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An Approach To Labor And Manpower Planning Techniques

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Abstract

The purpose of manpower planning is to get a better matching between manpower requirement and manpower availability. Manpower planning is particularly suitable for the application of statistical techniques. The aim of this paper is to review the models which have been developed, concentrating on their assumptions and applications.Further, we have presented the manpower planning and have explored the conceptual strengths and weaknesses of five of the commonly utilized strategies for approaching manpower planning.

Keywords:Labors, Manpower plan,Matrixes

1. Introduction

Manpower planning plays an important role in the arena of industrialization. In this modernworld, it is well known that manpower is inevitable, inspire of the existence of advancedtechniques. It is a device with which an attempt is made to match the supply of people withthe demand in the form of jobs available in any organization so that the cost incurred is optimum.Manpower planning's important for assisting the Human resource agencies in the policy-making process. Mathematics has done much more work on the development of models of manpower systems in the years. If the organization fails to place direct human resources in the right areas of the business, at right time and right cost, serious inefficiencies are likely to occur creating considerable operational difficulties or even business failure [1].

Different types of Manpower model plays an important role in efficient design and control of manpower system. This model is involved to look after different changes which took place like productive changes, technical changes, market forces, corporate strategies and trends. The supply models foretell the supply of man power in near future.

2. Assumption for Manpower Planning

Manpower Planning is a two-phased process because manpower planning not only analyses the current human resources but also makes manpower forecasts and thereby draw employment programmes.

- ✓ All the recruitment and selection programmesare based on manpower planning.
- ✓ It also helps to reduce the labour cost as excess staff can be identified and thereby overstaffing can be avoided.
- ✓ With the help of manpower planning we can utilize the human resources which are available which will increase

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the growth and diversifications of business.

There are five main steps to assess the number of workers by educational level over time [2].

Note: i=economic sector, j=occupation, k=educational level, a=age, s=sex;

a. Estimating the future level of GDP or output (X)
b. Estimating the structural transformation of the economy as expressed by the distribution of output by economic sector (X_i/X)as it evolves over time.
c. Estimating labour productivity by economic sector (L_i/X_i) and its evolution over time.
d. Estimating the occupational structure of the labour force within economic sectors and its evolution over time (L_{ij}/L_i).
e. Estimating the educational structure of the labour force in given occupations within economic sectors over time (L_{ijk}/L_{ij}).

Hence the demand function for educated labour looks something like:

$$L^D_{ijk} = f\,(X, X_i/X, L_i/X_i, L_{ij}/L_i, L_{ijk}/L_{ij}) \ldots\ldots (1)$$

There are four basic steps:

a. Estimating the population $P_{a,s,k}$ by age, sex and educational level.
b. Assessing the number of graduates, dropouts by age, sex and educational level, $E_{a,s,k}$.
c. Finding the labor force participants (L^S) by applying age, sex, educational level labor force participation rates to the number of graduates, $l_{a,s,k}$.
d. Estimating the occupational supply based on the labor supply by education level possibly using an education to occupation matrix $M_{k,j}$

Hence the supply function for educated labour looks something like:

$$L^S_{j,k} = f(P_{a,s,k}, E_{a,s,k}, l_{a,s,k}, M_{k,j}) \ldots\ldots (2)$$

Manpower planning as expressed through this dominant model with the criticism being most typified by such statements as [3]:

1. Considerable forecast errors were associated with projections of employment by occupation using the MRP (Mediterranean Regional Project) or manpower requirements approach methodology.
2. The errors were mainly due to the fixed-coefficients model and assumed labour-productivity growth (as specified in equation (1) above).
3. Forecasting errors were larger the longer the time-horizon of the forecast.
4. No evidence was found linking manpower forecasts to any actual educational policy decision.
5. In some cases manpower forecasts gave support to what turned out to be a wrong decision. Therefore, it is wrong to argue that forecasting always improves policy decisions, or that some view of future developments is better than none.

One of the most crucial assumptions (according to Youidi's review) in MRP-type manpower-forecasting methodology is that the elasticity of substitution between different kinds of labour is equal to (or near) zero. The elasticity of substitution is:

$$e = - d \text{ Log } (L_{k1}/L_{k2});\ d \text{ Log } (W_{k1}/W_{k2})$$

Where, *k1* and *k2* are two kinds of labor, say university graduates or secondary-school graduates; or even mining or electrical engineers; and W the level of their wages determined during the forecast period.

3. Types of Manpower Model

In this section, various modeling techniques which have been used in manpower planning will be considered.A

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typical manpower system is presented in Fig.1. In which rectangle represent stocks and flows represent movement between the various entities of the system.

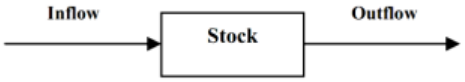

Fig. A Typical Manpower System.

Many author have describes manpower planning with limited hiring opportunities in which they have presented the value of stochastic modeling [4, 5]. In which they have describe the objective function of the program maximizes the difference between billable revenue, and payroll costs, recruiting costs, training costs, and the expected cost of firing and subcontracting with following constraints. (a) The overall staff balance constraint; it states that in every skill and grade category the net change in manpower is equal to the number of new hires, less the number lost to attrition or termination. (b) All new hires and retooled resources are designated as in training for one period.(c) The number of billable resources according to demand and supply. (d) An upper limit on the proportion of billable resources that can be subcontracted. (e) Balances the number of retrained resources.

4. Labor accounting matrices

LAM and in his matrix one component of a LAM is that showing headcounts and/or hours worked. In the rows are given 'Types of Individuals' and these correspond to the population and labour supply. The total, of course, sums to the total population of the nation. Clearly it could be further disaggregated into urban/rural areas [6].

The endogenous accounts generally comprise the factor accounts, the accounts for households and companies and the accounts for the production activities. The exogenous accounts include the government account, the investment account, the accounts for indirect taxes and international transactions.

Table 1: Exogenous and endogenoussub matrices

Outlays Receipts	Endogenous Acc.	Exogenous Acc.
1.Factors	ENDOGENOUS TRANSACTIONS	INJECTIONS
2. Endogenous Institutions		
3.Production		
4.Government	LEAKAGES	EXOGENOUS TRANSACTIONS
5.Ind.Taxes		
6.Capital Acc.		
7.Rest of world		

The application of LAMs to the manpower planning problem is not widespread probably because of the use of fixed coefficients so that the allocation of labor by economic sector, for instance, is carried out in the same way as the discarded manpower planning approach. In fact the LAM is simply a formalization of the data from a manpower planning exercise into a set of accounts. This is useful in itself as a way of organizing data but still does not escape the aforementioned limitations.

5. Conclusion

In conclusion, the main manpower planning techniques, requirements, rate of return, labor market information systems, pragmatic, key informants, labor market signaling and LAMs were described. The main challenges that Industries face ever in Manpower planning are recruitment ofpersonnel at various levels. Further, this paper will be more useful to recruiting

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their laborwith possible future development.

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