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The Socio-Economic Impact of Online Platforms

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Foreword



Platforms – Solving problems not making them

Platform business models are by no means a novel phenomenon. Shopping malls and newspapers follow exactly the same principle and have existed for decades. All of them aim to match two or more groups of users to solve apparent problems. This has not changed. What has changed though are the problems that they solve.

Search engines make the internet fathomable as they point consumers to exactly the information they need online. Online marketplaces let small and large businesses reach their customers worldwide with ease. Comparison websites intensify competition and make markets transparent for consumers. Social networks make communicating with friends and family comfortable. All this creates new jobs and drives economic growth.

Online platforms constantly face strong competitors. Consumers can switch from one platform service to another in the matter of a click. A large customer base and apparent lock-in effects are unlikely to suffice to keep ahead of others. Only by continuous innovation and possibly cannibalising one's own business model can online platforms succeed in the long term. MySpace was quickly forgotten when Facebook entered the market.

Today, the internet without online platforms is unimaginable. They create various advantages for the individual user as well as society as a whole. They encourage plurality, increase efficiency and strengthen innovation. Consequently, we first of all need to get more actual evidence before we continue the debate about potential policy measures.

Dr. Iris Henseler-Unger



Digital wake-up call

Introduction of the quartz movement enabled much cheaper production of watches that were also more reliable than their predecessors. Hence, a structural change forged its way through the Swiss watchmaking industry, wiping out around a third of all jobs. With smartphones having replaced most alarm clocks already, one may question whether the watch as we know it will survive the next few years.

Long-established businesses and their business models run the risk of becoming outdated unless they continuously reconsider what drives their success. In particular, one must fully understand the impact of new technology and learn to make the most of it.

It's too late to hear the digital wake-up call when the Uber driver waits in front of the Airbnb apartment to chauffeur the lady perfectly dressed in a rent-the-runway outfit to a Tinder date. All lines of industry must take digitisation and platform business models seriously. Protectionism will not prevent fundamental structural change; only the creativity and keenness to innovate can lead to sustainable success.

Introduction

The strong position of some online platforms like Google, Amazon, Facebook and Apple (GAFA) has triggered a public debate about their economic dominance, notorious data collection and massive pull on users. The White Book published by the German Federal Ministry for Economic Affairs and Energy (BMWi) highlights just how important this matter is to policy makers in Germany.

Surprisingly, the public debate is more often than not void of scientific insights into the subject matter. There is a lack of evidence about the actual economic and societal impact of online platforms. Even a consistent and clear definition of online platforms is missing from the debate.

A proper analysis of online platforms and their impact is needed to correctly identify if there is any call to action for policy makers or regulators.

The present research brief provides an overview of the economic and societal impact of online platforms in Germany.¹ It adheres to the economic definition of platforms as multi-sided markets. Consequently, the technological concept of platforms is not considered here.

Based on a comprehensive review of the economic literature, we develop a new approach that enables consistent analysis of online platform business models, taking full account of their complexity. Nonetheless, our approach is intuitive and easy to understand, making comparison of various online platforms straightforward.

To achieve this, our approach draws on the concept of business model analysis put forward by Osterwalder and Pigneur (2010).² It captures the most relevant interactions between the various user groups of online platforms, referring to data, revenue and attention. The results of this analysis informed the Green and White Books published by the BMWi on online platforms.

¹ Arnold, R. et al. (2016). "Internet-basierte Plattformen und ihre Bedeutung in Deutschland." WIK-Study for the Federal Ministry for Economic Affairs and Energy, Bad Honnef.

² Osterwalder, A., & Pigneur, Y. (2010). "Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers", John Wiley & Sons.

The economic impact of online platforms

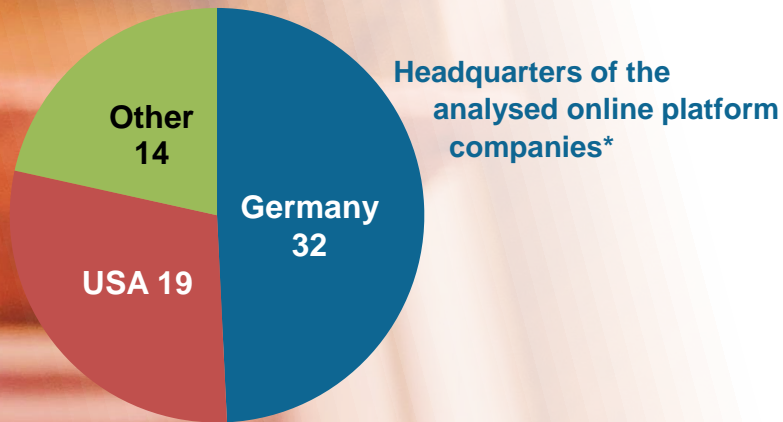
Revenue in billion € (2015)*



As a first step, the economic impact of online platforms can be measured by their revenue in Germany and worldwide. The figure on the left illustrates that revenue for the top 65 online platforms in Germany equals roughly a tenth of their worldwide revenue.

Around a third of the revenue originating in Germany also remains with online platforms whose headquarters reside in Germany. Internationally, however, the same companies have only a 5% share of the remaining global revenue between them.

For 2015, the analysis by WIK shows approximately 61,000 employees at companies that have online platforms as a significant part of their business model. That equates to more than half of the employees of Deutsche Telekom in Germany.



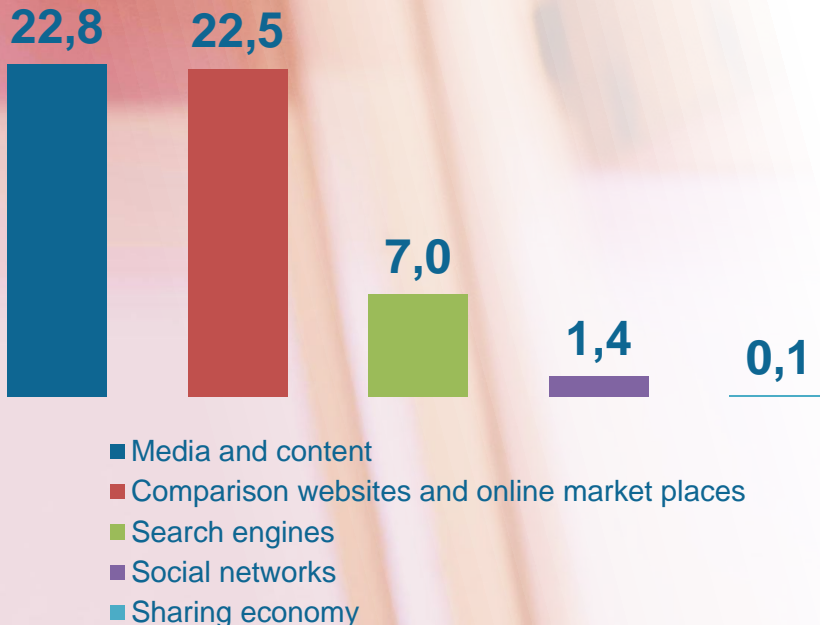
The public debate more often than not emphasises the dominance of (in particular) US online platforms in Germany. Our analysis cannot support this.

The headquarters of around half of the 65 most important online platforms are in fact in Germany. The share is the highest for those online platforms that thrive on local insights or seek to connect user groups locally. For instance, 18 out of 26 comparison websites and online marketplaces stem from Germany.

Whether such a focus on a local market is sensible or not remains to be seen. On the one hand, marginal benefits of scaling worldwide can be extremely high. This is reflected, for instance, in the significantly higher average revenue per employee that US online platforms who are active worldwide have achieved (approx. €590,000 per employee) compared to German online platforms (approx. €309,000 per employee). On the other hand, a clear focus on a local target group can improve the service quality, in turn increasing profits and reducing compliance costs for international markets. Which strategy proves more successful requires more research.

Split by type of online platform, it becomes clear that companies in the fields of “media and content” and “comparison websites and online marketplaces” have the highest aggregated revenue in Germany. The revenue of search engines in Germany are around €7 billion in 2015. Social networks follow with an aggregate revenue of €1.4 billion in 2015, while online platforms in the sharing economy made only around €100 million.

Revenue in Germany in billion € (2015)*

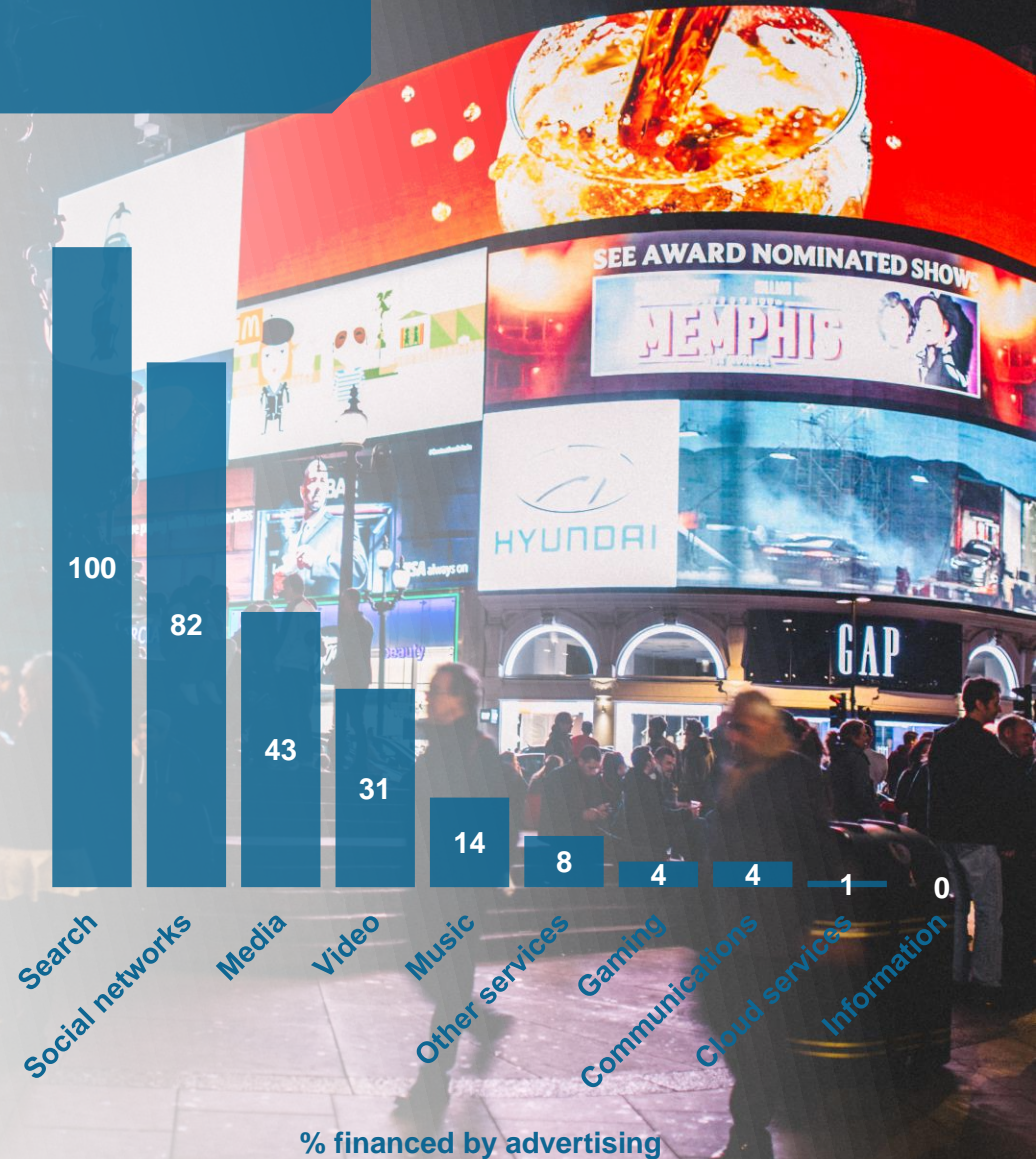


*Basis: 65 most important online platforms in the fields of 'search engines', 'comparison websites and online market places', 'sharing economy', 'media and content' 'social networks' – WIK (2017) estimate based on company data, press releases, trade publications (All revenues were accounted for referring to the companies offering specific services and not to individual services. Therefore, summing the individual categories of online platforms implies double counting some revenues.)

Drivers of online advertising

Advertising is one of the most important sources of revenue for many online platforms. A study by GSMA (2016)¹ shows how strongly various business models depend on advertising. Search engines generate almost all their revenue from advertisements. With social networks, the revenue share of advertising is 18% lower. Music- and video-streaming services depend significantly less on advertising. Some of them even follow a subscription-only business model that is void of any advertising. Notably, subscription-only online services are not platforms in the economic sense.

Online platforms have driven a significant part of the overall online advertising revenue as well as the value chain behind it. In total, the share of online advertising worldwide has increased from below 5% in 2000 to around 33% of advertising expenditure in 2015.



¹ Page, M., Firth, C., & Rand, C. (2016). The Internet Value Chain - A Study on the Economics of the Internet. London/Dubai: GSMA/A.T. Kearney.

² The Economist (2013) based on Zenith Optimedia.

Capturing new value

Online platforms enable unused capacity to be unlocked efficiently by reducing information, search and transaction costs. Thus, completely new value can be captured and existing economic potential can be fully used.

This is the basic idea of the so-called sharing economy. Our analysis shows that the direct revenue of this type of online platform is relatively small at €2.6 billion worldwide. Nonetheless, the economic and in particular societal impact of online platforms is enormous.

According to the German Environmental Agency, an appropriate increase in car sharing and public transport could reduce CO₂ emission in Germany by 6 million tonnes.¹ Against this backdrop, it is important to mention that the percentage of German revenue in the sharing economy lags behind that of other types of online platforms: For the sharing economy, it is around 4%, while it is 17% for online marketplaces and 13% for content services. Thus, there is still substantial potential in the German sharing economy.

Car
23h per day
standstill

Drilling machine

12min in life
in use



¹ Gsell, M., et al. (2015). Nutzen statt Besitzen: Neue Ansätze für eine Collaborative Economy. Dessau-Roßlau. Source: Auto-Nutzung VCD (2014).

Success factors – It's in the mix

is the beginning of everything. In this respect, platform businesses do not differ from other innovative business ideas. Unlike typical products or services, with platforms it is not about engineering or designing a better process. Instead, the most important aspect is to identify an efficiency gap that can be filled by a multi-sided business model connecting at least two groups of users.

If one can scale this model, such efficiency gaps bear great profitability potential. However, it can prove very difficult to make this growth happen. Individual sides of the platform have to be managed to grow at the right speed so as not to alienate the other sides by either featuring too few or too many members; most importantly, one has to have the right actors on each side of the platform. When this fickle balance is lost, the online platform is at risk of rapid failure.

If it all works out, our analysis underscores the potential for efficiency unveiled by platform business models. This is reflected in online platforms' revenue by employee, which is substantially higher than in most other sectors in Germany. For instance, in manufacturing, the average per capita revenue is €295,000 but for the average online platform, it is €548,000.

Ideas

A platform business model alone is not a guarantee for success. The analysis by WIK shows that this type of business model is in fact very difficult to pursue. Four success factors appear to be most decisive (see on the right). First and foremost, a creative idea

Efficiency

Balance

Growth



Multi-sided success

Online platforms can be considered intermediaries that enable economic and social interaction between two or more user groups. Within these user groups, there are indirect network effects (network externalities). Online platforms use the internet as their infrastructure. They operate on multi-sided markets to generate added value for at least one of their user groups.¹



CONSUMERS & USERS

¹ Hildebrandt, C. & L. Nett (2016). "Die Marktanalyse im Kontext von mehrseitigen Online-Plattformen." WIK-Diskussionsbeitrag Nr. 410, Bad Honnef.; Monopolkommission (2015). "Sondergutachten 68 Wettbewerbspolitik: Herausforderung digitale Märkte.", Nomos: Baden-Baden.; Bundeskartellamt (2016). "Marktmacht von Plattformen und Netzwerken." Arbeitspapier des Think Tank Internet, Bonn.; Bundesnetzagentur (2017). "Digitale Transformation in den Netzsektoren." Grundsatzpapier des Aufbaustabes Digitalisierung/Vernetzung und Internetplattformen, Bonn.

How platforms work

An online platform matches demand and supply sides. Within that, online platforms tailor their functions (e.g. matching, transaction, comparison) in line with the behaviour and usage of their user groups such as suppliers, consumers, advertisers and data intermediaries. Platforms facilitate interaction between the various platform sides sometimes without being a part of it.¹ To tailor their services, online platforms collect data about their users. Big data technology enables new insights and is used by most platforms.²

The larger the number of users (i.e. the network), the more new users are drawn to a specific platform (direct network effect). The users on one side of a platform profit indirectly when the number of users on another platform side grows, thus increasing the attractiveness to use the platform (indirect network effect).

Current analytical approaches cannot account for asymmetric pricing, non-monetary prices, direct and indirect network effects, and the huge variety of business models that one finds with online platforms. Furthermore, it has been shown that simply looking at one market side individually cannot account for the overall complexity of platform business models.

Thus, WIK designed a new model to analyse online platforms – the “Data Revenue Attention Model” (DRAM). The model is introduced on the following page. It can identify online platform business models consistently and makes them comparable.

analytics

ALL

IMAGES

NEWS

Google Analytics -
<https://www.google.com/analytics/>

Get the data you
Marketing and
Analytics. A

Google

¹ Henseler-Unger, I., R. Arnold & C. Hildebrandt (2016). "Wettbewerbspolitik in der digitalen Wirtschaft: Ein neuer Ansatz für die Analyse Internet-basierter Plattformen." *Wirtschaftsdienst* 96 (4): 242-245.

² Hildebrandt, C. & R. Arnold (2016). "Big Data und OTT-Geschäftsmodelle sowie daraus resultierende Wettbewerbsprobleme und Herausforderungen bei Datenschutz und Verbraucherschutz." *WIK-Diskussionsbeitrag Nr. 414*, Bad Honnef.

The DRAM¹ builds on the concept of business model analysis by Osterwalder and Pigneur (2010)². It transfers the intuitive logic of their approach to platform business models. The figure on the right provides an overview of our model.

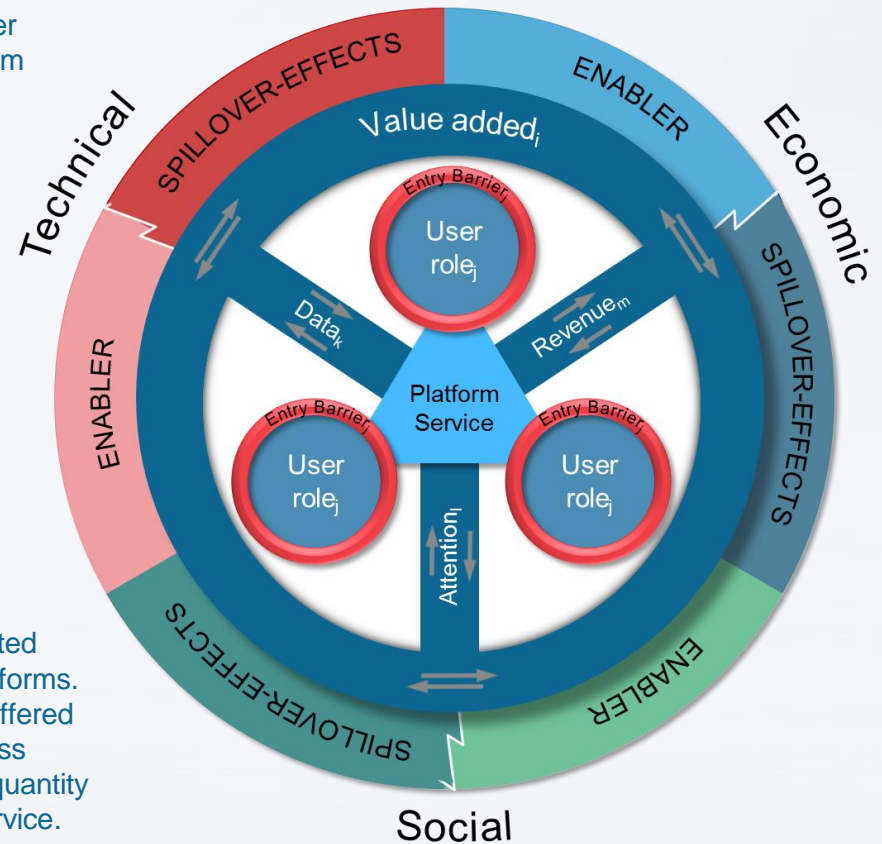
As mentioned before, the matching of individual **user roles** is the central concept of online platforms. The DRAM differentiates user roles according to their individual purpose. For instance, one can differentiate suppliers, consumers, advertisers and data intermediaries.

The **barrier to entry** captures the creative leeway of online platforms in relation to their various user roles. This may include incentives paid to new users offering their services on the platform. There can also be legal barriers to entry for some user roles, such as a valid driver's licence. Depending on the specifics of the barrier to entry, lock-in effects can arise. For instance, reputation markers gained by activity on the platform may create a lock-in effect.

The user roles exchange **data**, **revenue** and **attention** among themselves, and also with the online platforms. Data is a significant input for online platforms, as the data can be used to improve their services as well as targeted advertising. The latter is an important source of revenue for many online platforms. For the success of advertising on the platform, it is crucial that the services offered can capture the attention of users. Our analysis identifies three critical success factors for getting consumers' attention: (1) appropriate personalisation, (2) quantity of advertisements and (3) the value added for consumers by the platform service.

The DRAM understands the **value added** as being created for individual user roles using the combination of data, revenue and attention flows. Furthermore, successful and targeted matching of the various user roles provided by the online platform creates significant value added. In sum, the specific combination and definition of the individual building blocks is critical for the competitive advantage and success of online platforms.

Besides the description of online platforms' building blocks, the DRAM also captures **enablers** and **spill-over effects** of online platforms. They can be sorted into technological, economic and societal categories. The DRAM helps to understand the framework conditions that shape the success of online platforms. For spill-over effects, our model lists the impact of online platforms on jobs and revenue in other sectors.



1 Arnold, R. et al. (2016). "Internet-basierte Plattformen und ihre Bedeutung in Deutschland." WIK-Study for the Federal Ministry for Economic Affairs and Energy, Bad Honnef.
 2 Osterwalder, A., & Pigneur, Y. (2010). "Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers", John Wiley & Sons.

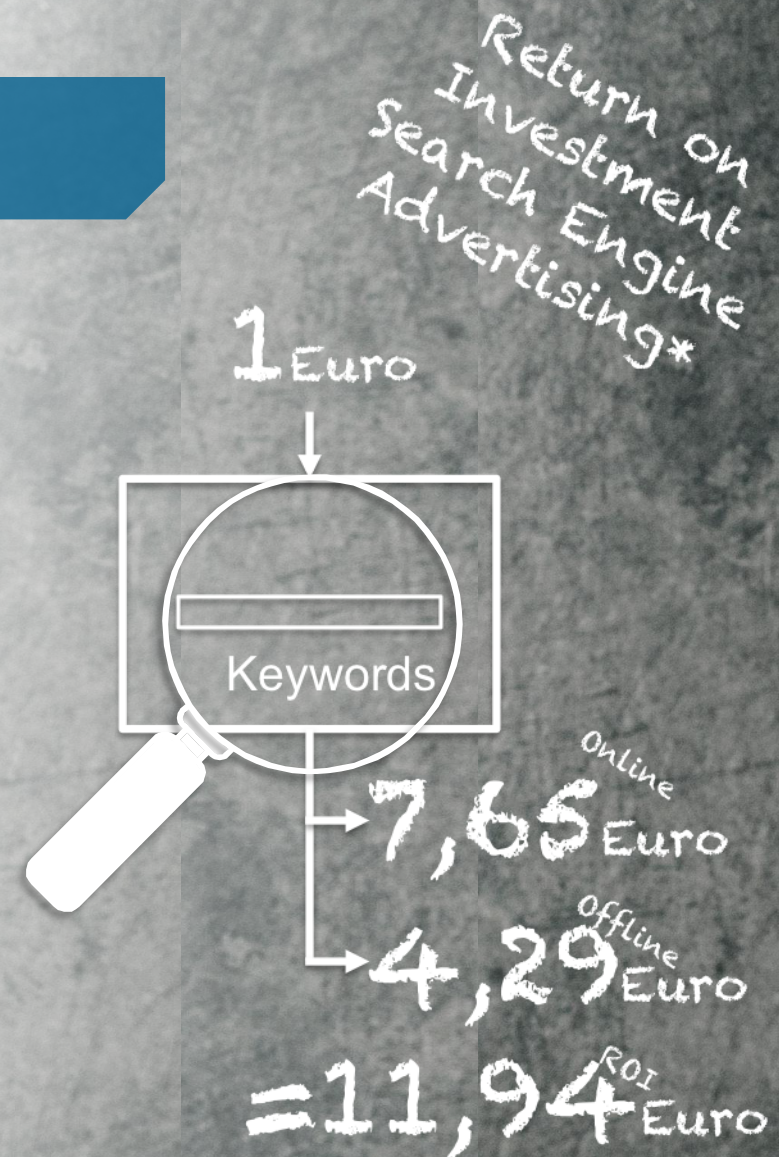
Offline impact of online platforms

The introduction to this study already referred to the sometimes disruptive effect that online platforms can have on offline businesses. The public debate often emphasises this aspect, rarely mentioning the positive impact of online platforms.

Many online platforms have an important marketing channel for local businesses. For instance, online platforms make it easy for consumers to find and rate local businesses and services. Many restaurants, small hotels, doctors or workshops who could otherwise not afford to reach such a large audience profit significantly from these platforms.

The so-called Research Online, Purchase Offline effect (ROPO effect) is also an important part of how online platforms influence local businesses. For instance, more than half of consumers (56%) typically search online for information about products and services before they purchase them at a local shop.¹

This ROPO effect is also evident in a study conducted by the Cologne Institute for Economic Research. The authors estimated a return on investment for search engine advertising. They found that for each Euro invested, around €12 in revenue can be expected. Roughly €4 of this €12 refers to offline purchases triggered by online advertising.²



¹ Google (2013). Research Online Purchase Offline - Die Bedeutung des Internet im Kaufentscheidungsprozess. Hamburg.
² Arnold, R. & M. Schiffer (2011). Faktor Google - Wie deutsche Unternehmen Google einsetzen. Study by IW Cologne.
*using the example Google AdWords; Source: ibid.

Conclusion

In sum, we find that online platforms contribute positively to economic, technological and societal development in Germany. The DRAM captures all relevant impacts, employing a consistent and intuitive approach. This simplifies the analysis of success factors and the comparison of platform business models.

Indeed, the spill-over effects of online platforms are large as the summary on the right illustrates. The impact of new technological developments such as artificial intelligence is difficult to predict today. It is, however, obvious that competitive pressure in this field is going to increase rather than decrease.

In order to establish strong and possibly globally successful online platforms in Germany, policy makers need to set the right framework conditions. First and foremost, this needs to include an innovation-friendly policy framework and taking start-up culture more seriously.

Search engines

Average annual savings per company:

€119,000 (in 2009)

Online marketplaces

Growth rate of CEP shipments: 4.5%

Media- and content services

Top 13 YouTubers earned together around US\$54.5 million (in 2015)

Social networks

Facebook's economic impact in Germany: €2.63 billion (in 2011)

Sharing Economy

Airbnb's contribution to Berlin's economy: €100 million (in 2015)

About this study:

The results described here are part of a larger study “Internet-basierte Plattformen und ihre Bedeutung in Deutschland” by the Wissenschaftlichen Instituts für Infrastruktur und Kommunikationsdienste (WIK) conducted for the German Federal Ministry for Economic Affairs and Energy. The complete study is available online on our website www.wik.org in German.

About WIK:

Founded in 1982, WIK (Wissenschaftliches Institut für Infrastruktur und Kommunikationsdienste), based in Bad Honnef, Germany, offers consultancy services for public and private clients around the world. Its focus is on the telecommunications, Internet, post and energy sectors, giving advice on policy, regulatory and strategic issues. More information is available at: www.wik.org.

The Top65 online platforms analysed for the present study are:

7Nxt, 9flats.com, Ab in den Urlaub, Airbnb, Amazon, AOL Suche, Ask.com, Bild.de, billiger.de, Bing, BlablaCar, Booking.com, BuzzFeed, Check24, Clifish, Couchsurfing, DaWanda, DuckDuckGo, Ebay, eDarling, Elitepartner, Etsy, Expedia, facebook, FAZ.net, Fluege.de, Friendscout24, Gelbe Seiten, Google, Groupon, guenstiger.de, Spotify, Handelsblatt, HolidayCheck, Idealo, Kleiderkreisel, lastminute.de, LeihDirWas, LinkedIn, Mamikreisel, Momondo, MyHammer, opodo, Parship, Preisvergleich.de, ResearchGate, SoundCloud, Spiegel Online, Sueddeutsche.de, T-Online Search, travelscout24, TripAdvisor, Trivago, Twitter, uber, Verivox, WGgesucht, Wimdu, Wolfram Alpha, Wunder, Xing, Yahoo Search, yelp, Youtube, Zeit Online.