DHBW
Duale Hochschule
Baden-Württemberg
Stuttgart

Industrial Management

INSIGHTS

Schriftenreihe der Fakultät Technik: 1/2016

What we can learn from Elon Musk

Yannick Dreher, Prof. Dr. Thomas Seemann

Yannick Dreher studiert Wirtschaftsingenieurwesen mit Schwerpunkt Innovations- und Produktmanagement an der DHBW Stuttgart. Er ist dualer Student der Dr. Ing. h.c. F. Porsche AG.

E-Mail: yannick_dreher@gmx.de

Prof. Dr. Thomas Seemann ist Professor der Dualen Hochschule Baden-Württemberg Stuttgart mit Schwerpunkt Industrielles Management. Er ist verantwortlich für die Themenreihe Industrial Management INSIGHTS.

Duale Hochschule Baden-Württemberg Stuttgart
Fakultät Technik - Studiengang Wirtschaftsingenieurwesen
Kronenstr. 40
70174 Stuttgart

E-Mail: thomas.seemann@dhbw-stuttgart.de

If something is important enough you should try,
even if the probable outcome is failure.
Elon Musk

Google co-founder Larry Page said that were he to die, he would consider giving his billions to Elon Musk rather than to a non-profit organization. Forbes magazine attests Musk to "having inherited Steve Job's mantle as the cult favorite CEO". And even FiatChrysler boss Marchionne has praise for his competitor: "I'm a phenomenal fan of Elon Musk. I think he's the greatest."

Other people are rather critical, especially in regards to Musk's car company Tesla. Former Daimler CEO Reuter considers Tesla as a "little upstart looking for applause while making enormous losses". VW patriarch Piech makes fun of Tesla saying "for this car, I can't find room in my garage". In contrast, BMW chairman Reithofer respects the electric car pioneer: "I take Tesla seriously."

Elon Musk is polarizing and there are a lot of controversies about him and his companies. His followers worship him like a guru, and investors nowadays lend him generous amounts of money for his visions. At the same time, Musk has not fulfilled many of his promises yet. But he's on the right path and has a proven and extraordinary record of success.

The 44 year-old bustling serial entrepreneur (pictured in figure 1) created innovative game changing companies in five different industries, including the automobile, energy and space industry. Due to high entry barriers, these industries are considered to be graveyards for market entries. At the moment, Musk's most important companies are SpaceX and Tesla Motors (company profiles see figure 2).

Figure 1: Elon Musk

1. Elon Musk – A man with high ambitions

Born on June 28, 1971 in Pretoria as the oldest of three children, Musk decided at the age of 19 that South Africa was too small for his ambitions. He

Elon Musk founded Space Exploration Technologies in 2002 to "revolutionize space technology, with the ultimate goal of enabling human life on Mars." SpaceX approaches this goal by utilizing reusable rockets, which significantly reduce costs.

After successfully launching a rocket in 2008, SpaceX has gained public attention for a series of historic milestones. In 2012, SpaceX became the first private company to deliver cargo to the ISS, and, in 2015, the company made history with a successful touchdown of a rocket on land.

Besides launching cargo for NASA, SpaceX obtained a US$2.6 billion contract from NASA to fly American astronauts in the near future. In the commercial sector, SpaceX raised US$1 billion from Google to provide Internet access through a global network of satellites. Through this agreement, Google received almost 10 percent of SpaceX's shares, which would value SpaceX at roughly US$10 billion.

Based in California, the rocket startup employs over 3,000 people and seems to be on a good track – but is still far away from its goal of sending people to Mars.

Tesla Motor's mission is to "catalyze a mass market for electric vehicles – through Tesla cars as well as through competition." Co-founded by Elon Musk in 2003, the California-based company defined its road map by starting with a high priced niche product, which it plans to shift to the mass market over time.

In 2008, Tesla introduced its first vehicle, the Roadster, which was followed by Model S (in 2012) and Model X (in 2015). With its upcoming product, Model 3, the company plans to finally reach the mass market. All Tesla cars are closely connected with the Internet and designed to ultimately enable autonomous driving.

Beyond that, Tesla introduced its own power-charging network to overcome the range disadvantages of electric vehicles. At these Supercharger stations, Tesla customers can recharge their car in a short time for free.

Due to massive investments in new products, Tesla is not yet profitable. The next few years will show whether the company can truly earn a profit or not. However, stock markets already value Tesla's market capitalization at US$30 billion.

Figure 2: SpaceX and Tesla

emigrated with his brother to Canada where he attended college for two years and then settled in the US to finish his studies in economics and physics. In 1995, at age 24, Musk moved to California to start a PhD in physics at Stanford University, but dropped out after two days when he became inspired by the entrepreneurial spirit in the region and the upcoming Internet trends.

Realizing the future impact of the Internet, Musk and his brother soon founded Zip2, a web based software business which allowed companies to represent themselves in the Internet – comparable to a mix of the Yellow Pages and Google Maps. The company developed successfully, but venture capitalists forced Musk to resign from his CEO position. In 1999, Zip2 was sold for US$300 million and Musk started his next company which, after a merger with a competing startup, became PayPal. He led the company through the bursting of the dotcom bubble, but later also had to step down from his post as a CEO due to disagreements regarding the future architecture of the company.

Both times Musk wasn't happy about losing control of the company. However, these actions were also a consequence of Musk's lack of management skills and his harsh treatment of employees. And being replaced by a professional CEO is not unusual for entrepreneurs. Research in 2008 showed that four out of five founders who left their companies were forced to resign. [1]

When PayPal was sold for US$1.5 billion to eBay in 2002, Musk used his entire share of US$200 million to start two capital-intensive high-risk gambles – SpaceX and Tesla Motors. Both companies grew strongly, but suffered enormous setbacks as competitive forces and entry barriers are extremely high in these industries. Musk who provided most funding in the first financing stages by himself, came very close to bankruptcy.

2008 was the most critical year for his companies. SpaceX had three failed launches and Tesla had presented its first model but suffered massive problems in ramping up production. Before these problems occurred, Musk only served as chairman and investor at Tesla but then decided to lead the company: “If you have all your chips on the table, you have to play the hand yourself.”

Musk’s bet worked out. SpaceX became the first private space company ever to succeed in launching a commercial satellite and Tesla the first successful American automotive start-up since Chrysler in 1925. Today, Musk’s companies seem to be well on track and Forbes estimates his wealth at US$12 billion. Contrary to his initial plans, Musk is actively involved in both companies and serves as CEO and CTO at SpaceX and as CEO and product architect at Tesla Motors.

These facts demonstrate that Elon Musk is a highly successful entrepreneur. Moreover, Musk is succeeding against the odds: Research by Harvard Business School’s Shikhar Ghosh shows that three-quarters of all start-ups in the US fail in returning investor’s capital. [2]

So, what does it take to build a successful start-up? How did Elon Musk build his breakthrough companies?

2. Musk’s approach to business strategy

An analysis of Musk’s success shows that all his ventures share the same business strategy. Zip2, PayPal, SolarCity, SpaceX and Tesla are all based on innovations and are strongly differentiated from their competition.

In contrast, opening a restaurant wouldn’t match with Musk’s approach because it would mean competing. In most cases competition leads to lower margins and an elimination of profit. American entrepreneur and venture capitalist Peter Thiel accordingly states “competition is for losers”. He argues that in a world with perfect competition all profit would be competed away. [3]

Musk isn’t competing. He is developing his businesses from scratch. He “starts up” and creates something new. Something unlike any competitor. He has proven the ability to build such companies like very few people before. How did he succeed? By following three crucial steps: (1) Finding secrets, (2) Identifying niches and (3) Growing and broadening his business. All of Musk’s companies perfectly exemplify this strategy (see figure 3).

Find a secret: Finding a secret can be hard for entrepreneurs. A secret is something true but still unknown – it is the distinguishing feature of your product offering in the future. Secrets exist in every industry and can be either technological innovations or discoveries of social trends.

Tesla Motors is a great example: First, Tesla found a technological solution for the supposed contradiction between range and driving pleasure of electric vehicles – by using lightweight constructions and affordable consumer electronic lithium ion batteries as energy storage. And second, Tesla also detected an important social trend.

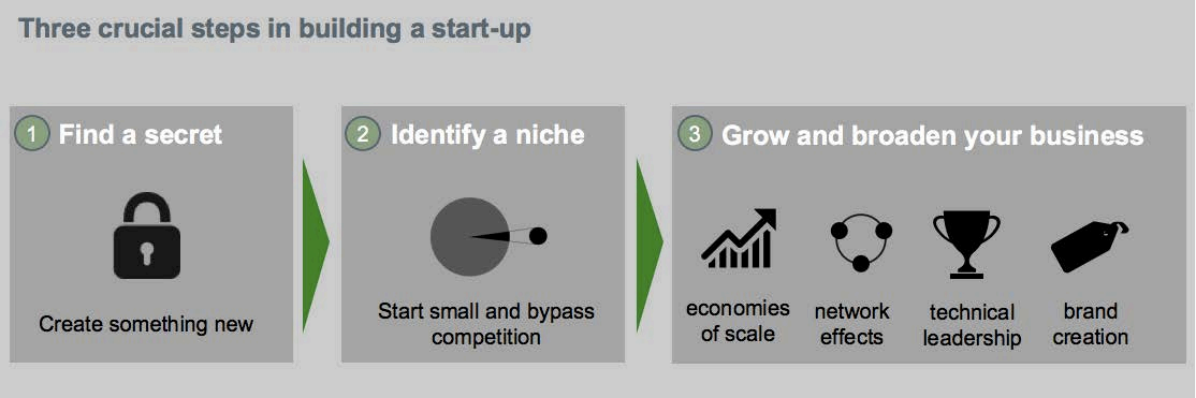

Figure 3: Musk's approach to business strategy

Going green was a popular mindset in the early 2000s. But while most car companies struggled to differentiate themselves, Tesla found a secret. They realized that renewable energy was not only an environmental necessity but also a social phenomenon.

Particularly hybrid electric cars became popular status symbols although they were not premium vehicles. Even affluent customers with the desire for eco-friendly cars had to go with a budget car like Toyota's Prius. Musk analyzed the buyers carefully and found that their average income was about US$ 200,000 per year. He saw an unaddressed demand where others saw nothing at all. Tesla decided to offer a desirable and attractive electric car. Accordingly, Tesla started with high end sports cars and created its unique selling proposition with premium electric vehicles. In the first years most people made fun of Tesla but when Musk presented the Roadster in 2006, Tesla received enthusiastic feedback. Musk's strategy had paid off. [4]

Identify a niche: Besides finding secrets, Musk's strategy is based on starting his companies within niches. For a small start-up, occupying niches is a significantly easier endeavor than competing head to head with global incumbents.

At PayPal for example, Musk and his team started with a tiny submarket in the online payment market: Bank transfers for high frequency traders on eBay. PayPal easily succeeded in dominating this market with tailored products and then reached out for further niches. And similarly Musk identified and occupied a niche with Tesla. By today, Tesla is the only manufacturer of fully electric sports cars.

Given these leading positions within niches, Musk's companies are able to bypass competition in the best possible way.

Grow and broaden your business: After succeeding in occupying niches, Musk sets up his companies for high growth by aiming for economies of scale. These economies of scale, e.g. concerning manufacturing costs, heavily reduce costs per unit. After completion, Tesla's Gigafactory for instance will lower the costs for battery packs by 30 percent. This will result in a key competitive advantage in the price sensitive car industry.[1]

In addition to such scale effects, Musk's success has proven three further practices as being valuable during this stage: Building network effects, keeping the technical leadership and creating a strong brand awareness.

Tesla's proprietary power charging infrastructure is a great example for both technical leadership and network effects. Since 2012, Tesla cars can be fast charged at Tesla owned supercharger stations, worldwide and for free. Thanks to this charging network, Tesla owners are able to minimize stops during long distance travel. This means an edge for electric vehicles as they previously have been city cars.

Musk has particularly succeeded in establishing Tesla as a popular premium brand. Forbes magazine lists Tesla Motors as most innovative company 2015 and certifies Tesla as "having grabbed Apple's creative crown". Similar to Apple, Tesla attracts and inspires people all over the world. An example for Tesla's strong brand representation is their recent unveiled Model 3. Before having seen the car thousands of people lined up in front of Tesla stores – not to test it but to place a deposit. By securing 200,000 pre-reservations within 24 hours, Tesla broke further records and tripled its overall customer base in one day. Given these early order intakes, Model 3 will most likely knock out competition for mass market electric vehicles. [2]

Why do people line up for Model 3 and refuse competing products? Surely because Model 3 seems to be a slightly better product offering. But mostly, people buy Tesla cars because the brand carries leap forward visions. And Tesla's visionary mission perfectly resonates with its target customers. Musk's marketing hit the bullseye as it nicely corresponds with Simon Sinek's "Golden Circle" theory: People don't buy what you do, people buy why you do it". [5]

Hence, Tesla customers line up because they actively want to join Musk's mission of saving the world. This also explains their willingness to wait hour for hour in front of a car showroom to make

[1] Given Tesla's increasing demand for batteries, the company started to build a giant battery plant in Nevada in 2014. Covering an area of 1.26 square kilometers the factory will be the second largest building worldwide. After reaching full capacity in 2020, the factory aims to double the entire global battery production.

[2] For your reference, BMW sold 24,000 cars of its electric i3 model in 2015. Analysts anticipate roughly the same number for the upcoming Chevy Bolt. Both cars are main competitors to Tesla's Model 3.

a down payment. And Musk needs these enthusiastic fans and early adopters. They are a crucial puzzle piece in his master plan of convincing the large majority of customers.

Beyond this business strategy, Musk's success is also based on his proven ability for building high performance organizations.

3. Musk's approach to building high performance organizations

High performance organizations are an imperative for Elon Musk to achieve his ambitious goals. One part of the equation is putting high pressure on the team. Accordingly, Musk warns beforehand that working with him is like being in the Special Forces: "We do the missions that others think are impossible."

However, in the long term this approach alone wouldn't succeed. Musk is aware of this and leverages three crucial success factors: (1) Looking for problem solvers, (2) Taking the first principles approach and (3) Creating strong company missions. These factors are Musk's building blocks for high performance organizations (see figure 4).

Look for problem solvers: Elon Musk has a clear recruiting strategy. Related work experience is not primarily relevant for him. Instead, he hires people who have been able to solve complex problems in the past – and then challenges them with new complex problems.

In case you are an applicant for Tesla or SpaceX, prepare to highlight which complex problems you have solved recently. Musk, who is still interviewing a lot of candidates himself, will ask this question and then go down to multiple levels. Only candidates who can "go down to the price tag" and don't get stuck are the people who really solved the problem, explains Musk.

Hal Gregerson, Executive Director at the MIT Leadership Center, observed Musk and tells the story of Jay Vijayan. Vijayan is the type of problem solver Musk is looking for. He was CIO of the cloud computing provider VMware when he was contacted by Musk. Tesla had grown rapidly since 2012 and the company became too big for its current enterprise software. Normally, companies upgrade their off the shelf software. Musk wanted Tesla to develop its own software.

After convincing Vijayan to join Tesla, Musk gave him a hard problem: "Jay, we would like you in three months to build the entire enterprise level software for 20 percent of the cost of the typical ones, that are off the shelf. Let me know what you need from my side to make this happen." Vijayan, who today is CIO of Tesla, accepted the challenge and succeeded within four months. In a later interview he explained that this software is now one of the best software systems Tesla ever had. [6]

Such stories are not unusual at Tesla or SpaceX as Musk is often tackling new barriers. Hiring great problem solvers like Vijayan allows Musk to solve upcoming challenges in the most efficient way. Moreover, this recruiting strategy is crucial for establishing Musk's objective of having a lean und maximum solution driven organization.

However, problem solving does not create innovations. Here, Musk's success recipe is taking the first principles approach.

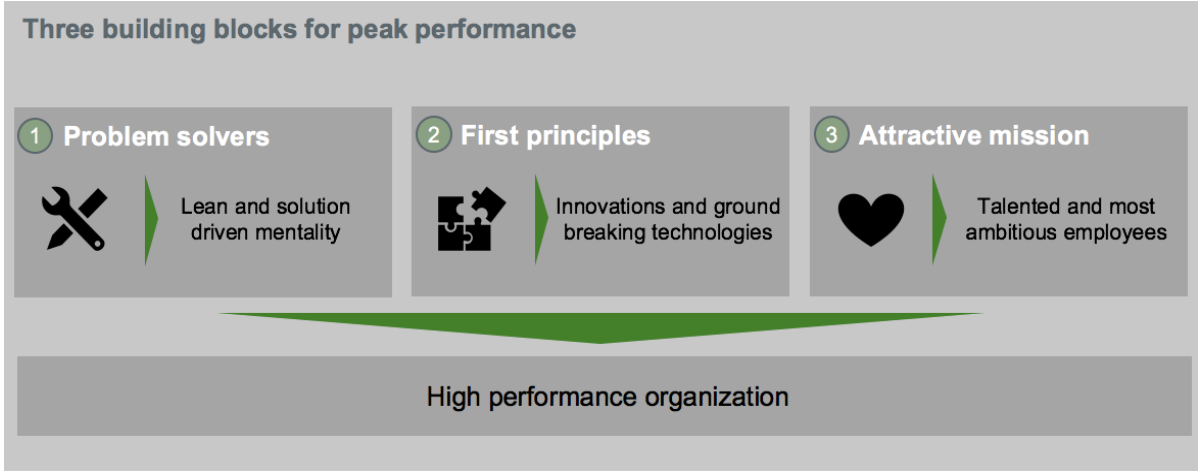

Figure 4: Musk's approach to building high performance organizations

Take the first principles approach: First principle thinking is a fixed term in science and goes back to the Greek philosopher Aristotle. A "first principle" is a basic assumption that cannot be deduced from any other assumption; it is the "most fundamental truth". This first principle logic can be used in many disciplines. In geometry for example, we can deduce many relations from only a few fundamental truths.

Musk also explains that identifying the most fundamental truths and then reasoning up from there, helps him a lot. Taking this path, there is a good chance of finding new innovative approaches. His path for rocket development at SpaceX is a good example of first principle thinking.

When Musk decided to build a rocket he was estimating the building costs. But he did not use comparable products on the market as benchmark. Instead, his team analyzed the necessary parts of a rocket and then broke down the costs for the raw material – as a result the team learned that they could build a rocket with just a small percentage of the typical price. Since then, SpaceX's engineers have tried to figure out new ways of designing rockets by questioning every bit of common knowledge in space industry.

As a result, SpaceX succeeded in building rockets at much lower costs than the competition. In a public hearing for launch contracts at the US Senate in 2014, SpaceX was able to undercut its competitor United Launch Alliance (ULA) by a factor of four. This lead to a huge embarrassment for ULA. Their longtime CEO Gass had few counterarguments and resigned five months later. Beating competition this way was only possible due to new innovative approaches based on SpaceX's first principle thinking.

Musk admits that this is not an easy way saying "it takes a lot more mental energy". But the reward is innovative and competitive products.

Create a strong company mission: Likewise, Musk greatly succeeded in giving his ventures attractive and compelling company missions. SpaceX is aiming at Mars and Tesla is accelerating the advent of electric cars for a more sustainable world.

Musk's inspiring visions allow him to lure the best employees worldwide. In times of globalization and an advanced knowledge-based society, many companies underestimate this factor greatly. Musk doesn't. For him this makes the competitive edge. His bold visions attract the brightest and most ambitious people. Tesla recently informed the public that the company has received approximately one million applications in 2015 (Tesla currently employs 14,000 people). This leads to a huge talent pool for Tesla.

And the people who have managed to get a job at Tesla are greatly committed to the company and willing to work hard. Taking the extra mile is more than a necessity in getting the job done – it is the personal commitment of every employee to achieve a greater goal. Exactly this mixture makes the secret sauce for Musk's companies: Mission attracts talented, dedicated and hard-working employees who strive both for business and personal success.

Peter Carlsson (Tesla's former VP Supply Chain) gives insights into how it feels to join Tesla: "Living in Asia, I didn't know much about Tesla. I came by during one of my business trips, and I was absolutely amazed by the vision, technology and management team that Elon Musk had recruited. And also, the type of energy that you see just stepping into our R&D or manufacturing, you can see the tremendous motivation and dedication of the team." [7]

Musk himself sets an example of dedicated passionate hard work, too. He admits that in the last twelve years he only "tried" a few times to take vacation. During his last time on leave, one of his rockets exploded. He learned "don't take a week off.", Musk explained in an interview with a Danish TV channel.

This interview is one of the few moments where Musk gives personal insights. When he is asked why he takes the incredible challenges and all the risks running stressful companies, he reflects: "I have to say at times I've wondered," he says with a laugh. "It's actually been a very difficult journey I have to say. But I think there are certain important things that we must do in order for the future to be good. We must have sustainable energy. If we don't have that, the future is going to be terrible." [8]

4. Elon Musk – A man on a mission

Musk's success is both based on his approach to business strategy and his ability to build high performance organizations. He has proven multiple times how to start and develop companies. But what it takes to lead such ventures is a certain mental framework.

Chris Anderson from TED once formulated the theory that Musk's success is partly based on his unique confidence to take "crazy risks", risks most other people would reject. Musk clearly realizes the risks and was skeptical in the beginning as well: "I thought the most likely outcome was failure. Any other expectations would have been irrational". [9]

However, Musk started SpaceX and Tesla anyway. But he did not start his companies because he is so venturesome. Musk started both companies because it was "too important not to try". This mindset, "doing things because they are too important not to try", constantly drives Musk to peak performances. He is fighting for his visions against the odds and he is on a good track so far. Any ambitions you want to achieve? Start thinking like Elon Musk!

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Schriftenreihe INSIGHTS
Themenreihe Industrial Management INSIGHTS

Herausgeber:
Fakultät Technik der
Dualen Hochschule Baden-Württemberg Stuttgart
Postfach 10 05 63, 70004 Stuttgart

Prof. Dr. Katja Kuhn, Dekanin der Fakultät Technik
Jägerstraße 53, 70174 Stuttgart

E-Mail: katja.kuhn@dhbw-stuttgart.de
Tel.: 0711/1849-610
Fax: 0711/1849-121

www.dhbw-stuttgart.de/technik/insights

Satz und Gestaltung: Inna Avrutina
Lektorat: Patricia Callan

Bildnachweis: Titelseite maglara - fotolia.com, Seite 1 Steve Jurvetson - flickr.com (CC BY 2.0)

ISSN 2193-9098

ISSN 2193-9098

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