

Exploration of How Technical Companies Measure Success

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

From the gourmet meals at Google to the chiropractors at Apple, the tech giants have poured a considerable amount of money in trying to foster and improvement employee engagement and teamwork. Teamwork, as defined by Marks et al., refers to ‘the range of interactive and interdependent behavioral processes among team members that convert team inputs’ (Marks MA, Mathieu JE, Zacao SJ., pg 357). Countless scholars have researched what makes the best teams, but as technical goals have evolved, so have the objectives and expectations of teams in the technology industry. Additionally, some of the largest technology firms accrue annual revenues of billions of dollars, increasing the value of researching internal company processes to determine how technology companies create and achieve goals (Leong, 2017).

Technology companies have created algorithms for improving teams to their standards of success, and the definitions of success and process to reach those goals vary amongst companies. This definition of success has become increasingly more comprehensive due to the evolution of company objectives and standards, as companies have begun to change their metrics of success to include factors related to happiness (Leong, 2017). This paper involves researching Amazon, Google, and Microsoft to learn how these companies prioritize and devalue certain methods and practices to encourage their teams to a certain standard of success defined with a set of metrics that includes topics like economic strength and inclusion and diversity. Based on the research conducted, Amazon, Google, and Microsoft already consider economic strength, inclusion and diversity. This research takes these and adds a measure of company culture. Though this set is certainly not exhaustive in measuring success and varies from company to company, they have

been historically and empirically recognized as important factors that have in part been correlated with different definitions of industrial success.

Literature Review

In researching the topic of success in technical teams, there was a large need to explore the concept of metrics for success in technical teams. While historically, common ways include measuring the economic health of organization to determine its success, this literature review will consider other diverse data collection possibilities to determine a set of metrics for assessing success in technical teams. In his dataset of over 67,000 Glassdoor reviews from some of the top technical firms—including Google, Amazon, and Microsoft—Andres Vourakis discusses some critical metrics to consider, including work life balance, senior management ratings, compensation and benefits, and culture and values. Additionally, Google as a company outlined their own metrics after launching a study on teams known as ‘Project Aristotle’. Starting with a review how teams performed historically, researchers then scrutinized Google’s makeup of teams, finding strong teams to have ‘conversational turn-taking’, high emotional sensitivity, and psychological safety (Duhigg, 2016). Other metrics were influenced by the gaps in teamwork present in Silicon Valley today; most notably, the lack of diversity that reflects in team makeup at various technology firms. For example: “in 2016, ten large technology companies in Silicon Valley did not employ a single black woman, some not having black employees at all” (Rangarajan, 2018). Thus, diversity is an important factor to consider in the metric of success, as it also connects with psychological safety (Hofhuis, J., van der Rijt, P. G., & Vlug, M., 2016).

Moreover, because this paper discusses the adaption of technology and team expectations as a result, it utilizes the Social Construction of Technology (SCOT), which includes the concept of the relevant social group, going further to say “all members of a certain social group share the

same set of meanings, attached to a specific artifact” (Klein, Hans & Kleinman, Daniel, 2002). The paper will use SCOT to further examine how team expectations have adapted as a result of increased technology, as well as how members of technical teams at Google, Microsoft, and Amazon have responded to these changes. Moreover, this framework will be helpful in the understanding of how the perspectives and experiences of certain social groups, like women and underrepresented minorities, differ and compare to the average employee experience at individual technology firms based on social theories within the SCOT framework, such as structuration. Moreover, this paper will also explore how an organization’s purpose influences its makeup and team dynamics, which goes in hand-in-hand with the SCOT framework.

Success in Terms of Economic Strength

Historically, economic strength has been the most traditional way of measuring success and wellbeing for different organizations. Gross Domestic Product (GDP), for example, defined by the Bureau of Economic Analysis (BEA) as ‘the value of the goods and services produced by the nation’s economy less the value of the goods and services used up in production’, while not a comprehensive measure of economic well-being, provides a large amount of information that is very closely related to welfare (Dyanan & Scheiner, 2017). Despite receiving criticism, GDP is often used by economists and the general public alike as a proxy for economic well-being. For 2019’s fourth quarter revenue, Microsoft (MSFT)’s value was listed at 36.91 billion dollars, Amazon (AMZN) at 87.44 billion dollars, and Google (GOOGL) at 46.07 billion dollars. Thus, Amazon leads in front of the two other technology companies in terms of revenue.

Historically, Amazon, Microsoft and Google, made early investments in the services and cloud businesses for growth, which skyrocketed in sales and raised tech company market values to record levels of one trillion dollars apiece today (Sheetz, 2020). For Amazon, its cloud

computing service, Amazon Web Services, drove considerable company growth and made Amazon more robust than an e-commerce company. This is particularly interesting from a SCOT perspective: how the teams within AWS developed and scaled is different from that of the teams within the Amazon e-commerce business. This is also seen in the diversity makeup of teams within the two different sectors. It follows the social theory of structuration, which describes how human behavior is structured by current infrastructure and shaped by the purpose of the team. In this case, it is worth noting the influence of structuration in looking at the differences in the teams in the two separate parts of Amazon, despite being one company with a uniform mission and set of values. Similarly, for Microsoft, in addition to being a key player in the server and data storage industry, its public cloud service, Azure, drove value. Finally, the driver of Google's market value comes from its proprietary advertising service, Google AdWords (Alphabet, 2017), which provides recommended pages based on user search inquiries. Moreover, Google accounts for more than 90% of all search queries, dwarfing search engine competitors (Dolata, 2017). These three tech giants make up 17% of the S&P 500's total market value, a starkly large share of the total market (Sheetz). With this influence over the market and their abilities as companies to remain adaptable to market needs, Google, Amazon, and Microsoft shape the working world and expectations of the commercial Internet sector, emphasizing the importance of strong teams. Moreover, in a 2015 ranking of Fortune 500 companies, Apple ranked 3rd, Amazon 18th, Microsoft 25th and Google 36th (Dolata, 2017), showcasing a collective dominance of technology companies in influencing the general consumer base.

These companies also show future value given their reputations of being adaptable and credible organizations, integrating technical and socio-economic developments. As Microsoft, Google and Amazon have dominated certain industries, they have built quasi-monopolies of

broad product range, superior quality and a plethora of data that arm these companies to understand their users; this bleeds credibility, attracting an even larger user base and dominating competitors (Dolata, 2017).

Success in Terms of Inclusion & Diversity

Diversity is also a critical metric given the uproar of technology company controversy in the media with regards to a lack of inclusion and diversity initiatives, and the makeup of many firms in the Silicon Valley area. Particularly because of this social pressure and more studies of how powerful diversity is to industry success and team innovation, there has been more data published recently regarding this information. Moreover, clear imbalances in minority presence in both engineering education as well engineering as an industry have been depicted as a result of such data.

Most companies in the Silicon Valley area are disproportionately dominated by men and employ underrepresented minorities and women at percentages that are not representative of population or degree parity (Baker & Dunnavant & McNair, 2015). As Baker writes in “How the Pathway to Engineering Affects Diversity in the Engineering Workforce: A Silicon Valley Case Study”, population parity is defined as comparing the proportion of a demographic in the US with that demographic in the Silicon Valley workforce. Degree parity refers to the proportion of degrees in relation to a certain fraction of the workforce and recognizes the obstacles companies may have in employing certain demographics of engineers. Moreover, employees venturing into the technology space today weight inclusivity and diversity more heavily than the engineers prior to them, emphasizing the importance and urgency of companies in the Silicon Valley area to implement initiatives relating to diversity and inclusion. In a study conducted last year, 78 percent of surveyors said they expect an employer to treat everyone equally, paying more

attention to the work culture and makeup of a company than before (Mazur, 2019). Furthermore, Baker asserts that “structures within the engineering pipeline may be inadvertently fostering racial and gender bias”, given anthropologist Faye V. Harrison’s definition of racism to be “any action, whether intended or not, that reinforces and reproduces racial inequalities, which are ultimately structured around disparities of power” (Baker & Dunnivant & McNair). This again goes back to the SCOT framework in that it provides a lens into how the infrastructure present within a system affects the makeup and attitudes of the teams within it. Thus, the societal pressure combined with the current institutional failures motivated this metric’s presence in measuring success.

In their 2019 annual report, Microsoft listed proportions of women, men, and underrepresented minorities in the workforce. For the representation of women globally, 27.6% of Microsoft’s workforce were made up by women, rising 8% since 2016. In terms of 2019 racial and ethnic minority representation in the United States, 46.7% of the workforce is made up by minorities, but of this number, 33.1% is Asian, while 4.5% is made of Black employees, and 6.3% is made up of Hispanic employees. In Google’s Annual Report for 2019, women make up 33.2% of the tech hiring workforce. In terms of minorities in Google technical workforce, Asian employees make up 43.9% of the technical hiring workforce; for underrepresented minorities, Black employees make up 4.8% of the technical hiring workforce and Latinx employees make up 6.8% of the technical hiring workforce. Looking at the change in underrepresented minority numbers, Latinx technical hires increased by 0.4 percentage points, and Black technical hires increased by 0.2 percentage points. Amazon does not report demographics for its technical workforce alone, which excludes Amazon’s warehouses, but according to workforce data published on Amazon’s page, women make up 41.7% of the total workforce. For minorities,

15.1% of the workforce consists of employees of Asian descent, 24.5% Black employees, and 17% Hispanic employees. While the percentages Amazon reports are higher than both Microsoft and Google, the numbers Amazon reports also includes employees outside of the company's technology departments, including the 647,000 employees who work in distribution centers (Harrison, 2019). While some technology companies in the Silicon Valley area have attained degree parity, none have attained population parity yet, the reasons for which are still unclear (Baker & Dunnavant & McNair, 2016).

Moreover, this paper also includes interviews with two former interns of some of the largest technology firms in the Silicon Valley area. Sally Jan (name changed for privacy), a former intern at Google, worked on two teams at the company during her time. Her first team was at Google's San Francisco office and focused more on 'back-end engineering'. It consisted of 5 white men who were all significantly older than her, and this team often interacted with another team of similar makeup, with the exception of one other woman on her team. Her second team was based in New York and more focused on 'front-end engineering', which exposed Jan more so to the client side, which she believed contributed to the increased diversity that she experienced on this team. The team based in New York had, excluding Jan, two Hispanic men and three women, one of which was an Arab woman. Moreover, Jain's intern group in New York consisted of 4 women and one man, creating an untraditional dynamic. Although Jan had experienced discrimination at other technology firms during her career, at Google, Jan reflected on a positive experience. Though she was the only female employee on her immediate team at Google's San Francisco office, during her first summer of interning, she was able to effectively communicate with her manager about this. Jan's manager, unbeknownst to her, foresaw challenges that Jan may have as a woman in the tech world and provide himself as a resource.

“He sat me down [during my first one-on-one] and was like, ‘Look, I get this whole thing of imposter syndrome and unconscious bias like, I get it. And, if you ever feel uncomfortable, if you ever feel like you know there's anything wrong, like, I understand that I am an old white man...but I'm here for you to talk to. He kind of like laid it all out, and he addressed [the elephant in the room], which made it a lot easier,” Jan said.

Kelly Sequeira (name changed for privacy), a former intern at Microsoft, also reflected on her experience in a similar mindset as Jan. During her summer at Microsoft, Smith worked with three other interns, three engineers, one product manager, and two managers that headed the team. During her internship, Kelly noticed a lot of Asian people, but not necessarily other minorities. “Yes, there are people that look like me, but there weren’t necessarily people that don't look like everybody,” Sequeira said. “Like they're definitely lacking Hispanic [employees] and, like, minorities and underrepresented groups. That's kind of the default across all the places that I worked at.” Although neither experienced teams that were diverse to their satisfaction, both experienced inclusivity in their team environments at their respective companies.

Success in Terms of Company Culture

The final metric that will be taken into account in this paper for the purpose of measuring success is an organization’s culture, which was first modernly defined by British anthropologist Edward Tyler as, “that complex whole which includes knowledge, belief, arts, morals, law, custom, and any other capabilities and habits acquired by man as a member of society” (Tharp, 2009). Whether implicitly or explicitly, a company’s values, mission, and purpose often affect its employee base, thus becoming quite critical to a company’s identity (Tharp, 2009).

Historically, hiring has typically worked as a very standard process. Hiring departments initially set expectations and ideal qualifications, as well as the salary. HR then posts these ads online and applicants go through a series of reference checks, maybe personality and IQ tests, and extensive interviews, eventually choosing a final candidate (Cappelli, 2019). In recent years, however, according to census data, rather than applicants applying to a post online, most applicants were approached for a job first. Not only does hiring talent remain a large concern still for upper level management at companies, but companies, on average, also spend a lot of money on hiring—an average of \$4,129 per job in the United States, according to Society for Human Resource Management estimates, for approximately 66 million jobs a year (Cappelli, 2019). Despite this large investment of concern and money, only about a third of U.S. companies are reported to actively monitor whether their hiring practices are actually effective (Cappelli, 2019).

Moreover, building culture and changing organizational mindset is a large challenge for many companies in the Silicon Valley area and wider. One of the largest obstacles in achieving this shared vision is that it must be exemplified by employees on every level in the company (Kratzer, 2017). ‘Cultural thinking’ is also an important concept when considering company culture. Cultural thinking refers to the consideration of employee behavior and attitudes, both of which contribute greatly to work and innovation culture in industry (Kratzer, 2017). While there is currently no central metric which measures company culture, this paper will consider the following combination of metrics in measuring company culture: work/life balance rating, culture and values rating, and compensation/benefits rating, sourced from a dataset that contains over 67,000 employee reviews from multiple technology and non-technology departments from the past decade for Google, Amazon, and Microsoft (Vourakis, 2019). In a rating scale from 0 to 5, Google rated at 4.0, Microsoft at approximately at a 3.6, and Amazon at approximately a 3.1.

In terms of cultural values, which measures how employees “rate core principals and ideals” of their respective companies on a rating scale from 0 to 5, Google is at approximately a 4.5, Microsoft is approximately at a 3.8, and Amazon rates at approximately a 3.5. Finally, in a 0 to 5 scale rating company benefits and perks, Google rates at approximately a 4.5, Microsoft at approximately a 4.1, and Amazon at approximately a 3.7. In summary of these findings, in each of these metrics for this particular dataset, Google employees seem to be most satisfied with how Google as a company provides benefits and perks, identify culture values and beliefs, and treat employees from a work-life-balance standpoint.

Following Jan’s story from her internship experience at Google, Jan believes that her time at Google showcased Google’s serious investment in inclusion, rather than just treating it at a tagline. Jan also spoke to an important quality of Google’s company culture being an organization with a lack of a ‘blame culture’. “Google has a very strict no blame culture where even if something disastrous happens...it's much more like, ‘okay, how did this happen and how can we solve this for the future?’ And so, that creates an environment where Google employees are more willing to be accepted as less competitive,” Jan said. Jan explains how the ‘no blame culture’ eliminates a sense of cutthroat-ness and instead emphasizes a friendlier, more supportive environment, which also speaks to company culture being heavily based on individuals team attitudes that contribute to the greater whole of an organization. “I’ve found that when you put really smart people in a room together, you take away that competitive aspect...that creates a much healthier environment that builds more positive relationships. And, at least for me differences like cultural differences seem to fall away [in light of this],” Jan said.

Sequeira’s experience at Microsoft also was very impacted by the people, such as when a new engineering manager joined her team late into her internship experience, who she describes

as a manager with “really interesting interests”, “intense in a good way” and “super welcoming”. “We started doing like daily stand ups as a team...we moved into this open office space,” Sequeira said. “We're all around each other more...and he really held us accountable to what we were saying that we were going to do and ... treated all of us as equal so it was interesting how the company culture like the culture just changed on the team and that inherently also made us all feel more inclusive.” Sequiera describes the presence of the new engineering manager as “like working a totally different company”. “Company culture can really be impacted by the leadership and I think that's what was a big takeaway from that summer was...being like wow the people matter, way more than anything... It can really change your experience.” The two perspectives showcase the massive influence of effective individual team leaders, rather than the impact of a company wide policy.

Conclusion

In exploring Google, Microsoft, and Amazon’s economic strength, inclusion and diversity efforts, and factors which contribute to company culture, we have outlined how the companies compare in data as well as how individual experiences stack up to one another. As a whole, these technology companies continue to improve in the metrics discussed and continue to implement tactics to create more innovative and successful communities.

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