

Business Demography and Human Resources: a forecasting approach

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Riassunto:

In questi ultimi anni si assiste ad un aumento di interesse per il capitale umano e la sua capacità di creare e sostenere il vantaggio competitivo aziendale. (Roehling M., Cavanaugh M., Moynihan L., Boswell W., 1998). La motivazione principale di questo lavoro è di andare ad applicare delle tecniche di analisi demografica come supporto alle decisioni aziendali. In particolare, attraverso una simulazione, si cercherà di studiare la fattibilità dell'applicazione del diagramma di Lexis per la pianificazione delle risorse umane in termini di forza lavoro e per la previsione dei costi che l'azienda dovrà sostenere in loro relazione.

Keywords: Micro and macro social-demographic analyses; Dynamics, structure and heterogeneity of populations.

1. Introduction

The demography and the use of the related techniques are important to manage human resources. Workers of a productive or administrative unit, the staff of a private company, workers of public administration etc. represent, in fact, renewable clusters in the statistics meaning (Santini A., 1995). The evolution through the years of some groups of human resources depends for example on engagement and dismissal.

Simulation models (Racioppi F., 2001) for the forecast and the management of working populations are widely applied because:

- they consider the behaviours of in-out and the advancement rules;
- they explain the ties between the company evolution and personal evolution;
- simulation gives probabilistic results and career profiles.

The used models are based on two hypothesis (Giorni P., Racioppi F., Funiciello P., 2001):

- the number of workers is defined by the probabilistic methods;
- we use the past to define the future, the hypothesis is a spontaneous evolution.

2. Human Resources and forecast

The practical application of this study consists in the analysis of simulated data related to the human resources of a services company operating in the credit.

The data regard the employee staff and cover a temporal arc from year 1981 to year 2003. It is important to note the total absence of workers in the production department. The data fill in the Lexis diagram (Blangiardo G.C., 1997) represent the state and the movement of the employee population: the engagement; the dismissal; the outsourcing; the advancement, etc.. This information is classified for seniority, year of assumption and year of observation. We represent the

population that achieve the year of seniority t in the course of a defined year or that is found in the year of seniority t at the date of December 31st. When the Lexis diagram is completed with the available data, we can proceed with the calculation of the rates:

dismissal = (dismissals per year of seniorities t /total employees at the end of year) *100

outsourcing = (outsourcing per year of seniorities t /total employees at the end of year) *100

advancement = (advancements per year of seniorities t /total employees at the end of year) *100

engagement = (engagements per year/total employees of year) *100

With these rates it is possible to calculate the number of engagement, of dismissal, advancement and outsourcing, lacking for year 2003, using the follow methods:

- TREND
- TREND BACKWARD
- ARITHMETIC MEAN GENERAL
- ARITHMETIC MEAN OF PROXIMITY
- ARITHMETIC MEAN OF THE AVERAGES OF THE CYCLES
- ARITHMETIC MEAN OF THE FIRST CYCLE

At this point the problem has been to choose the better technique, that have to forecast the future course of the data. The choice has been guided from a criterion of “fit evaluation”; we have in fact tried to apply all the listed methods to have the forecast for the years 2000, 2001, 2002 and 2003. The chosen methodology is the one that reproduces the number of employees in the more adherent way to the real data and it has turned out to be the TREND one.

The probabilities of position changes in small populations, like a company, depend on different factors and not only on the seniority or on the age of the employees. A stochastic element could be introduced in the model to consider these factors.

The frame delineated from this job has put in evidence the fact that the management of the Human Resources can represent a lever of competitive advantage and plays a role of primary importance. Ours specific goal has been to show how the typical approaches of the demography, in particular the diagram of Lexis, can be used in the management of human resources in a company with the aim to better define the related politics and strategies.

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