Strategy By Design

MSIN0020

Analyzing The Strategic Case for Waymo

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2018

Introduction and Overview

My organisation of choice is Waymo. Waymo is a stand-alone subsidiary of Alphabet Inc. yet started as an internal project within Google's X lab. Waymo can be categorised as an autonomous vehicle (AV) technology company (LeBeau 2018), producing both their own autonomous vehicles as well as implementing their software into already established automotive company's vehicles.

I believe it is worth writing a case about Waymo as the related technology and industry is potentially going to become extremely valuable in coming years. Both financially; Intel (2018) predict that by the year 2030, the AV industry will be worth over $800 billion, and socially; in terms of lives saved. This particular organisation within this industry is the focus of my analysis due to its parent company. A strategic analysis of this subsidiary organisation can provide insight into how Alphabet Inc. has become so successful in a variety of different industries, through implementing a specific strategy which will be detailed in due course. Furthermore, the resources available to Waymo as a result of Alphabet result in this particular organisation being at the very forefront of the industry, and well on track to become the industry leader. Therefore, examining this organisation in detail can provide a sense of how the AV industry will shape in the coming years.

The primary audience that might be interested in this case would be executives of competing companies (automotive technology companies, e.g. Tesla Motors). Resulting from the fact that Waymo is an organisation at the forefront of this industry, competitors will find great value in understanding the true strategy they are implementing and what impact this will have on their own organisation, potentially redefining their own strategic actions.

Secondly, technology companies within the subset of Internet of Things (IoT) and Artificial Intelligence (AI) technologies, that produce both hardware and software could look to Waymo's strategy for guidance. I will argue that Waymo's strategy is effective in terms of enabling the organisation to achieve their goals. Therefore, if the goals align with other organisations from related fields, then learning and adapting their own strategies from this case analysis could potentially allow them to achieve their goals with more efficacy.

Thirdly, other stakeholders including automotive drivers whose daily activities may be changed as we see a paradigm shift toward AV should pay close attention to the results of this strategic case analysis; the fact that Waymo can become a monopolistic entity within the AV industry. This market domination could directly impact such individuals in ways including potentially increased price and restriction of choice of personal vehicles as AV is brought to mass market. Therefore, such individuals should read this case to gain an initial understanding of how the market will change and impact them in the coming years.

Situation

Internally, Waymo is in a very preferential situation. It's parent company, Alphabet Inc., is a multinational technology conglomerate, with a significant market capitalisation of over $730B (Yahoo finance 2018) substantial cash reserves of over $90B (Levy 2018) and valuable real-life Data sources in the magnitude of exabytes (10^{18}) (Mitchell 2017). Many other subsidiary and side projects within Alphabet have received resources on a scale that is unprecedented compared to the competition. Resources include; (practically) infinite cash reserves, Intellectual Property (IP) that Alphabet owns, the technological capabilities of Alphabet's resources (human and physical capital) as well as the rich and vast amount of data Alphabet (Google) collects and organises. All these factors result in Waymo having significant opportunity to utilise extremely valuable and rare resources when implementing its strategy.

On the other hand, the external environment Waymo is facing is particularly unusual in the sense that they are heading into the unknown. Nobody truly knows how technology and other factors such as legislation, regulation, social acceptance and competition will shape the AV industry (Walker 2018). Of course, it should be the case that in an industry with such potential to change modern life and to bring about real benefits; there will be substantial regulatory pressure the globe wide once the industry becomes established enough (Bontrager 2018). Therefore, one thing that Waymo could take as a certainty is that only the best (in terms of accuracy and hence safety) AV technology will be allowed to be used in mass-market. This assumption is based on the fact that it would significantly reduce the complication with standardisation of technologies and performance of different AV software (Bontrager 2018), as well as optimise the overall efficacy of the technology if solely one software platform is in control of all sensors and vehicle interactions. It is with this certainty,

of the risks and potential rewards of the execution of their product, that I believe Waymo shapes their current strategy and goals.

Waymo's Goals

I believe Waymo's superordinate goal is to increase Alphabet's overall global data footprint and the interconnectivity of their products. This version of their primary goal is based on other Alphabet subsidiaries' historical actions, of maximising data collection and utilization, for example, Alphabet's mission as laid out by CEO Larry Page is "to organise all of the world's information". Furthermore, subordinate goals that are prerequisites for Waymo to achieve its superordinate goal influences Waymo to take this stance. These goals include; owning the safest and most accurate AV software on the planet, having their software implemented into every single AV globally, wiping out the need for any other AV software. This logic follows on from the argument that only the best AV technology will be allowed to market (Bontrager 2018), and if Waymo achieves its primary goal of increasing Alphabet's data footprint, then it must be the case that it is the dominant organisation in the industry.

Alphabet's speciality lies within developing complex software, as demonstrated by all successful products it has in market currently. This case analysis examines evidence that points towards Waymo aiming to carry on this pattern of specialism. This evidence will detract from any other plausible alternatives for Waymo's goals. The main alternative being that Waymo does not truly care about market dominance and solely wants to move the industry forward and help in the development of safe and advanced AV technology, with a result that benefits society. This makes sense as it is relatively in line with the goal of X, the Moonshot factory, from which Waymo was established – their current mission statement is to help solve large-scale real-world problems by utilising advancements in technology. However, this case analysis will evidence other successful developments from within Alphabet's X labs have the potential to be heavily monetised, and all importantly adds to the

data footprint that Alphabet has as its disposal. Therefore, I believe that the goals I have laid out here are what Waymo truly values, and what they are basing their strategic actions on.

Waymo's Strategy

I believe Waymo's strategy to achieve their goals to be:

To treat their hardware development as a ploy and to internally direct all resources required towards the development of the most accurate and safest AV software globally.

I believe Waymo see the true value in creating the worlds' best and safest algorithm for self-driving vehicles and have decided to inject substantial resources including cash in the magnitude of billions (CNBC 2017) and intellectual capital into the development of their software, whilst keeping their position behind closed doors and to use their hardware (their own vehicle) development as a marketing ploy to hide their true goals.

The first piece of evidence supporting this argument is the external environment Waymo is facing. To reiterate, Waymo is facing immense uncertainty; nobody truly knows how technology, legislation, regulation, social acceptance and competition will shape the AV industry. To potentially combat this, Waymo needs to successfully manoeuvre itself into the crowning position for both public and regulatory acceptance, as only the safest and most accurate AV software will be allowed to be put to mass-market (Bontrager 2018). Aiming to achieve this goal of market domination and monopolising the industry by utilising all resources necessary, whilst hiding their aggressive actions as much as possible from other well resourced and established competitors is a strategy that I have termed "camouflaged offensive".

There are benefits from "camouflaging" your true intentions from the competition within this industry, if indeed it is the fact that only the best to market will beat all competition. As previously mentioned, there is substantial potential value resulting from being the dominant

player within the AV industry; such as through Intel's estimated value of the market from 2030 (over $800 billion) to 2050 (over $7 trillion).

This value illustrates that there is significant reward from being not first to market, but best to market. In the sense that to reap all the market value, over a sustained period of time, then you need to ensure the product you are offering, in this case, is the best in comparison to all alternatives. This is strengthened by the argument that in this specific industry, regulation and standards across the globe will require for solely the best AV technology to be implemented. If Waymo understands this, then surely it would be best to hide this realisation of true value from their competitors? This would be in order to stop every competitor in the market, some of whom possess significant resources and capabilities too, from placing all of their attention on the development of their software, where the sustained value to the organisations in this argument will be derived from, and not on the development of the hardware features related to the industry.

So far, Waymo has only utilised their hardware (their own vehicle development) for blog reports and content production. For example, they drove a blind man around Palo Alto in their own vehicle, the "Firefly", completely unaccompanied (Wired 2018). The sole result from such activities has been media attention regarding the efficacy of Waymo as an AV company and building up consumer awareness of the organisation. During these marketing content releases, Waymo has been developing numerous partnerships with traditional automotive companies (Perez 2018). These companies include Toyota, Chrysler and Lexus. Surely this is evidence that Waymo is solely treating their hardware development as a marketing tactic and not a true resource that can help it develop revenue in the future as the AV market develops. The demonstration that Waymo has only used their own vehicles for

content production, as in fact ensuring its software will be implemented into well-established automotive vehicles once AV technology reaches at least stage 4 autonomy and brought to market (Walker 2018) makes sense if it is the fact that the strategy Waymo is undertaking in order to achieve its goals is the one I have outlined.

Additionally, this particular strategy adopted by Waymo makes sense as we have seen similar strategies from other aspects of projects within Alphabet. In terms of expending significant resources, Alphabet's Project Loon, a plan to use balloon-satellite hybrids to beam internet to isolated areas, has seen substantial cash injections in the magnitude of millions of dollars per test flight (D'Onfro 2015) and has not even started making any revenue yet. Though it should be noted, similar to the situation of Waymo's industry, there is significant potential in this venture for Alphabet to earn large revenues, with a primary goal being to acquire even more consumer activity data from connecting and establishing new internet users. Furthermore, Alphabet and its subsidiaries have not had the best success rate with regard to consumer-facing hardware; for example, Google glass was a tremendous failure and a first step for Alphabet into a new, technical hardware space (Brunner 2018). Would Waymo's hardware attempts be the same? I believe Waymo already realise this and it is influencing the actions they take.

Further evidence for Waymo adopting this particular strategy comes from analysing Alphabet's Financial Statements, which provide significant insight into the resources Waymo has been receiving from Alphabet. From 2016 to present, Alphabet as a whole have increased R&D headcount by 16% within Waymo's staffing. Alphabet in 2017 spent $16.6 billion in total on R&D advancements. Equipment related expenses for Waymo increased by $388 million in 2016-2017. With a revenue totalling less than $10 million as of current, does a

sustained investment in hardware development for Waymo make sense? When other development projects under Alphabet that have put a dominance on software within their product's value proposition have an average predicted CAGR of 49% (Alphabet 2017), surely Waymo focusing on software development from a strategic standpoint is understandably more appealing. It is perhaps a safer bet in terms of financial and goal-achieving success.

Moreover, there are numerous other examples signalling the true value Waymo and Alphabet place on their software from a strategic standpoint. Firstly, in the 2017 executive letter to their shareholders, Alphabet refer to a subset of their subsidiaries as "Internet products" – Waymo was included at the end of that list. If this is how the parent company views Waymo, then this is surely a tell-tale sign of Waymo placing their true value proposition on software and less so on the hardware they are currently developing. Secondly, according to my research via Quid, Waymo have filed 40 patents related to the field of "Autonomous Vehicle Technology", and Alphabet have filed another 64 patents related to the same field. 92% of all patents filed are related to software and algorithmic methods/systems. The other 8% are to do with optimising and sustaining the sensory apparatus that supports the current software development by Waymo. If Waymo and Alphabet are investing significant resources on primarily focusing on advancing their software technology relating to this industry, then surely it acts as a signal that the hardware development is something they are not as invested in, and perhaps serves another purpose, such as a marketing ploy as described.

A plausible alternative strategy that Waymo could be currently implementing is that Waymo does, in fact, intend to develop valuable and successful vehicles that consumers will want to buy. This makes sense due to the fact it would increase Waymo's revenue stream and overall market impact. However, as an objection to this argument, the reported initial development

cost of each unit in Waymo's hardware component list was close to $75,000 (CNBC 2017). This only includes the cost of the hardware sensors developed by Waymo. Despite these sensor costs having fallen 90% in the last four years (Mouio 2018), at a cost of $7,500 per hardware unit, surely competing with well-established automotive companies on price does not make sense to Waymo. If a sensor is still costing a substantial amount of money, close to the price of a low-tier mass-produced vehicle, then surely Waymo is better off utilising its software, rather than compete on pricing with other automotive manufacturers on hardware.

Evaluation

Let's start evaluating Waymo's strategy by first looking to see whether the actions they are taking are indeed moving Waymo towards achieving its goals. Waymo want to establish a sustainable competitive advantage in the AV market, resulting in the superordinate goal of increasing Alphabet's overall global data footprint and the interconnectivity of their products. If Waymo is indeed putting all of the resources required, no matter the initial cost, into developing their software, then they are indeed focusing on enhancing their competitive advantage. Alphabet and its subsidiaries speciality lies within complex data-related software, and so ensuring a clear focus on developing this aspect of its product line, whilst implicitly hiding this from competitors, will help ensure the software Waymo develops is Valuable, Rare, Inimitable, Non-substitutable (VRIN framework, Wernerfelt 1984). This framework fundamentally outlines whether an organisation can continue to be unique and differentiable from other competing organisations and whether this uniqueness results in a sustained competitive advantage. Due to the context of the industry of focus, whereby only the best-to-market organisation will be able to reap the sustained rewards of the AV industry, then focusing on whether Waymo can establish unique value that can continue to remain differentiable from competitors is a telling sign of whether this strategy implemented by Waymo will result in success. As demonstrated by their marketing campaigns and product testing content, Waymo does indeed have a valuable and rare product; a software enabling level 3 vehicle autonomy and above (Waymo 2018). Of course, other competitors have similar software, so the rarity of this product, as well as the inimitability of Waymo's software, could be threatened. Yet Waymo implementing this "camouflaged offensive" strategy, hiding their actions from others and once the market develops dominate through

regulatory acceptance, will help in obtaining an inimitable and non-substitutable product that will help Waymo unlock the complete value from its software and achieve its goals.

If by taking these "camouflaged offensive" strategic actions, Waymo are successful in developing the most accurate and safest AV software technology, then they will stand in the favourable position within the market, potentially being the sole AV software technology in a $7 trillion-dollar market (Intel 2018). This would not only provide substantial revenue for Alphabet but would also increase the number of data points that Alphabet has access to and can utilise, which would mutually enhance and complement numerous other products that Alphabet offers. For example, imagine how optimised Google Maps could become if all vehicles on the road are AV and are controlled solely by Waymo's technology. Traffic would become a thing of the past. Of course, it should be noted that this evaluation of the potential effectiveness of Waymo's strategy is conditional on the fact that they do indeed produce the world's safest AV software. This is a big condition to base an argument on. However, I believe with the internal resources at Waymo's disposal; they stand in good stead to execute their strategy effectively, resulting in their desired goals being achieved.

Thompson et al. (2013) discusses the technique of benchmarking strategies against other leading competitors within this potential market as an effective way of analysing whether this strategy can be executed effectively and whether it will actually result in success for the organisation in question. The first competitor in my benchmarking analysis: Tesla Motors. Firstly, with regard to hardware, Waymo have a significantly smaller fleet (500-600) compared to the over 300,000 of Tesla's currently on the road (Lambert 2018). The number of vehicles that each company can collect data from and utilise is extremely valuable to their competitive positioning due to the fact that the number of real-life data points collected can

directly enhance any AV algorithm. To combat their weakened position on real-life and in-action hardware, Waymo have developed the concept of "virtual miles"; Waymo utilises Alphabet's Big Data and Machine Learning resources, such as Google's BigQuery, to create simulated worlds for their algorithm to drive around and to improve.

There has been over 10 million miles driven virtually by Waymo already (Waymo 2018). I believe this signifies Waymo's realisation of software being their strategic advantage and have distanced themselves from competing on hardware development in this case. It also tells us how valuable software can be in technology development; with the help of virtual simulations, Waymo has been able to drive more than 1 million more AV miles than Tesla's vehicles (Lambert 2018) and has hence gained an edge with refining their software product. Tesla currently have a "Shadow Mode" that acts in the background as individuals drive their vehicles to try and allow their AV algorithms to improve, very much like Waymo's virtual miles. However, Tesla has restricted this feature to only select model units where the consumer has also purchased the autopiloting feature. This, of course, can be viewed as a poor strategic decision on behalf of Tesla, and as Tesla is a front-runner in the development of AV software, this can illustrate that Waymo does indeed hold in good stead in the race for developing the safest and best performing AV software.

A second company that is attempting to compete within the AV space and is developing their own AV software and hardware technology is Uber. Uber is relatively new to the AV market, yet has made news headlines ever since its 2015 entrance into developing its own AV technology. What may be the best case of illustrating how competitors perceive Waymo as a threat, and the value that Waymo has developed over its 9-year development, is the Uber-Waymo trade secret trial. In 2017, Uber was accused by Alphabet of stealing 14,000 trade

secret files from Waymo's software development division, allegedly through poaching ex-employees (Solon 2018). If a large competitor, with numerous resources such as substantial vehicles in its interconnected fleet, is potentially breaking laws to try and gain insight into the development of Waymo's software, then surely this signals how much of a potential threat Waymo is to the AV and automotive market as a whole. In Alphabet's 2017 Financial Statements, it is made explicitly clear that as an entire organisation, they "rely on intellectual property and legislation" in order to achieve sustainable and substantial competitive advantage. I believe this protection of Waymo's product will ensure what they develop is sustainably valuable, and the actions of certain competitors does indeed signify how truly valuable Waymo's products are, therefore again highlighting that Waymo's software product is intended to be, and is indeed, VRIN.

As an alternative evaluating framework I could have used, a SWOT (Situation, Weaknesses, Opportunities, Threats) analysis would not be a sufficient due to its static outlook. As the environment Waymo is facing is so uncertain and ever-changing, the goals (as well as their priority) and the actions of Waymo could be subject to change, a highly rigid and structured evaluation framework would only simply give a 'snapshot' in a moment of time of Waymo's current strategic positioning. In the case of facing a truly uncertain situation, it is best for Waymo to ensure it implements its strategy with iterative actions. Ensuring the actions and strategy Waymo is implementing is reflective based on the environment they are facing improves the odds of Waymo being able to successfully adapt to their ever-changing environment and continue to achieve their goals. This specific design application to strategy is an approach that will substantially increase Waymo's chances of achieving their desired competitive advantage if implemented correctly.

It should be noted that it may be the case that not everybody who reads this case analysis or who views the same and other similar evidence of Waymo and their activities will come to the same conclusion regarding the effectiveness of their actions in relation to their goals. An alternative argument is that Waymo, without successful and mass-produced vehicles of their own, will be sidestepped by more traditional automotive companies as they develop their own AV software. However, Waymo is extremely likely to develop an effective VRIN AV technology that others will be required to use due to the unique resources at their disposal, detailed in the situation section, compared to traditional automotive organisations.

To conclude, Waymo is an AV technology company aiming to achieve market domination and focus on results that increase the overall data footprint of its parent company, Alphabet Inc. as well as the interconnectivity of its other subsidiaries. I have argued that in order for Waymo to achieve these goals, it has implemented a strategy that I have defined as "camouflaged offensive" – using its hardware that it develops solely for marketing purposes and consumer awareness, while focusing on developing the best AV software that can be brought to market and become the sole distributor of AV technology when the market develops. I believe that Waymo's current actions do indeed make sense from a competitive and strategic standpoint. Waymo stands in good stead to be at the forefront of the AV industry. With their actions allowing them to work towards their desired goals. I have evaluated Waymo's actions in line with its competitors, arguing that it is indeed in a preferable competitive and strategic position, as well as evaluating whether the actions of Waymo bring their product in line with the dimensions of the VRIN framework. Arguing that Waymo's actions make sense from the perspective of their aim being to develop an extremely unique and rare resource in a market that only allows very few or indeed a single distributor of such a technology. Of course, in

such an uncertain market, Waymo must continue to adapt and implement a reflective design approach to its strategic positioning in order to have the best chance at coming out on top and dominating the AV market by being the sole AV software technology implemented across the globe, increasing Alphabet's overall global data footprint and the interconnectivity of their products.

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