AI | TALENT | CULTURE

Talent Hiring to Retention

Proof that Artificial Intelligent (AI) can accurately predict Cultural Fit: Develop Unbiased and Enhanced Match for Employees and Employers

WHITE PAPER

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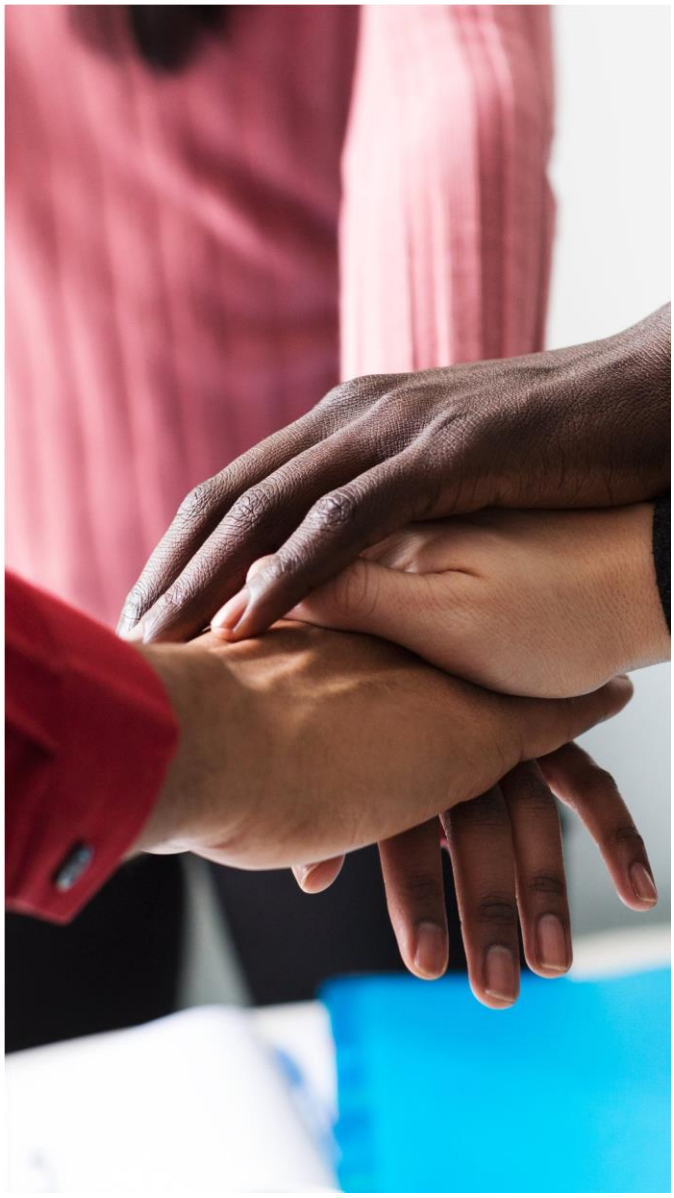

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ABSTRACT

Today's organizations are plagued with a high level of turnover. Research has shown that one in four employees leave their job within the first year of employment. While there are a variety of factors that contribute to this attrition, it accentuates the need for a new approach when it comes to hiring talent.

dotin has been developing one such new approach with their artificial intelligence engine that is able to extract personality profiles of potential candidates without asking a single question and assess their personality fit to the hiring organization's culture. The goal of the dotin SaaS-Artificial Intelligent (AI) engine has been to maximize the match of prospective employees to the employer culture and help increase employee engagement.

To demonstrate the validity of the dotin engine, two major experiments have been conducted. The results of these experiments concluded that the approach has over 80% rate of accuracy when it comes to predicting individual personality traits.

INTRODUCTION

Employee turnover can be as high as 50%, according to the Society for Human Resource Management (SHRM). The report also noted that it usually happens within the first 18 months of employment.

Whenever an employee leaves, it can be costly for the company, not only in terms of cost to recruit a replacement, but also the lost productivity. In fact, SHRM has estimated it can cost six to nine months of the employee's salary to fill a replacement position.

"An estimated 42 million employees will leave their jobs by the end of 2018 in the U.S. alone", a report by the Work Institute stated. That amounts to one in every four employees. About 40% leave within the first year. The Work Institute estimates that kind of turnover will cost the industry $600 billion in 2018, a number that is expected to rise to $680 billion in the next couple of years. The organization also noted that employers could prevent 77% of the cases.

There must be a better way to ensure employees are happy enough in their jobs that they are willing to stay longer than a few months.

BACKGROUND

dotin Inc. has designed an artificial intelligence-based (AI) engine designed to create a holistic view of talent by combining skills with cultural values leveraging their core motivations and personality. The goal has been to enable talents core motivations to the right opportunities and in return giving employers a better idea of who a potential candidate is and whether they would be a good fit into the company environment.

The AI engine can analyze the subconscious influences that determine the core motivations and personalities of every human. The analysis is independent of objects, contours, facial expressions, age, gender, culture, and ethnicity, which makes it very pervasive and as no questions are asked it makes it unbiased as well. Leveraging the personality identified, tangible business outcomes are extrapolated. Business outcomes being learning style, working style, dominant and compatibility attributes.

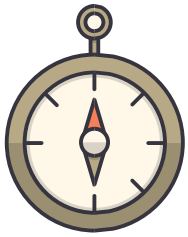
The fundamental issue with the current cultural fitment assessments or analysis is that the hiring process is either it's too long and expensive or biased in nature where the talent knows how to trick the system. The AI engine is designed to minimize the bias and help both the talent and the employer, creating a win-win scenario.

This white paper serves to validate the AI engine designed by dotin, which assesses a list of psychological attributes of potential hires. There have been several studies similar in nature that have demonstrated the reliability of the dotin AI engine.

There were multiple participants involved in the studies, range in age from 18 to 80 years. They were from 69 different countries. There are two ways of validating the results- One way is through

experiments and another way through live implementation comparing with existing performance management systems.

VALIDATION THROUGH EXPERIMENTS



As part of the product verification process, one of the first experiments conducted tested participant's perceived accuracy of such assessments against the Barnum effect (Forer, 1949). The Barnum effect occurs when participants perceive the results of such an assessment as accurate when the results essentially describe the participant's personality using vague and wide-ranging attributes. Thus, the experiment conducted for dotin examined whether participants' accuracy ratings were higher in dotin assessments compared to those of the Barnum effect. The belief is that if dotin assessments have higher accuracy ratings with minimal to none placebo effects, then the AI engine is validated.

The participants were invited to participate in the study, which had two parts, including a visual element. dotin's AI engine then provided a personality assessment, which was rated by each participant. Those who took part in the study were asked to rate the accuracy of each of the listed attributes.

There were two setups in the experiment. For the first setup, the engine generated, on a separate page, a list of 40 highly-probable attributes. These include positive and negative personality attributes, products buying affinity and non-affinity, Holland's Occupational Assessment (Holland, 1997), employment affinity and nonaffinity, and Multiple Intelligence's and Learning Styles (Gardner, 1995). In this portion of the experiment, a Likert scale was used to allow the participant to measure the accuracy of the predicted attributes. The scale ranged from -2 (very inaccurate) to 2 (very accurate).

In the second setup, a similar list of attributes was presented to the participant. However, these were made up in order to create the Barnum effect. In this setup, there were some cases where the made-up attributes overlapped those generated by the AI engine. In these cases, the data was included as part of the real setup rather than the Barnum setup.

The results found that there were significantly more participants in the first setup with higher accuracy ratings when compared to the second setup, about 135% better. These results demonstrate

that participants perceived the attributes generated by the dotin AI engine as more accurate than those made-up ones designed to produce the Barnum effect.

The first round of experiments then fed into multiple rounds of experiments to enhance the accuracy of the model further. The following set of data is from the latest round of experiment with 878 participants. As part of this test, they were asked to participate in a visual element test and to answer several questions. These questions were additional information that was used to measure the participant psychological characteristics. In this experiment there were 46 characteristics identified, which included:

- Big Five
- Gardner's Multiple Intelligence
- Holland's Occupational Insights (Working style)
- Compatibility Attributes (Personality match)
- Buying Preferences

ACCURACY MEASUREMENTS

As part of the analysis, coefficients calculated by the dotin AI engine were compared to questionnaire answers provided by the participants. The Mean Absolute Error was chosen as the metric of dissimilarity. The coefficients lie in the [0,1] interval, which means this metric is the same as a relative error. Furthermore, the accuracy of approximation was defined as:

Accuracy = 100% x (1-MAE),
Where MAE = $SUM_{(i=1..N)}$ ($|y_i - x_i|$)/N

- yi - a target characteristic,
- xi - an AI predicted characteristic,
- N - number of people in the experiment

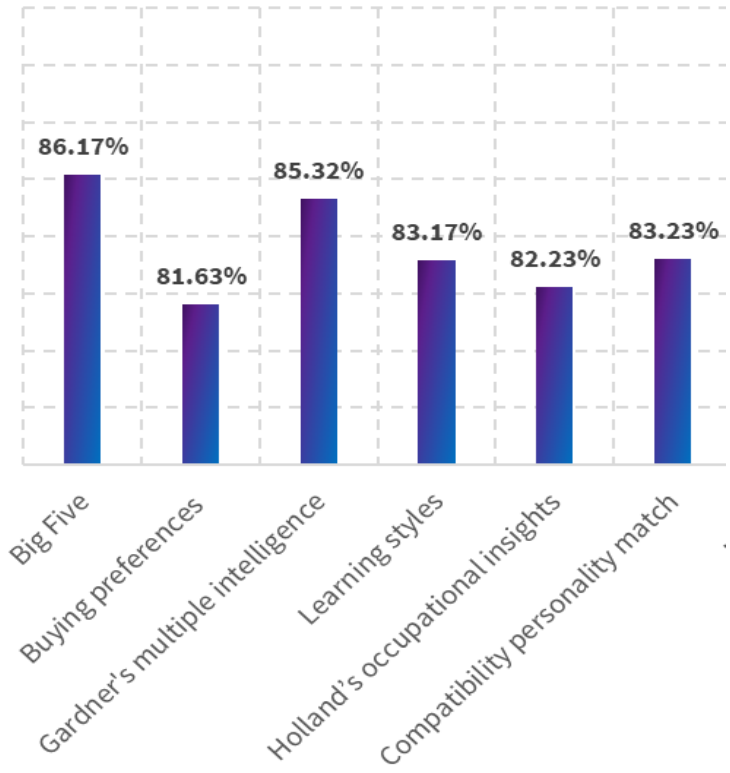


Figure 1. The Accuracy of prediction of psychological parameters grouped by blocks

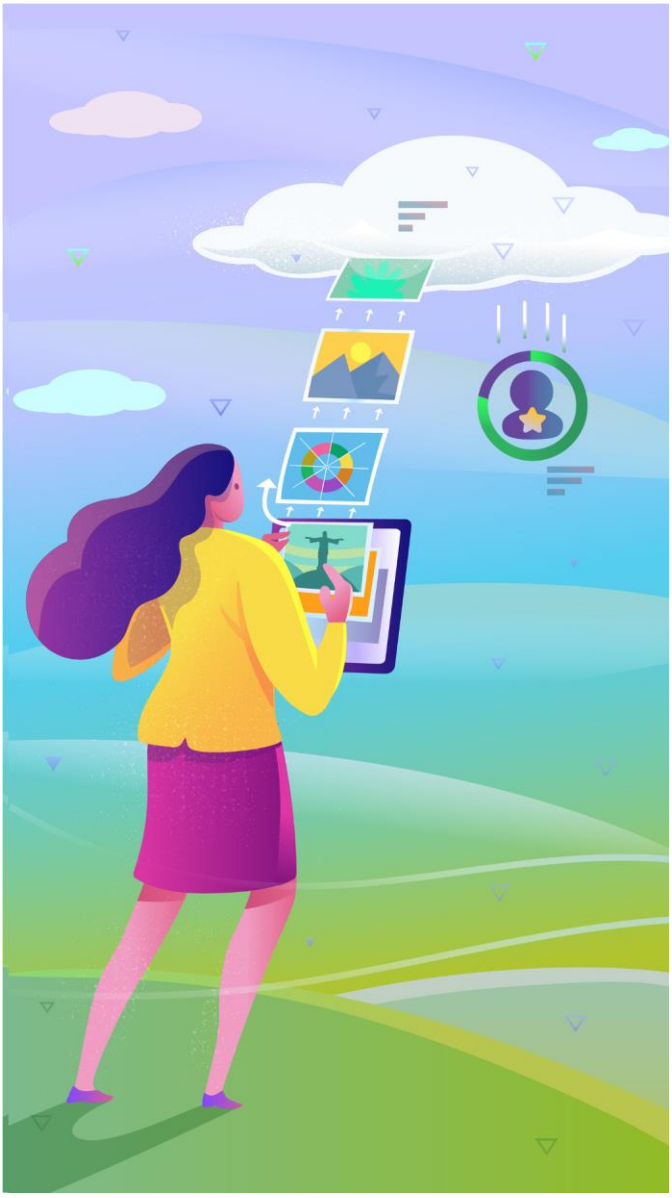
The results were further validation of the dotin engine. There was a high level of accuracy across the 46 characteristics was an average of 83%.

The results of the testing showed high accuracy in all 46 psychological coefficients as shown in Figure-1. The average accuracy was 83% with the most accurately predicted characteristics being Big Five at 86% followed by Gardner's Intelligence at 85%. However, even the less accurately predicted characteristics had a significant p-value of correlation between the target and predicted parameters, such as buying preferences at 81%. P-value means the probability of a random outcome of the result. A low P-value ensures the reliability of the results.

VALIDATION THROUGH PERFORMANCE MANAGEMENT SYSTEM

Figure 2: Validation study dotin score as compared to the performance management system score

The second part of the validation comes from the customers by comparing with their performance management system. As a part of the validation with a performance management system, a cultural fit ideal model was created using the best performers and dotin AI engine. Once the ideal model was created the existing set of employees were profiled and were compared with the ideal model to create a prioritized list of employees that fit well with the ideal model using the same AI engine. Figure 2 shows a direct and high degree of accuracy and correlation (more than 90%) in predicting a prioritized list of potential candidates fit per job as compared to the performance management system using dotin AI engine.



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CONCLUSION

As organizations search for better ways to tackle the employee retention problem, dotin has proven that its AI-based personality assessment engine can be one of the reliable resources for both talent and employers to make informed decisions. The capability of knowing a potential talent and their ability to fit into the workplace culture without asking a single question gives more power to both talent and recruiting personals (recruiters or hiring managers).

As a prescreening tool (when accepting the resumes, at the start of the application process) through its innovative use of AI combined with tried and tested psychology assessment methods, dotin offers recruiters and employers the opportunity to cut down their time to find the right talent and turnover rate. Through its proprietary AI engine dotin also is providing a means to identify the core motivations of every talent and align it to the right opportunities without asking a single question in the most unbiased and almost in real time (less than a minute for talent to get assessed). Several separate studies have proven that the dotin engine has an over 80% accuracy rate, which validates the SaaS product.

In conclusion, such findings provide preliminary support for the validity of the engine in assessing psychological attributes.

ADDITIONAL RESOURCES

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- For more information on dotin or to complete your own free personality assessment, visit their website at http://report.dotin.us

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