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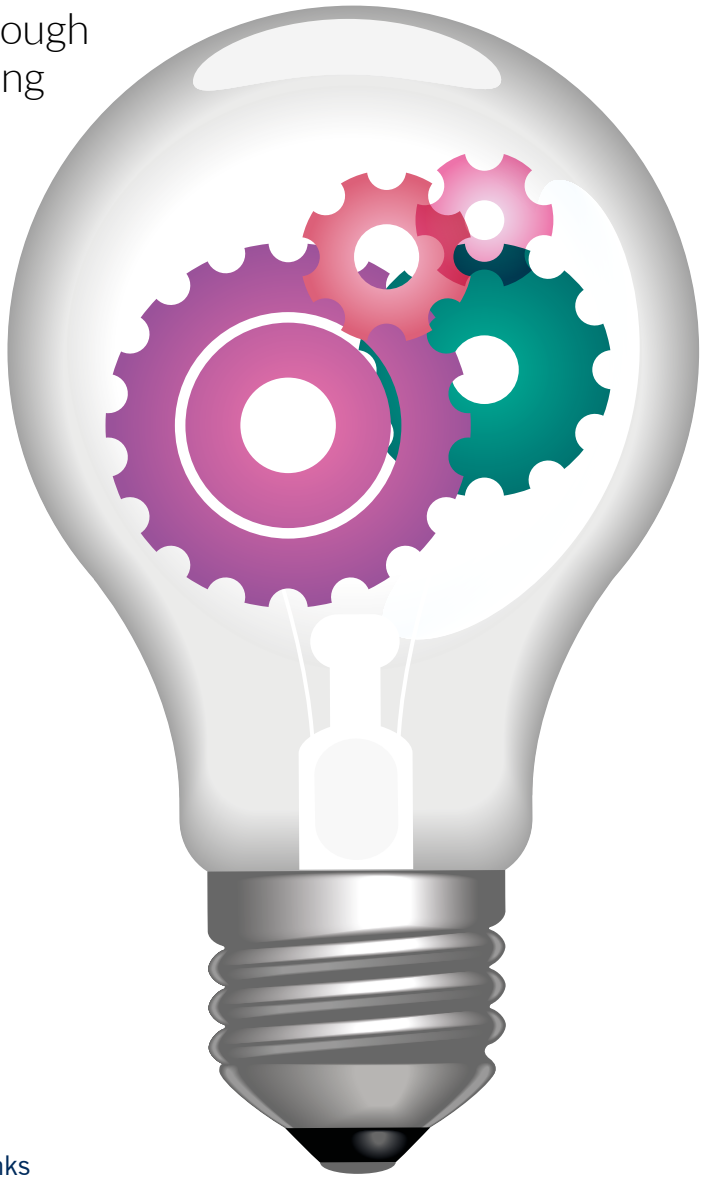

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The potential of computer-aided applicant pre-screening

By ***Colin Lee***

Imagine what it would be like if accurate algorithms took over the recruitment process and were used to match potential applicants to work. Recruiters would no longer have to trawl through stacks of CVs or engage in swathes of interviews. Job seekers would be relieved of the time and stress involved in searching and applying.

Although it seems far from reality, the technology is available and a recent study provides promising results. There is no doubt that the internet has increased by incalculable proportions the visibility given to job vacancies. It has also facilitated the task of searching and applying. Job boards and other online media have made vacancy and applicant data more accessible.

Companies often integrate these platforms into applicant databases, called Applicant Tracking Systems (or ATSs), so that the various recruitment channels can be utilised from a single interface. This has opened up the job market as it provides more choices to both parties and connects applicants and vacancies on an unprecedented scale. However, one of the less positive outcomes is the now vast number of applications with which recruiters have to deal.

To leverage the increased openness of the job market, yet keep down the number of promising applicants accepted for an interview to a manageable level, pre-screening has become an ever more important practice.

A magic formula?

Using a formula to filter the applicant pool to something smaller but more appropriate could save firms a lot of time, energy and money. However, a single formula that works for all jobs has yet to be found. Different jobs have different requirements and this variation has long provided a hurdle to the widespread use of formulas in support of applicant pre-screening.

Obtaining a valid formula for just a single occupation at a specific company requires large, expensive validation studies, making it an option that is only available to sizeable, affluent organisations. However, in the 1950s a method called Synthetic Validity was developed and it could prove to be extremely valuable in applicant selection.

The basic idea for Synthetic Validity comes from a technique used to predict how long it would take to complete work projects. This technique, called Synthetic Time, entails cutting up each project into separate tasks. Next, one would try to find predictors to help determine how long would be spent on each task. Finally, these predictors would be integrated into a "synthetic" formula, by considering the relevance of the task to the project as a whole. Similarly, in Synthetic Validity each job is broken up into the same set of work activities, including activities such as repairing and maintaining equipment, analysing data, or influencing others. Next, one finds predictors that can help determine the applicant's performance on each activity. Finally, when one knows the importance of each work activity for a certain job, a

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synthetic formula tailored to that job can be created.

Since all jobs can be reduced to and weighted on these work activities, this technique allows the prediction for one occupation to be transferred and adjusted to another occupation very effectively. Since one only needs to know the importance of the work activities to create a job-specific selection formula, one can even attain predictions for completely new jobs. The method requires sufficient data to establish relationships between work activities and predictors and this has possibly restricted the use of the method in the past. However, as shown in a recent study, this is no longer a concern in the era of big data.

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Computer-aided pre-screening

Using data from the Applicant Tracking Systems of 48 companies, the study built on 441,769 applications to 21,694 distinct vacancies, focusing on predicting the pre-screening decision: whether the applicant would be invited to a job interview. For each applicant the actual decision had been recorded in the ATS system. In stage one, the algorithms were trained using the first 90 per cent of the applicants per company.

Predictors included applicant demographics (age, gender, nationality, distance from recruiting firm), applicant biodata (prior professional experience and educational background), characteristics of the application (internal or external, timing before or after the deadline), and characteristics of the applicant pool (volume of applications, average percentage invited for an interview, occupation vacancy rate). The jobs from the vacancies were matched to existing occupations that had been rated on 42 different work activities. This made it possible to establish how the importance of the predictors varies with the importance of the work activities.

In stage two, the algorithm was used to predict whether the applicant would be invited or not and we compared this prediction to the actual pre-screening decision. The accuracy of the decision proved promising, with 69.5 per cent of those invited correctly classified and 68.8 per cent of those not invited correctly identified. Moreover, for those vacancies where no cover letter was required, the accuracy was even higher with 82.5 per cent invited and 80.3 per cent not invited but correctly identified.

Pre-screening to selection

The implications of this study are of especial interest to large firms having to deal with sizeable applicant pools and for whom the screening and assessment process can be very costly. The approach offers a way to prioritise time spent on applicants, such that the recruiter can focus on the boundary cases that require most deliberation. This does not only save time, but could also help make pre-screening decisions more consistent.

However, the million-dollar question for both recruiters and researchers for the future remains. An improved understanding of application criteria is the first step, but what guarantee does this offer that recruiters choose the right person for the job...? For this next step theorists and practitioners will have to move beyond the prediction of the pre-screening decision and engage in predicting applicant performance. ■

This article draws its inspiration from Colin Lee's PhD thesis *Big Data in Management Research – Exploring New Avenues*. It can be freely download at WEB http://repub.eur.nl/pub/79818

Having successfully defended his thesis at RSM, Colin is now a postdoctoral research fellow at Haskayne School of Business, Calgary (Canada).