

Briefing

CASE Studies

Validation of the CASE Score
as a selection criterion in the
hiring-process

Published with permission
and based on real data of

Deutsche Post DHL
Group



MAHLE

SIMON • KUCHER & PARTNERS
Strategy & Marketing Consultants



CASE has been successfully validated for different industries using data on 4,879 applicants from ten customers

All ten validation studies have demonstrated the strong predictive power of the CASE Score. The following five studies were published with the permission of our customers. More customer studies are available upon request.

Deutsche Post DHL Group

Deutsche Post DHL Group combined the CASE Score with assessment tests to create high-quality rules for early selection. **CASE identified 53% of applicants deemed unsuitable by the assessment centre beforehand.** It was demonstrated that **CASE allows better selection, saving 80% of selection cost.** (n= 287)

▶ Page 5-6



CASE is the **most reliable tool for early screening at Evonik Industries and enables a validated pre-selection.** Unlike raw university grades, the CASE Score is a good predictor of applicant success. Candidates with a good CASE Score show a 60% chance of being hired compared to candidates with bad grades who only had a 5% chance. (n= 74)

▶ Page 7-8



At innogy CASE found that candidates with a **CASE Score worse than Top 40% make up half of all trainee-applicants, but rarely (none in this sample) make it to the AC.** While CASE encourages occasional wild card hires, the process could be streamlined, effectively reducing recruiting costs and improving candidate experience. (n=306)

▶ Page 9-10



A retrospective analysis of trainees at MAHLE shows that **CASE is the best predictor of job performance four years after being hired.** The probability that MAHLE was very satisfied with a trainee increased by 60%-points from the trainees with the lowest CASE Score to the ones with the best CASE Scores. (n=361)

▶ Page 11-13

SIMON • KUCHER & PARTNERS
Strategy & Marketing Consultants

At Simon-Kucher & Partners CASE helps to **select from a large number of very competitive applications.** It was shown that a good CASE Score had a significant effect on the probability of receiving a job offer with significance level of 0.1%. An online test on the other hand had no such predictive power. (n=235)

▶ Page 14-15

CASE converts the noisy and biased signal of an academic degree into the highly predictive CASE Score

Academic Achievements

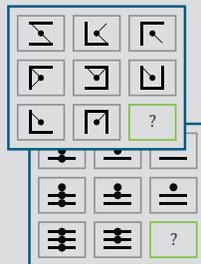


The Problem

Students invest 5 to 6 years and a lot of money to obtain a university degree. Yet, the complexity of higher education makes it hard to measure the achievement behind a degree.

It is practically impossible for individual employers to monitor differences in grading standards and competitiveness across thousands of institutions.

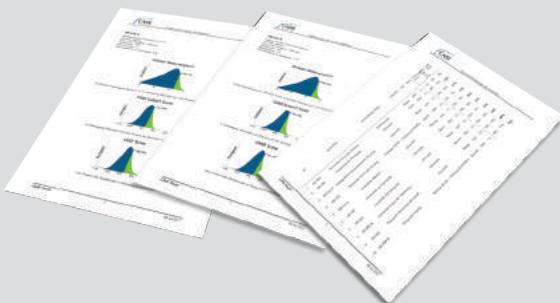
As a result, the details of a degree are often ignored and students are asked to submit to diagnostic tests. These tend to be less reliable than a degree because of their relative brevity.



The Solution

CASE is a data science start-up that monitors educational degrees. It corrects for differences in grading standards and competitiveness, revealing the predictive power of university degrees.

CASE Scoring

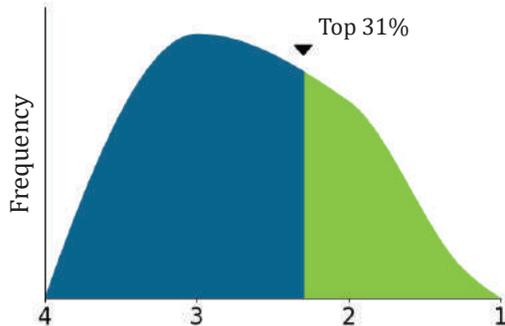


The CASE Score uses

- ▶ Germany's largest student survey
- ▶ >300,000 grade distributions
- ▶ >290,000 IQ- and personality tests
- ▶ International data (UK, NL, IT, ES, PT, ...)
- ▶ Years of academic research

CASE offers three different metrics to gain a better understanding of the value of an academic degree

1. Local Grade Comparison



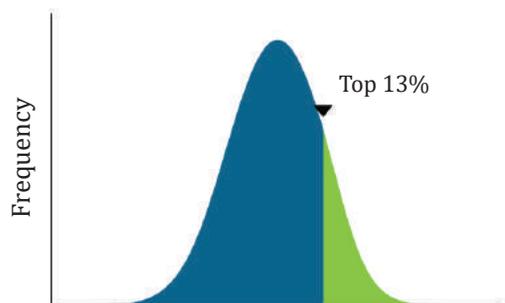
1. Local Grade Comparison

The exact ranking of an applicant within the grade distribution of the specific study programme (university, subject and degree).

2. CASE Subject Score

A cross university comparison of a degree with all degrees within the same subject group.

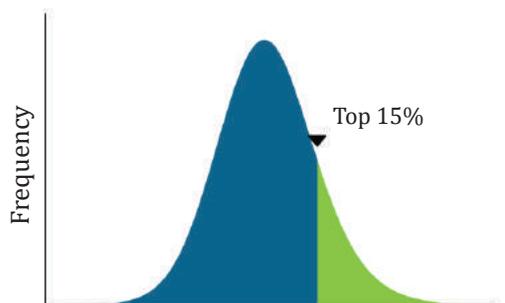
2. CASE Subject Score



3. CASE Score

A cross university and cross subject comparison of an academic degree with all other degrees.

3. CASE Score



How to interpret the CASE Score:

- ▶ CASE Scores are percentile ranks - lower scores are better.
- ▶ A CASE Score close to 50% means that a degree is average
- ▶ A CASE Score better than 15% is very good

Deutsche Post DHL uses CASE Scores to select the best applicants for their assessment centre

Deutsche Post DHL Group

Setting

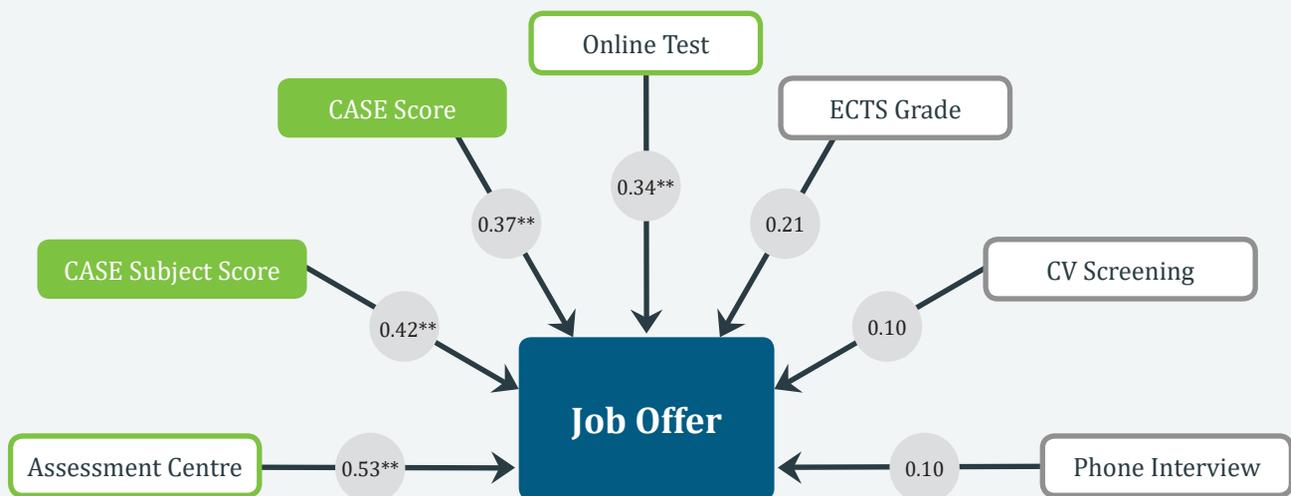
This first CASE Study, conducted with Deutsche Post DHL Group, tested the predictive power of CASE Scores for the DHL JOIN programme. 24 interns were selected for different sections of the company, mostly with an IT or business background.

The dataset consists of 287 candidates, the majority of which was not considered after failing to reach a minimum score in a 45-minute online test. Still, more than a hundred applicants proceeded to the phone interview stage and 38 were invited to an assessment centre at the DHL Tower in Bonn.

For this study the CASE Score was available in the recruiting process, but was not used as formal criterion.



Hiring process of the JOIN programme at DP-DHL



Absolute correlations between selection criteria and Job Offers. “***” significance at $\alpha=0.05$, “**” at $\alpha=0.10$

Combining the CASE Score with assessment tests allows to create high-quality rules for early selection

Deutsche Post DHL Group



Scatterplot of CASE Score and Online Test indicating successful candidates and the selection rule “CASE-Score” minus “Online Test” > 0

Better selection at lower costs

The plot shows all candidates as dots in different colours. Grey dots depict candidates who were excluded before the assessment centre, blue dots those who were excluded after the assessment centre and green dots those who received a job offer after the assessment centre.

The green triangle divides the plot in two equal halves. Candidates inside it have a better combination of CASE Score and online test than those outside. More than half (53%) of

the candidates excluded after the assessment centre (blue dots) are outside the green triangle, while all successful candidates except one (95%) are inside it.

Knowing this, it is possible to use CASE Scores early in the selection-process to cut recruiting costs by up to 80% (reduce phone interviews and assessment centre slots), while simultaneously inviting better candidates (investigate currently grey candidates in the bottom right corner).

Since 2016 Evonik assesses the academic degrees of all their applicants with the CASE Score



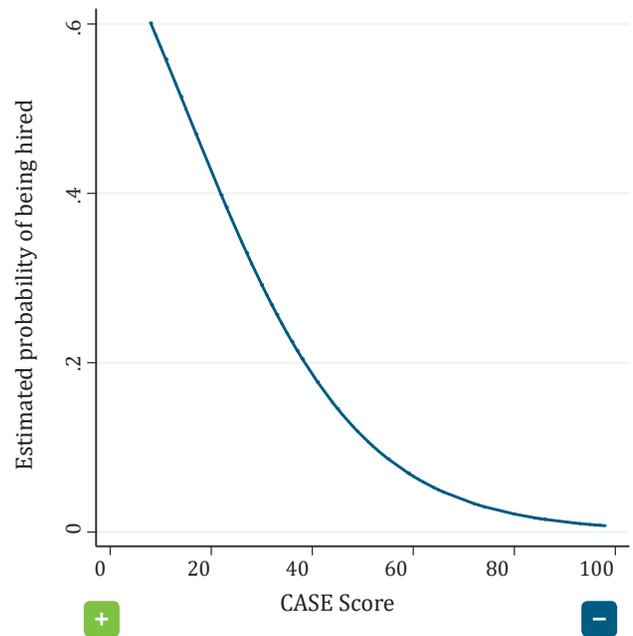
Setting

This CASE Study analysed the predictive power of CASE Scores for three trainee programmes at Evonik Industries in early 2017. Trainees were recruited for the controlling and the procurement division as well as for the International Production and Technology Program (IPAT).

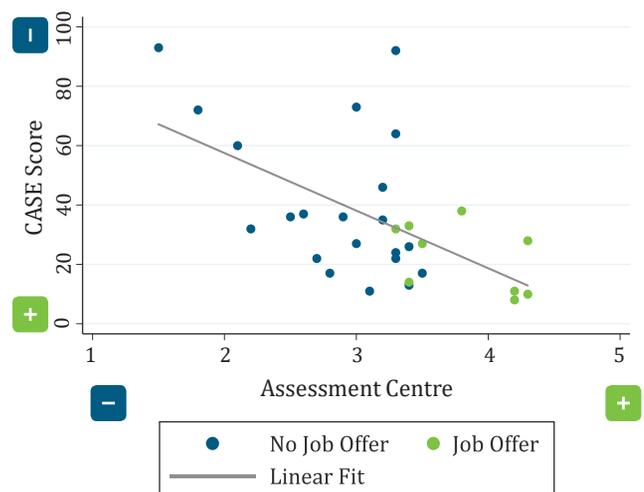
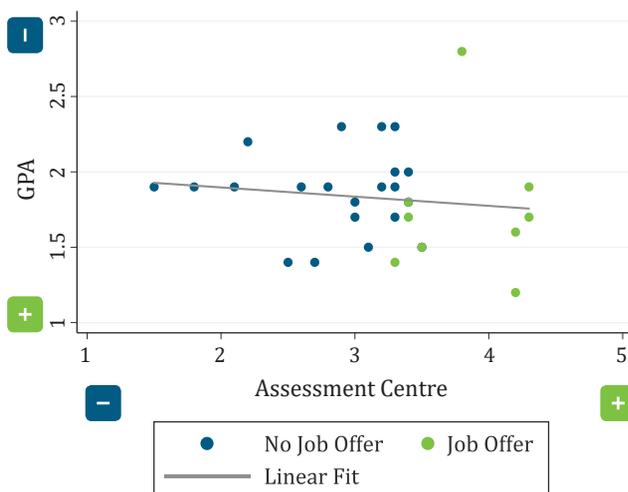
To make 10 final offers, 74 candidates were reviewed, 31 of which were invited to an assessment centre. The CASE Score of candidates was known in the selection process, but not used as a formal criterion.

CASE predicts hires

Unlike raw university grades, the CASE Score is a good predictor of applicant success. Candidates with a low (good) CASE Score show a 60% chance of being hired.



Logit estimates of the probability to be hired after the Assessment Centre



Scatterplots of GPA (left) / CASE Score (right) and Assessment Centre indicating successful candidates

CASE is the most reliable tool for early screening at Evonik Industries and enables a validated pre-selection



Absolute correlations between selection criteria and Job Offers. “**” significance at $\alpha=0.05$, “*” at $\alpha=0.10$

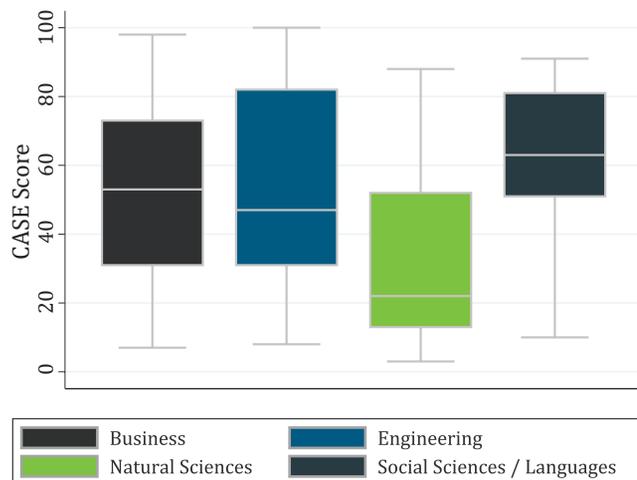
Improved candidate selection and recruiting evaluation

Only the assessment centre and the CASE Score predict job offers significantly. Neither the assessment test nor the absolute grade show a significant correlation. Especially, absolute grades should not be used as a selection criterion for trainee recruiting.

On top of these trainee programmes, Evonik uses CASE to assess all other incoming applications from candidates with an academic background. Drawing a sample from early 2017 we investigate the quality of incoming applications at Evonik, measured by the CASE Score.

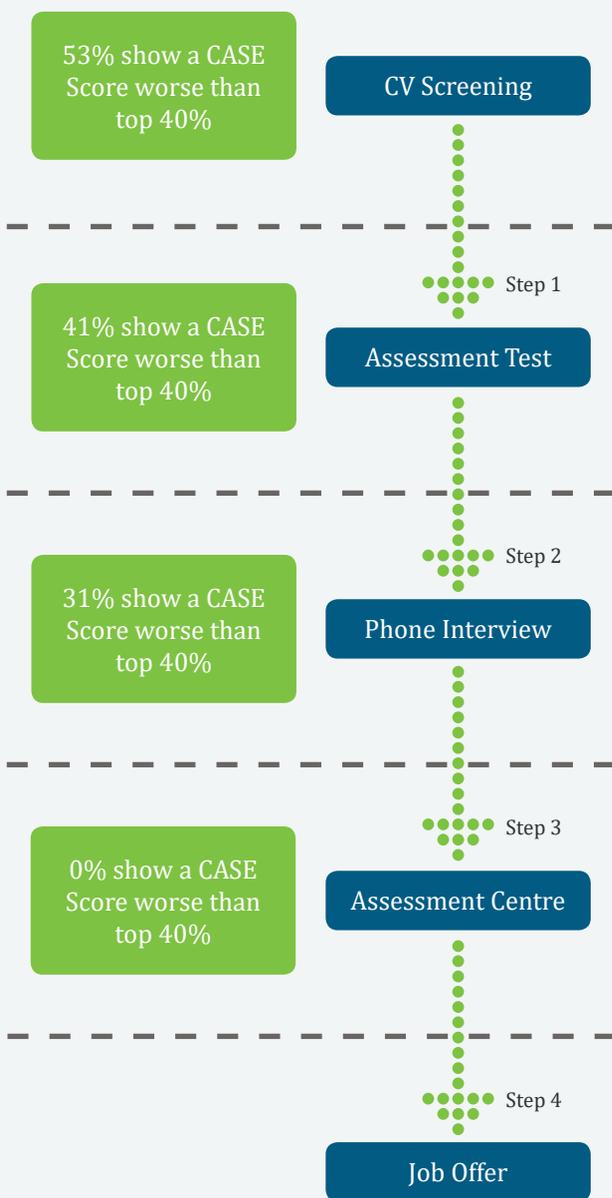
We find that Evonik, which has a strong employer brand in the chemical sector, receives the best applications from students with a natural sciences background. Of those applications 37.5% were in the top 20% of students.

Such results can be used for targeting employer branding and campus recruiting.



Box plots of applicants' CASE Scores by subject group

Half of the candidates show a CASE Score weaker than top 40% - not a single one proceeds to the assessment centre



Hiring process for trainees within the International Graduate Programme at innogy

Setting

In cooperation with innogy a retrospective analysis of trainee hires within the 2018 International Graduate Programme has been conducted. The final sample consist of 306 applicants who hold degrees from Germany, the United Kingdom, Spain and Italy. The quality of applications in this programme is high. To select the best trainees from this competitive pool innogy followed a four step process: (S1) CV-screening, (S2) assessment test, (S3) phone interview and (S4) assessment centre. S1 to S3 are decided by the central HR department, S4 is done by HR in cooperation with the respective department.

CASE provides a powerful selection criterion right at the beginning

There is a clear relationship between candidates who show a strong CASE Score and candidates who advance in the recruiting process. Roughly half of the candidates show a CASE Score worse than top 40% at the beginning of the hiring process. This share steadily decreases throughout the process. In the end, not a single candidate with a CASE Score worse than top 40% reaches the assessment centre.

This is remarkable for two reasons. First, the analysis has been done in retrospect and the recruiters were not aware of the CASE Score while making decisions. Second, the academic merit of candidates had in principle already been tested in the CV-Screening of step 1. Thereafter, the quality of a degree should be less important. The fact that the share of weak CASE Scores continues to decrease throughout S2 and S3 shows that information about the candidates that the CASE Score picked up in the very beginning was subsequently discovered in further selection rounds.

CASE is available right at the beginning of the process and predicts CV screening, cognitive ability and interview performance

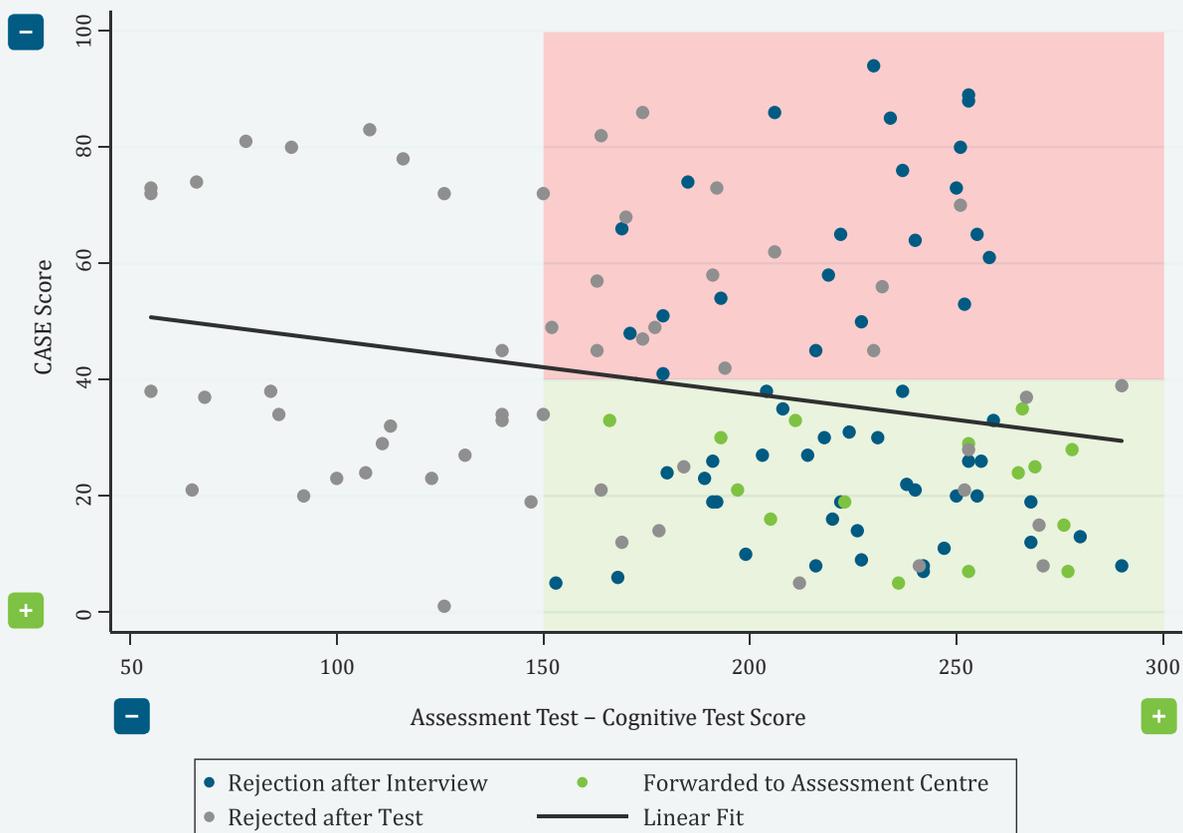


innogy

CASE predicts more than just cognitive ability

It is visible from the graph below that no candidate with a combined cognitive score below 150 made it to the phone interview. As explained before a similar cut-off exists for the CASE Score, even though it was not available and could not be formally used.

The linear fit shows that there is a clear relationship between cognitive ability as measured by the assessment test and the CASE Score. This reveals that cognitive ability is partly explained by CASE. There are, however, more traits and abilities that the CASE Score measures. CASE predicts equally well which candidates are successful in the interview and hence should be thought of not only as a substitute to one-off tests, but also a measure of long-term productivity, which requires stamina, emotional stability, social skills and conscientiousness next to cognitive ability.



Scatterplot of CASE Score and cognitive test scores derived from the Assessment Test indicating the success of candidates and the cut-off CASE Score < 40

A retrospective analysis of trainees at MAHLE shows that CASE is the best predictor of job performance

MAHLE

Setting

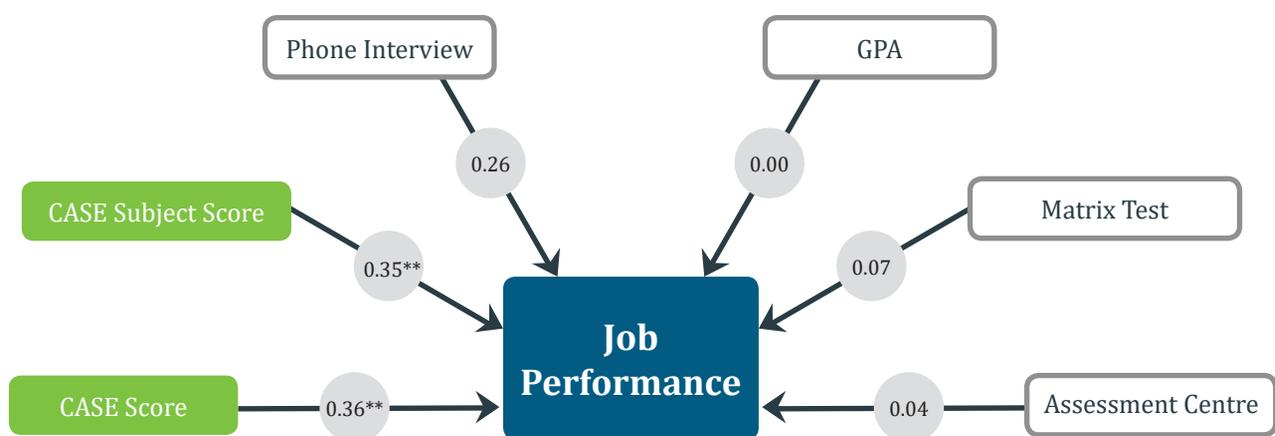
This CASE Study tested the predictive power of CASE Scores for the MAHLE trainee programme. The study was done retrospectively and CASE Scores were not used in the selection process. The sample contains current applicants as well as successful applicants from earlier years. For the latter a performance review is included in the data. Overall, candidates come from six cohorts making up a data set of 361 individuals.

Performance is measured after a trainee has worked in the company for two years. Three different HR-Managers look at all available feedback from the respective departments

and rank individuals from 1 (very unsatisfied) to 5 (extremely satisfied). Such measures of performance are available for 61 trainees with an average four years of experience at MAHLE.

Only CASE correlates with trainee performance

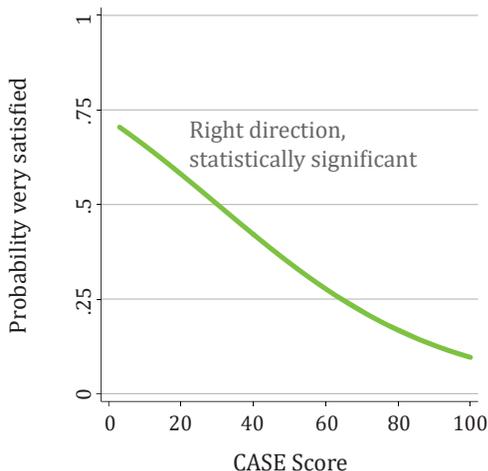
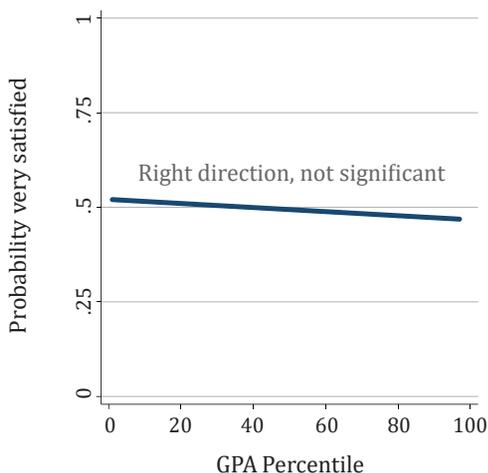
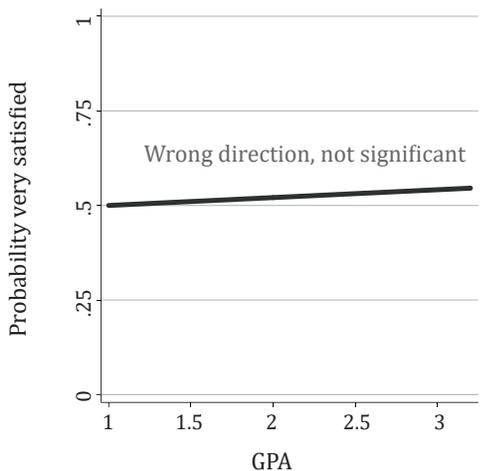
The results with regard to trainee performance are striking with the CASE Score being the only selection criterion that significantly predicts job performance. While the structured phone interview can explain some of the measured differences in job performance, the assessment centre, matrix IQ-test and raw university grade are unable to predict job performance in the sample.



Absolute correlations between selection criteria and Job Performance as evaluated by the HR department of MAHLE. “**” significance at $\alpha=0.05$, “*” at $\alpha=0.10$

Using CASE Scores in the recruiting process translates into better performing trainees

MAHLE



Logit estimates of the probability to be very satisfied with the Job Performance of a hire using absolute GPA (upper), relative GPA percentiles (middle) and CASE Scores (lower) as a predictor

CASE Scores predict job-performance

The strong correlation between job-performance and the CASE Score makes CASE a very good predictor of trainee success.

In the sample, MAHLE was satisfied with the majority of trainees (rated at least “3”). Candidates with a very good CASE Score have a 90% probability that MAHLE is satisfied with them. With a weak CASE Score the chance that MAHLE is satisfied drops to 50%.

The results become even clearer with regard to the probability of being very or extremely satisfied (rated at least “4”).

The probability of sourcing such a very good trainee is 10% for weak CASE Scores and climbs up to 70% for candidates with very strong CASE Scores. This means that an increase of 1% in the CASE Score relates to a 0.6% greater chance of being very satisfied.



Across all job types [...] best performers are roughly four times as productive as average performers. That holds in every industry, geographical region, and type of organization we’ve examined.



Harvard Business Review:

Michael Mankins, Alan Bird and James Root – February 2013

CASE can predict past hiring decisions and enable a more efficient recruiting process at MAHLE

MAHLE

Improving employee selection

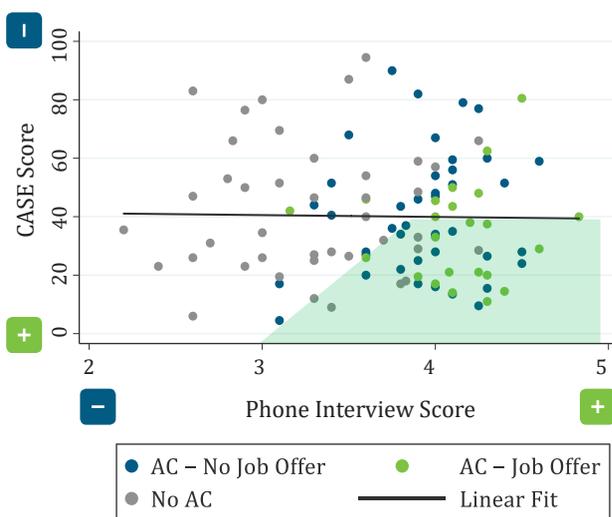
The CASE Score is not only a strong predictor of performance, but also explains which applicants are selected to become trainees. Since CASE is available right from the start of any recruiting process it can be used prior to more expensive instruments.

If only candidates with a strong CASE Score (<40%) were admitted to the phone interview, this would have saved 44% of all interviews. On the flipside, 7 candidates who received offers would have been lost. However, the average satisfaction with these candidates is only 2.8 compared to 3.6 for candidates who would continue to make the cut and be hired.

Combining phone interview results and CASE Scores for the remaining candidates in a simple linear fashion would save 48% of assessment centre invitations



Hiring Process at MAHLE



Scatterplot of CASE Score and Phone Interview indicating successful candidates and a selection rule

The Green box identifies candidates with a good CASE Score (<40%) and a strong phone interview performance

In the box: 38/106 (36%)
47% get an offer after the AC
Ø Satisfaction: 3,6

Outside the box: 68/106 (64%)
22.5% get an offer after the AC
Ø Satisfaction: 2.8

At Simon-Kucher & Partners CASE helps to select from a large number of very competitive applications

SIMON • KUCHER & PARTNERS
Strategy & Marketing Consultants



Hiring process for consultants and interns at Simon-Kucher & Partners

Setting

This CASE Study, the result of a cooperation with Simon-Kucher & Partners Strategy & Marketing Consultants, tested the predictive power of CASE Scores in the hiring process for full-time consultants and interns. The data, which contains 235 candidates in total, was collected in the first half of 2017. The CASE Score was available and used in the recruiting process.

Applicants aiming to become consultants are on average more competitive (better with regard to online test and CASE Score) than those applying for an internship.

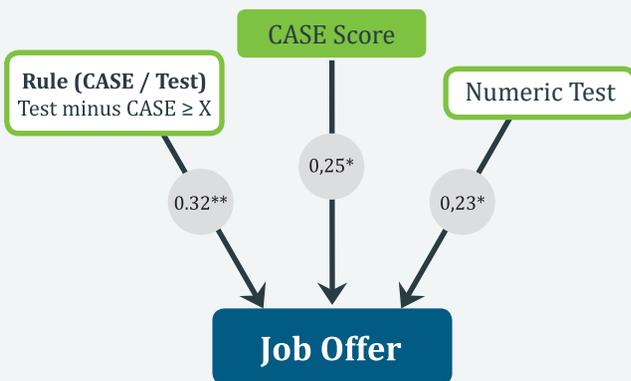
With one exception, no candidates scoring below 50% in the online test were considered for an interview.



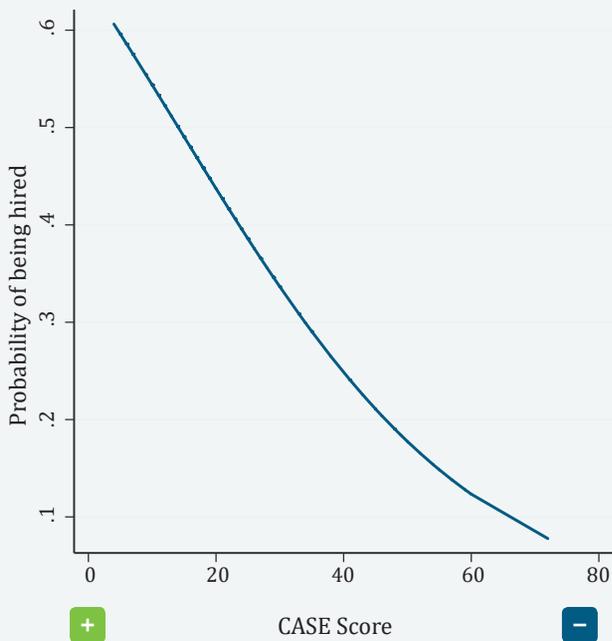
Scatterplot of CASE Score and Online Test indicating successful candidates

CASE performs well by itself, combining it with other instruments allows to create optimal, yet simple, recruiting rules

SIMON • KUCHER & PARTNERS
Strategy & Marketing Consultants



Absolute correlations between selection criteria and Job Offers for consultants. “***” significance at $\alpha=0.05$, “*” at $\alpha=0.10$



Logit estimates of the probability of being hired as a consultant after the interview at Simon-Kucher & Partners

Selecting consultants

CASE Score and online assessment test both correlate with the final job offer at a 10% significance level.

Test and CASE Score, however, add unique information about a candidate. They can be combined to create a rule that shows the strongest correlation and is significant at 5%.

The CASE Score is a good predictor of interview performance. Interviews are conducted by higher ranking consultants and Partners. Their time is a scarce resource. Matching interview slots with promising candidates is a challenge for the recruiting department.

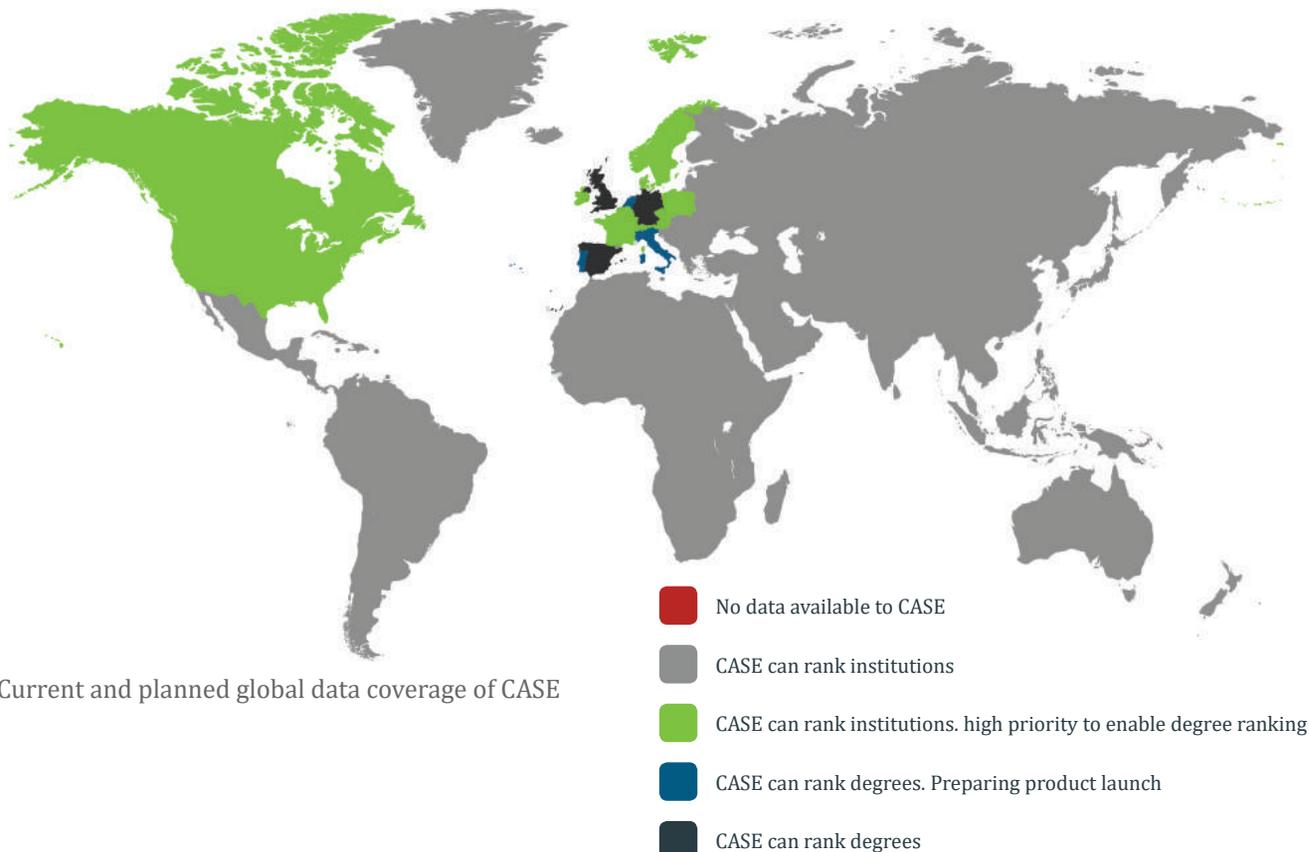
Generally, the majority of interviews are not successful. Applicants with a weak CASE Score almost never succeed in the interview stage. However, candidates with a very strong CASE Score reach a 60% probability to receive a job offer.

Internship applicants

The results for interns are similar to those of consultants, but the correlations are generally slightly weaker. One reason for this could be that the profiles of internship applications are more varied.

A rule based on online test *and* CASE Score correlates significantly (at the 10% level) with job offers. This can mostly be attributed to the CASE Score which clearly outperforms the online test with regard to internship applications.

CASE is already collecting international data and adapting its algorithm to assess academic degrees on a global scale



Global range of the CASE Score

As of now, CASE is functional in Germany, the UK and Spain. Data is available and CASE will launch shortly in Italy and Portugal. Other European countries and the USA are planned to follow within the next years.

On top of this, a basic version of the CASE Score is available for more than 27,000 universities in 163 countries. This scoring

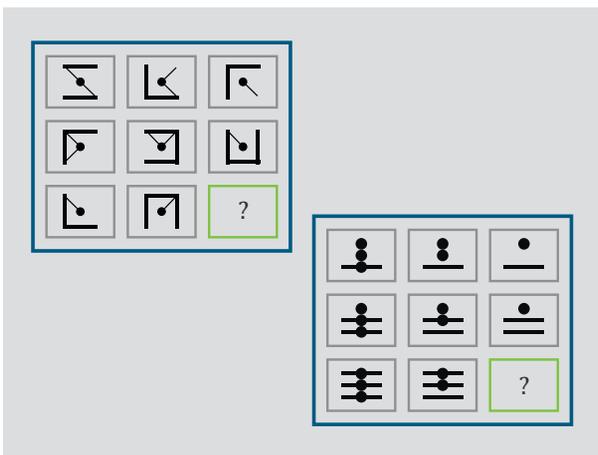
uses different international rankings and high-quality government data. It was developed based on customer feedback to help recruiters determine whether a foreign degree fulfils domestic standards of quality. In real-time CASE International provides a basic ranking of the university's status and the employability of its students, together with information about the local grading systems. This covers almost all institutions of higher education worldwide.

CASE is your partner to select the right applicants at all stages: From employer branding to recruiting evaluation



Campus Targeting

CASE helps to identify the graduate-potential of different universities and study fields by providing valuable graduate statistics for campus recruiting. This allows to target talent that your competition is likely to oversee and increases the efficiency of employer branding campaigns.



Assessment Tests

CASE enables companies to use the scientific tests from the “Fachkraft 2030” survey for candidate assessment. The tests have been normalised and validated in corporation with the University of Bonn and Maastricht University using data on more than 290,000 students.



People Analytics

Applicant- and employee-data can be used to improve the recruiting process in order to increase satisfaction and job-performance in your company. CASE is experienced in collecting the right data and using the appropriate tools to gain the best insights while honouring employee data-privacy.

CASE is available in Germany since 2016 and succeeded in attracting many large companies as customers

Hear it from our customers:



Applicants with a good CASE Score usually show a good performance during the interview as well.

Stephan A. Butscher

Chief Talent Officer, Simon Kucher & Partners

CASE allows us to make better use of the performance during five or more years of higher education. As a result we can give even better advice to our hiring managers.

Randolf Bursian

Head of HR, Evonik Industries



F.l.t.r.: Dr. Jan Bergerhoff (CASE), Randolf Bursian (Evonik), Dr. Philipp Seegers (CASE), Dr. Frank Lelke (Evonik)

Reference customers of CASE





candidate select GmbH

Dr. Jan Bergerhoff

Dr. Philipp Karl Seegers

Dr. Max Hoyer

March, 2019

Published by:

candidate select GmbH
Bonn University (IAME)
Adenauerallee 24-42
53113 Bonn



We recommend employers to take into account the university and subject-specific grading traditions (...) only then do they obtain a valid impression of an applicant's potential.

Scientific Counsel of the German Government (Wissenschaftsrat, 2012)





Contact

info@candidate-select.de

+49 221 99 55 44 63



Internet

www.candidate-select.com

www.case-score.com