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Takeaways from 2 National Studies

What we found might surprise you...it surprised us!

We at MindCette have now completed two nationally representative studies of the entrepreneurial mindset - the first one in the Republic of South Africa; the second in the Kingdom of Bahrain. As I write this, an academic paper is underway which we will submit to a leading industry journal for publication. One of the nuances of academia is that many esteemed journals will not accept a work to be considered for publication, if that content already exists elsewhere—for example, self-published on your website—as it is already published.

As a result, we have to be somewhat judicious when talking about our findings. However, while our research consultant, academic lead, and economist all collaborate to produce that paper, I—as the corporate operations person—would like to share a high-level view of what we have learned from our national studies thus far; and a couple of things we weren't expecting. For the purposes of this post, I will forego detailed explanations of how and why we approach national studies (those can be found [here](#) and [here](#)) and instead share what we've learned after two national studies.

Factor analysis for non-statisticians

First, a word about factor analysis. You can get a much nerdier explanation of factor analysis from my colleagues or internet rabbit-holes (gasp), but for the purposes of setting up the findings, here is a simplified version. Once you've collected data, it must be cleaned (funneled into a uniform format) and weighted (if, for example, women are 70% of respondents but only 35% of the overall population, their responses must be weighted at .5). Once this is complete, you are left with columns of accurate values which you feed to a statistical analysis program (we use SPSS) and you see what patterns emerge.

Imagine an unopened bag of praline pecans. When you first open the bag, you can easily grab large, flavorful, unbroken nuts. As you get further into the bag, the pieces start to become a little smaller, and they may not be whole pecans anymore. Toward the bottom of the bag, the pieces become shards; they may be burnt; and even a dozen of them aren't as good as the very first nut you pulled out of the bag. Factor analysis works much the same way. The items that “load,” or hang together, in the first factor will be the strongest and most predictably correlated. By the time you get to the final factor, the items still comprise a factor, but correlate less emphatically than earlier factors. How do you know what ‘hangs together’ and what is your ‘first factor’? The data will tell you. For each value, you’ll have an integer between -1 and 1; and the closer the value is to either of those, the better, because it indicates a strong positive (or inverse if close to -1) correlation. Occasionally you’ll get a number that “cross-loads” - that is, has a value of .63 in one factor and .55 in another, for example. These must be discarded because it’s impossible to make a conclusive correlation between that item and a single factor (because it’s loading in two).

On the front end, it’s very scientific; and two statisticians approaching a dataset with the same methodology should get the same results, even many decimal places out. Because the results are based in *mathematics* rather than *opinion*, meaningful conclusions can be drawn; and indeed, replicated. Now, what you *call* that group of items that cluster together is more of an art; and that’s where decades of institutional knowledge and familiarity with the body of literature surrounding entrepreneurship enable you to properly title these clusters, or factors.

What we found

This set-up brings us to the question: Do you believe entrepreneurs strive to master any new task they undertake? We certainly did; and the literature also supports that theory. However, the question, Item C1_35, “I strive to master any new activity I undertake” failed to load in either national study. That is: mathematically, it was irrelevant.

Would you expect entrepreneurs to define themselves as non-conformists? If you said yes—(we did)—you’re wrong. Item C1_75, “People would describe me as a non-conformist,” also did not load in either study. But curiously, similar Item C1_76, “I like to stand out from the crowd”

proved statistically significant in the Bahrain study among both female and male panelists. Why? We could only speculate; but that would be an interesting study in itself.

Items C1_35 and C1_75 are **the only two items out of our 72 that have thus far been statistically insignificant in relation to the entrepreneurial mindset**. You might wonder why we have an ‘Item C1_75’ when I’ve just said that our list of items is 72. The reason is that in the first study in South Africa, we began with 116 items. But when 44 of them failed to be statistically significant in the pilot study, we dropped them. To provide context, a scientifically curated sample size of roughly 1,200 people is considered representative for the U.S., a country of over 350 million people. So a sample of 3,600 in a country that had 56.5 million people when the study was conducted (2017) is a very reliable and stable sample size.

Once we dropped those 44 items, we made the decision that relabeling items for no purpose other than continuity would have negative cascading effects throughout our dataset, so we left items labeled just as they were in the pilot of 116 items. Our 72 items represent the “sweet spot” between brevity and the ability to collect meaningful data from panelists.

I noted above that Item C1_76, “I like to stand out from the crowd” proved statistically significant in the Bahrain study for both sexes, but not in the South Africa study. That brings us to **Lesson #1: Every country is different**. It seems obvious, but as someone with an academic background in political geography, I feel as if I scream some permutation of this at people until I am hoarse. Context matters. History, culture, and social norms differ; sometimes wildly. Therefore, it is not surprising that an amalgamation of the citizens of a nation into a singular entrepreneurial mindset will show distinct differences; just as you’d observe among two different individuals.

Based on the existing body of literature and our work in South Africa, we derived the following 9 dimensions as parts of the entrepreneurial mindset: Confidence, Diligence, Entrepreneurial Desire, Innovation, Leadership, Motives, Permanence, Resilience, and Self-Control. We went into the Bahrain study expecting to find fluctuations across these dimensions because they had reliably appeared in good sample sizes in two countries. But for the Bahrain study, some of these dimension names were just wrong.

While it is true that the vast majority of the 72 items showed some statistical significance in either or both countries, *how they assigned to dimensions* varied. For example, what clearly presented as “Resilience” in South Africa presented instead as “Resourcefulness” in Bahrain. Our next

learning, inextricably linked with Lesson #1, is **Lesson #2: Items are stable; dimensions are dynamic**. As we continue to do national studies, a clearer picture emerges of what may be more or less ‘universal’ dimensions; and what are nation- or possibly even region-specific dimensions. Not only did the items in the Bahrain study not conform to the 9 derived dimensions, but in fact, sometimes items hung together to create dimensions that were more aptly named as a new dimension, such as “Perseverance.” And while this revelation of ‘what was true yesterday is completely incorrect today’ is maddening in corporate environments, it is part of the thrill and raison de être for an academic, and proves why it is so important to handle the data carefully every step of the way.

Lesson #3: It is critical to disaggregate the data by sex. This tenet we employed from the beginning. That’s why at the start of the survey, we ask panelists how they identify - as male or female. We ask this in the MindCette Entrepreneurial Test on our website, which asks the same 72 items as the survey in our national studies. At the end of the test, a respondent’s results are compared to all respondents of the same sex, as well as entrepreneurs of the same sex. (To see why we only offer binary choices, please click [here](#).)

When we attach this parameter to all respondents, we then have two distinct groups of data, which are factor-analyzed separately. The literature is clear that men and women entrepreneurs approach starting a business differently; do so for different reasons, and at different points in their careers/lives. Once we have separate data sets, it’s easy enough to toss them back together and look at the aggregate - but if we never ask at the beginning of the survey how respondents identify, it yields a “muddier” dataset that limits meaningful extrapolations.

Indeed, this disaggregation allowed us to see that there were 11 dimensions for females in South Africa; 10 for males; and 9 overlapped (the aforementioned). By contrast, in Bahrain, there were 9 dimensions for females; 10 for males; and only 4 dimensions overlapped; and not all of these matched the overlapping dimensions in South Africa. Suppose we had never drawn the distinction between nation; nor between men and women — we would now have only 4 dimensions that would inadequately capture the entrepreneurial mindset. There is no substitute for specificity and compartmentalization of data on the front end.

You might be surprised to learn that, as of this writing, there is no other company that tests the entrepreneurial mindset that asks if you are male or female. Why? We have no good answer, but we imagine it’s because cleaning, weighting, and running 2 different datasets through 4

different factor-analysis rotations (PCA, ULS, Quartimax, Varimax) and evaluating each rotation as its own unit is *extremely* time-consuming; and only rewarding if you value a product of incomparable academic rigor.

That said, if you handle your data with care every step of the way, when the data show a clear pattern, you can be confident that it is no fluke. That brings us to our closing takeaway,

Lesson #4: In both countries, across both sexes, entrepreneurs' scores were better across the respective dimensions than non-entrepreneurs. Scores vary on some dimensions more than others, but regardless of the dimension—resourcefulness, resilience, diligence, entrepreneurial desire, confidence, etc.—tangibly, predictably, and unequivocally, entrepreneurs are different from non-entrepreneurs.

National studies are an invaluable way to benchmark, develop policy, and maximize ecosystem resources. We look forward to undertaking studies in new nations and discovering their unique ‘personalities.’ And that’s something the corporate political geographer and the psychology & entrepreneurship professor can agree on.