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Identifying the drivers of collective intelligence in large organizations: an empirical analysis across network behaviors and skills

Summary

Using four years of data for 1,500 people, part of a globally-distributed 96,000 people organization involved in large enterprise sales we analyzed the determinants of large group performance across 3 sets of variables: network composition, collaboration intensity, and skills. The results indicate that there may be a relation between those three and the performance levels of those teams. The implications for design of organizational structures supporting large and complex multifunctional teams seem significant across three areas: the identification of the network nodes and incentivization/enablement to collaborate, as well as the investment in broad-based skills to facilitate the exchange of knowledge, and not just the individual formation of expertise.

Objectives and findings

Complex organizations engaged in finding solutions to complex problems invest significant money on their people, their training, their travel, their knowledge management, their incentives, etc. These costs are very substantial, and the opportunity-cost (that is, the cost of doing the wrong things) is also very large. By analyzing the natural experiments occurring across a cohort of sales people in a large professional services firm, engaged in crafting and selling complex, large-scale solutions to large clients, we wanted to explore the nexus between network structure, skills, and outcomes. Ultimately, the objective is to understand how to create well-functioning enterprise network intelligences, superminds (Malone, 2018), able to sense, remember what has worked, create solutions, decide on options, and learn from their actions.

The outcome of sales pursuits, led by highly sophisticated sales professionals who orchestrate the work of dozens of subject matter experts, was used as target variable. The objective was the real-world test of a hypothesis: the effectiveness of network of teams (Arena, Cross, Sims, Uhl-Bien 2017) involved in complex work depends on the maturity of the network (Christakis and Fowler 2009, Gloor 2017) of people who are working on the problem, but also on the skills that nodal parts of the network have that enable them to effectively convene the different parties. There are clear implications for the design, creation and sustenance of those networks, as well as the appropriate training of the participants.

The company is Genpact, a spinoff of General Electric, headquartered in New York, NY, independently listed on the NYSE since 2007 and employing about 100,000 people across about 30 countries. www.genpact.com The company delivers digital transformation through business process management to large enterprises, with contract value often in the hundreds of millions of dollars. The corresponding sales process is akin to an engineering project, with many experts collaborating with the sales force over many months.

Methodology

For the analysis of the network characteristics, we used Microsoft Workplace Analytics (WPA), which tracks several parameters indicating the strength of connection between people in organizations. Unlike

earlier efforts where only emails connections were utilized, WPA computes connection edges through a variety of touchpoints (e.g. calendar, Teams, instant messaging, as well as email).

There were two group of employees; one group were the Work Place Analytics (WPA) employees, (n = 1,500), that were licensed for the WPA analytics tracking. The WPA employees included the sales persons (n=92) that were being analyzed. The second group was Genpact's employee role, 96,000 employees, which provided basic Genpact classification information to allow for the matching of information derived from the WPA license sample. i.e., they were in a meeting with one of the WPA License Respondents (n=1,500).
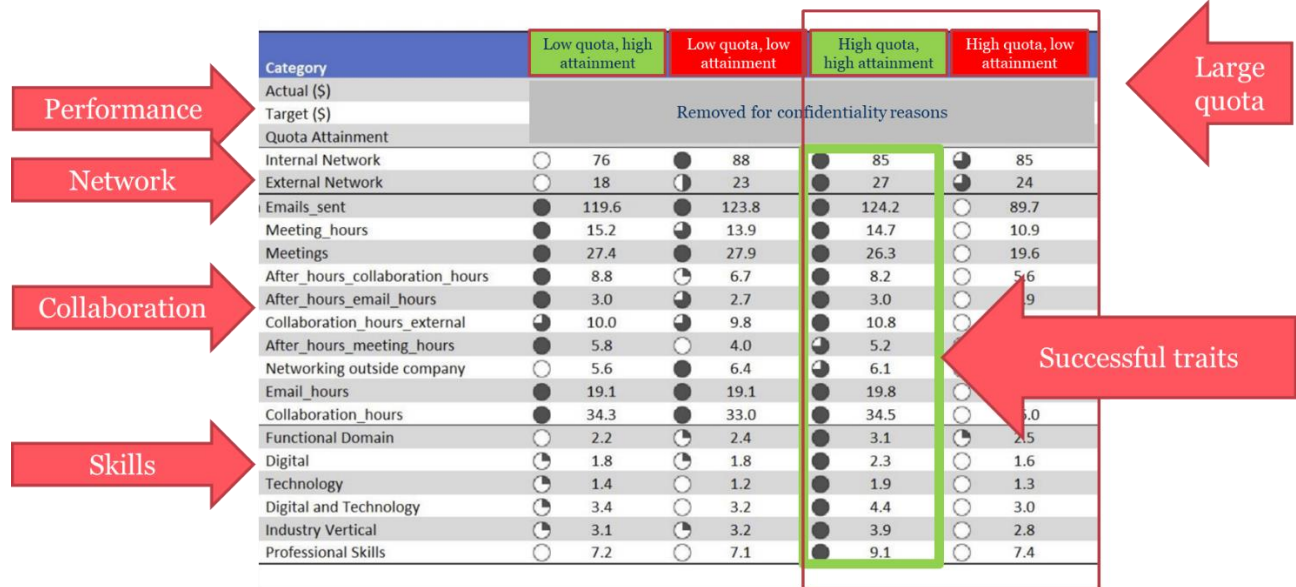
The WPA analysis data time frame was from late-September 2019 thru early-January 2020. Sales and Sales Quota used TCV values; they were calculated at the individual sales person level using a four-year average. Using a four-year average smoothed the data by minimizing effects of when the sales were closed, booked and the revenue recognized. If a sales person's tenure was less than four years, then the calculations used the number of years where data was available.

The inventory of skills was compiled through a self-assessed questionnaire filled between November 2018 and December 2019. About 70 major skills were inventoried across four main categories: functional and industry domain expertise, digital and technology expertise including data analytics, and other professional skills particularly useful in coordinating the collaboration between people (for instance design thinking, program management, storytelling, agile project management).

Findings

The results are presented in the next table. There are significant differences between high performing sales individuals and less successful ones especially for those sales professionals who have higher sales targets. Those are typically individuals with more seniority in their role or in their career and engaged in more complex and larger deals. Those deals tend to be more sophisticated and includes a bigger number of subject matter experts, for longer periods of time. In other words, they require more collective intelligence to deliver the expected results. More successful salespeople in the high-quota bracket scored higher, and statistically significantly so, compared to the successful ones across three areas:

1. First, their **network** is larger, both internally and externally.
2. Second, the **intensity of their collaboration** with the network is substantially higher, as shown by the amount of emails sent, meeting hours, number of meetings, work after hours, networking outside of the company among others.
3. Third, their **skill inventory** showed marked differences compared to their counterparts across he the areas but are required in sophisticated digital transformation sales. Those are the likes of functional domain expertise, for example the understanding of finance or accounting domains, industry specific expertise for instance related to banking or consumer products, digital and technology skills such as artificial intelligence or robotic process automation comma and finally a range of professional skills that are required in collaborating in complex environments and with diverse workforces (for instance design thinking, agile project management, storytelling and executive presence).

Category	Low quota, high attainment		Low quota, low attainment		High quota, high attainment		High quota, low attainment	
Actual ($)	Removed for confidentiality reasons							
Target ($)								
Quota Attainment								
Internal Network	○	76	●	88	●	85	◑	85
External Network	○	18	◑	23	●	27	◑	24
Emails_sent	●	119.6	●	123.8	●	124.2	○	89.7
Meeting_hours	●	15.2	◕	13.9	●	14.7	○	10.9
Meetings	●	27.4	●	27.9	●	26.3	○	19.6
After_hours_collaboration_hours	●	8.8	◕	6.7	●	8.2	○	5.6
After_hours_email_hours	●	3.0	◕	2.7	●	3.0	○	.9
Collaboration_hours_external	◕	10.0	◕	9.8	●	10.8	○	
After_hours_meeting_hours	●	5.8	○	4.0	◕	5.2		
Networking outside company	○	5.6	●	6.4	◕	6.1	◕	
Email_hours	●	19.1	●	19.1	●	19.8	○	
Collaboration_hours	●	34.3	●	33.0	●	34.5	○	.0
Functional Domain	○	2.2	◕	2.4	●	3.1	◕	2.5
Digital	◕	1.8	◕	1.8	●	2.3	○	1.6
Technology	◕	1.4	○	1.2	●	1.9	○	1.3
Digital and Technology	◕	3.4	○	3.2	●	4.4	○	3.0
Industry Vertical	◕	3.1	◕	3.2	●	3.9	○	2.8
Professional Skills	○	7.2	○	7.1	●	9.1	○	7.4

(Labels pointing to the table: Performance, Network, Collaboration, Skills on the left; Large quota and Successful traits on the right.)

The reading of the results that the company makes of these results is the following. To be able to harness the power of the collective intelligence of large networks of people, scattered across a global company, and directed towards a tightly defined goal under tough deadlines, requires the ability to touch many places of the enterprise network. But that's not enough, in that large-enterprise solutions of this nature require the collaboration between people with very different ways of working. Additionally, the mere mechanics of collaboration wouldn't be enough if the salesperson as a catalyst of the process didn't have a certain level of command of the crucial skills, hence being able to translate between the inputs of the various constituencies.

While the findings may not be generalizable to all types of organizations, the organizational design and management implications can be very significant in the right settings.
In the first place, an **active management of the network** is necessary for salespeople, and their management infrastructure need to support that, especially for newcomers or people maybe disadvantage before because of their location, individual dispositions or other reasons.
Secondly, providing the **right collaboration platforms** and clarifying the value of using them can create higher performing teams that are also more efficient and avoid burning out scarce resources, as opposed to operating through brute force.
Thirdly, the **importance of upskilling** existing resources is highlighted. Even more interestingly in this case the data seems to suggest that for human networks who require cognitive and knowledge diversity it is important that the people who are at the center of those networks have a varied set of skills, so that they can meaningfully combine diverse input. There may be a substantial implication therefore for learning and development departments as they establish their capability frameworks, that is the proficiency requirements for specific roles across a variety of skills.

It is finally important to note that these findings don't just matter for sales forces, but also for all the human resources that are deployed in those enterprise problem-solving efforts, as many of them are central in the network structure of those teams.

This field of research requires more effort. Some additional findings are available on www.supermind.design.

References

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