

The Blockchain's Impact on Digital Marketing Platforms

The platform economy is booming. However, platform business models are often based on powerful monopolies or oligopolies, leading stakeholders to look for more balanced ecosystems. As blockchain technology offers decentralized solutions, it appears attractive for replacing such platforms. However, many blockchain applications are still in an early stage. This paper scrutinizes how the blockchain affects the platform economy and whether relevant blockchain applications with product/market fit exist. The paper draws on a qualitative mixed-method approach followed by a case analysis to develop a basic framework for assessing the impact of blockchains on platform economies. The results are illustrated by means of a blockchain-based platform with a proven product/market fit. Options for incumbent firms to draw on this new infrastructure are outlined.

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One example of the so-called platform economy is Airbnb, which connects accommodation seekers with apartment owners via an online platform. Despite an annual revenue exceeding 3.6 billion USD in 2018, Airbnb does not actually own any apartments (Hook, 2018). However, many business models of the platform economy are based on powerful monopolies or oligopolies. This is the reason why many stakeholders (e.g., publishers, advertisers and users) are looking for more balanced ecosystems. Can a new disruptive technology change that?

Blockchain technology has been attracting more and more media attention (Nofer, 2017). Cryptocurrency usage has increased from 5 million users in 2015 to 44 million in 2019 (Statista, 2020). The most popular cryptocurrency is Bitcoin and its current market capitalization of 174 billion EUR would place it at the top of the German DAX30. This leads to the question what blockchain technology is all about.

The idea of blockchains is to create a database that can verify and store data transactions decentralized across many devices (nodes), thus dispensing with the connecting party. Many companies are keen to invest in blockchain start-ups to gain a competitive edge. In 2018, blockchain start-ups raised over 3.1 billion USD of venture capital and incumbent firms dedicated entire teams to the analysis of use cases and the development of prototypes (Carson, Romanelli, Walsh, & Zhumaev, 2018; Coindesk, 2020).

However, blockchain applications are still at the stage of an “innovation trigger” (Gartner, 2019a), especially in marketing (Gartner, 2019b).

This leads to the following questions: How can blockchain technology affect digital platforms in marketing? Is there a conflict between the boom of blockchain and the rise of the platform economy? Can blockchain decentralize platform businesses to remedy monopolistic structures? Are there use cases of blockchain technology for digital marketing with product/market fit?

This paper develops a framework for the blockchain’s impact on digital platforms based on a mixed-method approach of literature review, qualitative expert interviews and a case study on a project with a proven product/market fit: the Basic Attention Token ecosystem and its browser Brave.

Conceptual Framework

The platform economy

An online platform connects at least two parties and facilitates their mutual transactions (Busch et al., 2016).

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A key growth driver of platforms is the network effect: the more people are using a platform, the more new users are joining (Gawer & Evans, 2016). When a critical mass is reached, users are locked in and cannot easily switch to another platform (Scholz & Schneider, 2016). Other key drivers are low marginal costs and the scalability of platform operations, creating the opportunity to break traditional industry boundaries (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013; Hidding, Williams, & Sviokla, 2011).

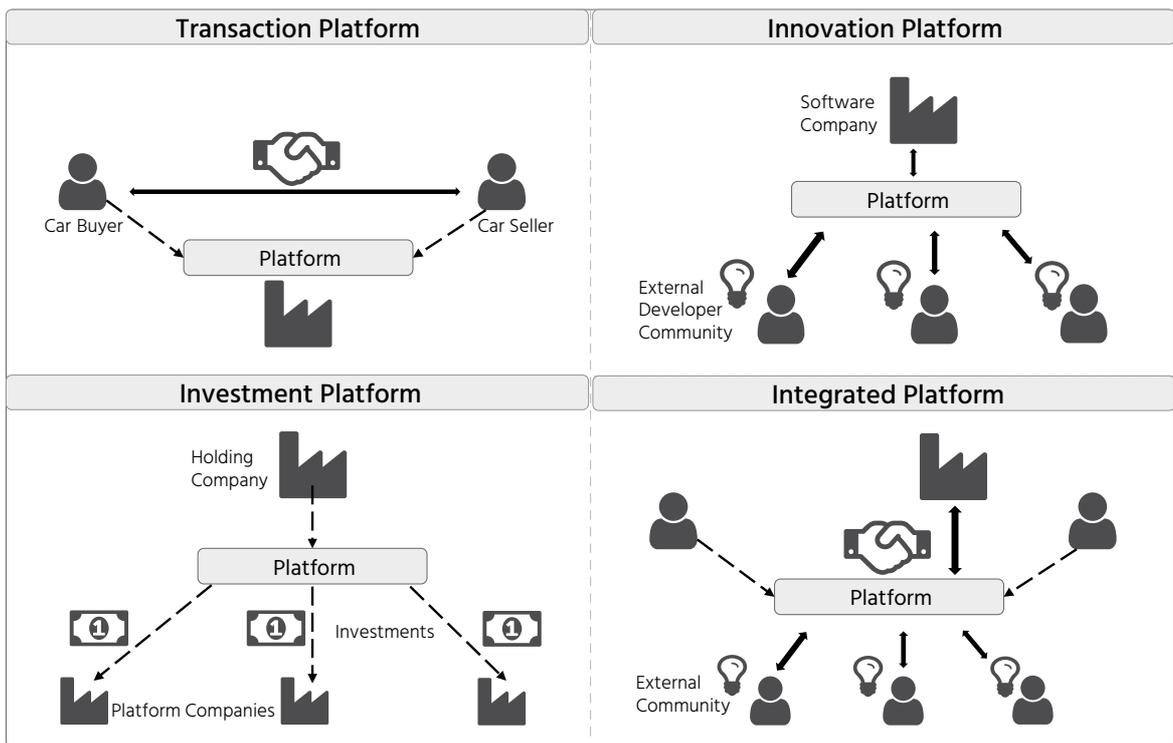
Gawer & Evans (2016) categorize platforms into four types (see figure 1).

A **transaction platform** acts as a traditional middleman between parties to enable exchanges or transactions of goods and services (Gawer & Evans, 2016). The ridesharing website blablacar.com, the payment provider paypal.com and the taxi competitor uber.com are successful examples.

An **innovation platform**, such as Apple’s app store, is used to boost the innovation process within a company using external input. Besides internally developed apps, third-party app developers are part of the innovation process, extending the product range (Gawer & Evans, 2016).

An **integrated platform** combines the features of a transaction and an innovation platform to maximize the benefits of both (Gawer & Evans, 2016). Apple, Google and Facebook are well-known examples that offer their own products as well as third parties’ products to enrich their ecosystems.

Fig. 1: Four Types of Platforms



Source: Adapted from Gawer et al., 2016.

An **investment platform** is provided by a holding company with a focus on platform companies (Gawer & Evans, 2016). For example, Priceline is invested in booking.com, kayak.com, rentalcars.com and opentable.com. Similarly, Rocket Internet invests in highly scalable platform companies (Neittaanmäki, Galeieva, & Ogbechie, 2016).

This study will use these four categories to differentiate platform companies and to explore the potential impact of blockchain technology on digital platforms.

Blockchain Technology

The overall concept behind blockchains is called distributed ledger technology (Deshpande, Stewart, Lepetit, & Gunashekar, 2017): every participant knows about all transactions and a payment can simply be made via subtraction on one account and addition on another one, without a bookkeeping party (Clark & Stoddard, 1996; Karame, Androutaki, & Capkun,

2012; Zohar, 2015). Each participant locally stores a synchronized copy of the database (Nofer, 2017), making a database host obsolete. Transactions are validated by each network member via a majority voting mechanism called consensus. The more entities are involved in the voting process, the less likely a corrupt transaction is (Seebacher & Schüritz, 2017). Immutability is ensured because transactions are encrypted and stored in blocks which are chained together – likely the origin of the name “blockchain” (Nofer, Gomber, Hinz, & Schiereck, 2017).

As figure 2 shows, blockchain technology is based on five principles (Iansiti & Lakhani, 2017).

A major problem in transactions is trust. Being able to trust might even be the precondition for exchanging goods in general. Trust therefore has a significant impact on the behavior of individuals and entire groups (Hosmer, 1995). Digital currencies or virtual goods create the possibility of being spent multiple times: this is called the double spending problem. Traditionally, central, highly credible third parties establish trust

between transaction parties. Now blockchain technology provides an alternative, ensuring trust by its architectural design.

Moreover, blockchains enable automated transactions with so-called smart contracts. They include rights, obligations, conditions and consequences via a digital algorithm. Specific events trigger a smart contract to execute a predefined action, for example the annual payment of a coupon interest (Brühl, 2017). The variability and automatization via smart contracts are major reasons for blockchains' disruptive potential (Johansen, 2018; Kosba, Miller, Shi, Wen, & Papamantou, 2016).

Methodology and Data

Methodology

This article combines primary and secondary data – a literature analysis, a qualitative field study and a case study analysis – to explore blockchains' impact on digital platform companies (Saunders, Lewis, & Thornhill, 2009). Specifically, the results of qualitative expert interviews yield a blockchain-specific framework of success factors for platform companies. This framework is validated via a case study on the Basic Attention Token (BAT).

Qualitative Data Collection

Experts were selected based on their involvement and expertise in the research topics blockchain and digital plat-

Management Summary

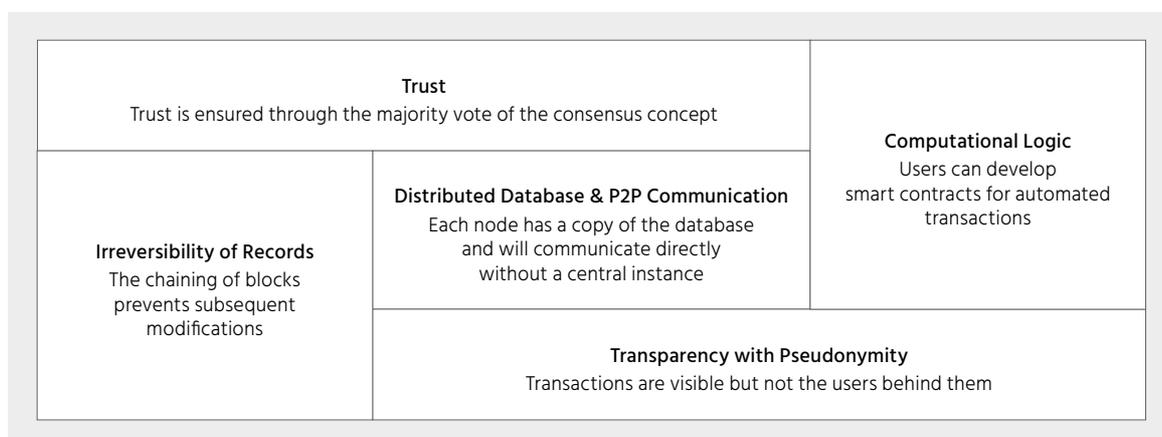
This paper develops a basic framework to assess the impact of blockchain technology on digital platform economies. It employs qualitative research and a digital marketing case study of the Basic Attention Token eco-system to guide managers of incumbent firms on how to react to the new blockchain infrastructure.

forms (Dorussen, Lenz, & Blavoukos, 2005; Meuser & Nagel, 1991). To compare different points of view, eight experts were selected from various industries, including platform company employees, strategy consultants and start-up founders.

The interviews followed a semi-structured approach, with the experts receiving a preparatory document beforehand. The telephone interviews were limited to an average duration of 20 minutes to ensure the interviewees did not lose interest (Greener, 2008).

To evaluate the data qualitatively, interviews were condensed into essential insights (Mayring, 2000). First, the recorded interviews were transcribed. Then, based on the research goals, multiple categories were developed. Employing these categories, the authors coded the text and derived

Fig. 2: Basic Principles of Blockchain Technology



Source: Adapted from Iansiti & Lakhani, 2017.

Schwerpunkt **Welcher Hype setzt sich durch?**

the most important insights, such as success factors for platform companies (see figure 3 for the results).

Mapping Basic Blockchain Principles to Success Factors of Digital Platforms

Framework for Blockchains and Digital Platforms

To explore the blockchain’s impact on the platform economy, this section will use the data from the expert interviews and the literature analysis to map and match blockchain principles to success factors of digital platforms. A match indicates that blockchain principles influence that specific success factor. The results are depicted in figure 3.

Essentially, two main success factors are impacted by blockchain technology.

- **Superiority of platforms:** Five of the experts stated that blockchain technology can help to further reduce costs dramatically. Participants can perform transactions directly on their own devices, in contrast to requiring a centralized

database (Expert 3). This further increases the competitive advantage of platforms, allowing them to charge lower fees (Carson et al., 2018; Pilkington, 2016). Also, processes can be optimized to increase efficiency, resulting in further competitive advantage (Expert 1; Expert 2).

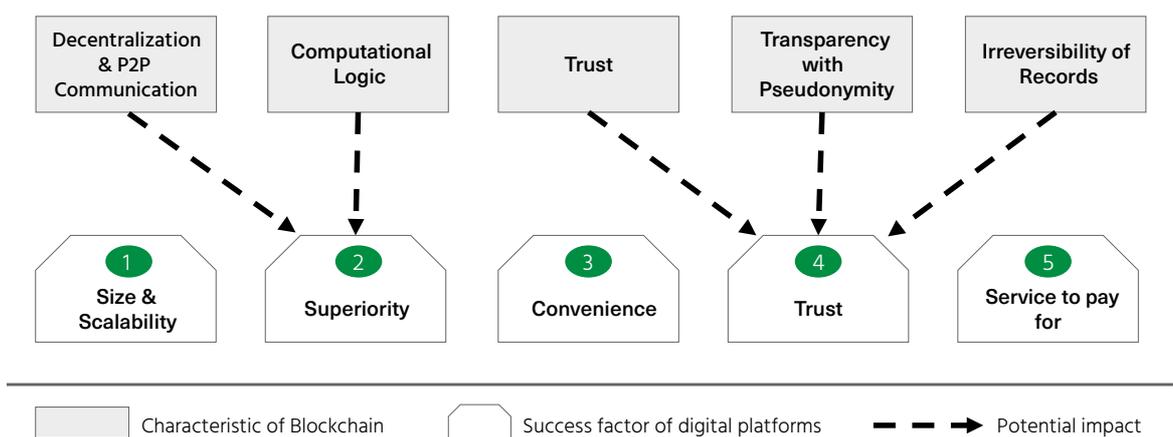
- **Trust in the digital platform.** Traditionally, trust is created by middlemen, but blockchain technology introduces a system where trust is based on mathematically defined and enforced rules (Pilkington, 2016). Every party interacting with a blockchain can rely on data integrity and rule adherence, since blockchain technology guarantees this by definition and therefore creates trust (Expert 7).

Thus, blockchain technology impacts two out of five central success factors of digital platforms.

Forms of Impact

Based on the two mechanisms of blockchains that impact digital platforms – superiority and trust – the research revealed three different forms of impact: the rise of new com-

Fig. 3: Mapping Basic Principles of Blockchains to Success Factors of Digital Platforms



Definitions of digital platform success factors:

1. Size & Scalability = Reaching a critical mass of participants to achieve momentum for self-sustainability.
2. Superiority = Differentiating from competitors by e.g. price or quality.
3. Convenience = Focusing on user friendliness to optimize the customer experience.
4. Trust = Positioning the platform as a trusted middlemen in a low trust market environment.
5. Service to pay for = Offering a service worth paying for which solves a user’s problem.

Source: Authors’ illustration.

panies, the adaptation of existing ones and the extinction of incumbent companies (Expert 8). One way in which blockchain technology impacts the platform economy is by threatening existing companies. This type of impact will be examined in the following to answer the question whether some companies really are in danger of extinction.

As table 1 shows, the qualitative research combined with the literature analysis indicates that many digital platforms are impacted by blockchain technology but only few are substantially threatened. This assessment allows grouping the business models into four groups:

- First, some business models are very likely to be impacted and threatened. As many interviewees stated, such business models operate in low-trust markets.
- Second, banks are very likely or likely to be impacted and likely to be threatened. Four out of eight interviewees anticipate a strong impact on the financial industry. However, the experts expect only a partial disruption of specific banking services, e.g. cross-border payments (Expert 5; Expert 7).
- Third, there are companies which are likely to be impacted and unlikely to be threatened. Six out of eight experts do not expect companies such as Uber, Spotify, Airbnb or Facebook to be threatened by blockchain technology. The data analysis revealed four major reasons for this assessment:
 - Incumbents have a very powerful market position due to the network effect, the lock-in effect and their large cash reserves to push new competitors out of business (Expert 2; Expert 6).
 - Also, there are high entry barriers. Potential new competitors must invest significantly to create a well-functioning infrastructure (Expert 6).
 - Additionally, competitors must undercut incumbents to be attractive, resulting in lower margins and a less profitable market (Expert 6).
 - Moreover, incumbents can offer additional services and blockchain technology is still in an infant stage of development (Expert 8).
- Fourth, some companies are not likely to be impacted and not very likely to be threatened, for instance Slack. While one cannot conclude that there will be no impact, the data of this study does not reveal major threats.

In addition, some experts added a time dimension. While some business models are not threatened, this will likely change with the diffusion of blockchain technology in the next five years (Expert 5; Expert 8).

Main Propositions

1. Blockchain technology might severely affect a large share of existing digital platforms.
2. Digital platforms are based on five key success factors: size & scalability, superiority, convenience, trust and service to pay for.
3. Blockchain technology mainly affects two of these success factors: superiority and trust.
4. By applying the framework of the blockchain impact on digital marketing platforms proposed in this paper, existing platform models can be analyzed regarding the impact of blockchain-based models on their platform.
5. By scrutinizing the framework of the blockchain impact on digital marketing platforms proposed in this paper, new blockchain-based business models can be created.

Table 1: Aggregation of Expert Assessments

| Company or Type of Business Model | Impacted | Threatened | Group |
|-----------------------------------|-------------|---------------|-------|
| Diamond trader | Very likely | Very likely | |
| Real estate trader | Very likely | Very likely | 1 |
| Art trader | Very likely | Very likely | |
| Banks | Very likely | Likely | 2 |
| Spotify | Likely | Unlikely | |
| Uber | Likely | Unlikely | 3 |
| Facebook | Likely | Unlikely | |
| Airbnb | Likely | Unlikely | |
| Slack | Unlikely | Very unlikely | 4 |

Note: This assessment is based on the aggregated expert opinions and thus subjective. Source: Authors' illustration.

Concluding the research question whether blockchain technology will put the business models of platform companies at risk it may be stated that there is a need to differentiate between the impact on a company and the risk for the business model.

Case Study: Applying Our Framework to the Basic Attention Token

To test the developed framework (see figure 3), this paper assesses the perspective of stakeholders of the Basic Atten-

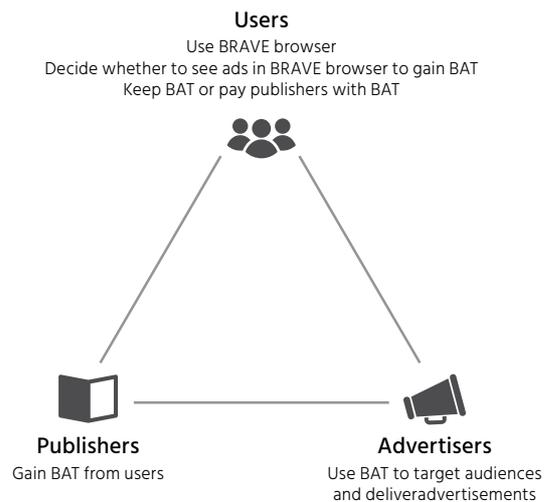
Lessons Learned

1. For managers of digital platforms, this paper provides a framework to analyze potential blockchain-induced challenges and opportunities for their business model and proposes concrete actions to tackle this issue.
2. For managers whose core industry is threatened by the rise of digital platforms, this paper provides insights on how to use blockchain technology to transform their current business models.
3. For entrepreneurs and intrapreneurs, this paper provides a framework for finding and assessing new business models based on digital platforms using blockchain.
4. For all stakeholder groups, this paper shows the need to understand blockchain as a core element of many future intermediation-based business models.

tion Token (BAT) system. BAT and its browser Brave are a blockchain ecosystem that disrupts digital marketing platforms. The promise of BAT is that it cuts out digital advertising platforms as middlemen by providing more trustful relationships. BAT was co-founded by Brendan Eich, famous for creating JavaScript and co-founder of Mozilla and Firefox. Based on his popularity and due to an extensive marketing campaign, 1 billion BAT sold for around 35 million USD within 30 seconds at the ICO on May 31, 2017.

The digital advertising industry encompasses three major stakeholders, internet browser users, advertisers and content publishers, who are all connected by the BAT project. Via real-time bidding, advertisers employ supply-side platforms (SSP) to bid for user attention via ads on publishers' websites. SSPs are commonly run by agencies and AdTech companies, which act as intermediaries. The demand-side platforms (DSP) of publishers aggregate data on users that browse their content and match user profiles with SSP bids. A successful bid indicates that a user sees a browser ad. This is billed via view-based (i.e., cost-per-mille) or performance-based (i.e., cost-per-click or cost-per-lead) KPIs. Advertisers, publishers and intermediaries accumulate user data to increase matching quality. They also track data in proprietary systems with no disclosure of the exact transactions to users, advertisers and/or publishers. Advertisers also track

Fig. 4: The BAT Ecosystem



Source: Authors' illustration.

user behavior, e.g. via Urchin Tracking Module (UTM) parameters, to assess their advertising investment and the trustworthiness of ad agencies and AdTech companies.

This system is criticized for violating data privacy and user security, diminishing revenues for publishers and causing ad fraud losses for advertisers. BAT addresses this situation with a three-sided platform as shown in figure 4.

BAT provides users with the free browser Brave, which includes strong ad blockers and tracking blockers by default. Also, it measures users' attention via so-called Basic Attention Metrics. Users can voluntarily turn on Brave Rewards and earn tokens for the publisher sites they visit, based on their attention and time spent. Also, users can voluntarily turn on Brave Ads to watch targeted advertising, again gaining tokens, which they can transfer to their wallet or donate to publishers.

The BAT value proposition will now be analyzed with regard to the success factors for digital platforms listed above (cf. figure 3). Table 2 shows the value propositions of the BAT for the three stakeholders.

As expected by the framework, Brave is superior for users due to their being rewarded for their attention and an increase in trust due to the focus on privacy and security. Moreover, there is an unexpected increase in browser speed for users, as Brave blocks most ads and trackers. However,

some of the advantages are not widely adopted: only 12.3% of the 13.8 million monthly active users (MAU) currently use the cryptocurrency wallet feature (Eich as cited by Coin-telegraph, 2020).

As expected, advertisers gain superior control due to higher transparency and higher trust, as BAT tackles the issue of ad fraud via a blockchain-based mechanism. Ad fraud damage is as high as 5.8 billion USD globally (WhiteOps & the Association of National Advertisers, 2019). However, there are two unexpected drawbacks regarding BAT: there are only 13.8 million MAU, meaning low volume and inferior scalability, and BAT is not yet integrated into existing workflows. Since the user base is growing, these drawbacks might be temporary, as indicated in the expert interviews.

For publishers, BAT is superior due to the new revenue source of Brave Rewards. This incentivizes them to create

high value content so that users spend time and attention on their content. Notably, this revenue is independent of advertisers. Publishers also profit from a higher trust due to mitigated ad fraud. However, BAT initially faced sharp criticism from publishers due to its ad blockers: Publishers perceived Brave as a browser which replaces publishers' ads with their own ads (PC Mag UK, 2016; TechCrunch, 2016). Despite this initial concern, BAT has acquired 878.000 publishers and content creators, showing strong growth in channels such as GitHub, Twitch, Vimeo and YouTube (Batgrowth, 2020).

Conclusion

The platform economy has been on the rise since the dawn of the internet. However, blockchain technology might disrupt such intermediaries via decentralization. To explore the



Table 2: Applying our Framework to BAT Stakeholders

| Stakeholders/Criteria | Users | Advertisers | Publishers |
|-----------------------|--|---|--|
| Size & Scalability | 0 | - Lower number of active users | 0 |
| Superiority | + Additional payment for attention via BAT | + Increased transparency of transactions to mitigate ad fraud | + New sources of revenue based on Brave Rewards |
| Convenience | + Increased convenience due to higher browser speed | - Lower integration into existing ecosystems and workflows | 0 |
| Trust | + Increased trust due to focus on privacy and security | + Increased trust in mitigating ad fraud | + Increased trust in mitigating ad fraud - Perceived threat to the advertising business model |
| Service to pay for | 0 | 0 | 0 |

"0" = no impact as expected
 "+ Text" = positive impact as expected

"+ Text" = unexpected positive impact
 "- Text" = unexpected negative impact

Source: Authors' illustration.

impact of blockchain on digital platforms, this study employs a mixed-method approach based on expert interviews and a case study. A basic framework of blockchain impact on platforms is created. Results reveal that the platform economy will see the rise of new companies and the adaptation or impairment of existing ones. Tested with a case study of BAT, the framework can explain the BAT's inherent blockchain value proposition to a large degree. This implies that the framework is generally valid. It may be developed further to account for multi-sided perspectives of many platforms as well as for an underlying time dimension. Focusing specifically on BAT, results indicate that blockchain has the potential to reshape digital advertising.

Implications for Managers

The framework reveals several implications. For existing platforms, the framework shows use cases according to a continuum of impact and threat to the current business model. Incumbents can use one of four tactics to cope with blockchain.

1. Not reacting at all because their business model is not impacted or threatened or because protective measures, such as long-term contracts, give incumbents time before they need to react.
2. Investing in in-house research. Some companies create teams to evaluate blockchain solutions. Schlatt, Schweizer, Urbach and Fridgen (2016) analyzed 222 blockchain-relevant firms and showed that most of them plan to invest in research to create infrastructure. For example, Facebook set up a task force to evaluate blockchain use cases (Expert 5).

3. Joining consortia and establishing partnerships. Companies can leverage their size by forming alliances for joint research on use cases. For instance, twelve European banks, including Deutsche Bank, UBS and Santander, created we.trade as a joint venture (we.trade, 2018) which aims to develop an industry-wide standard. Also, partnerships with blockchain companies help to gather and share knowledge and identify competitors at an early stage.
4. Acquiring resources. Many incumbents strive to acquire three different resources in the blockchain sector: knowledge, people and competitive intelligence (De Leon & Gupta, 2017). Since expert knowledge in blockchain technology is limited, the acquisition of start-ups allows companies to build new infrastructure. Also, people with the required skill set are scarce but can potentially be acquired as well.

Research Implications

While this study provides a qualitative framework of how blockchain can impact platforms and conducted a case study, it did not do any quantitative testing. Thus, survey-based key informant research of blockchain and platform experts could augment and validate the framework.

Moreover, such research could find boundary and contingency factors for implementing blockchain-based platforms. Furthermore, a cluster analysis could validate the different forms of impact on the digital platforms and reveal the number and nature of different strategic groups in the platform industry dealing with the impact of blockchain technology.



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