THE GENERAL DATA PROTECTION'S (GDPR) IMPACT ON DATA-DRIVEN BUSINESS MODELS: THE CASE OF THE RIGHT TO DATA PORTABILITY AND FACEBOOK

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Abstract *– The General Data Protection Regulation (GDPR) has recently come into force and will have wide implications for the digital economy and the business models of various tech firms, as well as providing new opportunities for innovation. The GDPR aims to provide consumers with the control of their personal data, provide trust in the digital economy and harmonize data protection throughout the EU pursuant to the Digital Single Market strategy. This paper attempts to analyze and outline how the GDPR might change the data-driven business models (DDBMs) of firms, yet nonetheless they may lead to a variety of positive effects. Indeed, the principles and individual rights in the GDPR tackle monopolistic structures (and lock-ins), and they can increase the quality of data and digital provisions as a result of competitive pressures, as well as promoting consumer trust in the digital market. One of the individual rights and newer features introduced by the GDPR, namely the right to 'data portability', will be considered with regard to the case of its impact on Facebook's DDBM.*

Keywords – Business models, data economy, data portability, Facebook, GDPR, innovation, trust

1. INTRODUCTION

The surge in digital technologies and platforms in recent years and the progression towards a digital economy has at its core the monetization of personal data and the use of 'Big Data' to create value (see [1]). Hence, many firms have capitalized on data-driven business models (DDBMs) such as the social media company Facebook Inc. that became a global leader and a multibillion-dollar business in less than one decade.

The introduction of the EU General Data Protection Regulation (GDPR) introduces sweeping changes to the digital environment, most notably compromising traditional business models and mechanisms regarding the collection, processing and use of personal data. It should be noted that, the totality of the GDPR with its various principles and rights interacting with one another will have a far more widespread and multidimensional impact on DDBMs that cannot be captured within the limited scope of this paper. Rather, using Hartmann et al.'s [1] taxonomy for DDBM of start-ups as a basis of analysis, the paper seeks to provide a case study outlining the effects of one of the more unique features of the GDPR, namely data portability on the DDBM of the social media company Facebook.

The structure of this paper is as follows: Section two will provide an overview of the data economy, digital business models, the GDPR and data portability. Section three will outline Facebook's business model within Hartmann et al.'s [1] framework illustrating the impact of the GDPR's right to data portability with consideration of consumer trust, the nature of the digital economy, digital markets and competition, as well as interoperability between platforms.

2. BACKGROUND

2.1 Data economy

Data has become an integral part of our way of life. The gathering of data and its subsequent commercialization has transformed contemporary economies, politics, societies and cultures. In the EU for example, the value of the data economy is continuously increasing. In 2016, the value was calculated to be EUR 300 billion (1.99% of the EU's GDP) and is estimated in 2020 to be EUR 739 billion (4% of the EU GDP) [2]. Indeed, over the last few decades multinational companies have mushroomed with several of them ascending very

swiftly to the top of the Fortune 500 list and whose source of revenue and business models are dependent on the gathering and use of personal data.

2.2 Business models

A business model reflects how a firm attracts and provides value to consumers and converts this into a financial profit [3]. A successful business model can differentiate a firm from its competitors, provide huge financial returns and can ultimately create a paradigm shift in how an industry functions and conducts business. An early example is the development by engineers of a shipping container which was a result of Malcolm McLean's (who owned a trucking company) ambition to make the loading and unloading of ships with cargo more efficient. Sport sponsorship is another example and allows for not only brand exposure and recognition but also the subsequent sales of products and merchandise for supporters. The rise of budget airlines such as Southwest Airlines and, more recently, EasyJet provide a further example. Air travel was made less luxurious when tickets could be booked directly online, where processes are standardized and made more efficient allowing for cheaper air travel [3].

2.3 Digital business models

With an increase in digitization and the emergence of the digital economy, the variety as well as the complexity of different business models has only increased. As a result, academic literature analyzing digital business models has flourished (see for example [4], [5], [6], [7], [8], [9], [10], [11], [12], [13]). The seminal business model research and canvas done by Osterwalder et al. [14] has had a profound impact in the start-up world. The canvas consists of nine components: key partners, key activities, key resources, cost structure, value proposition, customer relationships, channels, customer segments and revenue streams. Indeed, the digital economy and the exponential possibilities it provides not only allows for a multitude of business models in meeting new customer desires but also in creating value for both consumers as well as firms. Most significantly, is the development of alternative forms of gaining profits beyond the traditional direct payment methods. This is best represented by the opportunities provided by big data. Big data refers to high-volume, high-velocity and a large variety of information, and

its accumulation and use can provide exponential financial rewards for an enterprise [15]. As a result, in the digital age what has often arisen are data-driven business models (DDBMs).

The collection, control and analysis of large amounts of user data can provide firms working in the digital markets with a competitive advantage [16]. Not only can the user data help personalize and increase the quality of services provided but also, more importantly, allows for more targeted advertising. Providing targeted advertising opportunities is often the major source of revenue for many digital companies and is the alternative (and often more lucrative) format of creating value beyond traditional direct payment mechanisms. Consequently, as the user data provides such large streams of services, many digital platforms are offered for 'free' attracting a large consumer base and subsequently, further increasing the amount and value of the collected data. There is a variety of formats of DDBMs but the majority of the big players in the digital markets can fall under three general categories. These are search engines, e-commerce and social networks [16]. In this paper we focus on social networks, of which Facebook is the most dominant player and which relies on network effects i.e. "The more members a social network has, the more attractive it is for the individual member" [16, p.7]. This is further exacerbated by a lack of interoperability among social platforms where consumers are incentivized to join the largest network. As a result, a lock-in occurs as consumers cannot transfer their personal data to another provider. This can lead not only, to competitive issues, but also to the accumulation of even more personal information (or risk being removed).

2.4 GDPR

The GDPR is an EU regulation that came into force on the 25th of May 2018 and replaced the former 95/46/EC Data Protection Directive. It is the most comprehensive piece of data protection legislation to date and unlike its predecessor, is a regulation and thus harmonizes data protection law throughout the EU member states.

In the GDPR it is stated that:

This regulation is intended to contribute...to economic and social progress, to the strengthening and the convergence of the economies within the

internal market, and to the well-being of natural persons [17, Recital 2]

Indeed, it has the aim to create *"...trust that will allow the digital economy to develop across the internal market"* [17, Recital 7]. The GDPR applies to all processors and controllers of personal data (information that makes a person identifiable). Whereas a controller outlines the reason and format of the processing of personal data, a processor is the one who conducts the processing [18]. The main principles of the GDPR are the following: lawfulness, fairness and transparency; purpose and storage limitation; data minimization; integrity and confidentiality; and accountability. The GDPR attempts to provide users with control of their data and the principles reflect the spirit of the GDPR (which in many cases does not provide specific rules) and thus, very difficult to navigate around. Failure to show compliance can lead to maximum fine of 4% of global turnover or 20 million, whichever is more [18]. Furthermore, the GDPR establishes fundamental rights, namely: the 'right to be informed', the 'right of access', 'the right of rectification', the 'right to erasure', the 'right to restrict processing', the 'right to data portability' the 'right to object', and rights related to automated decision-making including profiling. Other aspects of the GDPR include data protection by design and default, showing proof of consent for processing as well as having the duty to report certain personal data breaches among others. In light of the central role the control, collection and use of vast amounts of user data plays for DDBM, the GDPR's principles of data minimization, transparency, purpose limitation to name a few as well as certain individual rights enclosed in the GDPR strongly compromises the status quo of certain DDBMs and certain firms' revenue streams.

2.5   The GDPR's right to data portability

One of the most prominent new features of the GDPR is the right to data portability. The right allows individuals to obtain the personal data (without hindrance) that they have given a controller "... in a structured, commonly used and machine-readable and interoperable format..." [17, Recital 68]. This right applies when processing has been based on consent, when you need to fulfil a contract or when the processing has been done through automated mechanisms. This right allows the user to not only obtain a copy of their personal data but also the ability to transfer this information

to another controller. The right of data portability and especially the stated 'encouragement' for interoperability introduces a new paradigm within the digital economy and compromises the dominant position and business models of certain large tech firms most notably, Facebook. With the importance of big data for many DDBMs, the data portability feature of the GDPR introduces competitive pressure in the digital markets (especially for Facebook) where combined with various principles of the GDPR (e.g. data minimization) as well as other rights (e.g. right to erasure), data portability provides consumers with leverage.

3.   GDPR'S INDIVIDUAL RIGHT TO DATA PORTABILITY AND FACEBOOK'S DDBM

With the rise in social media, the US company Facebook has established market leadership. Initially developed as a small social communication website used at elite universities in the US, it has grown to become a global, multi-billion dollar social networking company with more than 2.19 billion monthly active users [19]. In addition to their own social network platform, Facebook Inc. acquired other companies such as the digital photo service Instagram, the instant messaging service WhatsApp, and the virtual reality technology provider Oculus VR amongst others [20], [21], [22]. Since 2013, the corporation's revenue streams grew from 7.87 billion to 40.7 billion US dollars with a net income of 15.9 billion in 2017 [19]. Facebook harnesses the data economy of billions of their users to derive patterns of preferences and brand affiliation. As a result, they can provide brands with extremely targeted advertisement opportunities and market insights [23].

According to strategist Tom Goodwin, Facebook evolved to become the "...world's most popular media owner [that] creates no content..." itself [24 p. 6]. The quality and quantity of this content is driven by the users and their data. As indicated above, the generation of content, the targeting of advertisements and the individual's utility of the social media platform rely heavily on network effects [16]. These features call for an approach to analyze Facebook with a specific focus on the data-driven nature of their business model. For this purpose, we rely on the comprehensive data-driven business model framework of Hartmann et al. [1], who analyzed business model data of a hundred data-driven start-ups and deduced a taxonomy that structures a DDBM into six dimensions and thirty-

five sub-dimensions. For the scope of this paper, we will focus on the first level of dimensions and analyze and discuss only the effect of the GDPR's individual 'right to Data Portability' on the specific dimensions of Facebook's DDBM.
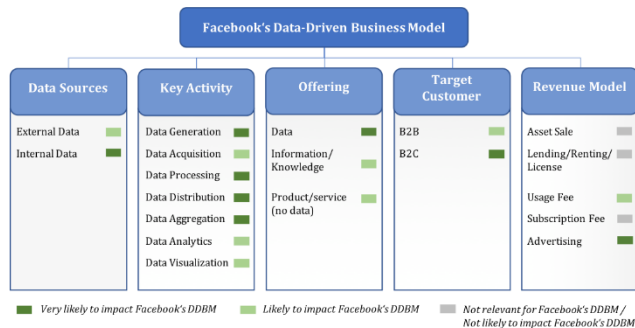

Fig.1 – The impact of GDPR's right to data portability on the DDBM of Facebook based on an adaptation of Hartmann et al., 2016 [1]

Fig. 1 depicts an adapted illustration of the dimensions identified by [1]. As a result of the limited scope of the paper, we do not include the dimension 'cost advantage' in the discussion. We adapt Hartmann et al.'s [1] framework and have deduced dimensions in order to categorize Facebook's business model in detail and discuss the effects of the GDPR's 'right to data portability' on each level if applicable. The dark green color indicates where this individual right is very likely to influence Facebook's data-driven business model. The light green color points to a likely impact. The grey color suggests that this dimension is either not relevant for Facebook's DDBM or that the individual right to data portability will not likely play a role for the business model.

3.1 Data sources

Hartmann et al. [1] differentiate between two types of data source: internal and external data. Internal data is the key component of Facebook's data pool and includes the data provided by the users themselves. Facebook processes data on the user's own status updates, contact info, timeline features, visited and saved events, messages, photos and videos, contact and friend history, access devices, visited and interested events, likes, pokes and comments. Moreover, Facebook collects data on the usage of "...games and other applications..." [23 p.528]. In addition, Facebook potentially also processes the amount of time users spend on certain components, of the platform such as on other pages and profiles. Facebook also tracks their

user's browsing behavior with the use of 'cookies'. These gather user data on previously visited, as well as subsequent visited websites. In addition, they can track users on other websites which have integrated Facebook products such as the 'like' buttons or social logins [25].

External data refers to commercially acquired data from third party providers and represents a smaller share of Facebook's data pool. The company announced in a press release in March 2018 to shut down the acquisition of third-party data from data analytics and polling companies such as Experian. However, they still gather and exchange data with the advertisers that are active on Facebook such as with certain customer loyalty programs [26].

The internal data source component of Facebook's business model is very likely affected by the GDPR's individual right to data portability. Previously, users of platforms such as Facebook experienced a lock-in effect because of the switching costs associated with leaving their data at the former platform (e.g. if they wanted to switch from Facebook to Google+). The GDPR's right to data portability addresses this lock-in which is important as lock-ins according to Shapiro and Varian [27], distort competition by establishing market barriers. These arguments are also valid for Facebook's external data usage, but we conclude that they are less likely to affect the business model and not in a similar holistic way as the amount of internal data. Before the GDPR came into force, Facebook already offered a 'Download-your-information-feature'. It was further improved to ensure compliance with the requirements that users' data be formatted in a 'structured', 'commonly used' and 'machine-readable' way. This might be realized by interoperable data formats such as JSON, CSV or XML. Facebook now offers the possibility to export their data in JSON and CSV formats. In addition, they also have to ensure that they can transfer this user data to other data controllers (such as their competitor Google+) and vice versa, incorporate structured data of new users coming from other data controllers [18]. These data controllers could also be established companies or start-ups seeking to establish a new business model (e.g. in a niche) using data that users allow to be exported from social media sites such as Facebook to their systems. Thus, we hypothesize that the GDPR's right to data portability can also spur innovation as it is outlining interoperability standards.

3.2 Key activity

Under the dimension 'Key Activity', Hartmann et al. [1] cluster seven data-related activities (see Fig. 1). As highlighted before, Facebook generates a large data pool of internal and external data ('Data Generation'), processes this data and provides some of the data itself as well as analytical insights ('Processing') to other companies that advertise on the platform. According to their press release [28], they stopped the acquisition of third-party data). However, the exchange of data with their advertising clients can be perceived indirectly as 'Data Acquisition'. For example, with the 'Facebook Ad Manager' tool, where the company offers a dashboard to the advertisers, distributes the aggregated data ('Aggregation' and 'Distribution') and analyze and visualize insights ('Analytics' and 'Visualization'). Moreover, the vast number of APIs such as the 'Facebook Ad API' and other Marketing APIs, provide an interoperability of certain aggregated user data for advertisers and partners that are then able to import this data into their systems [29].

GDPR's right to data portability and the push for a more interoperable collection of data, provides opportunities for companies such as Facebook to increase the quality and value of their data, as well as that of their analytics tools and improve the quality of consumer targeting for advertisements. Indeed, this could even increase revenues as their key activity could become more valuable.

3.3 Offering

The dimension offering describes the value that is created by a DDBM and substitutes the common dimension 'value proposition' which is known from other business model analysis frameworks such as from [8] or [14]. It describes the concrete product or service value that is offered to the clients [1].

Facebook is a multi-sided platform. These platforms are characterized by direct interactions between multiple distinct types of clients [30]. Consequently, it also unifies different offerings outlined here very briefly: For private individuals, the platform allows users to connect and interact with other individuals such as friends, family members or colleagues via profile pages, chat messengers, groups etc. Moreover, it allows the user to consume partially tailored content (e.g. via posts of other users or pages of corporates, organizations or persons of

interest) and express their opinion, affiliations and interests freely. User can build up a representative social eminence that might be also relevant in their professional lives (e.g. 'content creators' as well).

Companies and organization however, use the platform to interact with the users as their (potential) customers and in order to place targeted advertisements. The social context, i.e. the digital footprint that every individual Facebook user produces, enables sophisticated and effective targeting [31]. Moreover, the company is offering several ad analytics tools and application programming interfaces (APIs). The sheer number of APIs and developer kits such as the Graph API allows for the integration of Facebook in various other websites and applications adding further value to them by including the social context of Facebook's data pool.

The GDPR's right to data portability is very likely to impact Facebook's offering. There are vast opportunities to expand the platform's business model based on the possibility to import data from other platforms. Theoretically, the regulation makes it possible to integrate the data of other digital platforms and offerings within another platform given the user's consent. The requirements for interoperability are complex however, and the regulation remains vague (arguing simply with a required 'machine-readable' format). Certainly, these requirements have to be refined in the future in order to achieve pure interoperability, for example, allowing social media users to network with each other across different platforms [32]. As an example, Facebook could offer an import function for data that the music streaming platform 'Spotify' stores from their users (given the user's consent for the data export) and expand their business model with the additional data. The regulation sets a cornerstone for an interoperability standard with an innovation-spawning character. It might spur business model innovations from niche start-ups that specialize in certain data that users might export of e.g. Facebook and develop an offering around this data.

3.4 Target customer

Hartmann et al. [1] use the generic classification of business-to-business (B2B) and business-to-customer (B2C) models to classify customer segments. Their analysis revealed that many of the analyzed start-ups targeted both types of customer

relationships [1]. The same holds true for Facebook and the nature of their multi-sided platform. Facebook initially had a B2B business model that enabled the interaction of distinctive users on their platform. As described in the previous 'Offering' section, it also became a B2B business model by opening the platform to advertisers that can interact with (potential) customers, increase their brand reach and place their advertisements within the social context of the users. It is also a platform for content providers of any kind that could evolve from a user (B2C) to an advertiser (B2B) relationship. In addition, the platform is also characterized by its B2B business with third-party developers that have to pay for example, fees from user transactions in their developed applications on the Facebook platform [19].

The GDPR's right to data portability is very likely to impact Facebook's B2C business. Users are less locked-in to the platform as they can theoretically move their data more easily to competitors. The B2B business might also be influenced by the regulation in an indirect way. The offering from Facebook to its business clients deteriorates with less users in the B2C business. Moreover, Facebook's ad analytics tools have to provide their advertising customers with the ability to export data and potentially also import data in a structured way. Hence, advertisers on the platform might also gain from the right to data portability because the integration of ad-relevant data from other platforms to Facebook's ad analytics tools is theoretically facilitated.

3.5 Revenue model

In their DDBM taxonomy, Hartmann et al. [1] define seven different revenue models (see Fig. 1). Currently, Facebook is provided to the individual user (B2C) free of charge. The users are paying indirectly by opting in to data storage and sharing of their data.

The key revenue source for Facebook however, are advertising fees from their B2B business (see [19]). In 2017, 'advertisement revenue' accounted for more than 98% of the total revenue ($12,779 million), while 'payments and other fees' hold only a small share of the total revenue ($193 million) such as payment transactions in Facebook games. Facebook reported a 14%-year-to-year increase for both daily active users (1.40 bn) as well as monthly active users (2.13 bn)

by December 2017 [19]. The more users Facebook has, the larger the potential reach of the advertisements or Facebook pages that seek to engage with customers (pre-/after-sale customer service, acquisitions etc.). Moreover, the more users and their data Facebook has, the more patterns can be derived to contextualize user demographics. Consequently, the advertisers can engage with users more precisely based on the patterns derived from data on age, gender, education and work history, likes or groups.

The GDPR's right to data portability is very likely to impact parts of the revenue model of Facebook's DDBM. On the one hand, the regulation should empower users to individually shift their data to competitors (such as Google+) which could jeopardize Facebook's ad-based revenues. Indeed, with less data, their algorithms for pattern-recognition in 'Big Data' are of less value and targeted advertisements might deteriorate. Moreover, the reach of advertisements decreases with less users which would make the platform less attractive for advertisers and third-party content providers. On the other hand, Facebook can also increase their user base by being able to import user data in a structured format of e.g. competitors or even other digital offerings and platforms. For 'payments and other fees' this effect might be more indirect. Furthermore, increasing the sovereignty of Facebook's users over their data might increase trust in the platform, which potentially increases the willingness to share personal data and thus the value of the users for Facebook's advertising-based revenue model. However, as a consequence of more stringent data protection and awareness, advertisement-based companies such as Facebook might consider transforming their revenue models. Indeed, during the congressional hearing of Facebook's Founder and CEO Marc Zuckerberg on April 10th, 2018 with regards to the Cambridge Analytica case, rumors spread that a second ad-free subscription-based alternative version of Facebook might emerge [33].

4. CONCLUSION

This paper attempted to outline the impact of the GDPR on DDBM by adapting Hartmann et al's [1] taxonomy using as an explorative case study, data portability's impact on Facebook DDBM. Five dimensions of Facebook's DDBM were outlined namely 'Data sources', 'Key activity', 'Offering', 'Target customer' and 'Revenue model'. Developing

this case study using Hartmann's et al.'s [1] taxonomy is a useful practical first step in conceptualizing the effect of the GDPR on DDBMs and can be further expanded and used as a tool in analyzing the effect on other firms. Overall, data portability will very likely impact the way Facebook gathers, generates and processes data, as well as its relationship with its customers and its revenue model based on targeted advertising. However, this might not be necessarily a negative prospect. Data portability tackles lock-in and subsequent monopolies where competitive pressure might increase the quality of data collected (i.e. quality of quantity) and services provided, as well as providing more consumer trust in online platforms especially considering recent damaging scandals concerning Facebook.

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