"How I Did It"

Inspirational adventures in HR analytics

Linda van Leeuwen, an HR analytics analyst at Shell International, explains how her team used statistical analyses to identify the conditions under which Shell could unleash the business value of diversity.

What was the question at hand?

Diversity has been an important topic for Shell for many years. However, diversity attributes (e.g., gender, nationality) are often measured separately, and discussions often revolve around the question whether diversity affects performance. In alignment with Shell's philosophy of "diversity means all the ways we differ," we wanted to examine how multiple attributes of diversity collectively affect our organization and under which conditions their value is greatest. Therefore, we analyzed the relationship between *diversity* and *inclusion* and the moderating effects of both *leadership performance* and *subgrouping*.

Why is this important?

This topic is important for two reasons:

1) Diversity and inclusion (D&I) are often linked to business performance. However, the concepts are not always clearly defined and are often used interchangeably, even though they do not refer to exactly the same concept. In partnership with Shell's D&I team, we wanted to show whether and when a diverse workforce has a positive or negative impact on an inclusive work environment, which is known to have a positive impact on business performance. Our analysis provides insights into the benefits of diversity and ways of minimizing the disruptions that seem to arise in diverse groups.

2) An analysis of the multidimensionality of diversity and the conditions under which its various dimensions are most valuable contributes important, innovational insights. Our new metrics, which capture the collective composition of diversity attributes, have the potential to break new ground through more in-depth analyses of diversity. The insights also help develop and drive an effective talent strategy.

How did you approach the issue?

We used data from two sources:

- The **annual Shell people survey**, which measures both *leadership performance* and perceptions of *inclusion.*
- A newly **self-developed objective metric**, which measures demographic *diversity* as well as *subgrouping.*

As we wanted to study multiple diversity attributes at the same time, our study called for a *multivariate analysis*. Given the large dataset covering more than 90,000 individuals and multiple dimensions, a *factor analysis* was used to uncover the underlying structure of the variables by summarizing the data in the fewest number of dimensions possible. As shown in the illustrative example in Figure 1, the individuals can be plotted in a graphical "diversity space" in which the distance between individuals relates to how similar or dissimilar they are from each other (black dots). It also serves to locate the categories of the diversity attributes and relates those categories to the individuals (red dots). To further enhance interpretation, we extend the graphical representation with the centroids of every group, which allows us to analyze the diversity in a given group (yellow dots). If the distance between every individual and its centroid is large (small), then the degree of diversity is high (low).

Another aspect of interest was the tendency towards subgrouping. A *cluster analysis* allows us to identify which individuals belonged to which cluster. By comparing the within and between distances of those clusters, we can quantify their tendency towards subgrouping. If the dissimilarity within clusters is small (large) and the dissimilarity between clusters is relatively large (small), then the tendency towards subgrouping is strong (weak).
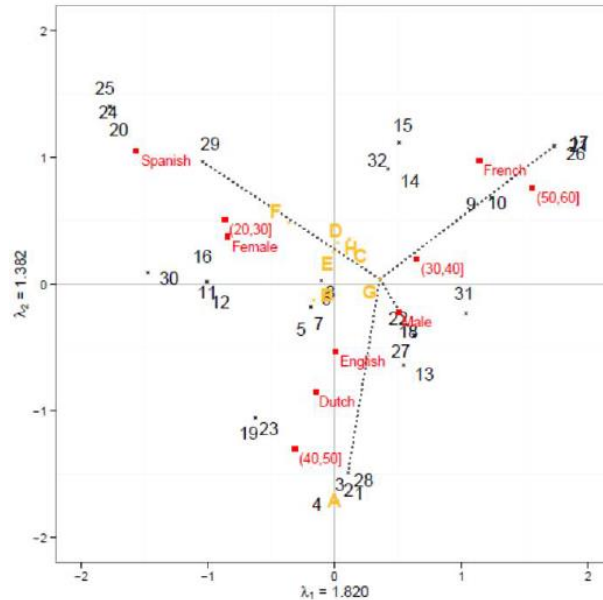

Figure 1: Diversity space including group centroids (source: Shell International)

What did you find?

Unexpectedly, we found a negative relationship between diversity and inclusion. To better understand this finding, we incorporated the leadership and subgrouping variables as moderators. In the case of strong leadership and weak subgrouping, our regression analysis showed a positive relationship. In short, this highlights the importance of strong leadership and weak subgrouping for unleashing the business value of diversity.

What was the impact on the business?

As we are still working on the link between D&I and performance, the final impact on the business cannot be determined at this point. However, our findings are important because diversity and inclusion are usually treated as the same concept, even though they are very distinct. First and foremost, our study created awareness of diversity at Shell, and the innovative approach of quantifying the multidimensional understanding of diversity opened many doors. Notably, this study does not have an impact on our recruitment policies. Instead, it enhances our understanding of what D&I actually means and highlights the importance of the leader's role.

What advice do you have for others seeking to use analytics in their HR work?

- Short and simple communication of the results is key. Awareness and an enhanced understanding can only be created if everybody is able to understand the results. This is particularly true when complex statistical methods are used.
- Leadership training and development across all levels in the organization should focus on building inclusive work environments and managing diverse groups.
- Organizations should move beyond the discussion of whether diversity can increase organizational performance and instead focus on identifying the conditions under which the business value of diversity can be unleashed.

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