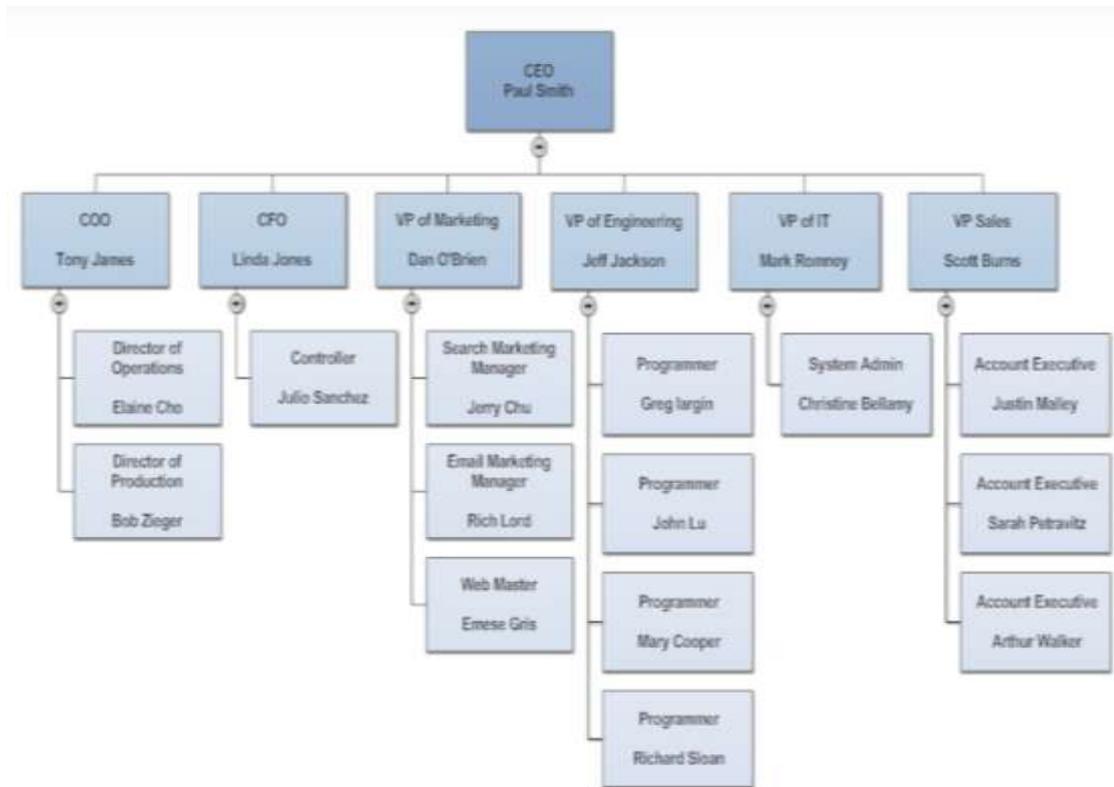
Strengths and weaknesses are the factors that are internal. For example, strength of an organization could be the existence of skilled staff, but a weakness could be the inadequate numbers of skilled staff.

Opportunities and threats are external factors. For example, the accessibility of skilled workers in the market could be a huge opportunity for an organization. On the other hand, competitor poaching your employees with better salaries could create a threat to you. The SWOT analysis is one of the most popular tools used during a situation analysis.

b. Organizational Chart

An organizational chart is a visual representation of the hierarchy/ structure of an organization. It also highlights reporting relationships between employees, their roles and responsibilities. In human resource planning, it can be used in a number of ways,

Figure 3.1. Sample Organizational Chart



- To record information about current employee roles, responsibilities, skills, experiences, etc. managers can also add additional information such as their educational qualifications, and demographical data. This will help to quickly identify the right personnel for the job.
- To create a roadmap of the staffing needs. Managers can mark labor deficiencies and surpluses on a company organizational chart as well.

c. RACI Matrix

A RACI matrix is the simplest, most effective means for defining and documenting project roles and responsibilities. Knowing exactly who is responsible, who is accountable, who needs to be consulted, and who must be kept informed at every step will significantly improve your chances of project success. The four roles that stakeholders might play in any project include the following:

Table 3.2: A Sample RACI Matrix

Step	Project Initiation	Project Executive	Project Manager	Business Analyst	Technical Architect	Application Developers
1	Task 1	C	A/R	C	I	I
2	Task 2	A	I	R	C	I
3	Task 3	A	I	R	C	I
4	Task 4	C	A	I	R	I

- **Responsible:** People or stakeholders who do the work. They must complete the task or objective or make the decision. Several people can be jointly *Responsible*.
- **Accountable:** Person or stakeholder who is the "owner" of the work. He or she must sign off or approve when the task, objective or decision is complete. This person must make sure that responsibilities are assigned in the matrix for all related activities. Success requires that there is only one person *Accountable*, which means that "the buck stops there."
- **Consulted:** People or stakeholders who need to give input before the work can be done and signed-off on. These people are "in the loop" and active participants.
- **Informed:** People or stakeholders who need to be kept "in the picture." They need updates on progress or decisions, but they do not need to be formally consulted, nor do they contribute directly to the task or decision.

d. 9 Box Grid

The 9 box grid, also known as the performance-potential matrix, is widely used in employee development and succession planning. It helps evaluate your existing employees against their current performance and their future potential performance. Rating employees with the help of the 9 box grid helps to identify strong employees and those who are falling behind.

Figure 3.2

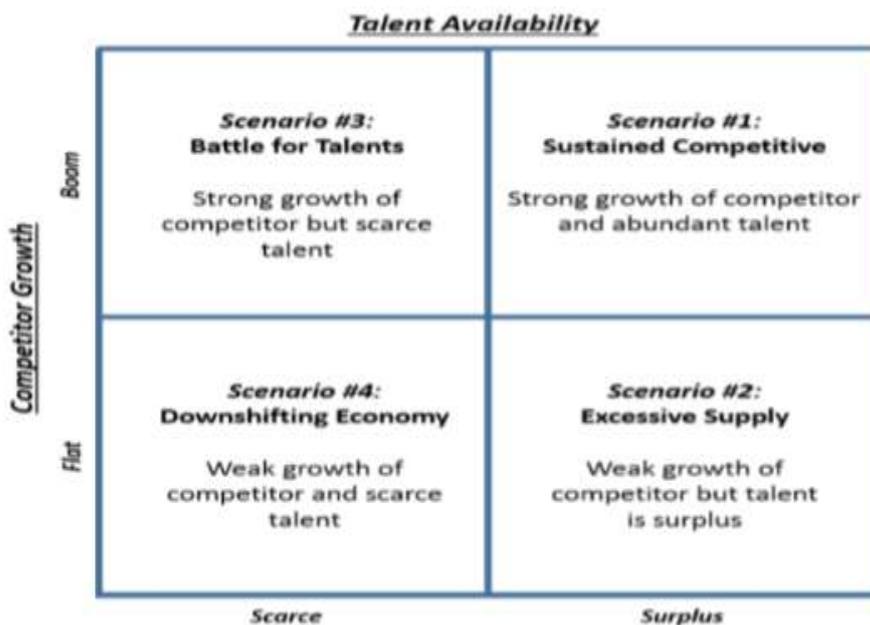
9 Box Performance-Potential Matrix



e. Scenario Planning

There are many scenarios, like technical advancements, natural disasters, political or economic changes that could significantly alter the future trend of a company. Ordinarily, one may not see them coming or plan for them.

Figure 3.3: A Sample Scenario Planning



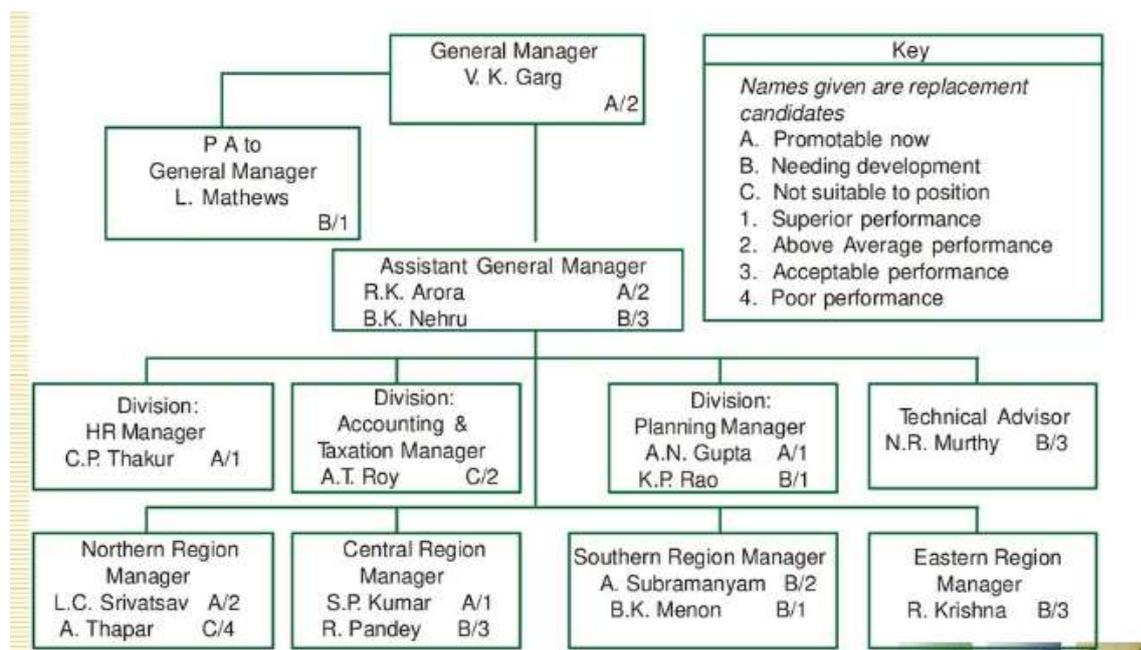
By incorporating scenario planning in company's strategic planning process, managers can recognize these diverse future scenarios, discuss how they will affect organization and take precautionary actions.

One can integrate scenario planning with human resource planning by examining scenarios that involve company's changing future labor requirements.

f. Replacement Chart

This is a diagram which is similar to the organizational chart. It is used to identify potential candidates who can replace an employee who is retiring, transferring, etc. Individual replacement charts can be developed for each significant position in a company along with potential replacements.

Figure 3.4: A Sample Replacement Chart



3.6.Strategic Manpower Planning Process: The Key Steps

The strategic human resource planning process begins with an assessment of current staffing, including whether it fits the organization's needs, and then moves on to forecasting future staffing needs based on business goals. From there, one should align organization's strategy with employment planning and implement the plan not only to hire new employees

but also to retain and properly train the new hires—and current employees—based on business changes.

a. Assess current HR capacity

The first step in the human resource planning process is to assess current staff. Before making any moves to hire new employees for your organization, it's important to understand the talent organization already have at its disposal. Develop a skills inventory for each of current employees.

Understanding the current workforce in terms of characteristics, capabilities, and distribution allows HR professionals to develop effective gap-closing strategies. Collecting HR analytics on employees is the perfect method to create a workforce profile. To do so, HR professionals should create a database with the following information:

- Employee data – Gathering information including demographics, age, gender, earnings, employment type, employee retention and distribution.
- Turnover and recruitment data – Analyzing vacancy lengths, recruitment rates and number of applicants during recruitment process.
- Internal influence – Identifying any company changes that may influence business processes such as a change in business direction, budget cuts and market pressures.
- Current competencies – Distinguishing skills and competencies of current workforce and looking for ways to improve them.
- Rewards scheme – Generating data about how employees are being recognized and rewarded for their work.
- Competitor analysis – Looking at competitors and comparing their workforce management strategy.

Organizations should include all employees when modeling their current workforce:

- Permanent employees – Employees who are on the organization's payroll, have regular hours and full benefit entitlements.
- Supplemental direct-hire employees – Employees who are on the organization's payroll, but don't have regular work hours or full benefit entitlements.
- Contract workers – Employees are found via a staffing agency and work for a specific time frame and generally without any employee benefits.

Collecting and using this data is an effective workforce planning tool that results in better workforce management.

Managers can do this in a number of ways, such as asking employees to self-evaluate with a questionnaire, looking over past performance reviews, or using an approach that combines the two.

b. Forecast HR requirements

Once HR manager have a full inventory of the resources at their disposal, it's time to begin forecasting future needs. Will company need to grow its human resources in number? Will company need to stick to current staff but improve their productivity through efficiency or new skills training? Are there potential employees available in the marketplace?

It is important to assess both company's demand for qualified employees and the supply of those employees either within the organization or outside of it. Manager will need to carefully manage that supply and demand.

c. Matching demand and supply (Gap-Closing Strategy)

Matching the demand and supply is where the hiring process gets tricky—and where the rest of the human resources management planning process comes into place. Organization will develop a plan to link organization's demand for quality staff with the supply available in the market. One can achieve this by developing and implement a gap-closing strategy

In order to close workforce gaps, HR professionals should develop a gap-closing strategy that will close workforce gaps. An effective gap-closing strategy will increase the capability, capacity, and productivity of employees. Once again, HR professionals will need to look at their gathered analytics to see which areas need to be improved and how. Developing the right gap-closing strategy is an important workforce planning tool that addresses business deficiencies.

A gap-closing strategy can fall into different categories that address different business processes, some of which include:

- **Restructuring strategies:** This includes reducing staff, regrouping tasks to create well-designed jobs, and reorganizing work groups to perform more efficiently.

- **Training and development strategies:** This includes providing the current staff with training and development opportunities to encompass new roles in the organization.
- **Recruitment strategies:** This includes recruiting new hires that already have the skills the organization will need in the future.
- **Outsourcing strategies:** This includes outreaching to external individuals or organizations to complete certain tasks.
- **Collaboration strategies:** This includes collaborating with other organizations to learn from how others do things, allow employees to gain skills and knowledge not previously available in their own organization. HR professionals should address the category that best suits their workforce management goals.

d. Develop talent strategies

It's time to begin the process of developing and adding talent. Talent development is a crucial part of the strategic human resources management process.

✓ **Recruitment**

In the recruitment phase of the talent development process, you begin the search for applicants that match the skills your company needs. This phase can involve posting on job websites, searching social networks like LinkedIn for qualified potential employees, and encouraging current employees to recommend people they know who might be a good-fit.

✓ **Selection**

Once you have connected with a pool of qualified applicants, conduct interviews and skills evaluations to determine the best fit for your organization. If you have properly forecasted supply and demand, you should have no trouble finding the right people for the right roles.

✓ **Hiring**

Decide the final candidates for the open positions and extend offers.

✓ **Training and development**

After hiring your new employees, bring them on board. Organize training to get them up to speed on your company's procedures. Encourage them to continue to develop their skills to fit your company's needs as they change. Find more ideas on how to develop your own employee on boarding process, and then get started with this on boarding timeline template.

✓ **Employee remuneration and benefits administration**

Keep your current employees and new hires happy by offering competitive salary and benefit packages and by properly rewarding employees who go above and beyond. Retaining good employees will save your company a lot of time and money in the long run.

✓ **Performance management**

Institute regular performance reviews for all employees. Identify successes and areas of improvement. Keep employees performing well with incentives for good performance.

✓ **Employee relations**

A strong company culture is integral in attracting top talent. Beyond that, make sure your company is maintaining a safe work environment for all, focusing on employee health, safety, and quality of work life.

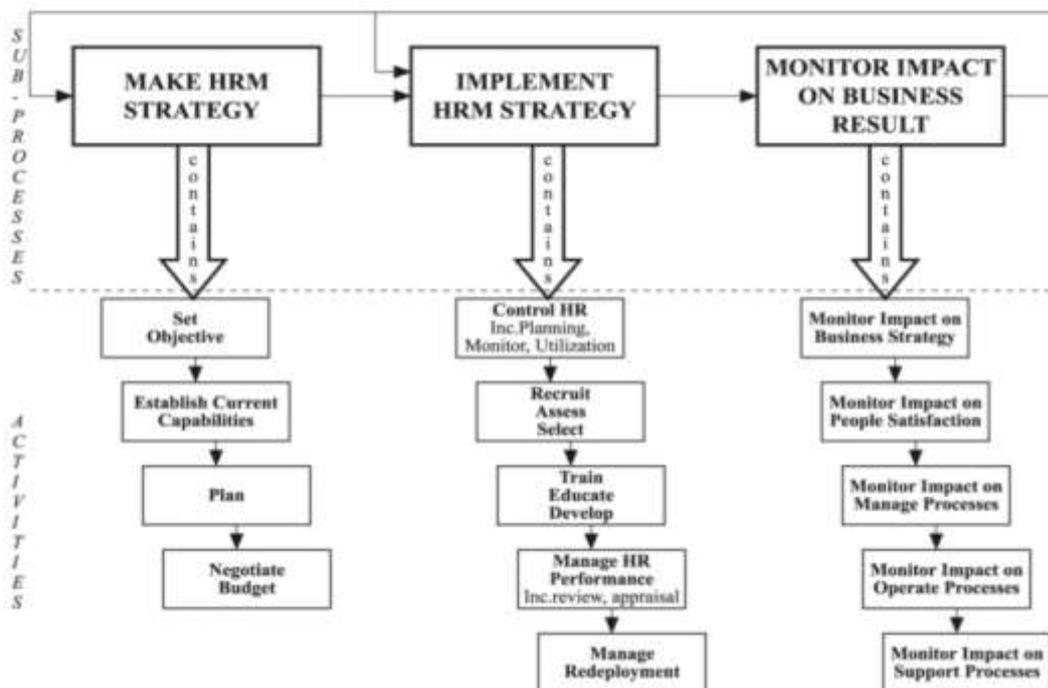
✓ **Review and evaluate**

Once your human resource management process plan has been in place for a set amount of time, you can evaluate whether the plan has helped the company to achieve its goals in factors like production, profit, employee retention, and employee satisfaction. If everything is running smoothly, continue with the plan, but if there are roadblocks along the way, you can always change up different aspects to better suit your company's needs.

3.7. Business Process Approach to Manpower Planning

- (1) *Make HRM strategy.* Uses business strategy and objectives and requirements of key business processes to formulate an integrated HRM strategy by setting objectives, establishing current capabilities, negotiating appropriate budgets for realistic implementation of the plan and setting HR policies:
 - *Set objective activity.* Interprets business strategy and objectives and requirements of other key business processes to HRM requirements and objectives.
 - *Establish current capability activity.* Establishes the current HR capability within business and its key processes to meet the set objectives.
 - *Plan activity.* Develops a plan, including budgets, which defines courses of action the business is going to adopt to build upon its current capabilities and develop its HRs in line with the stated HR objectives and requirements.
 - *Negotiate budget activity.* Uses requirements of the plan to negotiate for financial resources which will lead to successful implementation of HRM strategy.
 - *Set HR policies activity.* Sets up types of compensation, staffing methods, appraisal methods, form of training and development, and working condition for relevant strategic needs.
- (2) *Implement HRM strategy sub-process.* Implements the HR strategy by controlling HR planning, monitoring, utilizing, recruiting, assessing and selecting the right people in order to develop, train and educate them.

Figure 3.5: A Business Process Approach to Manpower Planning



This is performed by managing HR performance through review and appraisal. This will result in redeployment of the HR:

- *Control HR.* To make sure that HR are planned, correctly applied and monitored in accordance with the objectives and requirements of the organisation.
 - *Recruit activity.* Concerned with bringing in HR positions in line with its HR requirements from internal or external sources.
 - *Train, educate, develop.* Activity is concerned with upgrading existing people capabilities within the business in line with its HR objectives.
 - *Manage HR performance.* Activity is concerned with setting targets for individuals, monitoring progress against the targets and identifying necessary training, education and development needs as well as deciding reward and discipline action.
 - *Manage redeployment.* This activity, having identified a deficiency in a job position which cannot be rectified through training, education or development, is concerned with redeployment of the current job holder within or without the organisation.
 - *Negotiation for working conditions.* Activity concerns requirement of people and capacity of business. It is related to HR policies and HR plan (people terms and conditions).
- (3) *Monitor impact on business result.* This sub-process monitors the impact of the HRM process on business performance through monitoring its contribution to the business strategy and objectives and other key business processes:
- *Monitor impact on business strategy.* This activity monitors the impact of the HR strategy on business strategy as well as business performance.
 - *Monitor impact on people satisfaction.* This activity is concerned with establishing how well the business satisfies its employees.
 - *Monitor impact on manage process.* This activity is concerned with monitoring how well the HRM strategy and its implementation are satisfying the requirements of manage processes. Manage processes formulates strategy and sets the direction for the whole business.
 - *Monitor impact on operate process.* This activity is concerned with monitoring how well the HRM strategy and its implementation are satisfying the requirements of operate processes. Operate processes consist of get order, develop product, fulfil order, support product.
 - *Monitor impact on support process.* This activity is concerned with monitoring how well the HRM strategy and its implementation are satisfying the requirements of support processes. The support processes include financial, IT, enable to operate the process function.
-

Summery

Strategic Manpower Planning is a process of “Integrating human resource management strategies and systems to achieve the overall mission, strategies, and success of the firm while meeting the needs of employees and other stakeholders.” It helps organization in ensuring supply and optimum utilization of required competencies. The long-term and short-term manpower planning strategies support organization in retention and induction of employees, developing a flexible working schedule and implementation of employees’ reward management program, employees’ engagement program. SWOT Analysis, Organizational Chart Analysis, RACI Matrix, 9 Box Grid, replacement chart are often used in strategic manpower planning for developing HR road map. Key steps involve in it are: a) Assess Current HR Capacity; b) Forecast HR Requirements and; c) Matching demand and supply (close- gap strategy).

Review Questions

Long Type Questions (16 Marks)

1. Describe the process of Strategic Manpower Planning.
2. Describe the Tools Involved In SMP
3. Discuss various steps in strategic human resource planning.
4. “Competition has forced organizations to start thinking strategically. In planning the human capital, successful organizations are formulating and implementing strategic human resource planning.” Discuss with a company example.
5. Describe the benefits of strategic manpower planning.
6. Analyze strategic policies to reduce a high labor turnover.

Medium Length Questions (8 Marks)

1. How does replacement planning help manpower planning?
2. How can swot analysis help in integral scanning of the organization?
3. Explain the importance of employee engagement program.
4. Differentiate between engaged and disengaged employee.
5. Differentiate between Strategic manpower planning formulation and implementation.
6. Difference between Strategic Manpower Planning and Personnel Planning.
7. Explain 3 employee engagement initiatives undertaken by companies to keep their employees engaged.

8. What are the possible ways of overcoming a problem of not finding the correct numbers of people, the organization is looking for?
9. Explain why a business may choose to use internal recruitment over external recruitment.
10. When doing an external scan of the environment for purposes of human resources planning (HR planning), what things should we look at?
11. Is human resource planning only relevant to large companies?
12. How Strategic HR planning links HR management directly to the strategic plan of your organization.
13. How day care program can help in reducing labour turn over?
14. What do you understand by gap closing strategy?
15. What events could affect your strategic plan?
16. How is human resource planning linked to overall strategic planning?

Short Questions (2 Marks)

1. Why is strategic manpower planning significant?
2. Why should you study strategic manpower planning?
3. Write two benefits of Strategic manpower planning.
4. Where Does Employee Retention Fit with Human Resources Planning?
5. Why is Succession Planning?
6. Write two factors influencing employee retention.
7. Why is Gap analysis significant?
8. State the importance of retention planning.
9. 12.why is workforce analysis significant?
10. Why would an HR manager monitor probable labour requirements of rivals?
11. Explain why absenteeism is a problem for business.
12. why is strategic manpower planning significant even during recession?

Human Resource Planning - MCQs with answers Section

- 1. _____ is the process of forecasting an organisations future demand for, and supply of, the right type of people in the right number.**
 - a. Human Resource Planning
 - b. Recruitments
 - c. Human Resource Management
 - d. Human Capital Management
- 2. Which of the following factors state the importance of the Human Resource Planning?**
 - a. Creating highly talented personnel
 - b. International strategies
 - c. Resistance to change and move
 - d. All of the above
- 3. A process that is used for identifying and developing internal people with the potential to fill key business leadership positions in the company is called _____.**
 - a. Highly talented personnel creation
 - b. Investing in human resources
 - c. Succession planning
 - d. None of the above
- 4. State true or false**
 - i. Human Resource Planning facilitates international expansion strategies.
 - a. True
 - b. False
- 5. Which of the following option is not the factor that hinders with the human resource planning process?**
 - a. Type and quality of forecasting information
 - b. Time horizons
 - c. Environmental uncertainties
 - d. Unite the perspectives of line and staff managers
- 6. What is the major issue faced while doing personal planning?**
 - a. Type of information which should be used in making forecasts
 - b. Types of people to be hired
 - c. Multiple positions to be filled
 - d. All of the above
- 7. Rearrange the following steps involved in the Human resource planning process in proper order.**
 - A. HR Programming
 - B. HR Demand Forecast
 - C. Environmental Scanning
 - D. Control and evaluation of programme
 - E. Surplus - restricted hiring
 - F. HRP implementation
 - G. HR supply forecast
 - H. Organisational objectives and Policies
 - I. Shortage - Recruitments and Selection

- a. ABCDEFGHI
- b. CHBGAFDEI
- c. IHDEBCAFG
- d. IHGFEDCBA

8. Which of these factors is not included in environmental scanning?

- a. Political and legislative issues
- b. Economic factors
- c. Technological changes
- d. None of the above

9. _____ is the process of estimating the quantity and quality of people required to meet future needs of the organisation.

- a. Demand forecasting
- b. Supply forecasting
- c. Environmental forecasting
- d. None of the above

10. Which of the below given options are the forecasting techniques used?

- A. Ration Trend Analysis
 - B. Delphi Technique
 - C. Staffing projections
- a. A & C
 - b. B & C
 - c. A, B & C
 - d. A & B

11. Which of the forecasting technique is the fastest?

- a. Work study technique
- b. Flow models
- c. Ratio trend analysis
- d. HR demand Forecast

12. What does the ratio trend analysis studies for forecasting?

- a. Profits and loss
- b. Retirements and requirements
- c. Past and future ratios of workers and sales
- d. None of the above

13. State true or false

i. The Delphi technique is named after the ancient Greek Oracle at the city of Delphi.

- a. True
- b. False

14. What does the Delphi technique use to do the forecasting?

- a. Personal needs
- b. Emotional needs
- c. Social needs
- d. All of the above

15. Which is the simplest flow model used for forecasting?

- a. Semi - Markov Model
- b. Resource based Model
- c. Markov Model

16. _____ is a systematic procedure for collecting, storing, maintaining, retrieving and validating data needed by an organisation about its human resources.

- a. Data collection
- b. Human Resource Information System
- c. Management Information System
- d. Maintenance of records

17. Choose the correct option, where Human Resource Information System can mostly be used.

- a. Succession planning
- b. Retirement
- c. Designing jobs
- d. Inducting new hires

18. How many steps are involved in implementing Human Resource Information System?

- a. 10
- b. 5
- c. 14
- d. 15

19. What techniques are used while analysing the internal supply?

- a. Inflows and outflows
- b. Turnover rate
- c. Conditions of work and absenteeism
- d. All of the above

20. Complete the following formula to calculate turnover rate.

(Number of separations during one year / _____) X 100

-
- a. Average number of persons X number of working days
 - b. Average number of working days
 - c. Average number of employees during the year
 - d. Average number of leaves

21. Which of the below mentioned option is not a retention plan?

- a. Performance appraisal
- b. Compensation plan
- c. Induction crisis
- d. Voluntary retirement Scheme

22. Which of the following is a barrier while doing human resource planning?

- a. HR information often is incompatible with the information used in strategy formulation
- b. Implementing human resource information system
- c. Managing inventories
- d. Supply forecast

23. What are the pre- requisites for successful human resource planning?

- a. Backing of top management
- b. Personal records must be complete
- c. Techniques of planning should be the best
- d. All of the above

24. Which of the following is requisite for a typical succession planning?

- a. Career counselling
- b. Performance appraisal
- c. Compensation plan
- d. Employees quitting

25. Which of these is the purpose of recruitment?

- a. Make sure that there is match between cost and benefit
- b. Help increase the success rate of the selection process by reducing the number of visibly underqualified or over qualified job applicants.
- c. Help the firm create more culturally diverse work - force
- d. None of the above

26. The poor quality of selection will mean extra cost on _____ and supervision.

- a. Training
- b. Recruitment
- c. Work quality
- d. None of the above

27. While recruiting for non - managerial, supervisory and middle - management positions which external factor is of prime importance?

- a. Political - Legal
- b. Unemployment rate
- c. Labour market
- d. Growth and Expansion

28. A major internal factor that can determine the success of the recruiting programme is whether or not the company engages in _____.

- a. HRP
- b. Selection
- c. Induction
- d. None of the above

29. _____ refers to the process of identifying and attracting job seekers so as to build a pool of qualified job applicants.

- a. Selection
- b. Training
- c. Recruitments
- d. Induction

30. Rearrange the following steps of recruitment.

- I. Searching
 - II. Evaluation and control
 - III. Planning
 - IV. Screening
 - V. Strategy development
- a. III, II, I, V, IV
 - b. III, V, I, IV, II
 - c. IV, V, III, I, II
 - d. II, I, IV, V, III

31. _____ express the relationship of applicant inputs to outputs at various decision points.

- a. Number of contacts
- b. Yield Ratios
- c. Type of contacts
- d. Technological sophistication

32. This gives details about the name of the job, qualification, qualities required and working conditions etc.

- a. Job analysis
- b. Job selection
- c. Job specification
- d. Job description

33. On the date of joining, the employee is introduced to the company and other employees. This process is called

- a. Training
- b. Induction
- c. Introduction
- d. Fresher program

34. Is a process by which an organization should move from its current manpower position to its desired manpower position.

- a. HRP
- b. HRM
- c. SHRM
- d. All of the above

35. Collection or aggregation of tasks, duties & responsibilities is known as

- a. HRIS
- b. JOB
- c. Role
- d. Designation

36.involves a collection of job-related information.

- a. Job description
- b. Job Analysis
- c. Job designing
- d. None of the above

37.is a statement of human qualification necessary to do the job.

- a. Job description
- b. Job analysis
- c. job specification
- d. None of the above.

38. Job description does not contain detail about

- a. Educational qualification
- b. Job summery
- c. Location
- d. Working conditions

39. working condition and hazards involve in a job is included in

- a. Job analysis
- b. Job Description
- c. Job design
- d. None of the above

40. Techniques of collecting job analysis data does not include

- a. Personal observation
- b. Training
- c. Maintenance of log records
- d. Sending out questionnaire

41. The activities in HRP does not include

- a. Forecasting future HR needs
- b. Analysing existing HR
- c. Recruitment
- d. Evaluate and redesign of HR plan

42. The first step of HRP is

- a. Forecasting future HR needs
- b. Analysing existing HR
- c. Implementation of HR Plan
- d. Evaluate and redesign of HR plan

43. KSA represents

- a. Knowledge, Skill, Aptitude
- b. Knowledge, System, Aptitude
- c. Knowledge, Skill, Approach

44.is a process which helps to identify strengths and weaknesses of an individual with the aim to enable the person to understand oneself to the point where career development efforts are directed.

- a. Competency Mapping
- b. Performance Appraisal
- c. Performance management
- d. None of these

45. Behaviour Event Interview is atechnique

- a. Quantitative
- b. Qualitative
- c. Internal
- d. External

46. Which one of the following is not a method of data collection for competency mapping.

- a. Competency-Based Interview
- b. Competency-Based Questionnaire
- c. Assessment Center
- d. Delphi Technique

47. Cohort means

- a. Homogenous
- b. Heterogenous
- c. Simultaneous
- d. None of the above

48. which shows the percentage (and actual number) of employees who remain in each job from one year to the next, thus keeping track of the pattern of employee movements through various jobs.

- a. Markov Analysis
- b. Census Analysis
- c. Cohort Analysis
- d. None of the above

49. _____ is the process of forecasting an organisations future demand for, and supply of, the right type of people in the right number.

- a. Human Resource Planning
- b. Recruitments
- c. Human Resource Management
- d. Human Capital Management

50. A process that is used for identifying and developing internal people with the potential to fill key business leadership positions in the company is called _____.

- a. Highly talented personnel creation
- b. Investing in human resources
- c. Succession planning
- d. None of the above

51. _____ is the process of estimating the quantity and quality of people required to meet future needs of the organization.

- a. Demand forecasting
- b. Supply forecasting
- c. Environmental forecasting
- d. None of the above

52. What techniques are used while analysing the internal supply?

- a. Inflows and outflows
- b. Turnover rate
- c. Conditions of work and absenteeism
- d. All of the above

53. Which of the below mentioned option is not a retention plan?

- a. Performance appraisal
- b. Compensation plan
- c. Induction crisis
- d. Voluntary retirement Scheme

54. Which of the following is requisite for a typical succession planning?

- a. Career counseling
- b. Performance appraisal
- c. Compensation plan
- d. Employees quitting

55. Which of the following would NOT be a possible way of overcoming a problem of not finding the correct numbers of people we need for our business?

- a. Outsourcing some of our output to sub-contractors
- b. Retraining current employees
- c. Adopting more mechanization
- d. Reducing overtime payment

56. An HR Manager was involved in the process of human resource planning. The first step he undertook was assessing current resources and making an inventory. What is the next step that the manager has to take in HRP?

- A. Start recruiting to meet the requirements
- B. Forecasting
- C. Matching the inventory with future requirements
- D. Developing an action plan to meet future requirements

57. The process of ensuring that there are the right number of qualified people in the right jobs for best results is termed

- A. Human Resource Planning
- B. Recruitment
- C. Retrenchment
- D. Downsizing

58. What was the traditional term used for HRP and the one often associated with personnel management?

- A. Gap analysis
- B. Human resource planning
- C. Employee planning
- D. Manpower planning

59. Which of the following factors state the importance of the Human Resource Planning?

- a. Creating highly talented personnel
- b. International strategies
- c. Resistance to change and move
- d. All of the above

a

. It motivates employees.

- b. It increases loyalty.
- c. It can lower turnover.
- d. It increases market share.

66. Which of the below mentioned option is not a retention plan?

- a. Performance appraisal
- b. Compensation plan
- c. Induction crisis
- d. Voluntary retirement Scheme

67. A human resource manager aims to:

- a. Match employee skills to the strategic decisions of the business
- b. Improve communications with clients
- c. Develop supply chains
- d. Monitor customer behavior

68. Which of the following would NOT be a possible way of overcoming a problem of not finding the correct numbers of people we need for our business?

- a. Outsourcing some of our output to sub-contractors
- b. Retraining current employees
- c. Adopting more mechanization
- d. Reducing overtime payments

68. Why are employers interested in employee engagement?

- a. To encourage employees to trust their managers
- b. To make a quick profit
- c. Because engaged employees are more motivated and prepared to give of their best to make the firm succeed
- d. To make employees work harder for less

69. Which of the following is not a limitation of SWOT (Strengths, Weaknesses, Opportunity, Threats) analysis?

- a. Organizational strengths may not lead to competitive advantage
- b. SWOT gives a one-shot view of a moving target
- c. SWOT's focus on the external environment is too broad and integrative
- d. SWOT over emphasizes a single dimension of strategy

70. HR Gap means
- a. Skill Gap
 - b. Head Count Gap
 - c. Dysfunctional elements
 - d. HR Demand and Supply difference

Answers Keys

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. A | 16. B | 31. B | 46. D | 61. D |
| 2. D | 17. A | 32. A | 47. A | 62. D |
| 3. C | 18. C | 33. B | 48. A | 63. A |
| 4. A | 19. D | 34. A | 49. A | 64. A |
| 5. D | 20. C | 35. B | 50. C | 65. D |
| 6. A | 21. D | 36. B | 51. A | 66. D |
| 7. B | 22. A | 37. B | 52. D | 67. A |
| 8. D | 23. A | 38. A | 53. D | 68. D |
| 9. A | 24. A | 39. B | 54. A | 69. C |
| 10. D | 25. B | 40. B | 55. D | 70. D |
| 11. C | 26. A | 41. C | 56. C | |
| 12. C | 27. C | 42. A | 57. A | |
| 13. A | 28. A | 43. D | 58. D | |
| 14. A | 29. C | 44. A | 59. D | |
| 15. C | 30. B | 45. D | 60. C | |