

6/29/2018

**THE CONTEMPORARY REGULATORY  
CHALLENGES FOR TELECOMS, AND TRANSITION  
TO SMART CITIES AND A DIGITAL ECONOMY**

The telecommunications sector has emerged as a global driving force for innovation, growth and disruption across markets. Telecoms act as a main hub for collection of electronic data from consumers. Additionally, telecoms have facilitated the global networking of financial dealings, commercial transactions and professional connections.

This growth has seen emergence of big data with an estimated value of over \$150 billion in 2017. This is not only likely to impact on human interactions, but also on markets and how consumer trends are used for marketing purposes. Big data will become instrumental in competition and business growth. This will be achieved through; segmentation of population thus tailoring specific needs, automation of human decisions, innovation of new business ideas and aiding of experimentation.

Big data is directly impacting on competition in terms of regulation, multi-sided markets, price coordination through digital platforms and complexity of information handling. The harm on competition by digital economy is likely to be faster, deeper and more widespread.

This paper examines the likely challenges posed by big data on competition regulation; definition of markets, regulatory access to data in a cloud computing environment especially for cartel cases, exclusive contracts preventing access to data, product and price discrimination and analysis of big data.

*JEL Classification: L4*

**Raphael Mburu**  
**COMPETITION AUTHORITY OF KENYA**

The Author is an Analyst in the Mergers and Acquisitions Department at the Competition Authority of Kenya. The views expressed in this paper do not reflect the views of the Competition Authority of Kenya. He can be contacted on <[mburu@cak.go.ke](mailto:mburu@cak.go.ke)>

# Contents

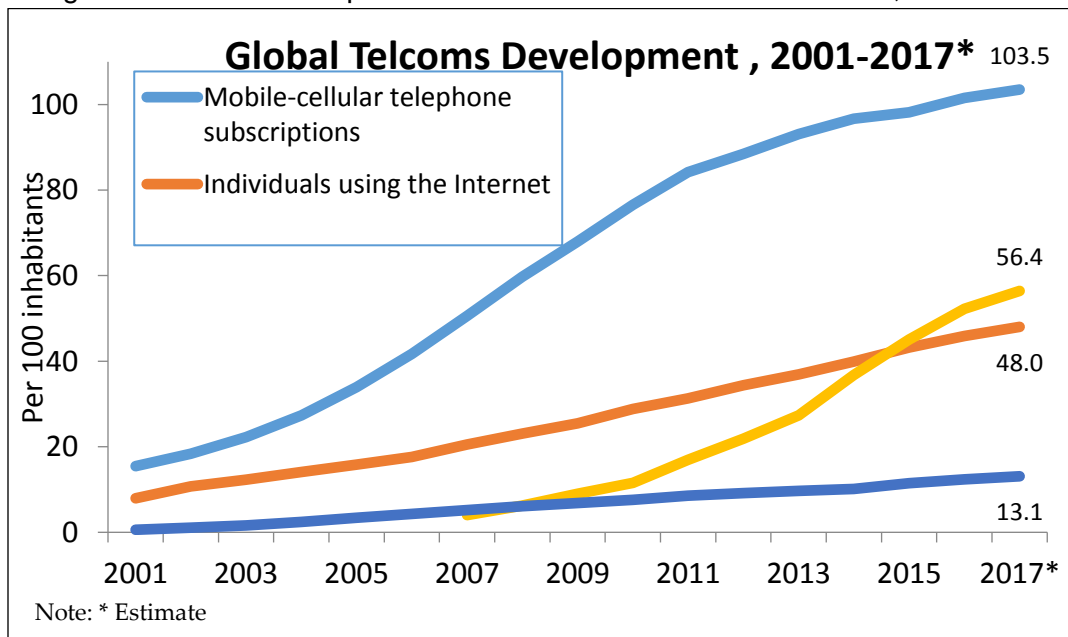
1. Introduction .....	2
2. Overview of Big Data .....	3
2.1. Big Data Value Chain.....	3
2.2. Uses and Benefits of Big Data Analytics .....	4
3. Competition Law Enforcement in Big Data .....	4
3.1. Competition Tools .....	5
3.1.1. Market Definition .....	5
3.2. Market Power Assessment .....	6
3.3. Regulatory Challenges in Data-Driven Markets.....	8
3.3.1. Data-Driven Collusion .....	8
3.3.2. Data-Driven Price discrimination .....	9
3.3.3. Mergers and Acquisitions.....	9
3.3.4. Exclusionary conducts .....	10
3.3.5. Data Privacy .....	11
4. Conclusion and Recommendations.....	12
References .....	14

## 1. Introduction

Rapid urbanization, evolution in digital technologies, and demographic shifts make for global changes that are bound to bring about the expansion of urban centers. In order to cope with the rapid changes and growth in population, it is envisioned that the need to leverage digital platforms will grow. With an increment in the usage of digital services for service provision and optimizing administration of urban centers is the emergence of smart cities, which marry traditional infrastructure (in the form of transportation networks and buildings) and modern or digital telecommunications infrastructure.

The telecommunications sector, which has witnessed rapid and sustained growth over recent years (figure 1), has been lauded for stimulating innovation, growth and service provision across global markets through the expansion of services. An exciting development in the sector is the use of big data to inform the production, innovation, and marketing decisions of firms in telecoms. Recent times have seen a rise in big data analytics to inform the business decisions of various entities, so much so that its value was estimated to be \$150 billion in 2017.

Figure 1: Global Developments in the Telecommunications Sector, 2001-2017



Source: ITU World Telecommunication /ICT Indicators database

The growth of big data analytics is expected to bring about positive outcomes for commercial transactions within telecoms. For competition policy however, this rapid evolution continues to pose new challenges for regulation for instance, in cases of abuse of dominance through exclusionary and exploitative conduct. There are also concerns around issues of handling issues within the context of merger analysis and investigating cartels which give rise to questions around the efficacy of traditional competition regulation tools such as market definition and the assessment of market power. These will be covered in detail within this paper.

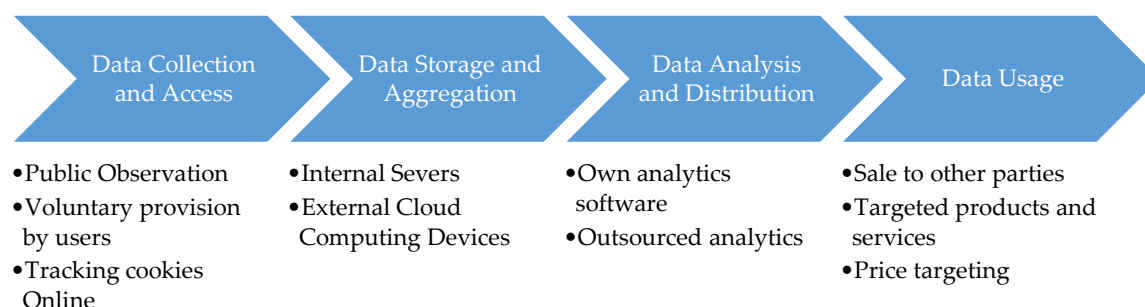
The rest of the paper will proceed as follows; Section II provides a brief overview of big data and the big data value chain. Section III is an analysis of competition issues ensuing in the regulation of big data and makes for the bulk of the paper. This section will explore traditional tools of case handling within competition authorities in the context of big data analytics. Additionally, challenges in handling merger, cartel cases and exclusive contracts will be examined. Section IV will outline recommendations and conclude the paper.

## 2. Overview of Big Data

### 2.1. Big Data Value Chain

De Mauro et al. (2016) define big data as, “the information asset characterized by such a high volume, velocity and variety to require specific technology and analytical methods for its transformation into value.” This definition of big data highlights characteristics of big data that can only be supported by the digital platforms and that create a demarcation from traditional data. These characteristics include: the volume (need for large datasets); variety (multidimensional datasets); velocity (high speed of collecting, processing, and disseminating the data); and value (value of the data is dependent on its use) of big data.

Figure 2: Big Data Value Chain



The big data value chain has four steps as illustrated in figure 2. The OECD (2015b; 2016) identifies various modes of data collection. Major channels include: public observation via telecommunication devices, IP addresses or operating systems; voluntary provision by consumers as they register in order to access certain websites; and online tracking by use of online cookies, history sniffing to find out what sites are often visited by users, tracking across the user’s devices including desktops, laptops, smartphones, wearables, and tablets, among others (Bourreau et al. 2017).

According to Datenschutzbeauftragter (2016), data can also be purchased from data brokers that utilize the discussed platforms to collect information from users. Even so a study by Deloitte (2016), for the European Commission, involving countries in the European Union reveals that most companies that data collected stays within the organization for the most part, especially in cases where the company is operating in a sector that is technologically advanced, such as banks or service providers in the telecommunications sector.

The data is then stored on servers that are internal to the business or on external cloud computing services. Internal servers are expensive to build, leaving smaller firms with the option of renting

space from service providers in cloud computing services. Analysis of the data is done by applications and algorithms in order to predict trends in consumer behavior, especially based on correlation patterns. These tools of analysis may be developed in house or obtained from third parties depending on economic viability to the firm.

## **2.2. Uses and Benefits of Big Data Analytics**

Positive outcomes have been reported throughout the business ecosystems of businesses that practice data-driven innovation. Data-driven innovation (DDI) has been lauded for allowing companies to better their standards, apparent in the production of better quality products and the provision of new services to consumers. This, according to McAfee and Brynjolfsson (2012), is based on the better understanding of the needs of customers created by accessing personal information. Machine learning algorithms observe and keep a record of the links clicked by users and refine web searches to address specific needs of users.

Other aspects of a business, for example efficient production, and ability to forecast market trends are also improved using big data analytics. For the customer, a direct benefit is the ability of the company to target advertisement and recommendations on relevant products to their needs. While difficult to assess, it is estimated that gains in the efficiency from the incorporation of DDI in production grow the productivity of the firm by an estimated 5-10% in comparison to firms that do not use DDI (OECD 2016).

There are also gains to society overall from the exploration of big data. A report by the OECD (2013) on the effects of big data in various aspects of the economy projects positive outcomes. For example, it is estimated that the use of data in the transport sector through tracking mobile devices can be used to lower traffic congestion and lead to savings of \$500 billion globally by 2020. Big data can also be used in the energy sector to lower the cost of CO2 emissions by controlling the operations of household appliances while simultaneously sending users information regarding emissions from these appliances. There data-related strides to be made in healthcare in the form of electronic health records, which would improve diagnosis and reduce medical errors among other gains.

Currently, there are a number of multinational and localized corporations that have made significant strides in business based on collecting data from consumers towards the provision of data-driven services. These companies leverage telecommunications to reach consumers across different sectors including transport and retail and are able to sustain efficiency in operations while remaining innovative in service provision. Some prominent examples include Uber, Google, and Walmart.

## **3. Competition Law Enforcement in Big Data**

While there is growing recognition of the implications of Big Data to productivity and growth, the enforcement of competition law is still yet to catch up fully. In marrying competition law with consumer protection issues, there is also a very real concern around the issues of privacy of information provided by consumers. It has been argued that these issues can be addressed adequately within the context of competition law. This section examines the effectiveness of existing competition tools and the challenges in assessing mergers, collusion and restrictive trade practices within the context of big data.

### **3.1. Competition Tools**

#### **3.1.1. Market Definition**

The definition of relevant markets is one of the first stages in enforcing competition law and is a way by which authorities to identify the operators in the market, vertical and horizontal integration. Although the definition of a market is not an end by itself in competition analysis, it forms a critical component of assessing market power. The relevant market is a composite of the relevant product and geographical markets. The key to market definition is substitutability which is the ease with which a consumer switch between alternative products (and across different geographical areas) - demand substitution - and the extent to which suppliers can switch their facilities between supply of alternative products (and across different geographical areas) - supply substitution.

For digital markets, market definition may not suffice in capturing the complexities of big data. The big data ecosystem is large and is made up of many players that take multiple roles. Apple, for example, sells technological products like phones and watches while at the same time providing a number of operating systems (iTunes, Apple Store, iOS) along with services like iCloud. In addition, Apple's big data ecosystem involves interaction with a number of players including app developers, customers of products and services, buyers of advertising space, and partners like Facebook and LinkedIn.

With globalization and cross border data transmission and storage a key component of determining the geographical component in market definition is witnessed. Although the actual owners of the data may be domiciled in a specific geographic location, the data could be used to influence market decisions in another region. Additionally, the data forms only one component of the product being offered or acts as a compliment on how a certain product or service is offered.

Another dimension to defining markets in multi-sided markets is the challenge posed in investigation of transactions where the primary rationale is in transferring the core business and not the data explicitly. An example would be the Kenyan based *M-pesa*, a mobile money transfer service operated by Safaricom. In a hypothetical transaction involving the service, competition authorities would typically define the market as the market for mobile money transfer. Big data brings however introduces an additional element to the definition of this market, raising questions about the viability of defining the market for data separately from that of the core business.

The challenge of multisided markets is compounded further by non-monetary transactions on various platforms in exchange for data (OECD 2016). Traditional media such as newspapers poses less of a challenge since all accessing the platform, whether readers or advertisers, attach monetary value to the service. With platforms such as Google, users can access money-free services. As such, the definition of a market would not only be based on money flows but also data flows that may be observed.

Further complexities exist in the convergence of telecoms infrastructure, which has turned devices that were complementary to each other into substitutes (Datenschutzbeauftragter 2016). For instance , in considering the market for big data, one would have to look at not only computers but also hand-held devices. Big data is crucial in the current multi-sided market and is exploited by parties competing against each other. The search engines industry for instance is one side of

the online marketing and an online advertising firm who is able to convince the search engine player is able to influence the outcome of such a market.

Where competition authorities are able to access big data to aid in defining markets accurately, they would still have to contend with issues of the internal capacities of staff in handling data, and the level of disclosure in the submissions of firms. Data-driven operations rely on algorithms that aggregate the data uniquely, depending on the information required to improve the profitability of the firm. For example, with data collected from consumers, it is possible that Facebook's algorithms aggregate data in one way to come up with targeted advertisements for users and in a completely different way for purposes of giving suggestions on articles that in which a user may be interested. Because of these nuances in data handling that make for varied scenarios among firms that handle data, competition authorities would be hard pressed to rely fully on firms to enhance accuracy in their definition of multi sided markets.

#### **3.1.1.1. *Recommendations on Market Definition***

The OECD (2016) suggests that this challenge may be countered by having competition authorities adapt the traditional Small but Significant Non-transitory Increase in Price SSNIP test and hypothetical monopoly tests. These measure whether a significant number of consumers are likely to switch the competitors of a firm of service provider in similar markets following a price increase. However, they admit that the use of these may be restricted by their heavy reliance on price mechanisms and propose an alternative measure which considers a quantitative assessment of quality. Filstruchi et al. (2014) also suggest that different markets ought to be defined for consumers, content providers, advertisers and other agents in the big data ecosystem that do not transact with each other. They urge competition authorities to introduce a modified SSNIP test that takes into account the impact of an increase in price in one of the markets defined and changes in the profitability in other segments of the big data platform.

Other than quantitative aspects, this analysis of challenges in defining markets in multisided markets demonstrates that there is need to build the capacities of staff within competition authorities beyond what has been deemed necessary to this point. This would create an appreciation of markets have a singular approach. Further, there is need for an understanding on what information data-driven firms ought to be compelled to submit to authorities for ease of market definition.

Jurisdictions in which cases involving personal data, for example as was in the Facebook/Whatsapp merger has been handled are particularly a step ahead with regard to the definition of markets. The existence of case studies in this regard could serve to address the concerns of other competition authorities globally, even as antitrust regulation in big data becomes a bigger issue owing to digitization.

### **3.2. Market Power Assessment**

Market power is the ability of a firm to manipulate prices while remaining profitable. Without Zero-price service providers are difficult to assess for market power. The tendency is to underestimate the market power of service providers that do not charge money for the provision of services. This however overlooks fact that zero-pricing is used as a strategy to attract users for free but then exert market power in other dimensions, for example, over companies looking to advertise their

products via freely accessed platforms and in the sale of data to third parties (OECD 2016). According to a report by the French *Autorité de la Concurrence* and the German *Bundeskartellamt* (2016) possessing data is in itself a source of market power, even where consumers can access services freely.

This claim is refuted by Sokol and Comerford (2016), who argue that nature of data driven markets serves to dilute the market power of parties. To make their point, they outline the following characteristics of data-driven markets: there are low barriers to entry, evidenced by the rapidly emerging innovators that often push out established firms; data is ubiquitous, and inexpensive to gather; data is non-exclusive and non-rivalrous and it would be impossible to control all the data that is available globally. Further, the fact that one firm is in possession of data does not restrict another from getting that same information from users or consumers. However, the process of collecting this data may be expensive and time consuming sometimes.

### **3.2.1. Sources of Market Power in Data Driven Markets**

#### **3.2.1.1. Exclusivity of Data**

Legal, technical and contractual restrictions that remove the non-rivalrous nature of data or weaken it to make it exclusive. Market power is gained due to the technical capacities of firms, for example the ownership of encryption technologies. Legal barriers such as data protection rules, which are more stringent in some jurisdictions, can increase the cost of data collection to new entrants. Contractual barriers emanate from contractual restrictions imposed by firms on the transfer of data.

Data exclusivity and scarcity has the potential to distort competition to the extent that it is essential input in the dissemination of a service or product provision. According to Stucke and Grunes (2016), the fact that companies often spend considerable amounts of money to acquire data renders it exclusive. This counters arguments on the ubiquitous, inexpensive and easy to gather nature of data. Exclusivity also emanates from the fact that companies often face restrictions to data sharing. Where it is allowed, firms may refuse to supply data to a competitor on the basis that it is a strategic asset to the competitive edge of the firm.

Apart from this, exclusivity can take the form of companies having instant access to data that is not enjoyed by other companies. In this regard, the perishability of data is in fact a condition for exclusivity in itself (Van Til et al. 2017). Companies with the resources to control instant access to data hold market power over their competitors. An example is companies like PeopleBrowsr, which have tools to analyze real time tweets Twitter. While the tweets are publicly available online, it is companies with the infrastructure to support analysis on their velocity, volume and variety that are able to accurately manipulate the market for their benefit. Van Til et al. (2017) maintain that data is inimitable, based on its varied uses by data-driven firms like Amazon and Facebook and Google. These are leading firms in their respective markets and yet use consumer data in different ways to achieve their respective positions.

Amazon derives uses personal data primarily to orchestrate transactions and is also in possession of data on prices and on retailers. Its market power lies in Amazon's use of data to cement its position as an e-commerce platform. This is different for Facebook, which controls data that is primarily meant to optimize the social media experience for users through the different



functionalities offered to users along with provision of targeted advertisement to users. The platform's market power is in social media, where it is estimated to hold 42% market share in the United States.

### **3.2.1.2. Consumer-Side Considerations**

While there are no legal restrictions to accessing multiple telecoms platforms, consumers may be more motivated to use particular search engines like Google or platforms like Android due to inconveniences in switching between platforms. These inconveniences emanate from default settings on search engines or costs of switching between platforms. Based on this, it is harder for new entrants to compete with complex platforms and establish themselves, hence ascribing market power to certain players, especially those that have been in operation over a longer duration.

Switching costs to consumers are especially difficult to overlook as they make it harder for consumers to access other services and share their data with rivals. This in the telecommunications sector takes the form of reduced interoperability with other systems, which could come about as a result of vertical integration that forecloses the operations of rivals. This is a real concern for companies whose operations are based on control of data. Stucke and Grunes (2016) give an example of Facebook, which in its 2012 annual report highlights the risk that competitors like Google could leverage their dominant position in data-driven markets to gain competitive advantages. Google relies on vast amounts of data for advertising. If Google were to introduce its own applications similar to those of smaller operators in social media, for example, the incumbent has enough data to foreclose the access of its competitors.

### **3.2.2. Recommendations for Assessing Market Power**

In assessing the market power of players in data driven markets, competition authorities are encouraged to treat data as only one input in the activities of the firm. Assessment should consider the labour force, and channels of capital distribution. Secondly, a value-chain approach to assessment is necessary, looking into data collection, storage and analysis, in order to capture network effects. This would allow competition authorities to fully appreciate the capacities of various players and obtain a clear picture of the assets that firms possess towards sustaining the value chain and related activities. Lastly, Borreau et al. (2017) emphasize the need for authorities to treat each application and algorithm as different and take a case-by-case approach in assessment of market power.

## **3.3. Regulatory Challenges in Data-Driven Markets**

### **3.3.1. Data-Driven Collusion**

Data-driven collusion and cartels pose a challenge to competition authorities given nuances that pave way for the involvement of both humans and algorithms (Van Til et al. 2015). Ezrachi and Stucke (2016) identify four major ways in which big data can be a conduit for collusion. The first is when data acts as a channel for colluding entities to use real-time data in monitoring compliance with price-setting agreements. This makes collusion more efficient than in traditional cartels, within which colluding entities have to monitor the behavior of the rest overtime. The use of big data allows for easier detection in case of deviation from the agreement.

Secondly, it is possible for companies with access to big data to monitor changes in prices among competitors, and adjust their prices accordingly and faster than they would in a traditional setting. This is different from the first scenario in the sense that companies can track the activities of their competitors remotely and adjust their own, even without contacting them for explicit agreements. Collusion in this case is fast and may occur without the express knowledge of one of the parties, which poses a challenge to authorities in investigation as it may be difficult to demonstrate that price-setting agreements were drawn.

Thirdly, through machine learning, it is possible for an algorithm to, without the explicit knowledge of the programmer, collude on pricing in order to achieve its intended purpose of profit maximization. This element is a basis for debate on the regulation of price fixing by algorithms and the extent to which humans can be held liable in cases where the algorithm acted without the knowledge of competing companies (*Bundeskartellamt*, 2016).

### **3.3.2. Data-Driven Price discrimination**

Big data analytics allows a company to receive and use information regarding a user's spending habits and their willingness to pay for certain products and services. Based on this the market power of the firm, it would be able to set different prices for different consumer groups (Van Til et al., 2016). Differences in pricing have been acceptable in traditional markets, for example, based on information asymmetry, insurance companies and institutions for provision of credit have differentiated between customer segments, charging more based on perceived risks. As pertains to big data however the pricing model is value-based rather than risk-based, allowing the company to charge more to a consumer that is projected to attach higher value to a product, purely for purposes of profit maximization. In Kerber (2016) and Bourreau et al. (2017), it is indicated that personalized pricing has been a rare occurrence in the use of big data. As such, it has been argued that competition authorities need not be majorly concerned about the harmful effects of personalized pricing. However, there is a call for vigilance in monitoring the trends in pricing of online retailers to consumers based on technological possibilities ensuing from the big data revolution.

### **3.3.3. Mergers and Acquisitions**

Mergers and acquisitions in data-driven markets are based on the strategy of a firm to acquire better access to data. The OECD (2015) estimated that mergers and acquisitions in sectors related to data increased from the 55 deals in 2008 to 164 deals in 2012. The traditional assessment of mergers, often considers that there will be a low impact from the merging of an established undertaking and a new entrant. This, however, is not necessarily the case in data-driven markets, where mergers between any two entities could lead to differentiated access and bring about concentration of data where new entrants have a large database (*Autorité de la Concurrence and Bundeskartellamt* 2016).

In assessing competition concerns, it is important for authorities to look into the advantages inherent to having the combined dataset and it may be impossible for competitors to have substitutes for the data. There is also the risk of market foreclosure from mergers, for instance, through the acquisition of firms that produce laptops or smartphone by online service providers that already consume big volumes of data. An interesting case study in this regard is the assessment of the merger between Facebook and Whatsapp, where the European Commission

looked into the competition effects of the integration of data from Facebook's social networking platform and Whatsapp's users.

Mergers in big data are also analyzed for efficiency gains, which are compared against the risks posed to competition. In the merger between Microsoft and Yahoo (European Commission 2010), the application was approved based on claims that the scale of data to be acquired would allow Microsoft to produce better products because of the data.

### **3.3.4. Exclusionary conducts**

These are actions by firms, particularly those that hold significant market power in certain respects, which lead to less efficient competition through excluding competitors. In the big data market, this takes the form of refusal to access, discriminatory access to data, exclusive contracts, and tied sales and cross-usage of datasets

#### **3.3.4.1. Refusal to Access**

Refusing access to essential facilities to the activities of players in big data markets is anticompetitive. For competition authorities, a challenge posed by this is, "To what extent can a firm be obliged to promote the business of its competitors?" *Autorité de la Concurrence and Bundeskartellamt* (2016) suggest that resources can be classified as essential facilities for products that are indispensable to the business of competitors and if exclusive ownership of the resource excludes all competitor in the secondary market. In ruling on the Bronner case (box 1), the ECJ based their argument on the indispensable nature of a product or service on the unavailability of the alternative products along with the economic, technical and legal obstacles that render it difficult for competitors to do business. For competition authorities, it is imperative that essential facility cases are assessed based on clear demonstrations that the data owned by the incumbent is unique, impossible to replicate, and necessary for the business of competitors. On the other hand, consideration also ought to be given to issues of lessened incentives for firms to develop their own data sources and legal and ethical constraints to sharing personal information.

#### **Box 1: The Bronner Case**

In the Australian market, Mediaprint, a dominant newspaper publisher would not grant Oscar Bronner access to the nationwide early morning home delivery network. Bronner argued that unless Mediaprint could objectively justify the refusal to grant access to its competitors, they had a duty to grant access to downstream markets. Further, Bronner argued that access to Mediaprint's distribution network was essential because it Bronner was economically constrained and could not afford to establish their own distribution network. He argued that failure to grant access would foreclose all other competitors.

#### **3.3.4.2. Discriminatory Access to Data**

This also has to do with refusal to access data and occurs if it discriminatory to particular parties. The French Competition Authority in the 2014 handled a case in which Cegedim, a leading provider of medical information databases declined sale of its main database to customers using the software of its competitor, Euris. The same database was sold to other customers. This was ruled discriminatory. Discriminatory access can also come about as a result of vertical integration

(*Autorité de la Concurrence* and *Bundeskartellamt* 2016) for example where an online retailer is also a market place operator, they can use their online platforms to get information on consumer behavior and products that are most in demand, which can be used to progress their own business. Failure to share this information with competitors is discriminatory.

#### **3.3.4.3. Exclusive Contracts**

Exclusive contracts between firms with data-driven operations and third-party providers forecloses opportunities for their competitors to produce similar data and is anti-competitive, making it more difficult for consumers to adopt their technologies and platforms. The European Commission in 2010 investigated allegations that Google was imposing exclusivity obligations on advertising parties barring them from displaying particular kinds of competing advertisements on their websites.

#### **3.3.4.4. Tied Sales**

Firms that carry out the sale of data and run services in analytics could compel parties purchasing the data to also use their data analytics services. While this could arguably improve efficiency, it could also be a barrier to competition in the market for data analytics as it locks out rivals.

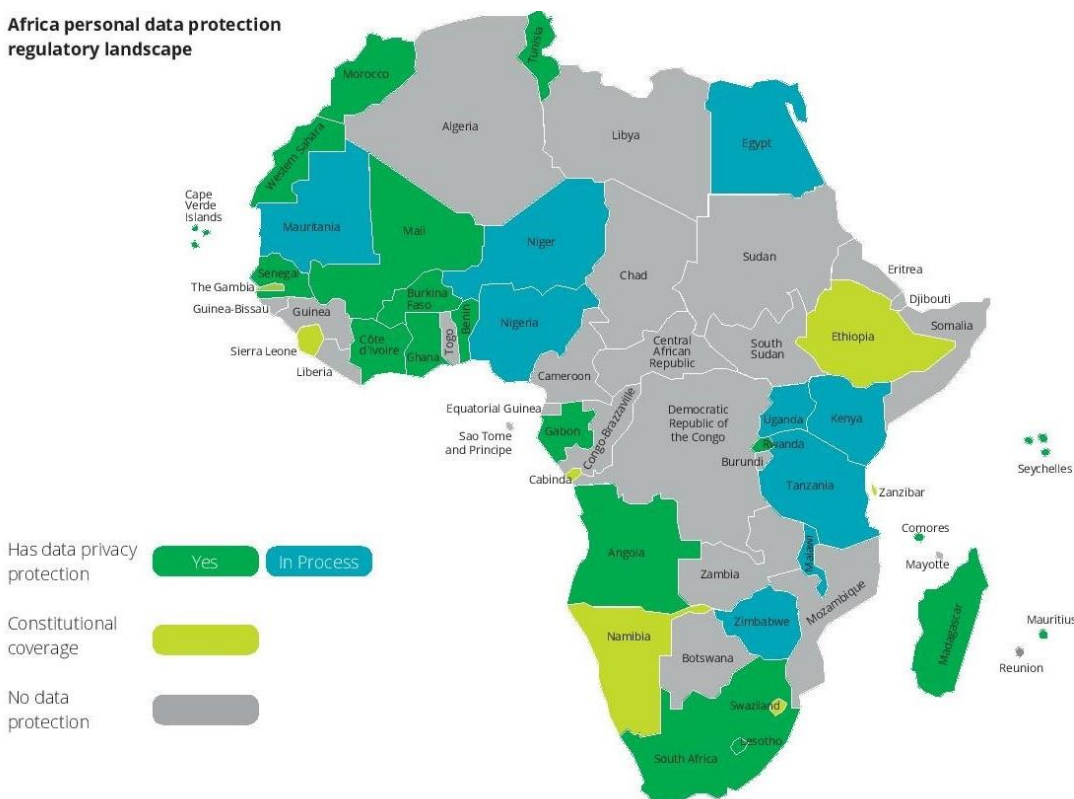
#### **3.3.5. Data Privacy**

Data privacy issues do not fall squarely within the jurisdiction of competition law. Privacy rules are designed to limit the dissemination of personal information with third parties for commercial purposes but do not make it impossible for this to occur. In many instances, consumers unknowingly provide consent for firms to share their information with other parties. Based on this, it is also possible for data brokerage to occur, as has been reported in multiple jurisdictions including by the French and German competition authorities (2016).

Protection of personal data is encompassed within data protection laws or regulations, which vary in complexity and scope based on the jurisdiction. Within the European Union and European Economic Area, data privacy is governed by the General Data Protection Regulation (GDPR), which came into force on 25<sup>th</sup> May, 2018, and that protects the personal data of citizens of the EU for transactions occurring within member states. The GDPR endows consumers with the power to withdraw their data by enshrining the “right to be forgotten” within the regulations.

The African continent has been singled out as a vibrant market for firms with data-driven operations, umping up the urgency for the enforcement of data protection measures. Efforts to put in place this measures have been scanty at best, with a significant number of countries lacking in the data protection laws or regulations (figure 3).

**Figure 3: Landscape on Data Protection Regulation in Africa**



(Deloitte Africa 2017)

This makes for a worrying state of affairs, especially in the wake of conversations around the formation of the Continental Free Trade Area, within which it is envisioned that there will be harmonization of laws of member countries. This highlights the need for the tightening of country laws that underpin data sharing, even as the region makes strides towards addressing big data regulation challenges that emanate externally.

Particularly relevant to competition authorities the value of data as an asset. In ruling on mergers involving personal data, there have often been questions around the amenability of consumers to having their personal information transferred to third parties, especially in cases of divestiture of the operations of the firms. Indeed, there have been arguments against the treatment of data privacy as relevant to antitrust regulation. One of the major ones is around the feasibility of departing from the defined standards analysis of efficiency in order to incorporate data privacy concerns. This has been felt holds potential to open doors to the distortion of analysis of competition concerns by introducing new standards (Haid 2018). Even so, it is not possible to overlook the implications of consumer and data protection legislation.

#### **4. Conclusion and Recommendations**

The use of big data as an asset to business, while not new, has been gaining traction based on technological progress. Because of this, businesses are able to maintain and analyze a database with consumer information, allowing for efficiencies in production and service provision to

consumers. Given the dynamic nature of the telecommunications sector, this ability can only expand in future.

For competition authorities, this poses a new set of challenges in regulation, based on risks such as the foreclosure of competitors of companies that have access to larger databases, collusion based on big data and related algorithms, and exclusionary conduct. Now more than ever, there is need for competition law to adapt quickly to the changing nature of doing business in order to keep up with the issues.

A comprehensive approach to regulation is required so as to fully address the challenges as identified. A summary of possible approaches is as follows:

- Formulation of data policies is key to addressing privacy concerns of consumers and governing the treatment of information in the age of digitization. This also calls for collaboration between competition authorities with other relevant bodies tasked with regulation.
- Continuous review of competition laws and regulations is required in order to take into account the changing pace and nature of business in contemporary digital markets. This will capture irregularities in assessing market power and address emerging concerns in assessing mergers and prosecution of cartels. Currently, African jurisdictions should jointly develop a frame work on sharing of big data to address emergent issues such as exclusivity and entry barriers.
- Global collaboration of authorities in investigating competition cases and enforcement is required. Globally, there are jurisdictions such as European Union and USA in which there has been a precedence in the cases related to the big data. As a result, there is precedence in ascertaining market power and defining markets. Consultation with other competition authorities on a case by case basis provides a guideline on how to address new issues as they arise.
- Awareness creation to consumers service providers and regulators on various platforms on issues of sharing personal data, personalized pricing and targeted marketing to ensure transparency regarding the activities of data driven firms. This should also include information on development in technological markets and the implications for choice, innovation, consumer welfare and competitiveness. Clarity is required on what is meant by “free” in the provision of services to consumers and what it means for privacy.

## References

- Autorité de la Concurrence* and *Bundeskartellamt*, 2016. Competition Law and Data.
- Bourreau, M., De Streel, A. and Graef, I., 2017. Big Data and Competition Policy: Market power, personalised pricing and advertising. Centre on Regulation in Europe (CERRE).
- Bundeskartellamt, 2016. Market power of platforms and networks.
- Commission Staff Working Document of 10 January 2017 on the free flow of data and emerging issues of the European data economy, SWD(2017) 2
- De Mauro, A., Greco, M. and Grimaldi, M., 2016. A formal definition of Big Data based on its essential features. *Library Review*, 65(3), pp.122-135.
- Ezrachi, A. and Stucke, M., 2016. *Virtual competition: the promise and perils of the algorithm-driven economy*, Harvard University Press
- European Commission 18.02.2010 "Microsoft/Yahoo!", Comp/M. 5727. [http://ec.europa.eu/competition/mergers/cases/decisions/M5727\\_20100218\\_20310\\_261\\_202\\_EN.pdf](http://ec.europa.eu/competition/mergers/cases/decisions/M5727_20100218_20310_261_202_EN.pdf)
- Filistrucchi, L., Geradin, D., Van Damme, E. and Affeldt, P., 2014. Market definition in two-sided markets: Theory and practice. *Journal of Competition Law & Economics*, 10(2), pp.293-339.
- Kerber, W., 2016. Digital markets, data, and privacy: competition law, consumer law and data protection. *Journal of Intellectual Property Law & Practice*, 11(11), pp.856-866.
- McAfee, A., Brynjolfsson, E., Davenport, T.H., Patil, D.J. and Barton, D., 2012. Big data: the management revolution. *Harvard business review*, 90(10), pp.60-68.
- OECD, 2013. Exploring Data-Driven Innovation as a New Source of Growth: Mapping the Policy Issues Raised by 'Big Data', *OECD Digital Economic Papers*, No. 22, OCED Publishing
- OECD, 2015. Data-Driven Innovation: Big Data for Growth and Well-Being, OECD Publishing, Paris
- OECD, 2015b. Exploring the economics of personal data: a survey of Methodologies for Measuring Monetary Value, DSTI/ICCP/REG(2011)2.
- OECD, 2016. Big Data: Bringing competition policy to the digital era, DAF/COMP(2016)14.
- Sokol, D.D. and Comerford, R., 2015. Antitrust and Regulating Big Data. *Geo. Mason L. Rev.*, 23, p.1129.
- Stucke, M.E. and Grunes, A.P., 2016. *Big data and competition policy* (p. 15). Oxford University Press.
- Van Til, H., Van Gorp, N. and Price, K., 2017. *Big Data and Competition*. ECORYS