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## **TECHNOLOGY ACQUISITIONS AS THE NEW POWER. AN APPROACH ON HOW GAFAM<sup>31</sup> HAVE MANAGED TO WIN THE WAR FOR INNOVATION, THE WAR FOR PATENTS, THE WAR FOR TALENTS, AND THE WAR FOR DATA**

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### **Abstract**

Looking at the global technology acquisitions over the past 20 years, it becomes clear that a major share of these transactions is made by the US-based “Big 5” technology companies (also known as GAFAM – Google, Amazon, Facebook, Apple, and Microsoft).

Given the market power of GAFAM (Dolata, 2017), which is evident not only in form of market capitalization, revenues, and profits, but also in the other dimensions of competitive strategy – such as innovation, patents, talent/people, and data, – it seems interesting to examine whether one of the main reasons for the overwhelming power of these companies is their obvious and almost unlimited ability to make technology acquisitions.

Against the background of the umbrella theme of the conference “POWER”, it is thematically and methodologically suitable to conduct a thought experiment based on the theoretical concept called “Concept of Strategic Power” (Scholz, 1987; 2001). This approach considers power as an interplay of strategic capabilities, strategic movements and strategic barriers and allows an evaluation of strategic power as a source of competitive advantage and market success (Scholz, 2001).

The results show that GAFAM’s high acquisition power enables it to make any acquisition it wants and thereby trigger strategic movements. These produce the inter-

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<sup>31</sup> Due to the term GAFAM, Google and Facebook are referred to in the relevant places throughout the article, although Google has meant Alphabet Inc. since 2015 and Facebook has meant Meta since 2021.

dependent and self-reinforcing effect of gaining strategic power to win the war for innovation, the war for patents, the war for talent, and the war for data.

Big Tech, GAFAM, M&A, Strategic Power, Technology Acquisitions

## **Technology Acquisitions As The New Power. An Approach On How GAFAM<sup>32</sup> Have Managed To Win The War For Innovation, The War For Patents, The War For Talents, And The War For Data.**

### **GAFAM and the “Concept of Strategic Power” – a thought experiment**

Looking at the global technology acquisitions over the past 20 years, it becomes clear that a major share of these transactions is made by the US-based “Big 5” technology companies (also known as GAFAM – Google, Amazon, Facebook, Apple, Microsoft). If the focus is limited to large-volume deals and the so-called emerging technologies in particular, the picture becomes even more striking (Giacomo and Kepalaité, 2018; Alcantara, Schaul, De Vynck and Albergotti, 2021; Ciepluch and Eisenbeis, 2022).

Given the market power of GAFAM (Dolata, 2017), which is evident not only in form of market capitalization, revenues, and profits (all of which seem to be rising endlessly at an already high level), but also in the other dimensions of competitive strategy – such as innovation, patents, talent/people, and data, it seems interesting to examine whether one of the main reasons for the overwhelming power of these companies is their obvious and almost unlimited ability to make technology acquisitions.

Against the background of the umbrella theme of the conference “POWER”, it is thematically and methodologically suitable to conduct a thought experiment based on the theoretical concept called “Concept of Strategic Power” (Scholz, 1987; 2001). This approach considers power as an

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interplay of strategic capabilities, strategic movements and strategic barriers and allows an evaluation of strategic power as a source of competitive advantage and market success (Scholz, 2001).

This article therefore aims to make a conceptual attempt to examine the success of GAFAM – both in terms of general market success and within the specific markets of innovation, patents, talent/people and data – based on the so-called “Concept of Strategic Power”. In order to approach the origin of strategic power, it is assumed that the starting point of the argumentation is GAFAM’s acquisitions in companies and startups in general, and (emerging) technology companies and startups in particular.

### **The “Concept of Strategic Power” – the theoretical approach**

Even though the “Concept of Strategic Power” is already dated, it is still suitable for the analysis of the problem raised here against the background of the conference topic. Moreover, the components of the model – especially in the field of research on core competencies (Prahalad and Hamel, 1994; Bouncken, 2000; Byrd, 2001) and dynamic capabilities (Teece, Pisano and Shuen, 1997; Winter, 2003; Lawson and Samson, 2001; Yeow, Soh, Hansen, 2017) – have evolved until the recent past. In this light, the approach is considered quite fruitful in providing an up-to-date contribution to the current discussion.

The “Concept of Strategic Power” (Scholz, 1987; 2001), which underlies the thoughts presented here, is based on the interplay of

- strategic capabilities (Chandler, 1992; Prahalad and Hamel, 1994; Bouncken, 2000; Byrd, 2001),
- strategic movements (Porter, 1980; Bruijl, 2018), and
- strategic barriers (Porter, 1980; Pehrsson, 2008),

which serve the strategic power development and thus become the strategic power of a company – from which competitive advantages in the sense of market and entrepreneurial success arise.

There are six interdependencies between the three components mentioned, as each component depends on the other (figure 1):

1. Strategic movements cause the development of strategic capabilities.

2. The effect of strategic capabilities on strategic barriers results from the fact that the level of strategic barriers is (partly) determined by the underlying strategic capabilities.
3. High strategic barriers constrain strategic movements because the existence of the barrier makes it difficult to transform a strategic movement into strategic power. Low barriers and thus strategic unprotected areas, on the other hand, provoke strategic movements.
4. The influence of strategic movements on strategic barriers consists in the selectivity and speed of barrier building and/or overcoming and breaking of barriers.
5. Strategic barriers influence the input and output rates that ultimately build, maintain, rearrange or dismantle strategic capabilities.
6. Strategic capabilities also influence strategic movements. Particularly strong strategic capabilities stimulate the initiation of a strategic movement making use of this capability.

This interplay of strategic capabilities, movements and barriers is defined as a strategic power (figure 1). The “Concept of Strategic Power” is particularly well applicable (as will be shown later) in the context of markets (or industries) characterized by the principles of the information economy (e.g., economies of scale, network effects, winner-takes-all-markets, etc.).

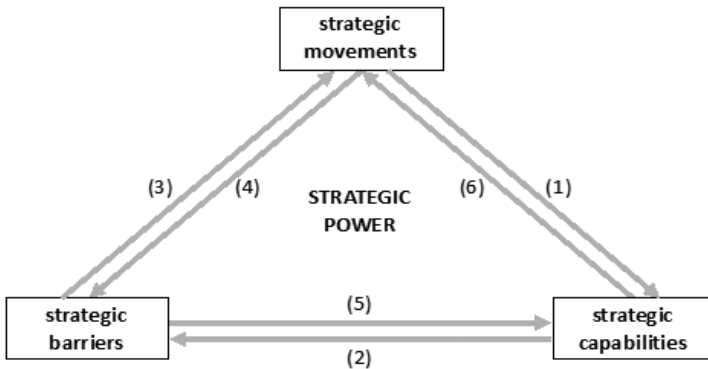


Figure 1: The “Concept of Strategic Power”

Following the approach, the absolute strategic power, which depends on the strategic potential and the strategic movements of the company as well as the building up of barriers (against the competition) and the breaking down and overcoming of barriers (against the company), must also be distinguished from the relative strategic power. The latter results from the ratio of the absolute strategic power of the company to the absolute strategic power of the company's competitors. The result of this comparison (the relative strategic power) ultimately determines the success of the company (Scholz, 1987; 2001).

### **GAFAM as dominant players in the digital business – the object of investigation**

The “Big 5”, also called GAFAM – as an acronym for the five most popular US-tech companies: Google (since 2015: Alphabet), Apple, Facebook (since 2021: Meta), Amazon and Microsoft –, have become very successful since their foundation. A brief look at pure facts and general business KPIs (Kolloge and Sievers, 2021) shows their impressive market success (table 1).

With their respective market capitalization of over US \$1.5 billion each, Google, Apple, Amazon and Microsoft are ranked amongst the five most valuable companies in the world on a regular basis (status as of 2021), Facebook is still in the top 10 (status as of 2021) with a market capitalization of just under US \$1 trillion. In total, these five companies have four times the value of the market capitalization of the entire companies in the German Stock Index DAX (40 companies). In other words, the five companies are four times as valuable as the 40 (largest) German companies combined. In terms of the most valuable brands (brand value), Apple, Google, Amazon and Microsoft are ranked 1st to 4th worldwide, Facebook is in 8th rank (Statista, 2022).

Table 1: GAFAM in numbers

	Year of Foundation	Year of Going Public (IPO)	Number of Employees (end of 2020)	Total Revenue in 2020 (in billion US \$)	Net Income in 2020 (in billion US \$)	Market Capitalization (in billion US \$)	Brand Value (in billion US \$)
Google	1998	2004	135,301	183	40.3	1,527	208
Apple	1976	1980	147,000	275	57.4	2,200	241
Facebook	2004	2012	52,535	86	29.2	890	70
Amazon	1994	1997	1,298,000	386	21.3	1,661	135
Microsoft	1975	1986	166,475	143	44.3	1,951	163

Looking at the market shares of the companies in the individual markets in which they are active, their dominant positions become apparent (Spiegel and Waldfogel, 2021; Kolloge and Sievers, 2021): In the search engine market, Google has a market share of around 90% (together with Microsoft, this adds up to almost 95%). In the computer operating systems market, Microsoft (75%) and Apple (15%) dominate with a combined market share of around 90%, and in the mobile operating systems market, Apple (around 30%) and Google (around 70%) together have almost 100% market share. When it comes to social media platforms, Facebook dominates the market with Facebook, Instagram and WhatsApp – at least in the Western world. For intelligent virtual assistants, Google (30%), Amazon (20%), Apple (30%), and Microsoft (15%) also jointly achieve almost 100% market share.

After considering rather general success and market performance figures, it is worth looking at specific markets: The source for generating big data (war for data) is e-commerce and digital advertising. Amazon's market share in US retail e-commerce is almost 40%, which is almost 10% more than the 14 top US retailers combined (Lebow, 2022), worldwide, the share is almost 15% (Statista, 2021). And in digital advertising, Google, Amazon, and Facebook account for two-thirds of global revenues (Lebow, 2021). With regard to the employer market (war for talents), it is also evident how successfully the GAFAM companies are positioning themselves: In the World's Best Employers 2021 ranking (published by Forbes), Google, Apple, Amazon and Microsoft are in the top 10 (Todd, 2021). In the Trendence Institute's employer ranking, these four companies are ranked

1 to 4 (Google, Apple, Amazon, Microsoft) in the field of computer science (Trendence, 2022a), while three (Apple, Google, Amazon) are in the top 10 in the field of economics/management (Trendence, 2022b). GAFAM also have concentrated control over vast intellectual property (war for patents). According to CBInsights (2017) and Mirrlees (2021), GAFAM are some of the world's largest patent holders (in 2019) in technology fields like artificial intelligence, cyber security, autonomous vehicles, augmented and virtual reality and health: Google (21,084 patents), Amazon (9,455 patents), Facebook (3,716), Apple (14,849), and Microsoft (29,824). Between 2019 and 2020, GAFAM accumulated a record number of new patents. Finally, it comes to acquisitions (war for innovation): In digital markets in particular, however, innovation is not only driven by technologies, but rather generated primarily through technology investments and acquisitions (Deller, Doan, Mariuzzo, Ennis, Fletcher and Ormo, 2021; Dolata, 2017). GAFAM companies are accountable for an enormous and constant number of acquisitions: Depending on the research (and thus the way acquisition activities are counted), these companies accomplished 175 mergers from 2015 to 2017 (Gautier and Lamesch, 2021), acquired more than 400 companies from 2010 to 2020 (Affeldt and Kesler, 2021), or made more than 700 acquisitions from 1998 to 2018 (Genzinu and Kpalaité, 2018). This trend seems to not only continue but also even to gain momentum according to Jin, Leccese and Liad (2022): GAFAM are recently acquiring more companies in a shorter period of time than ever before. According to Dolata (2017, 18) the characteristic of GAFAM companies' innovation and expansion strategies can be summed up as "acquisition instead of cooperation". In other words, innovation is driven through the acquisition of companies whose resources and competences are integrated into GAFAM corporations.

### **Mechanism of developing strategic power in innovation, patents, people and data – the interdependent effects**

As described in the previous section, acquisitions in technology startups and companies can be considered as a strategic competitive action, and thus as strategic movements. Taking these strategic movements as a starting point and apply the "Concept of Strategic Power" to the strategically important areas of innovation, patents, talent, and data – once clockwise

(arrows/effects 1 to 3 in figure 1) and once counterclockwise (arrows/effects 4 to 6 in figure 1) – the following effects emerge:

1. Strategic movements (technology acquisitions – for example, at an early or late point in time, broadly spread or focused) make it possible to expand strategic capabilities and/or build up new ones.

**Innovation:** Technology-driven innovation leads to product, process, organizational or marketing innovation at the company level (OECD/EUROSTAT, 2018; Eisenbeis and Ciepluch, 2021), which can build strategic capabilities.

**Patents:** Technology acquisitions are often made to secure patents and intellectual property rights. Patents and rights are often the central (intangible) assets and – depending on their uniqueness and exclusivity – lead to the development of new strategic capabilities.

**Talents:** Acquisitions and mergers are often an instrument for building up and/or expanding new core competencies and thus new strategic competencies through the know-how (often technology know-how) that is tied to people. Particularly in highly technology-dependent market fields, these strategic capabilities – people, talent and know-how – represent competitive advantages that are crucial for success.

**Data:** Having a lot of data, having the right data and being able to use it, is the number one competitive advantage in a data-driven, digital economy. Since this triad (big data, right data, and usable data) is technology-dependent, appropriate technology acquisitions can be utilized to build up or to (further) develop strategic capabilities.

2. Expanded and/or new strategic capabilities make it possible to build up strategic barriers for (potential) competitors and/or to raise existing barriers. At the same time, existing barriers can be overcome with expanded or new strategic capabilities.

**Innovation:** Once (new) strategic capabilities have been developed or expanded – through technology-driven innovation, as product, process, organizational or marketing innovation – there is the opportunity to use these capabilities deliberately and selectively to raise or lower barriers.



Patents: Unique and exclusive patents and rights – or at least rare and marketable patents and rights – are a strategic capability in technology-dependent fields in particular, and even more in the technology sector itself, and represent barriers to market entry, but also a suitable vehicle for overcoming barriers.

Talents: The lack of know-how, the right people, the talent is – today more than ever – a prohibitive market entry barrier. Those who have the appropriate strategic capability “talent” can overcome this market barrier, but at the same time also raise the barrier for others, for example by shortening the availability of high potentials.

Data: If you have data sovereignty or superiority in terms of data, this is a strategic capability that is crucial for success nowadays. This can be both a high barrier to market entry for others and a powerful factor in overcoming market barriers – the latter even in markets that were previously not accessible.

3. Barriers that can now be overcome enable new strategic movements; at the same time, strategic barriers that have been tightened (for/against others) and/or newly created allow the company more freedom in its strategic movements, since the risk of new competitors is or becomes smaller due to the now higher barriers.

Innovation: Striving for innovation (as a completely new strategic movement) is possible in areas or markets in which barriers have now been overcome. Technologies can now be further developed until they are ready for productive use or until the investment is amortized, and the technological lead can be extended. If one’s own engagement in a specific (technology) market is stabilized or protected by barriers that have now been erected, there is greater freedom of resource allocation on the other side, and further strategic movements into other areas and markets become possible – for example through resources for further technology investments.

Patents: Increased market barriers for others now make it possible to use the patents and rights in the sense of further strategic movements, for example to license these to other companies and thus open up a new business field or a new source to generate revenue. This and (as with innovations) the greater freedom of allocation

now enables further acquisitions to be made in (other) patents and rights.

Talents: Same within the “talent” area. The higher market barriers for others, as well as the new and, above all, more flexible strategic movements allow new ways of dealing with personnel strategies, for example further acquisitions of talent. In new areas and markets where barriers now have been overcome, new paths (strategic movements) can be taken with this scarce resource of personnel and the corresponding know-how, for example in the area of technology research and development.

Data: Particularly in the area of data (and information), barriers built up for others have an effect in the sense of network effects and self-enforcing mechanisms, the so-called winner-takes-all phenomenon (Shapiro and Varian, 1999). Here, further strategic movements are the most logical consequence – both in the sense of reinforcement and expansion as well as in the sense of (completely) new activities.

After describing the effects between the components clockwise – effects (1) to (3) – and, since the components of the “Concept of Strategic Power” have interdependent effects on each other, the other direction – counter-clockwise, effects (4) to (6) – will be described in the same way.

1. Strategic movements (technology acquisitions – for example, early or late, broadly spread or focused) make it possible to build up and/or increase strategic barriers (for others) and to reduce and/or overcome barriers for one’s own company.

Innovation: On the one hand, technology-driven innovation at the market level leads to incremental, leapfrog or even disruptive market changes (Olivan, 2019), depending on the degree of innovation, and thus enables the establishment of market barriers in the best case. In this way, others (competitors and potential competitors) are forced out of the market or kept out, or at least their market entry is made more difficult. On the other hand, technology-driven innovations sometimes make it possible to enter markets with high market entry barriers in the first place, i.e. to overcome existing barriers with the help of innovation.

**Patents:** Technology acquisitions are often made in order to secure patents and rights. On the one hand, patents also create market barriers in (technology-dependent) markets – if a company does not have the corresponding patents, it cannot enter the market or can only do so with difficulty (for example, by paying for licenses). On the other hand, patents make it possible to overcome market barriers, i.e. by entering markets that were previously closed to the company due to a lack of patents and rights.

**Talents:** Acquisitions and mergers are often also an instrument for securing know-how (often technology know-how) tied to people. Particularly against the background of the war for talents and the shortage of highly specialized personnel, this (human) resource represents a critical barrier that must be overcome. In this respect, technology acquisitions in this field also serve on the one hand to create barriers to others (since the available know-how becomes scarce on the market as a result of the acquisition). On the other hand, technology acquisitions also serve to enter new markets or enable the overcoming of the market barrier of know-how or talent.

**Data:** Digital markets and e-commerce in particular are dependent on data (availability and usability). Only those who have access to direct contact with customers and (thus) to big data can be successful in these markets. Being competitive in information and data markets means having the appropriate technologies at your disposal (artificial intelligence, machine learning, cloud computing, etc.). Only those who have access to these technologies, and thus the data, can play a role in the markets. Thus, on the one hand, technology acquisitions and data enable barriers (to others) to be built up and/or raised; on the other hand, they are the entry ticket to all digital markets.

2. Barriers which can now be passed, enable strategic capabilities to be reorganized and realigned. At the same time, more stringent and/or newly created strategic barriers help to build up, secure and/or expand strategic capabilities.

**Innovation:** Increased barriers can secure strategic capabilities or, especially in the technology sector, extend the technological lead over the competition through innovations, as these innovations can

be developed within a secure company environment. Likewise, the development of new strategic capabilities is possible due to direct and indirect network effects as well as due to (among other things, resulting from network effects) lock-in effects.

**Patents:** If the barriers are built up high enough, patents and rights can also be used to extend the lead over the competition. Especially if these are rare and unique, they can be secured as non-imitable and thus increase their effectiveness as a strategic capability.

**Talents:** In the area of talents, increased barriers ensure that the company remains unique on the employer market. The result: A higher employee retention rate, which means the valuable talents and high potentials will remain loyal to the company. For example, an innovative, technology-leading image could be built up as a new strategic capability.

**Data:** Network effects and self-reinforcing mechanisms (winner-takes-all mechanisms) take effect here, too. The higher the barriers for others – especially in the area of data – the more valuable the strategic capability becomes in this area, and the more dependent others become on the data of the leading company.

3. Expanded and/or new strategic capabilities serve as an enabler and driving force for new (further) strategic movements.

**Innovation:** Once (new) strategic capabilities have been developed or expanded – as a consequence of barriers which have been set or overcome – these capabilities will both enable and drive new strategic movements. This will allow previous ideas to be implemented and innovation to be driven. In addition, the new or expanded strategic capabilities can also enable other strategic movements that do not explicitly relate to technology aspects, since technologies also have an impact on other areas.

**Patents:** The possibility of having patents and rights at one's disposal is also considered a strategic capability – especially in technology-dependent fields, and even more so in the technology sector itself. Here, too, new strategic capabilities initiate further strategic movements because they are possible and because they are obvious.

**Talents:** In the area of talents, strategic capabilities make new strategic movements possible. Not only because top personnel attracts further high potentials. In technology-driven markets, but also in so-called people-driven markets, talent is the key strategic capability and, like patents and rights, both enabler and driving force. People make the difference, people make decisions, and people push and move the company forward in the sense of strategic movements.

**Data:** Data is the new oil. Data is often a strategic capability. And here, too, data is pushing to have more and more data and to generate and use it in ever broader contexts, while at the same time enabling completely new application contexts. Data as strategic capability enables and drives strategic movement.

Clockwise or counterclockwise – it is demonstrated that strategic movements, in this case in the sense of technology acquisitions, have an interdependent effect: Following the model, as a starting point to develop strategic power. But an effect with regard to the success factors innovation, patents, talent and data too. This will be illustrated in the following in the form of selected cases of technology acquisitions of GAFAM companies over the past 20 years.

### **Strategic technology acquisitions as key for success – GAFAM acquisitions as use cases**

As already mentioned, GAFAM companies are accountable for an enormous and constant number of technology acquisitions, particularly of technology startups. Following the companies' press releases and/or the relevant sources for the latest industry news as well as scientific sources, many of these acquisitions contribute directly to the success factors of innovation, patents, talent and data discussed here. In the following, 25 of these acquisitions will be presented as examples and they will be assigned to the success factors innovation, patents, talent and data (table 2). In a next step, the interdependent mechanisms of action between strategic movements, strategic capabilities and strategic barriers will be illustrated using these examples from the GAFAM sphere.

Some of the acquisitions are linked to only one of the four factors, while others can be attributed to two or even three of the factors (table 2). While

Google (Google, 2007; Kincaid, 2009; Hong, Bhattacharyya and Geis, 2013; Dolata, 2017, Genzini and Kepalaité, 2018; Callaham, 2022) was able to develop advertising innovation in particular with most of the acquisitions and thus also further advantages in terms of data, and in some cases even purchased additional data inventories, with Adscape, Double Click and Android, not only technology and technological innovation were acquired, but also explicitly the teams behind these companies (as a source of new talent), which were then integrated into Google. Two of Amazon's acquisitions (McCarthy, 2008; Dolata, 2017; Genzini and Kepalaité, 2018) ensure the company important patents (microchip design and touchscreen technology) to be more independent (from the competition) in the hardware market (tablet market). Facebook acquired adtech-innovation, adtech-patents, data and adtech-talent (Siegler, 2011; Dolata, 2017; Genzini and Kepalaité, 2018). Apple is looking in particular for innovation with its acquisitions (Schonfeld, 2012; Gupta and Carew, 2012; Dolata, 2017; Genzini and Kepalaité, 2018) – but not only key hardware components and touchscreen or fingerprint technology and patents for the iPhone are of specific relevance – Apple is also looking for talent for their engineering teams. Speaking of Microsoft's acquisitions (Microsoft, 2007; Hong *et al.*, 2013, Dolata, 2017), in the case of AdECN the acquisition brings both, key technologies and significant domain expertise to Microsoft.

The acquisition of Android (as a strategic movement) built up Google's strategic capability (in terms of technology and innovation as well as talent and know-how in the mobile operating systems market) to own and develop one of the most advanced mobile operating systems. There was nothing comparable on the market (except for Apple with iOS). The barriers to enter the market of mobile operating systems are accordingly very high. The purchase of Zagat and Waze can be viewed in a similar way: Google has tremendously expanded the data base and functionality of Google Maps and created additional value for users with the restaurant reviews (and restaurant information), GPS navigation and a real-time traffic information system now available. The lead in the field of map applications has thus increased again, and the market barriers for others have been raised.

*Table 2: Selected examples of GAFAM technology acquisitions assigned to the success factors innovation, patents, talent and data*

Acquirer	Acquiree	Year	Innovation	Patent	Talent	Data
Google	AdMob (mobile advertising)	2009	x			x
Google	Adscape (advertising software)	2007	x		x	
Google	Android (mobile software)	2005	x		x	x
Google	Zagat (review platform)	2011				x
Google	DoubleClick (internet advertising)	2008	x		x	x
Google	Waze (GPS navigation software)	2013	x			x
Amazon	Annapura Labs (hardware)	2015	x	x		
Amazon	Audible (audio book download provider)	2008	x			x
Amazon	Kiva Systems (automatic ordering systems)	2012	x			
Amazon	Liquavista (hardware)	2013	x	x		
Amazon	Dispatch (robotic hardware)	2017	x	x	x	
Facebook	Atlas Solutions (advertising)	2013	x	x		x
Facebook	Beluga (messaging)	2011			x	
Facebook	FriendFeed (social networking aggregator)	2009			x	
Facebook	Oculus (hardware)	2014	x	x		
Facebook	GrokStyle (image search software)	2019	x			
Apple	Anobit (flash storage technology)	2011	x		x	
Apple	AuthenTec (biometrics hardware)	2012	x	x		
Apple	WifiSlam (indoor mapping technology)	2013	x			
Apple	FingerWorks (touchscreen technology)	2005	x	x	x	
Apple	DataTiger (marketing software)	2019				x
Microsoft	AdECN (advertising exchange platform)	2007	x		x	
Microsoft	aQuantive (advertising)	2007	x			x
Microsoft	Calista Technologies (graphic technology)	2008	x			
Microsoft	Semantic Machines (software)	2018	x	x		x

Buying (as a strategic movement by Amazon) Audible, with all its existing subscribers and the respective user data, combined with Amazon's already existing strategic capabilities, led to enormously high market entry barriers

in the audio book market. A market entry was almost impossible to overcome by other (potential) competitors until the emergence of streaming music platforms.

The acquisition of Oculus at a time when virtual reality technologies were not yet ready for the market enabled Facebook to secure relevant patents and thereby significantly influence the further development of VR glasses. This enabled Facebook to raise the barriers to market entry to such an extent that Facebook is currently one of the dominant players in the VR market.

The strategic movement to buy a touchscreen technology pioneer and make an innovative control technology for mobile devices marketable became one of the strategic capabilities for Apple. The innovation (or invention) of the iPhone smartphone became possible. Securing patents is not only in this case a central competitive factor in the mobile devices and hardware markets.

Microsoft's goal in acquiring Semantic Machines is to enhance its strategic capabilities of natural-sounding voice assistants using the data collected by Semantic Machines to help guide the further development of this technology and thereby become the most important business partner of such voice assistants.

To sum up the situation of GAFAM, it can be said that they have such a high level of liquidity and cash reserves that they are able to conduct any acquisition they would like to at any time. This acquisition-power is one of the sources of their success. Their strategic movements cause the interdependent and self-reinforcing effect to gain strategic power to win the war for innovation, the war for patents, the war for talents, and the war for data.

### **Evaluation of the “Concept of Strategic Power” – findings and next steps**

With the “Concept of Strategic Power”, certainly, only a pragmatic approach has been presented here (as a reminder, it all started with a thought experiment on the title “power”), with which, starting from acquisition activities from the GAFAM-sphere, an attempt has been made to explain the



mechanisms of action of the superiority of these companies. It is assumed that acquisitions are the starting point of success (strategic movements), which then become capabilities and finally strategic power and thus initially account for the success of GAFAM. However, it is just as plausible as it is likely that the success here can be due to the company's very own business model (Google), clever marketing (Apple) or other success factors (capabilities), an extreme willingness to take risks (Amazon in the early years) and other reasons. It is also clear that this type of case study application is almost solely descriptive and therefore analytical to an almost limited extent only.

Nevertheless, the concept can be considered suitable: Because of its interdependent structure and cyclicity, other directions of action than those described between potentials, movements and barriers are not excluded. Moreover, the examples as well as other authors (for example Dolata 2017) demonstrate that a central key for the overall success of GAFAM companies lies in technology investments and acquisitions. The GAFAM companies are responsible for an enormous and constant number of acquisitions. Moreover, since then, concerns have been addressed to the fact that the growing number of startup acquisitions made by such tech giants are in reality a strategic way to terminate the competition. This is already drawing the attention of the competition authorities – not only in Europe (Fulgencio, 2021) but now also in the USA (Stoller, 2019; Breuninger and Feiner, 2021).

For management practice, the approach presented here can provide benefit in three areas in particular: (a) The approach can be an alternative way of thinking in the context reasoning, justification and defense in the decision-making processes for technology acquisitions and thus a further component of decision support. Companies can ask themselves the questions: What steps (in terms of movements) do we want to and can we take in this technology area? How do these movements affect our capabilities? What do the movements mean in terms of consciously setting barriers or what opportunities for surpassing barriers arise? (b) The approach is multi-perspective because it takes into account several aspects and especially effects of technology acquisitions (movements) – both direct and indirect. (c) The approach makes clear that the targeted (strategic) selection of technologies is important (which technologies, which actions, which earliness and speed, which diversity or focus, etc.).

This last aspect already points to what could also be interesting for research from a scientific point of view: (i) Under the keywords technology adoption strategies and technology investment strategies, it would be interesting to investigate how early or how late companies, especially GAFAM, invest in emerging technologies. (ii) What does a technology investment portfolio look like, depending on the overall corporate strategy, and are there differences in situational success factors here. (iii) To what extent do the Chinese counterparts of GAFAM, BATX (Baidu, Alibaba, Tencent, Xiaomi) act accordingly or with completely different technology adoption strategies. In China, too, technology companies now dominate access to information, entertainment and communication as well as the production of media content.

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