

Briefing CASE Studies

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

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Deutsche Post DHL
Group



MAHLE

SIMON • KUCHER & PARTNERS
Strategy & Marketing Consultants

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

Academic Achievements

1 - Hochschule
2 - Abschlussart
3 - (verursachliches) Abschlusstage
4 - Fachrichtung
Abschleusnote (in Schulnoten)
schlechter

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.

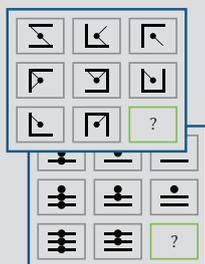
As a result, the details of a degree are often ignored and students are asked to submit to diagnostic tests. These tend to be less reliable than a degree because of their relative brevity.



Fachkraft 2020

7. und 8. Erhebung zur wirtschaftlichen und allgemeinen Lebenssituation der Studierenden in Deutschland

Herausgegeben durch
Studtempo GmbH | Maschke University
Studtempo Maschke University
KOH-Maxxville, 2017



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
- ▶ >210,000 grade distributions
- ▶ >240,000 IQ- and personality tests
- ▶ International data (UK, NL, IT, ES, PT, ...)
- ▶ Years of academic research

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

Deutsche Post DHL Group



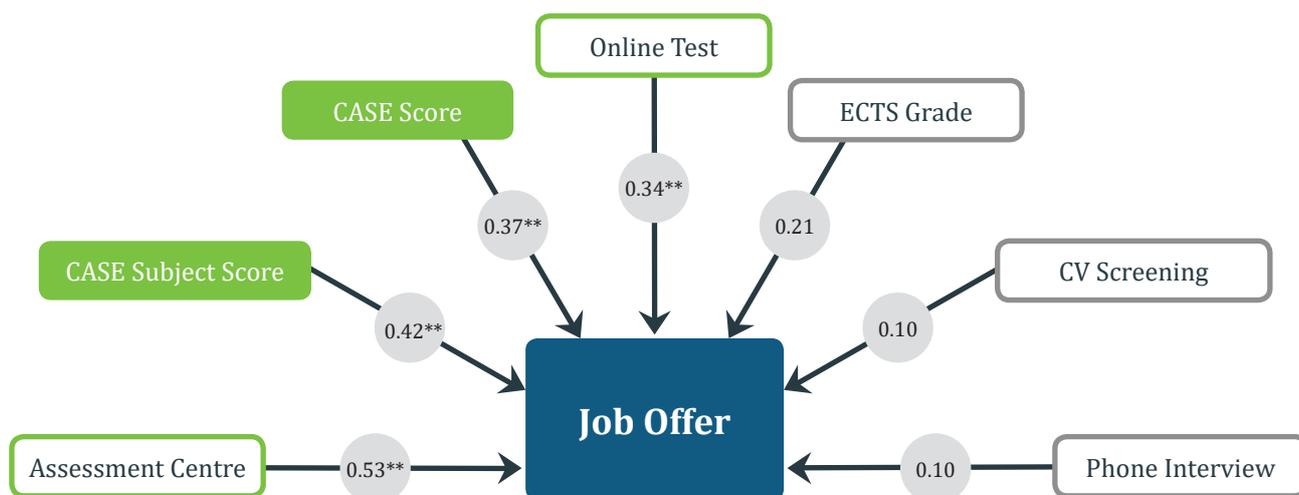
Hiring process of the JOIN programme at DP-DHL

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.

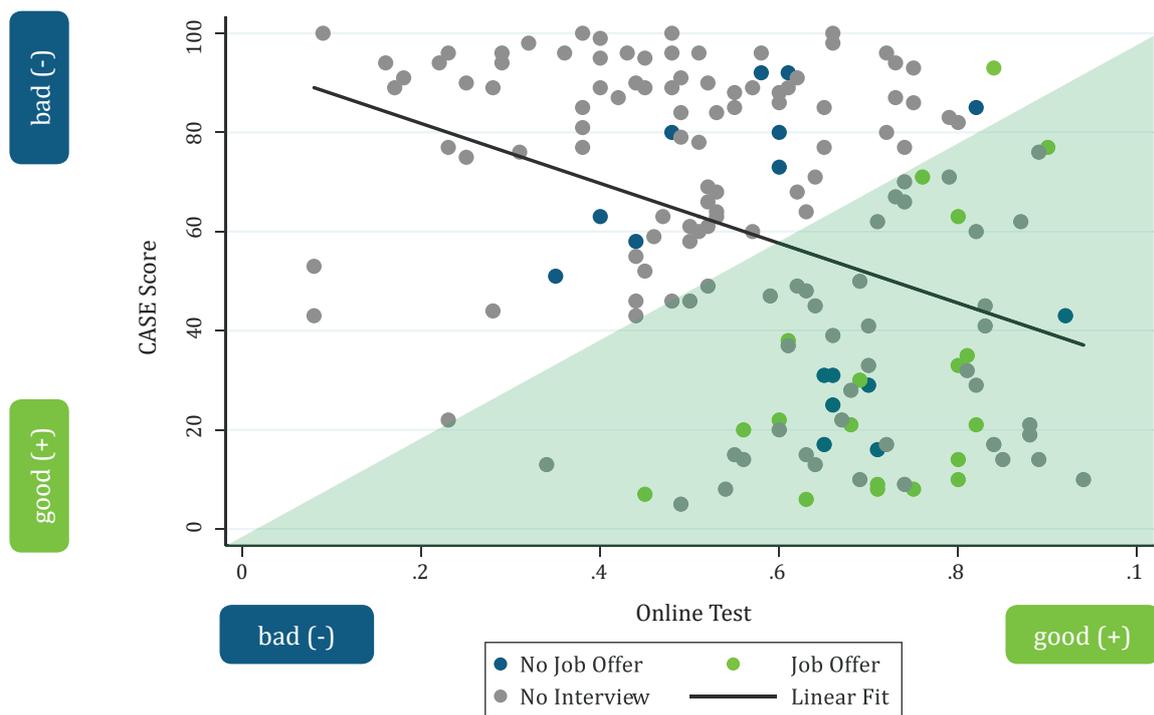
For this study the CASE Score was available in the recruiting process, but was not used as formal criterion.



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



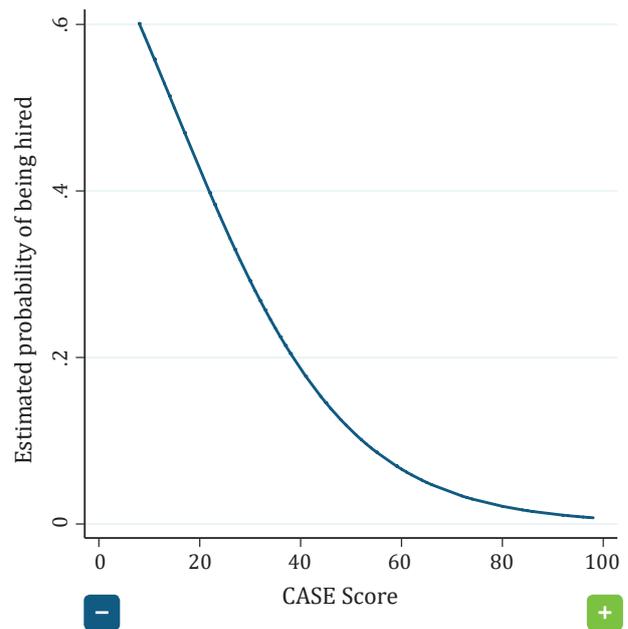
Setting

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).

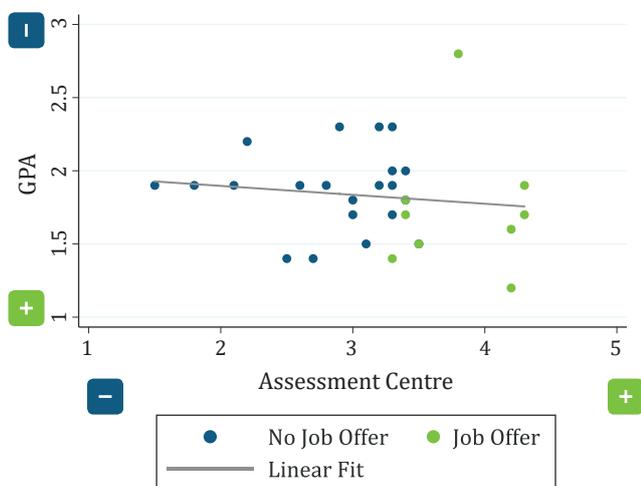
To make 10 final offers, 74 candidates were reviewed, 31 of which were invited to an assessment centre. The CASE Score of candidates was known in the selection process, but not used as a formal criterion.

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 using CASE Score as predictor



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

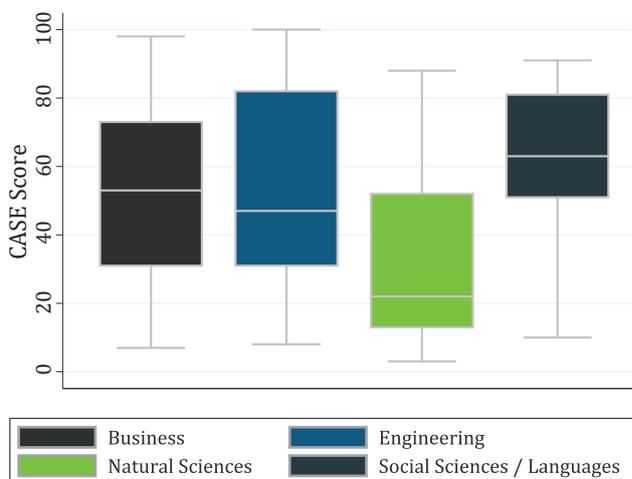
Only the assessment centre and the CASE Score predict job offers significantly. Neither the assessment test nor the absolute grade show a significant correlation. Especially, absolute grades should not be used as a selection criterion for trainee recruiting.

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. 37.5%

of those applications 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

Trainee recruiting at an energy firm was analysed retrospectively to see how well CASE predicts hiring

Setting

CASE was validated for a 2017 trainee-programme of a German energy supplier. All feasible trainee applications, 463 in total, form the sample of this study. 12 trainees were ultimately hired by the company as part of this programme.

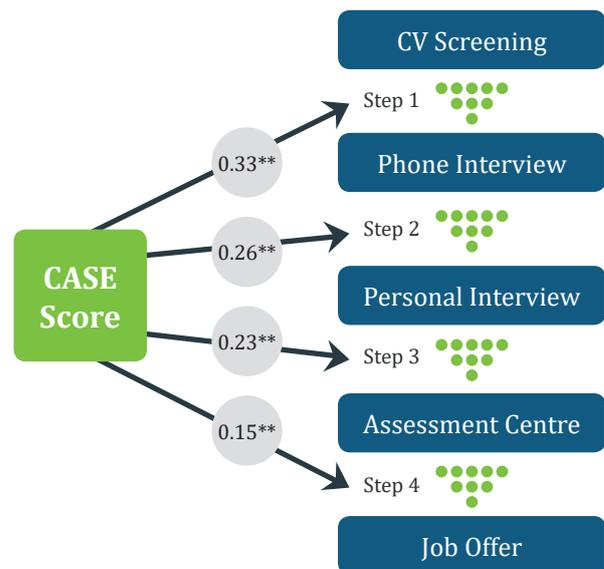
The analysis was done retrospectively, after the trainee selection had taken place. Therefore, the CASE Score was not used in the actual selection, allowing for a clean analysis of the recruiting decisions that were taken.

The recruiting process in this trainee programme consists of four steps: (1) CV screening, (2) phone interview, (3) personal interview and (4) assessment centre.

All selections correlate with CASE

All decisions taken within the recruiting process are in line with the CASE Scores of the applicants. While all correlations are significant, the importance of CASE is greatest in early selection. Thereafter, CASE becomes less variable as the CASE Scores of the remaining candidates are, on average, very good.

This can also be seen from the expected probability to succeed in a certain step. Candidates with an average CASE Score have a 30% chance of reaching the phone interview, a 15% chance of reaching the personal interview, a 5% chance of reaching the assessment centre and a 1% chance of receiving a job offer.

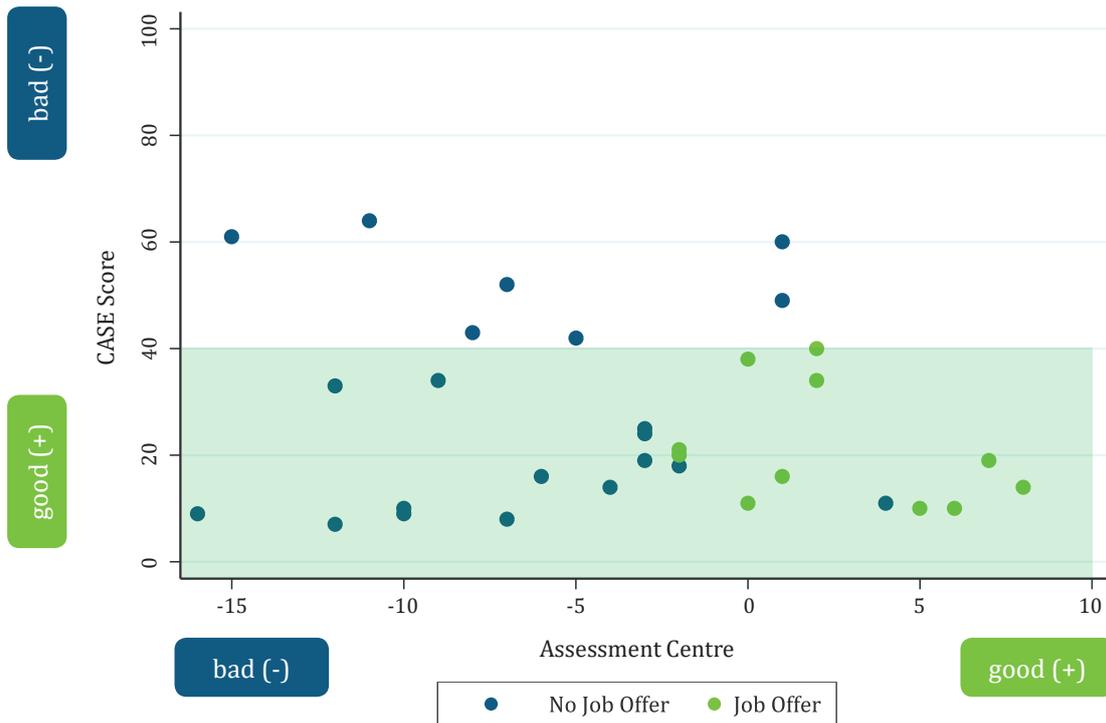


Absolute correlations between selection in different phases of the recruiting process and CASE Score. “**” significance at $\alpha=0.05$, “*” at $\alpha=0.10$

Advantages of a retrospective CASE Study:

- ▶ More data is available
- ▶ Faster evaluation is possible
- ▶ Performance data can be included
- ▶ Better estimates due to unbiased decisions

No candidate with a weak CASE Score was hired, only few made it to the assessment centre



Scatterplot of CASE Score and Assessment Centre indicating successful candidates and the selection rule “CASE-Score” < 40%

Reproduce results with less effort

The graph shows the relationship between CASE Scores (vertical axis) and results from the assessment centre (horizontal axis). The green square indicates candidates with a good CASE Score. Moreover, blue and green dots indicate whether a candidate received a job offer.

Most applicants in the assessment centre show a good CASE Score. More importantly: All candidates that received a job offer also have a

good CASE Score. This means that CASE can be used to determine which candidates should be invited to the assessment centre.

The relationship between CASE Scores and the assessment centre results themselves is weak. In other words: CASE is a very good tool to select candidates who should participate in the assessment centre. However, within the assessment centre more information is collected to decide which applicants fit the company and should be hired.

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

MAHLE

Setting

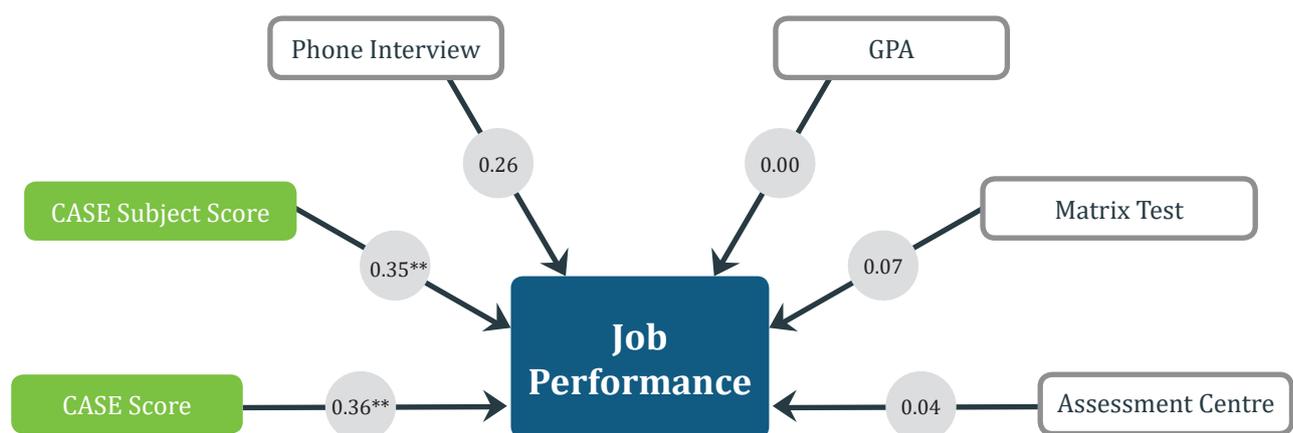
This CASE Study tested the predictive power of CASE Scores for the MAHLE trainee programme. The study was done retrospectively and CASE Scores were not used in the selection process. The sample contains current applicants as well as successful applicants from earlier years. For the latter a performance 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

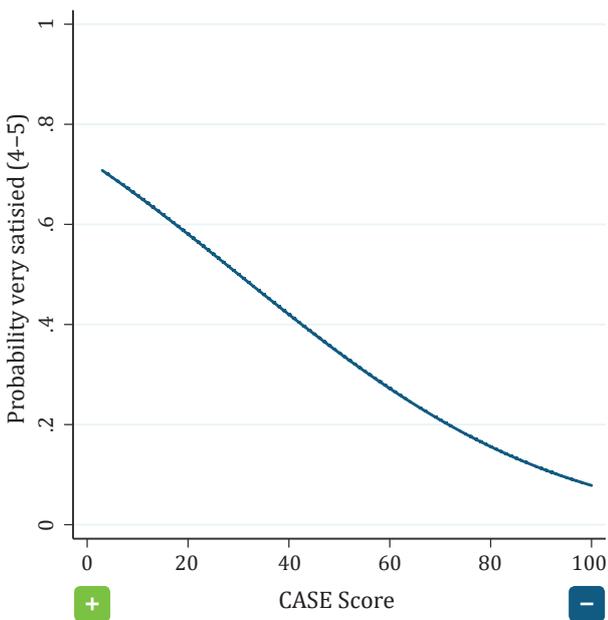
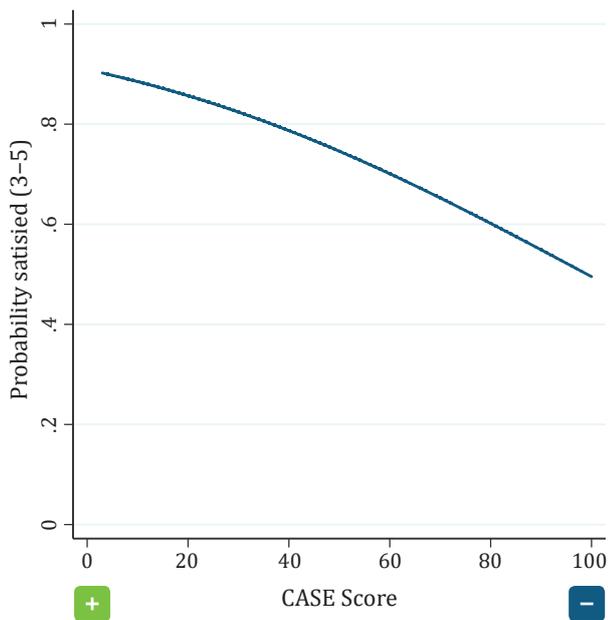
The results with regard to trainee performance are striking with the CASE Score being the only selection criterion that significantly predicts job performance. While the structured phone interview can explain some of the measured differences in job performance, the assessment centre, matrix IQ-test and 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 satisfied (upper) / very satisfied (lower) with the Job Performance of a hire using CASE Score as 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 is 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

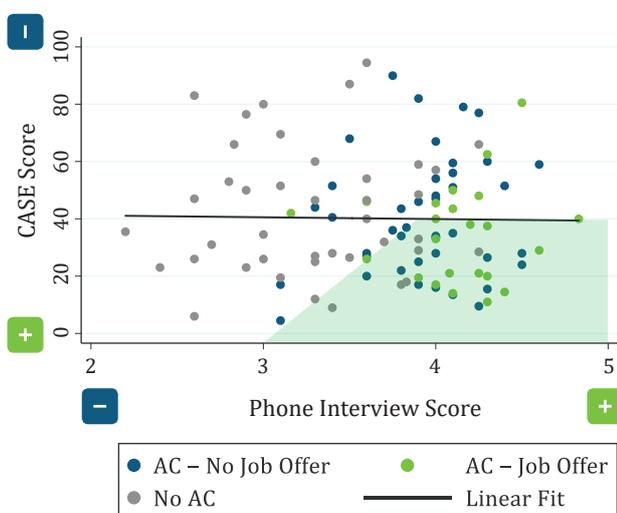
The CASE Score is not only a strong predictor of performance, but also explains which applicants are selected to become trainees. Since CASE is available right from the start of any recruiting process it can be used prior to more expensive instruments.

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

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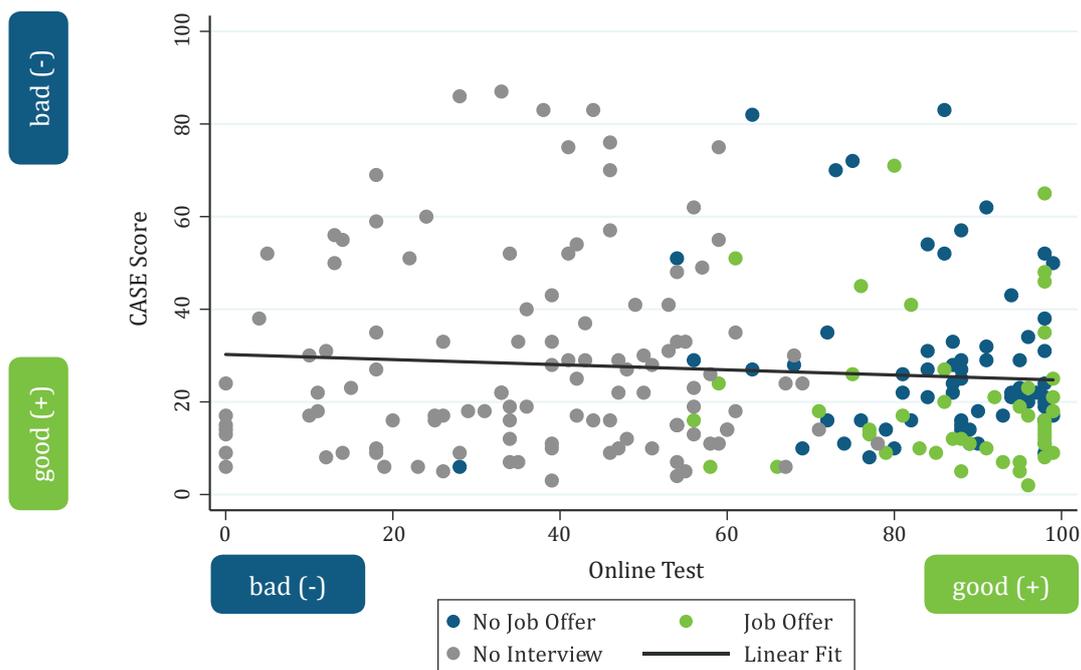
Hiring process for consultants and interns at Simon-Kucher & Partners

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.

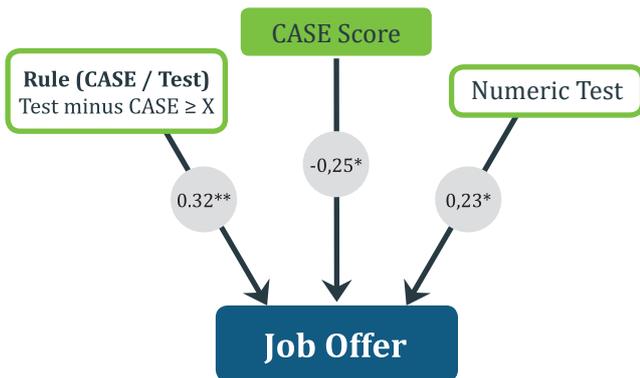
With one exception, no candidates scoring below 50% in the online test were considered for an interview.



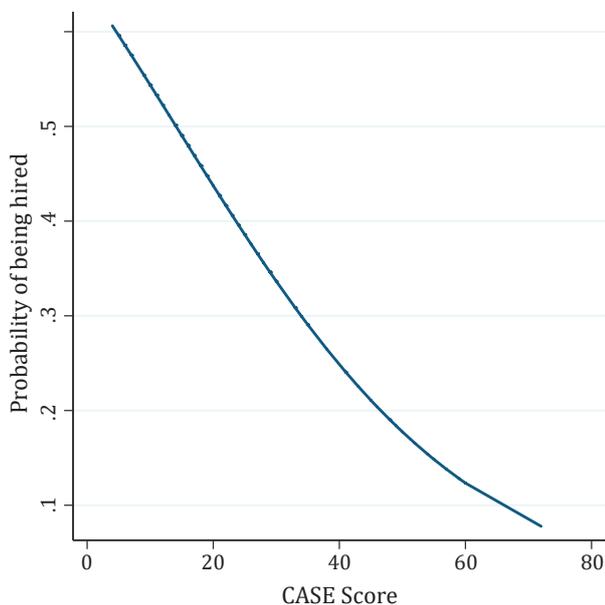
Scatterplot of CASE Score and Online Test indicating successful candidates

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

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



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



Hear it from our customers:



CASE allows us to make better use of more than five years of university experience. As a result we can give even better advice to our hiring managers.



Randolf Bursian
Head of HR, Evonik Industries

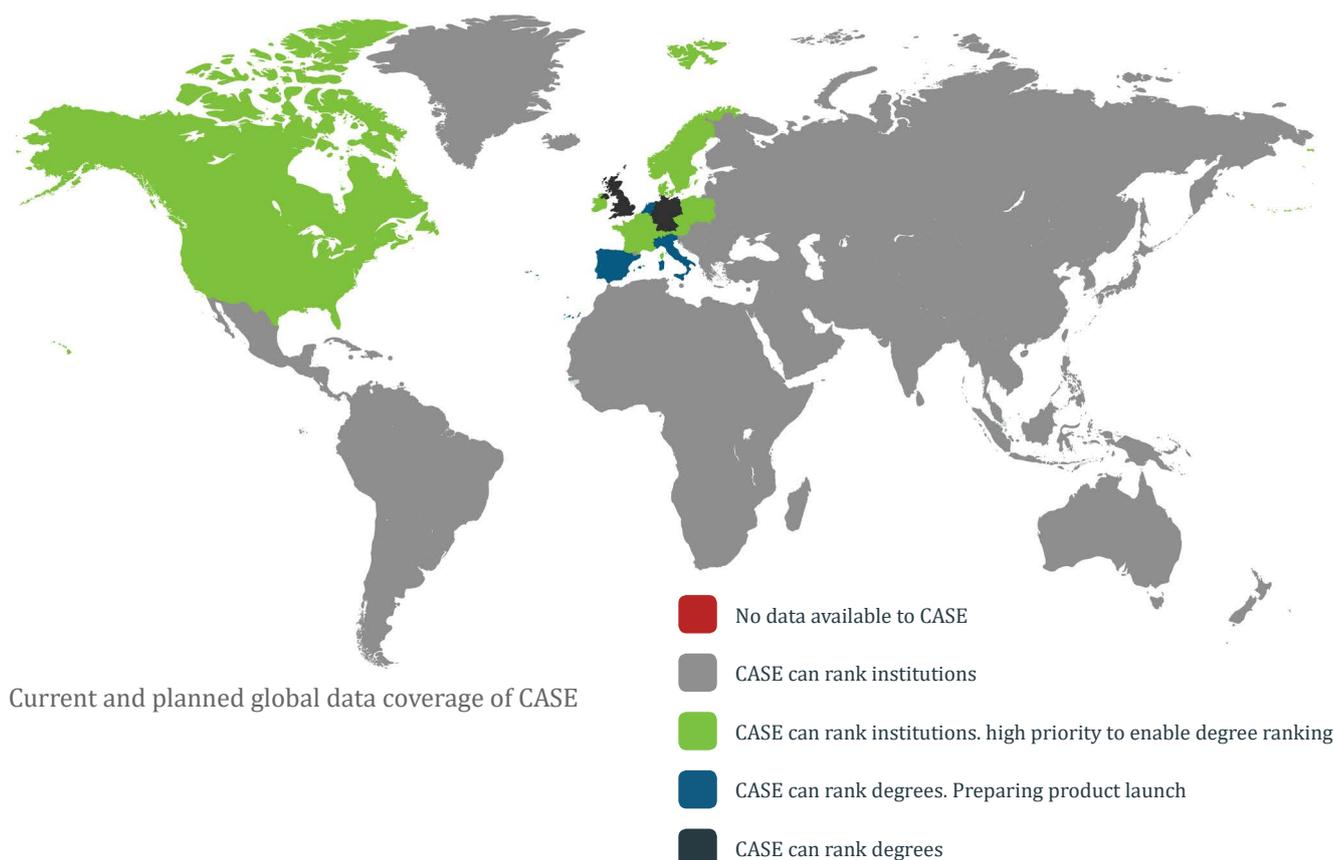


F.l.t.r.: Dr. Jan Bergerhoff (CASE), Randolf Bursian (Evonik), Dr. Philipp Seegers (CASE), Dr. Frank Lelke (Evonik)

Reference customers of CASE



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



Current and planned global data coverage of CASE

Global range of the CASE Score

As of now, CASE is functional in Germany and the UK. Data is available and CASE will launch shortly in the Netherlands, Spain, Portugal and Italy. 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.



candidate select GmbH

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