ANALYTICAL SCHEME OF HUMAN RESOURCE PLANNING FOR PROFESSIONAL COMPANIES

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Human resources(HR) planning is a core problem for many companies nowadays by the virtue of a series of facts. The basis fact is actual conditions of the economic and marketing development of a country – the pace of this development has increased immensely for the past 10-15 years. Markets became well-developed with matured competitive environment where time of qualified human resources hiring becomes of vital importance for the company to get their clients' recognition.

The second group of facts concerns the characteristics of the modern epoch - global economy with increasingly sophisticated information technology where the demand for professional services is escalating. The quality of services a company can render-ultimately depends on the caliber of its employees.

Next group of factors consider human resource expenditures, such as salaries, professional development, pension, medical and other benefits, constitute a major portion of its total operating costs. It's an important factor for professional companies. To control these expenditures while maintaining high-quality services, management needs to deal effectively and efficiently with its manpower issues.

The last (but not the least) group deals with optimal workload caused by seasonable character of a company's activity. Such firms have a distinct *peak-wise* demand period during which the workload of their professional employees exceeds the hours normally available. Effective HR management must provide the company with the ability to meet the demand in a peak season.

Complex mathematical tools were once presented to the HR managerial theory. However, in spite of the results provided in the literature, human resource managers are reluctant to adopt linear programming approaches for two major reasons. Firstly, they prefer to perceive and effectively employ analytical rules and policies rather than mathematical programming. Secondly, it relates to the accuracy discrete time-based methods, which is not always controllable (the higher the accuracy needed, the greater the number of periods must be considered within the same planning horizon).

The model that we are going to present here allows the corporate managers to consider dynamic demands and processes analytically, including **peak-wise** (or seasonal) **demand**, balance of **workloads**, engagement (contract) **delays**, **loss** of clients (streams of revenues), and **over-capacity** (excessive surplus) issues when making human resources decisions, thus minimizing the firm's **operating costs**. It's a continuous-time model for human resources management. The goal of using such a model is to find a trade-off between the cost of delaying jobs plus loss in revenue, on the one hand, and the cost of recruiting and hiring employees at all levels, plus their salaries, on the other hand. For considering the model we assume the following:

- Employees have different combinations of knowledge, skills and experience and, therefore, are distinguished hierarchically.

- Senior managers who are to manage rather than to carry out professional assignments are excluded from the consideration.

- The service provided by a firm involves a systematic and sequential process that cannot be done in advance. But, a contract can be delayed with a costly penalty, assuming that there is a mutual agreement (understanding) when the contract is signed.

- The optimal solution does not allow over-capacity of a firm. Thus, it is not desirable to hire professional employees on such a scale during a peak season that the clients' demands can be met easily during the rest of the year not using all of the available HR.

Then we consider the employees are distinguished by level $n = 1, 2, \ldots, N$ at which they are capable of performing incoming assignments. If the total performance rate from the beginning of the planning horizon by time is greater than the accumulated demand by the same time t, the service process results in a surplus; otherwise it results in a backlog. The model proposes no surpluses, but backlogs are permissible. This implies temporary delays in completing engagements and a rejected job at the end of the planning period .

When there is a **peak in demand**, a dynamic response (hiring cycle) is required to minimize the cost of contract delays and the loss of fees. The demand level can be estimated reasonably, a professional firm should include the delay penalty as part of its negotiations with clients before the signing of contract. If a firm realizes that a delay cannot be avoided due to a lack of suitable manpower, it may be beneficial management to reject a contract in the early stages of negotiations or engagement processes. This would limit **delay penalties** to unexpected circumstances and prevent the company from an image damage.

Loss of fee is used to represent cost invested by a professional firm in evaluating a client before accepting the engagement. Hence, is a loss for not accepting an engagement after the initial assessment of a client's financial condition.

Three **workload policies**: workload at the maximum rate; no-workload-at-all; partial workload. The company depending on the working process and its strategy can stick to one of these policies. And, under different conditions they could be optimal. Mathematic tools describe these possible situations concerning the cost of hiring, an employee's salary and benefits over the peak time. From the cost control and profit maximization viewpoints, employees must be fully loaded after the switching point to the peak season. The case of under-utilizing of professionals during the peak time is a case of **over-capacity**.

Optimal hiring of professional employees at all levels can be of three types: (1) no hiring of professional employees of level n up to time t1, hiring employees of level n at full rate from $t1$ to $t2$, and no hiring after $t2$; (2) hiring of employees of level n at full rate from the beginning of the planning horizon to $t2$, and then no hiring of this level employees after that; (3) no hiring at all of professional employees of level n

Human resources expenditures typically includes all resources consumed to bring an employee to the point that he/she will be able to generate revenues for the firm. Therefore, we include time and financial resources consumed by the human resources management department, the personnel at all levels who are involved in recruiting and hiring, his/her salary and benefits, the overhead expenditures to design, print and deliver recruiting materials, and other expenditures (e.g. training provided for new hires).

Summing it all up, to cope with the issues of human resources planning in professional firms, we explicitly consider the firm's hierarchical structure, costs of recruiting and hiring, workload, engagement delay penalties, loss of fees, and the issue of over-capacity. And, it is imperative for the firm's management to establish human resource policies in hiring, training, scheduling, balance workload and retention, so that both clients and professional employees can maintain a high level of satisfaction, enhance a firm's profitability and also sharpen its competitive edge.