

Doctor of Business Economics

Improving Predictions in Manpower Planning through Classification and Accounting for Voluntary Turnover

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Abstract

Manpower planning models and Human Resource analytics contribute in providing decision support for Human Resource practitioners. Although developments in academia in regards to these fields are growing by the second, the industry is left behind. Usually, HR practitioners are not familiar with data modelling techniques, and even if they are, developed methods are often inaccessible and user-unfriendly.

In this dissertation, methodological improvements to predictive HR models are made. Furthermore, the predictive and explanatory value of the available data in HR datasets is investigated and demonstrated.

For Markov manpower systems, an automated method is proposed for prior division of the population in homogeneous subgroups based on decision tree learning. This classification method not only enhances the usage in practice but provides methodological improvements over existing approaches.

Next, in order to further develop HR research and the industries it supports, both a predictive and explanatory investigation of voluntary turnover is executed. Contrary to most turnover research, a data-driven approach is suggested. The biggest advantage of this approach is that actual turnover is analyzed instead of turnover intention and that prediction accuracy will grow with the expansion of HR data. The suggested data-driven approach enabled a turnover analysis of a large sample of the Belgian working population. In this analysis, white collar and blue collar workers are investigated separately, since the latter group of workers is often neglected in literature. The results of the current study suggest that blue collar careers are still in line with older career theories and that there is a need for differentiation.

Lastly, in order to control turnover, the effectiveness of employee retention strategies is investigated. In this dissertation, an uplift modeling approach is presented. Through combining matching techniques with uplift modeling, the direct effect of retention strategies is investigated by using observational data from a HR dataset. This presented combination can be a useful approach for many other practical applications. In the current study, the approach makes it possible to determine characteristics of employees who respond higher on average to certain retention treatments.