

Forward Thinking EU Policy Analysis:
An exploratory study on improving the EU legal framework
to facilitate a Digital Single Market and technological
innovation

Tudor Paisa

F.J.M. Peeters (Supervisor)

I. de Vries (Supervisor)

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Student: Tudor Paisa
Student Number: 00065747
Department: Academy of Business Administration
Study Program: International Business and Management Studies

Company: EMOTA, The European eCommerce and Omni-Channel Trade Association
Address: Avenue Marnix 30, B-1000, Brussels, Belgium
Supervisor: Maurits Bruggink

University: HZ University of Applied Sciences
Address: Edisonweg 4, 4382NW, Vlissingen, The Netherlands
Supervisors: F.J.M. Peeters; I. de Vries

Abstract

In 2015, the European Commission has outlined the institution's strategy on reaching a harmonised Digital Single Market by focusing on a set of issues, many of which are targeted towards eCommerce. However, this is a global industry which sparked new technologies, industries, services and products while disrupting others.

Moreover, the strong ties to technology have made eCommerce one of the leading drivers for the development and adoption for new and up and coming technologies and pieces of innovation. As such, it has become increasingly challenging for policy-makers to keep the pace with new technologies.

In this line of thought, nine policy areas (cross-border regulations, cross-border parcel delivery, geo-blocking, online platforms, personal data, data economy, competition, and payments) have been assessed through the prism of six - identified - emerging pieces of technology (Internet of Things, drones, BitCoin, 3D printing, artificial intelligence, and virtual reality). The goal was to identify where the current legal framework does not facilitate technological innovation, and would impede the large scale adoption of the latest innovations.

The assessment method consisted of a key-hole comparative analysis, whereby selected recitals of EU legal documents have been graded in relation to their uniformity towards the technologies. In addition, industry experts were interviewed to assess the relevance of the identified technologies to the eCommerce industry against the desk research results.

Overall, the development and progression of technological innovations within eCommerce (and in general) is impeded by strict, unsubstantiated or technologically incompatible regulation. With a few exceptions, it was shown that this is due to EU laws and principles that create additional and unnecessary burdens to EU eCommerce businesses. The documents falling under the scope of Data Protection along with Parcel Delivery, Data Economy and Geo-Blocking are those creating most barriers.

As such, it was concluded that on a larger scale, due to the levels of complexity within each issue require, comprehensive knowledge of both the consumer and the business, as well as entrenched understanding of technology. More practically, a number of positions were recommended in regards to each policy area, as to facilitate technological innovation within European eCommerce.

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Chapter 1

Introduction

1.1 Terms of Reference

As part of the IBMS curriculum at the HZ University of Applied Sciences, one of the graduation requirements is that the 4th year student follows an internship during the 8th semester. In parallel, the student is tasked to conduct a research project within the company with the goal of providing a solution to a given/selected business problem. The research process, along with the topic and its purpose, research methodology, results and recommendations are documented within this paper. In accordance to the policy of the university, the student must hand in to the supervising teachers the research paper for assessment by the 29th of May. Upon a positive feedback, the student will be invited for a defence session.

The internship takes place at EMOTA, the European eCommerce and Omni-Channel Trade Association between 13th of February 2017 and 16th of June 2017. Within this period, the student conducted an exploratory research on improving the EU legal framework with the purpose of helping the EU create a harmonised Digital Single Market whilst facilitating technological innovation.

1.2 Purpose

The employer of the student is EMOTA, the eCommerce and Omni-Channel Trade Association, a leading representative of eCommerce needs within the EU. In order to fulfil this role, the association makes use of the staff's expertise in lobbying to convince EU Officials from the European Commission and European Parliament to make amendments, reductions or additions to current policies.

However, the eCommerce market - from both the side of the consumer and that of the business - is rapidly changing due to a constant stream technological advancements, which in turn led to a series of laggard EU policies. Therefore, in order to assist EMOTA, this research paper aims to promote technological innovation by identifying areas of EU regulation that are in need of improvement to accommodate emerging developments. In other words, it strives to provide a clear overview of the sector and identify areas where the legislation is lacking or is presenting bottlenecks for technological innovation within eCommerce businesses throughout the EU.

1.3 Scope

The research focused on the European Union's eCommerce industry, whilst identifying emerging technologies and market trends applicable to the sector, as well as areas of EU law with improvement potential. Given the scale of the subject, the student is limited by the allocated time-frame required to conduct the research (five months). In addition, the student's specialisation lies in Business Administration and not Law or its branching studies (such as Contract Law, or Consumer Protection). As a result, identifying key areas for improvement will take the student more time to complete compared to someone with more appropriate knowledge. Moreover, the fast-moving and immediate work environment and work ethic requires constant attention. In other words, the likelihood of the internship duties going in the way of the research were high. Furthermore, this study did not take into account the possibility of self-regulating market players due to time constraints.

1.4 Procedure

The research was written in accordance to the requirements set by the HZ University of Applied Sciences, whilst following Arian de Bont's and Mark Saunders' methodology as laid out in "Doing in Company Research" and "Research Methods for Business Students" respectively. The student handed in a research proposal containing the problem definition, theoretical framework, research methodology, and finally the research question. Upon approval, the student was granted the possibility to conduct the research *per se*.

The study is an exploratory research with a mixed-method approach, although primarily qualitative and largely based on secondary research. It features a keyhole comparative analysis between identified emerging technologies and current EU legal framework. Furthermore, it also presents a number of interviews with industry experts to assess the premise of this study as well as the degree of adoption of new technologies within European eCommerce businesses.

1.5 About EMOTA

EMOTA is an eCommerce and Omni-Channel Trade Association located in the heart of Brussels, Belgium (EMOTA, 2016a). It was originally positioned towards the mail-order industry - before the 2000s - but, with the advent of eCommerce, the association shifted towards the new medium. In order to cover a larger area, EMOTA is now serving the businesses with both an online and offline shop (Omni-Channel). The goal of the association is to bridge the gap between policy-makers and organisations in order to help the EU Commission's (EC) target in developing a European Digital Single Market (DSM) (EMOTA, 2016a). To do so, EMOTA engages in advocating the needs of the eCommerce businesses - namely, of its members - to EU Officials from the European Parliament (EP) and European Commission. Before delving any deeper into the organisation's business activities, it must be defined the type of business EMOTA is, and the membership system.

Firstly, a trade association is a representative body for companies and/or organisations with a common interest. It is a member-based organisation - these being businesses and not individuals - who fund the association by means of a monthly or yearly fee (Boleat, 2003). As stated, in the case of EMOTA, here the members are originating from the eCommerce and Omni-Channel environments. However, not all of them are profit-seeking companies.

EMOTA's membership is comprised of three types of organisations. Firstly, there are the profit-seeking companies that operate in the eCommerce sector. Next, there are the national trade association that represent the needs and interest of the industry within their own national territories. Thirdly, there are the supplier members represented by postal operators such as DHL and Post NL (EMOTA, 2016b). The main scope of the organisation is to promote the harmonisation of the industry across the EU and thus to create a Digital Single Market (EMOTA, 2014). It makes use of the staff's expertise in lobbying to convince key EU Officials to make amendments, reductions, or additions to current policies. This is achieved by organising meetings or events with respective policy-makers, by publishing newsletters and white-papers - dubbed "Position Papers" - on the state of the industry or of a specific topic, or by providing consultancy work for the members' lobbying taskforce.

Chapter 2

Problem Definition

2.1 Context

The EU Consumer Scoreboard - study conducted yearly by the European Commission - concluded in 2015 that the European Union has untapped potential for the eCommerce market. It showed that 59% of Europe's B2C companies are not selling online. Moreover, 61% of the consumers are confident in purchasing online domestically and 38% in purchasing from outside of their national borders (European Commission, 2015a). However, these statistics do not fully reflect the reality. With EU's fragmentation, the spread of eCommerce differs from country to country. For instance, in both Denmark and the UK, over 80% have bought items online, whereas countries like Bulgaria and Romania score low - 17% and 12% respectively (eurostat, 2016). Given the retailing industry's growth from eCommerce, and the potential of the European market, it comes as no surprise that facilitating a "Digital Single Market" is a major priority of the European Commission (European Commission, 2015e).

The online retailing industry is faced with barriers that impede it from contributing approximately 415 billion EUR to the European economy (European Commission, 2015e). Furthermore, if achieved, a DSM would provide a boost in "jobs growth, competition, investment, and innovation" to the Union. In 2015, the European Commission has made a communication which outlined the institution's strategy on reaching the DSM; thorough a set of rules aimed at a number of areas. Out the enunciated ones, the following apply to the eCommerce sector (European Commission, 2015e): cross-border regulations, cross-border parcel delivery, geo-blocking, VAT, online platforms, handling of personal data, and competition. However, in addition to these, EMOTA has identified payment methods and trust towards web-shops as being another set of barriers (EMOTA, 2014).

With the advent of the internet and internet technology, eCommerce took its first steps into becoming a global industry (Deloitte, 2017). Through the prism of new technologies, online retailing has made way to the development of new products (e.g. eBooks), services (e.g. project management applications) and industries (e.g. Apps), whilst disrupting others (e.g. traditional bookshops). Furthermore, the strong connectivity (such as the emergence of the "Internet of Things") throughout the internet and low start-up costs makes it easy for entrepreneurs to build a company over the internet.

2.2 Problem

The strong ties to technology have made eCommerce one of the leading drivers for the development and adoption for new and up and coming technologies and pieces of innovation (Deloitte, 2015). In conjunction with the increasing connectivity of the society, and access to more and more information, the adoption times for new pieces of technology are constantly shrinking (Rieder, 2015). Subsequently, this leads to a growing number of iteration of said technologies which in turn makes full-circle by allowing for the development of the next generation of technological innovations.

As such, it is increasingly challenging for the policy-makers to keep the pace with new technologies (Wadhwa, n.d.). This is the main premise for when a law targeting a piece of technology tends to be applied too late - because of newer technologies being adopted, thus nullifying the point of the regulation in the first place -, or when said rules impede the development of newer technologies - usually due to strict or too many regulations. Additionally, hindering the adoption of new technologies translates into both the EU and European businesses losing their competitive edge. To further up the

challenge, the EU must facilitate a harmonised DSM (European Commission, 2015e) which usually requires giving the Member States some time to implement the laws within their borders before they can be applied.

2.3 Action

The point of not regulating does not stand. A political institution such as a Member State's government, a specialised authority, or the European Commission need to provide rules and regulations to warrant a minimum standard of (for example) consumer protection or safety at work - more so where such standards do not exist. Secondly, the policies can establish a benchmark for appropriate business practices.

Nevertheless, it should be pointed out that self-regulation and co-regulation are options for which the EU has opted for in the past. The terms refer to a range of stakeholders involved in joint initiatives such as codes of conduct, agreements or declarations. Relevant to eCommerce, self-regulatory initiatives are largely taking place within the area of parcel delivery (European Commission, 2015e).

Looking on the other side of EU policy-making, it is EMOTA's role to ensure that the voices of Europe's eCommerce and Omni-Channel retailers are echoed within the adopted policies. Furthermore, as an European organisation and industry representative, it must fulfil its goal of facilitating a harmonised DSM as well (EMOTA, 2016a).

2.4 Results

The European Union is in the position where it must implement new rules and regulations that are not adopted too late and do not impede new technologies from entering the market. However, it's regulating bodies have difficulties in keeping up due to rapid developments arising from the eCommerce industry and slow implementation of new policies.

EMOTA, as an industry representative, must ensure that the new laws adopted by the European Union do not create unnecessary burdens to eCommerce and Omni-Channel businesses across Europe. Additionally, both the trade association and the EU must warrant a harmonised Digital Single Market in order to fully tap into the potential of the Europe's Digital sector. In this light, in order to facilitate the development of the next generation of innovations, the EU legal framework needs to be improved. The timely adoption of new technologies does not need to be pursued within this study as it is an inherent part of the innovation process.

Chapter 3

Research Question

Given the above mentioned, this research strives to offer a solution to the following research question (RQ):

RQ: *What can be made to the EU legal framework to facilitate technological innovation within the eCommerce industry, whilst fulfilling policy objectives (such as consumer protection and market harmonisation)?*

With the ultimate goal of facilitating a technologically innovative environment without infringing the EU from attaining its policy objectives, this study took an exploratory stance towards improving the EU legal framework. As mentioned in the previous section, eCommerce is currently one of leading actors in establishing new and ground-breaking technologies however, a number of political factors impede the industry in doing so. As such, this research aimed to look at emergent technologies from two separate time-frames (0 to 10 years, 10-20 years) in order to identify legal barriers to their widespread and timely adoption. The results was be compiled into a set of changes to EU law necessary to achieving the set goal. In turn, these will be regarded as tools which EMOTA can recommend further to the EU bodies.

SQ1: *What are the upcoming technologies arising from eCommerce, and what barriers does the EU law present to their widespread adoption?*

In order to allow for progress, the next generation of developments has to be identified, and the degree to which they are impeded from being brought to market. The purpose of answering this question is to allow for amendments in the EU law take place - in the present - before the innovations appear on the market - in the future.

SQ2: *What other technologies are expected to emerge within a time-frame of 10-20 years, and what aspects should be taken into account when shaping EU law to ensure their adoption?*

Given that it might be difficult to predict the technologies that will be developed 10-20 years from now, it is then necessary to take a broader perspective. Based on secondary research, a number of general developments (such as creating low-cost and high-performance IT infrastructures) were identified and their possible impact examined. The results of this were summarised in a number of key points that should be taken into account when making amendments to the law.

SQ3: *To which extent can the EU regulate eCommerce without infringing on technological progress?*

To reiterate from the previous chapter, the EU is required to adopt new rules and regulations for the benefit of both consumers and businesses however, too much of it can hinder advancements and damage its competitive role in the global economy. Therefore, this SQ aims to identify a middle-ground by pinpointing an exact approach - if possible - to the policy-making process that does not have negative reverberations on progress.

Chapter 4

Theoretical Framework

4.1 Technology

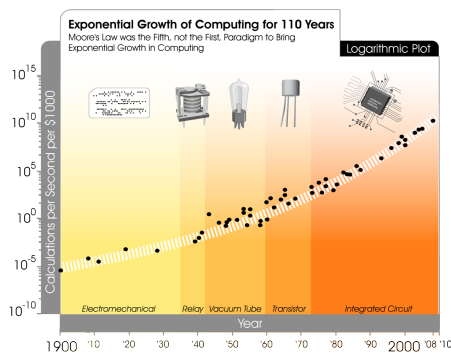


Figure 4.1: Exponential Growth in Computing since 1900; notice the logarithmic plot

Synonymous to technological growth is Moore's law, describing (in 1965) that the number of transistors integrated in a circuit doubles every year (Moore, 1965) - i.e. exponentially. Decades later, the law underwent some readjustments thus settling for a doubling every 18 months (at the time of writing; most likely it will be readjusted again in the future) (Max Roser, 2016). What is often forgotten is that data storage follows the same trend line as semiconductors (Max Roser, 2016). To illustrate, in 1980 IBM introduced the IBM 3380; a hard-disk capable of holding 2.5 GB of data, with a price-tag ranging from \$81,000 to \$142,000, and weighing 250kgs (IBM, 2003). In comparison, today 2GB of storage can cost as low as €2 and weigh a few grams (Walmart, 2017). Also in line with Moore's Law, exponential growth is reflected in the quality-to-price ratio and electrical efficiency; for over 100 years, the number of calculations per second per \$1,000 has been following a similar pattern (Max Roser, 2016; Kurzweil, 2005).

Therefore, from these trend lines it can be extrapolated that technology is constantly deflating since in a few years there will be better technologies available for the same price. Traditionally, deflation is considered to be harmful and distressing, although this one can - justly - be considered as progress (Turner, 2015). As such, the overall exponential growth of technology explains the shortening diffusion rates of new inventions. In other words, given the above, it comes as no surprise that the time required for a certain piece of technology to penetrate the worldwide market is increasingly smaller. Tablets and smartphones needed only a few years to become widely accepted and commonplace pieces of innovation (Max Roser, 2016). Nonetheless, this is the generally the case for the Western world, whereas developing countries (e.g. China and India) tend to leapfrog - skipping over some developments and adopting just the latest (Murray, 2017).

4.2 eCommerce

eCommerce is generally regarded as the practice of "buying and selling goods and services, or the transmitting of funds or data, over an electronic network" such as the Internet (SearchIO, 2016). Nowadays, such transactions take place in between businesses (B2B), between a business and a consumer (B2C), and between consumers (C2C). Since it has first emerged in the 90's, the industry has experienced double-digit growth (Goetsch, 2014). Furthermore, it is expected to become a large part of the retail industry, currently accounting for 16% of the retail turnover in the EU (eurostat, 2016). Part of its growth is directly linked to technological advancement and increasing use of internet and

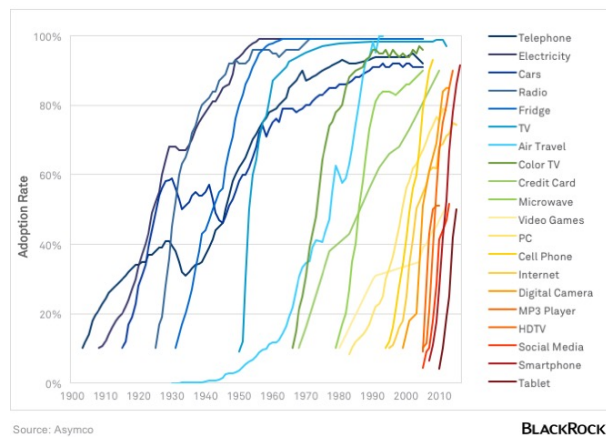


Figure 4.2: Adoption rates of technology since 1900

internet technology. Nowadays, internet-enabled devices make it easier for consumers to make purchases online. Evolving from stationary desktop computers, the primary means of shopping is through the use of mobile devices such as tablets and smartphones (Goetsch, 2014).

Convenience is one of the primary purposes why consumers choose eCommerce over traditional brick-and-mortar stores. A major aspect of it is that consumers can have their purchases delivered straight to their home address, or from a pick-up point if they so desire. The lack of unquantifiable costs such as the "time away from home or work" represents a net advantage over traditional retailing (Goetsch, 2014). Following the same line of thought, online stores offer larger product assortment by taking advantage of information technology whilst having - usually - only one warehouse storage. Coupled with logistical advancements, this gave rise to next-day delivery or, in some extreme cases, same-day or one-hour delivery services (Lierow, Janssen, & D'Inca, 2016).

Price is another aspect that favours eCommerce businesses over traditional retailing (Goetsch, 2014). A survey conducted by Accenture concluded that 59% of UK customers believe that prices in the physical stores are higher (Accenture Interactive, 2012). As such, it comes as no surprise that shoppers tend to visit a physical store and compare the prices with the online offering (Pymnts, 2012). However, it should be mentioned that eCommerce stores having lower prices than their physical counterparts is not a maxim; the reverse is also possible.

That being said, eCommerce generally suffers from customers unable to see (physically) the products when they make the purchase (Goetsch, 2014). Which is why companies such as Zalando offer a customer-oriented return policy (e.g, money-back guarantee, including shipping costs). Moreover, stores with an online and offline presence (Omni-Channel) are rising in popularity, a more advantageous business model in this regard (Zalando, n.d.).

4.3 Digital Single Market

This section will present in brief the EU Commission's communication on its strategy for facilitating the Digital Single Market. Afterwards, the progress from the date of the communication up until the time of writing will be presented. The author wishes to mention that the data presented in this section are respective to the EU Commission's publications, findings, communications, etc. Whether the information factual or not, this will be the reality in which the research will delve into.

With the election of Jean-Claude Juncker as the President of the European Commission, one of the institution's priorities is to harmonise the Digital Single Market of the European Union. According to the Commission's communication on 6th of May, 2015, a DSM is defined as a market in which "the free movement of goods, persons, services and capital is ensured and where individuals and businesses can seamlessly access and exercise online activities under conditions of fair competition, and a high level of consumer and personal data protection, irrespective of their nationality or place of residence" (European Commission, 2015e).

The motive for encouraging the DSM comes from the fact that various barriers and market fragmentation are holding back the development and growth of the Union. The market harmonisation - removal

of barriers and homogenisation of the EU sectors - would contribute to the European economy with EUR 415 billion. Furthermore, it would provide SMEs with the opportunity of tapping into a "market of over 500 million people" (European Commission, 2015e).

To facilitate such a market, the DSM Strategy of the EC is built upon three pillars acting as guiding principles as well as goals. Firstly, it wants to provide a better access to online goods and services to both consumers and businesses. Secondly, there is the provision of suitable conditions for "digital networks and services to flourish". Lastly, the EC wants to maximise the growth potential of Europe's Digital Economy (European Commission, 2015e).

Within the same communication, the EC states that it will reach the above-mentioned through a set rules and regulations aimed at a number of areas (European Commission, 2015e):

1. Cross-Border Regulations
2. Cross-Border Parcel-Delivery
3. Unjustified Geoblocking
4. Access to Digital Content
5. VAT Burdens
6. Telecommunication Networks
7. 21st century Media
8. Online Platforms
9. Handling of Personal Data
10. Data economy
11. Competition
12. Digital Society

All of the enunciated areas branch out from the three pillars that form the DSM Strategy. However, not all of them directly relate to the practice of eCommerce. The provision on digital content access is linked to copyright law, whereas media relates to adapting regulations to suit on-demand services as well. E-society talks about digitalisation of society and governments, as well as expertise in the digital realm (European Commission, 2015e). The point on telecoms is self-explanatory. In light of the above, each of the remaining matters will be discussed in terms of barriers - as of the time of the communication -, and current progress of the legislations - as of the time of writing.

4.3.1 Cross-Border Regulations

One of the first reasons businesses do not engage in cross-border sales is a result of fragmented contract law throughout the EU. At the time of the communication was published, a number of aspects within consumer and contract law have been fully harmonised. However, this does not represent a fully unified set of rules as there is still room for improvement - e.g. remedies to goods not in compliance with the terms laid in the sales contract (European Commission, 2015e).

Therefore, the EC wants to simplify these laws in order to encourage SMEs to sell across their national borders. It aims to do so by allowing traders to rely on national rules, which in turn would be based on a set of "mandatory EU contractual rights for domestic and cross-border online sales" - it applies only to tangible goods. The EC will target digital content through the process of harmonisation of the laws. Finally, an Online Dispute Resolution platform (EU program which allows EU consumers to submit complaints about a trader or product they have purchased) was prepared for launch in 2016 (European Commission, 2015e).

4.3.2 Cross-Border Parcel-Delivery

For 62% of the companies that do not sell online, the high delivery costs pose as a major barrier to cross-border sales. On top of that, the EC further mentions that the lack of transparency and lack of inter-operability in between different parcel operators is another bottleneck for the DSM. These are the general aspect that surround the topic of cross-border parcel-delivery. In this regard, the Commission planned a "self-regulation exercise" undergone by the postal industry, whilst the EU institution was scheduled to provide in 2016 a few measures to improve price transparency (European Commission, 2015e).

4.3.3 Unjustified Geo-Blocking

Geo-blocking is the practice in which a seller does not grant access to the website or the website's products/content to a consumer on the basis of geographical location. Another geo-blocking practice is to offer different prices on the same basis. Moreover, the EU identified geo-blocking is a practice with which they can segment their markets based on national borders. The EC suspects that some geo-blocking practices are a result of companies falling in agreement with competition to share the market or for vertical agreements. There are however some situations where the geo-blocking is fully justified (such as requirements of/compliance to national regulations) (European Commission, 2015e). The Commission said to make a set of proposals to end unjustified geo-blocking practices, and to launch an inquiry on the "application of competition law in the eCommerce" sector (European Commission, 2015e).

4.3.4 VAT Burdens

Taking into account the legal fragmentation from within the EU, an SME wishing to sell cross-border is subjected to 28 different VAT legislations. Up until a certain point (different across countries), businesses are exempt from this tax for cross-border sales. However, after passing the threshold in the respective country, the business is obliged to declare and pay the VAT at the country residence of the customer (European Commission, 2015e).

As such, the European Commission planned to minimise these burdens by allowing businesses to declare and pay the VAT within their own Member State. In parallel, an electronic registration and payment system will be put in place for companies selling tangible goods within and outside the EU (it was already in place for providers of digital services). Furthermore, the Commission promised to present an Action Plan for a new approach in corporate taxation, where profits would be taxed where the value was generated (European Commission, 2015e).

4.3.5 Online Platforms

Online platforms (such as "search engines, eCommerce marketplaces, app stores, [and] price comparison websites") generate and control a large amount of customer data, information which is transformed in turn into usable information for varying purposes (such as better product placement of more precise targeting of ads). The Commission's concern comes from the fact that such businesses exert a large influence over market players. This translates into a strong bargaining power, concerns over transparency, and uncompetitive behaviour - such as unfavourable sales conditions and pricing restrictions in favour of the platform's products/services. The EC's communication states only that such actions would require an analysis that goes beyond the scope of competition law (European Commission, 2015e).

4.3.6 Personal Data

Due to growing cyber threats from all around the world, EU citizens as well as EU economy are put at risk; a truism that the Union and its Member States have acknowledged by implementing national and pan-European cybersecurity strategies and regulations. That being said, the EC acknowledges the fact that there are still gaps in ensuring citizens and businesses security in the digital era.

However, there is another facet on the topic of security, and it relates to privacy and processing of personal data. As briefly mentioned in the previous section, online platforms generate large amounts

of data from their consumers. Taking into account that the EU's research has found that 22% of Europeans have full trust in companies and that 72% of Internet users are concerned over the fact that companies ask for too much personal data, the EU institution puts its trust in the adoption of the General Data Protection Regulation (GDPR). The purpose of the documentation is to promote trust in digital services and protect individuals in respect of their personal data. Moreover, the adoption of the GDPR most likely warrants a revision of the e-Privacy Directive.

4.3.7 Data Economy

Part of the EC's DSM strategy is to facilitate better use of generated data in order to create a data-driven economy. The communication quotes the Big Data movement, along with cloud services and the Internet of Things (IoT) as central items to EU competitiveness. In addition, it's considered to be a catalyst for "economic growth, innovation and digitisation" across all sectors (European Commission, 2015e).

The fragmentation of markets impedes scaling up and reaching full potential of cloud computing and data-driven services. The communication mentions bottlenecks such as data location (a requirement for Member States to keep data generated within its borders, reason for which companies are obliged to create data centres within each country they operate), implementation of copyright law, lack of clarity within the rights to use data, lack of interoperability and portability of data, and allocation of liability. Furthermore, the EC has identified lack of confidence in adopting cloud-based services due to privacy concerns. Therefore, the Commission plans to solve these issues with the adoption of the GDPR, making amendments to contractual law, and removing barriers relating to geolocation of data (the "Free flow of data" initiative) (European Commission, 2015e).

4.3.8 Competition

The way EC plans to promote competition is by ensuring interoperability and standardisation of digital devices. The communication defines interoperability as better connectivity along the "supply chain or between the industry and services sectors", efficient connections between borders, communities, public services and authorities. Currently, there is a common agreement on interoperability within the Member States based on the "European Interoperability Framework" (adopted in 2010), however the Commission plans to update and extend it (European Commission, 2015e).

Standardisation is mentioned in the communication as an essential element in increasing interoperability of new technologies. Moreover, it sees it as strategy for the development adoption of even newer technologies (such as 5G networks). As a result, the EC relies on the EU Rolling Plan for ICT Standardisation. It plans to ensure that the standardisation output is up to date with current and new technologies, as well as defining missing technological standards. All in all, the scope is to support greater digitisation of industries and sectors (European Commission, 2015e).

One other aspect that will be touched upon are patents, namely standards - with proprietary rights - that are based on patents. To an increasing number of corporations and SMEs, this aspect represents a key element in their business model (to monetize on their R&D). Here, the Commission wants to have a "balanced framework [...] in order to ensure fair licensing conditions" (European Commission, 2015e).

4.4 Progress

4.4.1 Cross-Border Regulations

In 2014, the Consumer Rights Directive (CRD) has been adopted to protect consumers involved in contractual agreements with businesses outside the national boundaries. It was achieved by harmonising rules applying to online and off-premises of goods and services. In general, it bans hidden charges, offers full total cost transparency, 14 days right of withdrawal, and full refund within 14 days, amongst many others (European Commission, 2014).

To complement that, in December 2015 the EC released as part of the DSM Strategy a proposal on aspects of contracts for the supply of digital content. The first proposal aims to enforce a harmonised set of rules for the practice of selling digital content before the Member States start designing their own (European Commission, 2015b). In addition, to resolve contractual disputes between consumers

and seller over the sales of online goods, the Online Dispute Resolution (ODR) platform has been launched (European Commission, 2016a).

Finally, in May 2016, the European Commission has launched a set of proposals concerning several issues in the DSM - these proposals are also known as the "DSM package". One of the topics it touches is with regards to "increasing consumer trust in e-commerce". It aims to revise the Consumer Protection Cooperation Regulation so Member States will have more freedom to enforce consumer rights in their national borders - by verifying if companies are engaged in geo-blocking consumers, if they do not respect EU's after-sales conditions, take down scam websites and obtain personal information of the trader by request from the domain registrar or bank (European Commission, 2016b). In parallel, the DSM package contains a set of updated guidelines on the application of the Unfair Commercial Practices Directive (UCPD) (European Commission, 2016e).

4.4.2 Cross-Border Parcel-Delivery

In 1997 the European Commission has adopted the Postal Services Directive. Given the key role postal operators have in the European economy, the Directive declared these services as Universal Service Providers and by defining a minimum set of requirement that these have to be fulfilled (European Commission, 2017c).

The DSM Package also features a proposal for regulations on cross-border parcel delivery. The Commission wants to increase "price transparency and regulatory oversight" at the benefit of consumers and retailers. Furthermore, postal operators would have access to data so they can monitor cross-border markets, in order to check the costs. The transparency point will also ensure there is no discrimination between postal service providers (European Commission, 2016b).

4.4.3 Unjustified Geo-Blocking

The only advancements with regards to Geo-Blocking reside in the DSM package. The European Commission's proposal on the practice of Geo-Blocking - and other forms of customer discrimination on grounds such as geographical location - by imposing an obligation to sell the product. However, the regulation mentions that there is no obligation to deliver - in order to avoid additional burdens on companies on matters such as VAT and VAT thresholds. Moreover, as stated in the communication, this only applies to unjustified Geo-Blocking practices (European Commission, 2016b).

4.4.4 VAT Burdens

In December 2016, the Commission has adopted a package of proposals (the VAT Digital Single Market Package) which will - mainly - increase the threshold before which cross-border sellers have to pay VAT per standard rules (10,000 EUR) and facilitate a "One-Stop Shop" (OSS) for VAT - paying VAT in one location only. These changes will take place in two phases; one in 2018 - threshold increase - and 2021 - OSS (European Commission, 2016c).

4.4.5 Online Platforms

Throughout the years there have been many discussions on platforms, their role in the European economy, and ways to regulate them. What mainly stands out is the communication on "Online Platforms and the Digital Single Market, Opportunities and Challenges for Europe" and the updated guidance document on the UCPD.

The former establishes platforms as bearing a great deal of importance in the EU economy whilst requesting for a balanced and regulatory framework. The document states that a legal equilibrium can be achieved by establishing a "level playing field for comparable digital services", ensuring responsible behaviour of said services, consumer trust and innovation through transparency and fair-play, and a non-discriminatory behaviour on behalf of the platforms (European Commission, 2016f). In addition to that, there is a draft report written by MEPs Henna Virkkunen and Philippe Juvin where it is recalled that the EU legislation is not properly enforced to online platforms or it needs to be updated to the online world (Virkkunen & Juvin, 2017).

The guidance document on the UCPD touches upon the applicability of the directive to online platforms in relation to the provisions of the "e-Commerce directive", respectively the extent to which

certain types of platforms are subjected to the UCPD - mainly since it has been questioned who is liable in case of non-conformity of the product; the seller or the platform (European Commission, 2016e).

4.4.6 Personal Data

In 2016, both the "General Data Protection Regulation" (GDPR) and the directive "on the protection of natural persons with regard to the processing of personal data by competent authorities for the purposes of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, and on the free movement of such data" were adopted. However, these two will apply from 6 May 2018 (directive) respectively 25 May 2018 (regulation). What these who want to achieve is to strengthen the privacy of consumers in a digital age whilst also simplifying the rules that businesses have to follow (European Commission, 2016g).

However, as stated in the original communication, the adoption of the GDPR means that the ePrivacy directive has to be reviewed. As such, in January 2017, a proposal has been put forth. The revision calls for "enhancing protection of confidentiality" and "enhancing protection against unsolicited communication" whilst simplifying the policies (European Commission, 2017d).

4.4.7 Data Economy

With regard to building a data economy, the EC has adopted a communication on January 2017 where - accompanied by a staff working document - it addresses the issues of free flow of data as well as data localisation. In addition, it touches upon the access and transfer of non-personal machine generated data, liability and portability of data (European Commission, 2017b). As such, the Commission plans to organise public consultations to hear and assess the voice of the stakeholders (European Commission, 2017e).

4.4.8 Competition

With the new Commission cabinet, the institution has published a yearly ICT Standardisation Rolling Plan where prioritised topics are listed (European Commission, 2015d). In addition, it features a series of proposed amendments to EU Policy in order to support economic growth and harmonise the Single Market. The 2017 release represents a milestone with regards to the fact that financial technologies have been included in the priority list (European Commission, 2017a).

4.5 Payments

At the time of writing, there has been little to no discussion on the topic of online payments systems during the Junckers cabinet. Nor is the topic mentioned in 2015 communication. The only major step towards any direction is the adoption of the Payment Services Directive 2 (PSD2) on October 2015. Its provisions include stricter security requirements on the processing of payments, a enhanced consumer rights, consumer/business-oriented payment services, prohibited surcharges, and the promotion of innovative payment services. It is another step towards the harmonisation of the DSM, one which will become applicable in 2018 (European Commission, 2015c).

It should be mentioned that the e-money directive (EMD) has been adopted in 2009 and has been fully implemented in 2011. It's aim was to facilitate the emerging financial services, whilst providing companies the access to electronic money - regarded as the currencies stored on a digital and/or mobile device (European Commission, 2009).

Chapter 5

Methods

5.1 Research Design

Given that the research was conducted for a Trade Association, it must be emphasised that the study focused on the perspective of the businesses and took a stance that could favour these over consumers. That being said, to identify improvements that will facilitate a Digital Single Market, the research took the form of an exploratory cross-sectional study. In other words, it seeks to provide new insights and assess the environment in a different light, whilst focusing on a particular phenomenon (EU eCommerce policies) at a given period of time (present) (Saunders, Lewis, & Thornhill, 2009).

With this in mind, the study answered the main research question by following the methodology of a comparative analysis - comparing and contrasting two things (Harvard University, n.d.). In this study, the subjects of the analysis are the emerging technologies - namely their characteristics -, and EU law - namely requirements and definitions. However, the study did not weigh the two equally, but it looked at the legal framework through the lens of the emerging technologies. Fundamentally this approach is labelled a "keyhole" comparison with the premise of showing new perspectives into or critiquing a unit (Harvard University, n.d.).

In the initial stage, up and coming technologies and technological developments within a time-frame of 0 to 10 years and 10 to 20 years will be identified - thus answering SQ1 and SQ2. Next, the findings were transposed on a spreadsheet, each column entry answering a particular question:

1. What is the technology?
2. Why is it needed?
3. What does it do?
4. How does it work?
5. When will it be commercially available?

The laws however did not need to be identified, as the research focused on the directives, regulations etc. mentioned in the theoretical framework (see research units). Data respective to each unit will be placed into a matrix where discrepancies between units - and the degree to which they differ - was marked accordingly. The scale based on which the analysis takes place is seen in table 5.1.

The completion of this stage marks presents the necessities to answer SQ3. Furthermore, these results were be used to provide a set of recommendations to improve the EU legal framework.

As an additional stage within the research process, a set of interviews were conducted on the adoption of the technologies by EU SMEs. The purpose is to assess a business' confidence levels of adopting new developments and the degree to which entrepreneurs can react towards opportunities. The interviews also acted as a means to add another layer of validation to the premise of this thesis. The interviews - semi-structured - featured industry experts and simply required the interviewee to express their opinion on the adoption of each particular piece of technology. The experts were be people versed into eCommerce (such as businesses, or legal representatives), bar law-makers. The reason for said exclusion is because the research focuses on the business' adoption and innovation of the technology. Moreover, it's purpose was to verify the confidence levels towards which entrepreneurs will integrate

Mark	Meaning
Uniform	the law as it stands allows for the full adoption of the identified technologies
Some Disparity	there are some barriers slowing down the adoption of identified technologies
Completely Divergent	the law as it stands fully blocks the adoption of identified technologies

Table 5.1: Grading System

new developments in their business models. As such, once the emerging technologies have been identified, industry experts were simply be asked to state their opinion on the following question: *How soon do you think will your business integrate technology X in its daily operations? Please elaborate as to why.* The number of questions depended on the number of technologies identified.

5.2 Research Units

As illustrated in the previous section, a comparative analysis dictates two research units. The first one (the dominant one) is represented by the "emerging technologies". The sub-dominant unit is represented here by the "EU law" more precisely, the documents mentioned in the previous chapter that fall under the umbrella of the DSM issues (when there are updated documents, evaluations or any other recent documents that examine or provide changes to existing regulations, the newer ones were analysed, over the already established ones). To reiterate, they are as follows:

Issue	Document #
Cros-Border Regulations	Directive 2011/83/EU; COM(2016) 283 final; Updated UCPD Guidance
Cross-Border Parcel Delivery	COM(2016) 285 final
Geo-Blocking	COM(2016) 289 final
VAT	COM(2016) 757 final; COM(2016) 811 final
Online Platforms	COM(2016) 288 final; Updated UCPD Guidance; 2016/2276 (INI)
Personal Data	COM(2012) 11 final; COM/2012/010 final; COM(2017) 10 final
Data Economy	COM(2017) 9 final
Competition	2017 Rolling Plan for ICT standardisation
Payments	Directive (EU) 2015/2366

Table 5.2: Documents related to eCommerce and the DSM

With regards to the emerging technologies, the specific units of analysis depended upon the identification process.

5.3 Data Collection

To identify the emerging technologies, a number of sources were consulted. The primary source for the 0-10 years time-frame are news outlets that specialise on eCommerce and Technology. However,

for both time-frames the source of information will be comprised of forward-looking industry reports and opinions of established intellectuals such as Ray Kurtzweil and John M. Smart. The following represents a comprehensive list of the sources to be consulted:

Source	Type
Bevh	Industry Report
UPS	Industry Report
DHL	Industry Report
Pitney Bowes	Industry Report
Youstice	Industry Report
Amazon	Industry Report
Alibaba	Industry Report
Internet Retailer	Industry Report
Ray Kurtzweil	Industry Figure
John M. Smart	Industry Figure
EU Commission	News & Industry Report
techUK	Industry Opinions
Hacker News	News
MIT Technology Review	News Outlet
E-Commerce Times	News Outlet
E-Commerce section of The Guardian	News Outlet
E-Commerce Week	News Outlet

Table 5.3: Desk Research Sources

Starting from January 2017, all articles and reports was succinctly reviewed and assessed whether they are relevant. From this point onwards, the list of technologies was being compiled.

Also mentioned before was the inclusion of some interviews within the research process. These took shape of semi-structured interviews with experts. The number of interviews depended upon the level of opportunities that the researcher is given, and also his time availability. Nonetheless, the experts were be accessed through EMOTA's network of businesses and associations.

5.4 Reliability and Validity

In order to ensure the reliability and validity of the data gathered and generated, the researcher ensured that the secondary data he gathered comes from reliable sources (by taking into account the author, copyright, contact information, if the data is verifiable, reputation of the source, etc.). Furthermore, the researcher ensured that there was no bias within the data analysis and that the results were geared towards the facilitation of a Digital Single Market. Furthermore, the data was analysed step-by-step to prevent any errors, logical leaps, or logical fallacies seeped into the results. To prevent generalisability, the information sources was directly related to the eCommerce industry, with the underlying recommendation to follow suit - in terms of applicability (Saunders et al., 2009).

5.5 Ethics

This research was conducted in accordance to the ethical guidelines laid out in the H2020 Programme's guidance on "How to complete your ethics self-assessment" (European Commission, 2016d) and the EC's "Ethics for researchers" (European Commission, 2016d).

Results

As dictated in the previous chapter, the policy analysis aspect is done through the prespective of emerging technologies. Thus, to identify the respective technologies, a number of news sources have been consulted throughout the study period. Contrary to the dictated principles of this study, a longitudinal approach was taken by setting up a private server along with an application which would receive daily news reports and studies by means of RSS (Really Simple Syndication). With the exception of the "Industry Report" type of sources - outlined in the previous chapter - all of the rest have been included. In addition to those, official news feeds from DGs (European Commission Directorate Generals) tied to research were added alongside. This approach was taken for the purpose of reinforcing the data gathering process.



Figure 6.1: Word cloud consisting of all titles

Whilst surveying the feeds on a daily basis - with the exception of weekends when there would be little to no input - a pattern of technologies started to emerge. However, the significance of those patterns had to be validated. As such, a simple verification process was set up; after roughly 90 days, the titles of the news reports would be copied into a spread sheet, curated of date and source name, and then put into a word cloud (for this purpose, the free word cloud generator from www.jasondavies.com was used).

After initial trials, titles were curated once more to eliminate words that would distort the results of this process. The respective are:

techUK, Get, CEO, 2017, 2016, Blog, Guest, Go, Free, Fight, Kill, Topic, Just, man, April, May, June, July, Using, Make, week, new, Events, Trump, EU, Europe, Court, Latest, 1st, two, 40, 702, 10, Now, need, Use, FCC, Update, Way, Keep, 1, S, Workshop

Although further changes could have been implemented, the aforementioned list was decided to be definitive as to not over-complicate the purpose of this exercise.

It should be mentioned that the titles have been distributed over a number of lists in relation to the sources. They were: eCommerce, Technology, EU, and a final list containing all of the titles. After making four separate word clouds, the initial theories have been validated. The top emerging technologies within a short timeframe (0-10 years) are as follows: Internet of Things, Drones, Bitcoin, 3D Printing, Artificial Intelligence, Virtual Reality. Although these exist in current markets, they lack widespread adoption, and there are considerable developments underway for each one. Figure 6.1 shows the word cloud for the technology titles. Appendix A contains all four word clouds.

However, there was no positive identification for the long-term technologies. This is largely due to the high levels of uncertainty in regards to their market entrance. This applies to nanotechnology, graphene technology ("future" replacement of transistors), and various supposed innovations in the

field of energy (majority of news sources would "hype" any possible developments yet never speak of them again).

6.1 Internet of Things

The Internet of Things (IoT) is not a technology in the real sense of the word, but a term that describes the increasing inter-connectivity of devices via wireless - mainly through the Internet - and API protocols (Application Programming Interface)(Porter & Heppelmann, 2014; Rowe, 2014). Its importance comes from the fact that data generated by one device is sent to another device which further processes the information and based on which will execute a specific action(Porter & Heppelmann, 2014). McKinsey published an article in which it categorizes and exemplifies the potential and use of IoT (Chui, L'uffler, & Roberts, 2010).

The first category is *Information and Analysis*, which contains three types of applications, outlined below (Chui et al., 2010):

1. **Tracking Behaviour:** Monitoring the behaviour of persons, things, or data through space and time (e.g. RFID tracking)
2. **Enhanced situational awareness:** Achieving real-time awareness of physical environment (e.g. use of sensors for data on environmental conditions)
3. **Sensor-driven decision analytics:** Assisting human decision making through deep analysis and data visualisation (e.g. real-time monitoring of patients)

The second category, *Automation and Control*, also has three types of applications, which can be found below (Chui et al., 2010):

1. **Process optimisation:** Automated control of closed [~~self-contained~~] systems (e.g. automatic temperature control)
2. **Optimised resource consumption:** Control of consumption to optimise resource use across network (e.g. balancing a server's power usage based on computing load)
3. **Complex autonomous systems:** Automated control in open environments with great uncertainty (e.g. automatic braking systems)

Originally, the McKinsey article referred to *Process Optimisation* as a feature in closed systems (Chui et al., 2010) however, that is not the case given that IoT is present in open-source systems as well.

6.2 Drones

Drones are not a new technology, however they have been included in the list since they have recently entered the wider market. Originally, drones were called *Unmanned Aerial Vehicle*(UAV), largely due to their initial use for military purposes (International Civil Aviation Organization, 2011). They are small aircraft systems that do not allow a human on board, yet they can be controlled by one, or - more recently - be completely autonomous (MIT, 2017).

As of the time of writing, their noteworthy notoriety comes from Amazon promising to ship products via drones, thus establishing a "drone race" with eCommerce players and postal service providers (Lierow et al., 2016). In this field respectively, a number of patents have been filed by Amazon, whilst research and development in the area has surged. An important breakthrough took place when MIT - in collaboration with Boeing - developed an algorithm that would allow a drone to make autonomous deliveries, whilst making effective decisions that allow for a long-lasting preservation of the drone's health (read as: capacity to do deliver more whilst preserving as much energy as possible) (MIT, 2017).

6.3 Bitcoin

The most popular cryptocurrency, Bitcoin is an open-source digital currency originally published in 2009 (Nakamoto, 2009). With 8 years since its introduction, it follows the same line of thought as drones (see previous section); it still lacks widespread adoption, in spite of the potential to become a worldwide single currency. Therefore, a note should be made that due to its age, the research would rather assess cryptocurrencies as a whole, with Bitcoin being as the representative of the lot.

What makes Bitcoin - and other denominations - stand out is the potential for being the catalyst of a global single-market. Furthermore, its open-source (the design and code belong to the public domain), it has no singular owner, it is community-owned (Bitcoin, n.d.-c). It behaves just like cash, with the user accessing the money through a "wallet" stored in a personal device (computer, phone, tablet, etc.) (Bitcoin, n.d.-a).

Unlike its liquid counterpart, transactions are not anonymous (Bitcoin, n.d.-b). They are all stored in a public registry called *Blockchain*. It is done so because - by design - Blockchain is a "database" managed autonomously and virtually impossible to change (Bitcoin, n.d.-b). One other way to think of Blockchain is to see it as a "public ledger" with an extra layer of security on top. As the matter of "personal security" would arise from the previous statements, it has to be mentioned that the personal identity of the user is not public knowledge (Bitcoin, n.d.-b). Bitcoin does not ask for any personal data to be included - such as name, age, gender, etc. - however, it automatically assigns an "address" by which the user's wallet can be reached (like an email address) (Bitcoin, n.d.-b). If any, that would be the only traceable information towards a private person however, many wallets offer the option to renew the address after each transaction (successful or not).

One other important thing to mention is that Bitcoin was the first to solve *double-spending* without the necessity of a trusted central authority or server (CryptoCompare, 2017). That being said, Bitcoin does feature (like the rest) payment service providers that provide Point-of-Sale (POS) solutions (Bitcoin, n.d.-c).

6.4 3D Printing

3D printing is a manufacturing process that creates a physical object by printing the materials layer by layer (3D Printing, n.d.). The process starts on the basis of a 3D rendered blueprint of the object from a Computer-aided-design (CAD) software such as *Blender* (3D Printing, n.d.). It was in use for far longer than any of the previously enunciated technologies however, the patents for this one started expiring in 2009 (3D Printing, n.d.). This - just like in the drones scenario - led to a surge in developments in the development of this piece of innovation.

Depending on the machine, some of the most common printing methods are by melting plastic (most common) or by selectively melting powder (comprised of individual materials) at high temperatures (3D Printing, n.d.). Most commonly available printers allow the user to create objects using plastic, rubber, metals, or alloys. However, scientists have recently made it possible to create 3D printed silicone implants (Sample, 2017)- such as a trachea implant -, whilst others were successful in creating artificial ovaries for infertile mice (which consequently allowed them to give birth to healthy babies) (O'Byrne et al., 2017). In the field of business however, 3D modelers are selling their designs on marketplaces such as *Shapeways* and *Pinshape* (Shapeways, n.d.; Pinshape, 2017). In the field of eCommerce the latter is of greater importance, especially when considering that the blueprints for the aforementioned medical devices could be sold on such platforms.

6.5 Artificial Intelligence

Artificial Intelligence (AI) is, in the words of John McCarthy, "the science and engineering of making intelligent machines, especially intelligent computer programs" (AISB, n.d.). It's a complex field that encompasses a wide array of disciplines ranging from computer science, to cognitive science and philosophy. The term "intelligent" is highly debated in this field, as there are many schools of thought in regards to the implications of designing an "intelligent" object (AISB, n.d.). However, the general consensus is that here the word implies a behaviour that is perceived as intelligent by human beings. Put short, the purpose of this field is to replicate the human mind and behaviour into a computer

program (AISB, n.d.).

One of the various systems that currently resemble a form of AI, are virtual assistants like the Amazon Echo, Apple's Siri, Microsoft's Cortana, and the Google Now (Dunn, 2016). They are all voice controlled and are able to fulfill complex tasks such as: *telling the weather, open and controlling apps, searching the internet, making purchases, or send emails* (Dunn, 2016). When these assistants are combined with IoT, their capabilities further extend to: *locking the house, controlling the lights in the house, displaying messages on the TV, finding one's phone or post on social media* (IFTTT, 2017).

In addition to being the technology behind self-driving cars (Els, 2016), AI brought back "chat bots" (software with which one can converse, this time to accomplish specific tasks). Although used for different purposes, one of the most ground-breaking advancements are in eBay "shopping assistant" which allows the user to browse through the website's catalog (eBay, 2017), and various other bots that allow for payments and money transfer (Sawers, 2017).

6.6 Virtual Reality

Virtual Reality (VR) is the field in which users, with the aid of a specific device, people can enter a computer-generated environment and interact with it in different ways (Virtual Reality Society, 2015b). The main device is a sensor-based headset that allows for the viewing of the surroundings (Virtual Reality Society, 2015b). In addition to it, the system might integrate gloves, omni-directional treadmills, or controllers (Virtual Reality Society, 2015a).

Its most common uses are in the field of entertainment (video-games, film, arts), where users are allowed to be immersed into the world which they are viewing (Virtual Reality Society, 2015b). However, VR can be expanded to be applicable to other fields. In architecture one could view and build a structure in greater amounts of detail. Moreover, eBay is working towards building a virtual shop where - just like the AI chat bot - users can browse its catalog, view a 3D rendering of the products, make bids, and buy online (Bogle, 2016). Also, experts in the field have stated that users will be able to view and "try" the clothes before ordering them online (Virtual Reality Society, 2015a).

6.7 Policy Analysis

With the technologies selected, the relevant parts from the legal documentation can be identified. All them have been placed vertically into a spread sheet on one column, whereas the technologies are present at the top (horizontally). From the legal documentation, to avoid further complications and abide to the limited time-frame available, only the recitals (where applicable) have been consulted. When an entry with any relevance to the technologies has been identified, it has been copied into the spreadsheet - either in its entirety or some fragments. Afterwards, per technology, each entry in the spreadsheet has been graded with either 1 (Uniform), 2 (Some Disparity), 3 (Completely Divergent). Before presenting the results of the analysis, it must be mentioned that the document COM(2012) 11 final did not contain any relevant entries.

Tables 6.1 to 6.6 represent the a summary of the policy analysis side of the study on a per technology basis whereas Table 6.7 represents an aggregate of the results on a per policy area basis. Tables with the complete analysis can be seen in Appendix B.

		IoT					
		# Uniform	% Uniform	# Some Disparity	% Some Disparity	# Completely Divergent	% Completely Divergent
Data Economy	COM/2012/011 final	6	38%	6	38%	4	25%
Data Economy	COM/2017/010 final	1	9%	8	73%	2	18%
Consumer Rights	Dir 2011 83 EU	22	79%	6	21%	0	0%
Consumer Rights	COM(2016)283 final	1	33%	2	67%	0	0%
Geo-blocking	COM/2016/289 final	9	53%	3	18%	5	29%
Platforms	Com/2016/288 final	28	100%	0	0%	0	0%
Platforms	Draft 2016/2276 (INI)	3	100%	0	0%	0	0%
Platforms	UCPD Guidance	3	75%	1	25%	0	0%
Parcel Delivery	COM/2016/285 final	5	50%	5	50%	0	0%
VAT	Com/2016/757 final	8	100%	0	0%	0	0%
VAT	COM/2016/811 final	6	100%	0	0%	0	0%
Payments	Dir 2015/2366	28	100%	0	0%	0	0%
Data Economy	COM/2017/9 final	2	22%	7	78%	0	0%
Competition	ICT Stand	2	25%	6	75%	0	0%
Aggregate		124	69%	44	25%	11	6%

Table 6.1: Analysis Summary: IoT

		Drones					
		# Uniform	% Uniform	# Some Disparity	% Some Disparity	# Completely Divergent	% Completely Divergent
Data Economy	COM/2012/011 final	16	100%	0	0%	0	0%
Data Economy	COM/2017/010 final	10	91%	1	9%	0	0%
Consumer Rights	Dir 2011 83 EU	24	86%	4	14%	0	0%
Consumer Rights	COM(2016)283 final	1	33%	2	67%	0	0%
Geo-blocking	COM/2016/289 final	11	65%	2	12%	4	24%
Platforms	Com/2016/288 final	28	100%	0	0%	0	0%
Platforms	Draft 2016/2276 (INI)	3	100%	0	0%	0	0%
Platforms	UCPD Guidance	4	100%	0	0%	0	0%
Parcel Delivery	COM/2016/285 final	5	50%	3	30%	2	20%
VAT	Com/2016/757 final	8	100%	0	0%	0	0%
VAT	COM/2016/811 final	6	100%	0	0%	0	0%
Payments	Dir 2015/2366	28	100%	0	0%	0	0%
Data Economy	COM/2017/9 final	6	67%	3	33%	0	0%
Competition	ICT Stand	6	75%	2	25%	0	0%
Aggregate		156	87%	17	9%	6	3%

Table 6.2: Summary Analysis: Drones

		Bitcoin					
		# Uniform	% Uniform	# Some Disparity	% Some Disparity	# Completely Divergent	% Completely Divergent
Data Economy	COM/2012/011 final	16	100%	0	0%	0	0%
Data Economy	COM/2017/010 final	11	100%	0	0%	0	0%
Consumer Rights	Dir 2011 83 EU	25	89%	3	11%	0	0%
Consumer Rights	COM(2016)283 final	1	33%	2	67%	0	0%
Geo-blocking	COM/2016/289 final	12	71%	2	12%	3	18%
Platforms	Com/2016/288 final	22	79%	4	14%	2	7%
Platforms	Draft 2016/2276 (INI)	3	100%	0	0%	0	0%
Platforms	UCPD Guidance	4	100%	0	0%	0	0%
Parcel Delivery	COM/2016/285 final	10	100%	0	0%	0	0%
VAT	Com/2016/757 final	8	100%	0	0%	0	0%
VAT	COM/2016/811 final	6	100%	0	0%	0	0%
Payments	Dir 2015/2366	22	79%	4	14%	2	7%
Data Economy	COM/2017/9 final	4	44%	5	56%	0	0%
Competition	ICT Stand	6	75%	2	25%	0	0%
Aggregate		150	84%	22	12%	7	4%

Table 6.3: Summary Analysis: Bitcoin

		3D Printing					
		# Uniform	% Uniform	# Some Disparity	% Some Disparity	# Completely Divergent	% Completely Divergent
Data Economy	COM/2012/011 final	15	94%	1	6%	0	0%
Data Economy	COM/2017/010 final	11	100%	0	0%	0	0%
Consumer Rights	Dir 2011 83 EU	25	89%	3	11%	0	0%
Consumer Rights	COM(2016)283 final	1	33%	2	67%	0	0%
Geo-blocking	COM/2016/289 final	9	53%	3	18%	5	29%
Platforms	Com/2016/288 final	28	100%	0	0%	0	0%
Platforms	Draft 2016/2276 (INI)	3	100%	0	0%	0	0%
Platforms	UCPD Guidance	3	75%	1	25%	0	0%
Parcel Delivery	COM/2016/285 final	10	100%	0	0%	0	0%
VAT	Com/2016/757 final	8	100%	0	0%	0	0%
VAT	COM/2016/811 final	6	100%	0	0%	0	0%
Payments	Dir 2015/2366	28	100%	0	0%	0	0%
Data Economy	COM/2017/9 final	5	56%	4	44%	0	0%
Competition	ICT Stand	6	75%	2	25%	0	0%
Aggregate		158	88%	16	9%	5	3%

Table 6.4: Summary Analysis: 3D Printing

		AI					
		# Uniform	% Uniform	# Some Disparity	% Some Disparity	# Completely Divergent	% Completely Divergent
Data Economy	COM/2012/011 final	6	38%	6	38%	4	25%
Data Economy	COM/2017/010 final	2	18%	7	64%	2	18%
Consumer Rights	Dir 2011 83 EU	22	79%	6	21%	0	0%
Consumer Rights	COM(2016)283 final	1	33%	2	67%	0	0%
Geo-blocking	COM/2016/289 final	9	53%	3	18%	5	29%
Platforms	Com/2016/288 final	28	100%	0	0%	0	0%
Platforms	Draft 2016/2276 (INI)	3	100%	0	0%	0	0%
Platforms	UCPD Guidance	3	75%	1	25%	0	0%
Parcel Delivery	COM/2016/285 final	10	100%	0	0%	0	0%
VAT	Com/2016/757 final	8	100%	0	0%	0	0%
VAT	COM/2016/811 final	6	100%	0	0%	0	0%
Payments	Dir 2015/2366	28	100%	0	0%	0	0%
Data Economy	COM/2017/9 final	2	22%	7	78%	0	0%
Competition	ICT Stand	2	25%	6	75%	0	0%
Aggregate		130	73%	38	21%	11	6%

Table 6.5: Summary Analysis: AI

		VR					
		# Uniform	% Uniform	# Some Disparity	% Some Disparity	# Completely Divergent	% Completely Divergent
Data Economy	COM/2012/011 final	6	38%	7	44%	3	19%
Data Economy	COM/2017/010 final	2	18%	7	64%	2	18%
Consumer Rights	Dir 2011 83 EU	23	82%	5	18%	0	0%
Consumer Rights	COM(2016)283 final	1	33%	2	67%	0	0%
Geo-blocking	COM/2016/289 final	9	53%	3	18%	5	29%
Platforms	Com/2016/288 final	28	100%	0	0%	0	0%
Platforms	Draft 2016/2276 (INI)	3	100%	0	0%	0	0%
Platforms	UCPD Guidance	2	50%	2	50%	0	0%
Parcel Delivery	COM/2016/285 final	10	100%	0	0%	0	0%
VAT	Com/2016/757 final	8	100%	0	0%	0	0%
VAT	COM/2016/811 final	6	100%	0	0%	0	0%
Payments	Dir 2015/2366	28	100%	0	0%	0	0%
Data Economy	COM/2017/9 final	3	33%	6	67%	0	0%
Competition	ICT Stand	2	25%	6	75%	0	0%
Aggregate		131	73%	38	21%	10	6%

Table 6.6: Summary Analysis: VR

		# Uniform	% Uniform	# Some Disparity	% Some Disparity	# Completely Divergent	% Completely Divergent
Data Protection	COM/2012/011 final	65	68%	20	21%	11	11%
Data Protection	COM/2017/010 final	37	56%	23	35%	6	9%
Consumer Rights	Dir 2011 83 EU	147	88%	21	13%	0	0%
Consumer Rights	COM(2016)283 final	6	33%	12	67%	0	0%
Geo-blocking	COM/2016/289 final	59	58%	16	16%	27	26%
Platforms	Com/2016/288 final	94	75%	30	24%	2	2%
Platforms	Draft 2016/2276 (INI)	18	100%	0	0%	0	0%
Platforms	UCPD Guidance	19	79%	5	21%	0	0%
Parcel Delivery	COM/2016/285 final	50	83%	8	13%	2	3%
VAT	Com/2016/757 final	48	100%	0	0%	0	0%
VAT	COM/2016/811 final	36	100%	0	0%	0	0%
Payments	Dir 2015/2366	162	96%	4	2%	2	1%
Data Economy	COM/2017/9 final	22	41%	32	59%	0	0%
Competition	ICT Stand	24	50%	24	50%	0	0%
Aggregate		787	76%	195	19%	50	5%

Table 6.7: Summary Analysis: Aggregate per Policy Area

6.8 Interviews

Due to time and availability constraints, the only interviewees were with EMOTA's Secretary General (Maurits Bruggink), and Director of Legal and Government Affairs (Razvan Antemir). They collectively have decades of advocating for EU businesses, an extensive network within the EU's eCommerce sector (from SMEs to large platforms and international corporations), as well as deep knowledge of the eCommerce industry. As mentioned in the *Methods* chapter, the questions were simply based on the time-frame required for a particular technology to be integrated within EU businesses.

The first to be interviewed was the Secretary General. When asked about IoT, the initial reaction was that he has yet to see an application of the technology to eCommerce businesses. However, upon presenting the automation potential as well as the tracking capabilities, the answer was changed; it should be made more aware for eCommerce businesses on how they can integrate IoT, while making it easy for integration. The existence of services such as IFTTT and Zapier was not mentioned by the interviewer, services which both fit the criteria.

Regarding Drones, Mr. Bruggink stated that the future of Drones is largely unknown due to current regulation; the use of drones is generally permitted only in large open spaces. In addition, his belief was that it will take some time until the EU will look into this issue. The response towards BitCoin and other cryptocurrencies, the answer was just similar; current cryptocurrencies would not receive any large adoption due to its lack of support from the EU and Member States, as well as other countries.

In contrast, 3D Printers would need only a few more years for wider adoption. What the Secretary General sees in it is that 3D Printers can cut out the "middleman" in many transactions. Here, the "middlemen" are postal operators, re-sellers, warehousing services, etc. Anything that stands between the manufacturer and the consumer, will be cut out of the equation.

Next, AI services were brought up. Here the consideration was that Artificial Intelligence services such as Amazon Echo are still "bare-bones" and expensive to develop. However, when the interviewer brought up and explained what chatbots are and how they are currently operating, the Secretary General stated that there is some room for re-consideration.

Finally, Mr. Bruggink was quite certain that VR will keep growing, foreseeing a wide adoption in the nearby future. His argumentation was that due to mobile commerce being on the rise, and cheap smartphone VR headsets, it is only a matter of time until a VR app will be made for eCommerce.

The second to be interviewed was the Director of Legal and Government Affairs. His belief on IoT was opposite to that of Mr. Bruggink. He sees the integration of IoT into eCommerce businesses in a short time-frame. Consumers are buying more and more IoT enabled products, and it is up to economies of scale to make it more affordable. However, there is room for improvement on the B2B market (IoT enabled SaaS).

With regards to drones, the answer was more in line with the Secretary General. For out-of-city deliveries, it can be made available in a short time-frame. However, it largely depends on whether postal operators will implement this service into their line of business, and if EU laws will allow drone delivery to be available everywhere.

Mr. Antemir believes that it's hard to predict the adoption of cryptocurrencies, the answer leaning more towards "never". In his opinion, such currencies firstly have to distance themselves from the criminal scene.

The answer towards 3D printing was the same as the Secretary General's, with the addition of the fact that it is a market with high potential that is equally disruptive.

On the topic of AI, Mr. Antemir firmly believes that the technology will soon reach market-wide adoption. All is needed is for companies to start populating the Facebook Messenger with their own chatbot offerings. On a wider scale, companies would need to be more creative and provide other AI-based services.

Finally, with regards to VR, the response was the same as Mr. Bruggink's.

Chapter 7

Discussion

As seen from tables 6.1 to 6.6, each of the identified technologies is faced with a degree of barriers to widespread adoption. It must be considered the fact that the desired outcome for each technology is to have no *Completely Divergent* ratings, and preferably little to no *Some Disparity* gradings. This signals that the regulatory framework does not impede the respective, and society is able to benefit from it - almost - fully. The following sections will discuss in detail the results for each category of regulation, however they will not touch upon the topic of VAT. This is due to all of the recitals being rated with *Uniform* across all technologies.

7.1 Data Protection

As it stands, across the board, the General Data Protection Regulation and the new ePrivacy Directive are some of the biggest barriers EU law is presenting to the adoption and innovation of new technologies. Consent is an important subject within both, and both regulations want to ensure that the consumer is aware, and agrees that websites might process their data for specific purposes (e.g. giving personalised recommendations, or improving the performance of the website). However, the ePrivacy Directive understands that requesting consent for each website the user visits might be too much for him/her. As such, a consumer might give consent automatically without reading the privacy notices, or simply leave the website - the latter being a worst case scenario for EU businesses. This is likely the reason why the ePrivacy Directive proposes to use the browser's cookie settings.

Protection of children is a key point in the GDPR; it requires businesses to provide extra protection of children's personal data, as they might be unaware of the risks they are exposing themselves to. Although the reasoning is correct, the implications might cause additional burdens to businesses. It must be taken into account that the only ways to identify the age of the user are through account sign-ups (where the user enters the date of birth), or through the user declaring that he/she is 18/16 years of age, or older. However, any of these can be *falsified* - the consumer stating a different age than in reality. Preventing this from happening might require the user to submit a copy of his/her ID or providing evidence which the user might find intrusive. This can not only further increase the burdens for the business due to storing/processing important personal data, but might also lead to frustration on behalf of the user, and to an abandonment of the service. This would be a major issue in the development of platforms - such as VR social media, VR marketplaces or 3D Printing marketplaces.

The requirement for processing the data is another barrier. Firstly, transparency related to the specific purposes for which the data is processed can make businesses lose some of their competitive edge. Furthermore, this is reinforced by the requirement for businesses to process only the minimum amount of data necessary, which can also limit a business' potential to discover new insights into a customer's behaviour.

Right of access to data is a minute detail that would cause a number of businesses to lose a profitable revenue stream. For instance a fitness tracker makes a large amount of data which, through extra processing gives new insights into the consumer's health status. That being said, most of players in this market give the consumer only the general, basic information, the processed data being available for a small fee. These are necessary as organisations can cover up the growing storage costs, server leases, employee salaries, etc.

The recitals relating to confidentiality of electronic communication (such as text messages and phone calls, as well as machine-to-machine communication) within the ePrivacy Directive could be an issue to new businesses. Compliance, would require businesses to implement high levels of encryption. Considering the technical expertise required to implement an encryption system that protects the user's data, would be a factor that can discourage building businesses requiring consumer data.

With regards to social media communication (VR or otherwise), encryption would block businesses from generating, or using metadata. Moreover, encrypted communication services might require a backdoor as to allow the organisation to solve any software bugs (this is a direct reference to the cases where specific messages caused iOS devices to crash), or - potentially - to update the software. Furthermore, given that IoT implies that data is shared between services and devices throughout the internet, the inclusion of encryption would require explicit approval from the user for each data stream. It should be mentioned that some encryption systems require long passwords, file-based authentication (digital "fingerprint"), actual fingerprint scan, etc. The user could grant some sort of exemption to the data-stream between devices, however that would beat the point of encryption; any exemption is a security risk open for hackers to exploit the entire system.

Besides the above, the ePrivacy Directive also requires businesses that process a user's data to consult a supervisory authority prior to the processing. Assuming that startups would know beforehand about this requirement, it would both discourage them to engage in a business practice or force them to changing their focus from creating value-adding services to abiding to EU rules and regulations.

In an age where data is one of the major leaders in technological advancement, both the GDPR and ePrivacy Directive are a major impediment to development. In order to improve AI, AI-based services, VR, VR-based services, and services provided under the IoT, businesses would need to access data generated by users, as well as have the freedom to process as much data as they deem necessary, under grounds of competitiveness. However, the complexity and implications of both proposals would place financial burdens on businesses, force them to lose competitiveness, and discourage new entrants in markets that would have to deal with consumer data.

7.2 Consumer Rights

Overall, the consumer rights documents are largely favorable towards all identified technologies. There is still room for improvement although, as it stands, the barriers of technology adoption are not high. A significant point to be made is in relation to one of the first recitals within the CRD, which grants Member States the possibility to impose additional information requirements within their country, besides the ones dictated by the Directive. Although not directly targeting technologies as a whole, it does allow for sustained legal fragmentation within the EU.

Also on a larger scope, requiring businesses to take into account a consumer's physical and psychological state, as well as age and mental capacity is a hard task. This is especially the case of the digital environment where anonymity is possible. It is possible to take these into consideration where businesses cater their services specifically to such groups. However, this application to the general market can be at the detriment of the general consumer. Also, providing "personalized" information can go against the requirement of providing equal levels of consumer protection. It is a conundrum that raises the question of which degree should the state protect its citizens. Nonetheless, it should be stated that instead of requiring an all encompassing social inclusion in a business' services, improving a consumer's understanding of the digital world would be a more appropriate solution.

Moving towards a different issue, adapting information requirements to the constraints imposed by all devices (such as screen size) can be a burden to technologically unsavvy business owners. With screen sizes and performances on different devices varying widely, making a website that is able to work properly on all is a difficult task.

Finally, the 12-month limit of extended withdrawal period when the trader does not adequately inform the consumer should be reduced. The year-long withdrawal period favours more the consumer, instead of striking an even balance.

7.3 Parcel Delivery

The Commission's proposal on parcel delivery was the only document analyzed within this area of expertise. Overall, it ranks quite well, according to the statistics. However, that is largely due to Bitcoin, 3D printing, AI, and VR in and of themselves having little to no correlation to the topic. IoT is affected by it - to a degree - whilst Drone delivery might be at risk.

First off, the same argumentation used in the *Data Protection* section applies for increased price transparency. The concern of high tariffs imposed by postal services is understandable, however it does strip these organisations of their competitive advantage - especially if public. Furthermore, the statement "where applicable, unjustified tariff differences between national and crossborder parcel delivery services" implies an agenda whereby national and crossborder deliveries should be equally priced. Before moving forwards it has to be mentioned that: the above statement does mention "where applicable" (and this could certainly be the case of neighboring small countries), and later in the document transportation costs are listed as a probable reason for the inequality between national and crossborder parcel delivery tariffs.

However, higher crossborder tariffs can further be explained by the additional storage costs in the country of delivery; usually a crossborder parcel, upon entering the country of delivery, is handed over firstly to the nearest subsidiary, and then is delivered to the consumer. In situations where the postal service does not have a subsidiary in the country of the delivery, the parcel is handed to a different postal operator. This would likely be the case of drone delivery as well, considering the fact that its current autonomy is sub par when compared to an automobile.

On a broader scope, the mere existence of this requirement (coupled with prices being required to be posted on the Commission's website) lays grounds for price regulation or a hypercompetitive market whereby the business' entire chain of operations is unsustainable. Keeping in mind the agenda of maintaining low delivery prices, and revisiting the principles of supply and demand, price regulation of parcel deliveries could be harmful for the industry. Artificially lowering prices will increase the demand of the product. In turn, a demand higher than the supply leads to a shortage of goods. Normally, this would be counteracted by increasing the prices (thus lowering demand), but due to artificial pricing this would be unattainable.

7.4 Geo-Blocking

Geo-Blocking, just like its Data Protection counterparts is another major barrier to the widespread adoption of technologies. Firstly the obligation to sell cross-border as laid out in the document goes against the mere principle of "freedom" within the EU. A business should be allowed to select its customers, as well as be allowed to choose for itself if it wants sell cross-border. It may very well be the case that a seller wants to remain a small business as it is, or that cross-borer sales might expose a business to additional - unwanted - risks. It should be the decision of the company's CEO whether he/she want to scale up or not.

In addition, the practicality of the obligation to sell but not to deliver is impossible; a business is required to provide after-sales services, otherwise it's liable for not fulfilling it's part of the contract. Considering an online-shop established in Germany which does not want to sell cross-border, any sales inquiries from outside the national borders will have to be fulfilled. Not delivering the product will require the consumer to come and pick up the products, assuming the consumer does come to pick up the products. However, if the consumer does not, then the products will remain in the company's storage facilities, causing additional and unnecessary storage costs. Moreover, with the consumer not picking up the products, it would make the business liable for theft. In this line of thought, by establishing an obligation to sell the organisation is forced to deliver, unless it wants to be liable for other things.

The same reasoning applies to all recitals were the seller is offering different versions of the online shop for different countries, as well as the sellers being obliged to provide all types of payment services to the consumers, all causing additional unnecessary burdens to businesses.

7.5 Platforms

Up to this point, there are no laws directly targeting online platforms. That being said, the Commission did release a communication in which it proposes a number of means in which these online phenomena can be regulated. Firstly, the tentative proposal of self-regulating platforms is welcomed. The Commission ignored to regulate these before, when they were smaller, however now, the institution is faced with regulating an element which has become an integral part of European economy and society. Whichever direction it will take, the EC must be careful in its implementation as to not distort the role of platforms in the EU.

With regards to the technologies (AI, VR and IoT especially), they are compatible for further development and adoption - considering the current "regulations" on platforms. However, a number of elements in the communication raise a number of concerns.

Firstly, it might be unjust to consider regulating the same digital services. Looking at the over-encompassing term "platforms" and yet the large spectrum of services it encapsulates, similar regulation on all of them will cause problems to all of them. Secondly, although a major general issue, regulating the proliferation of harmful content on visual sharing platforms should be carefully written, especially when discussing hate speech. The reasoning is that such actions should not be outright banned, as it should not be up to the platform to limit and control a consumer's right for freedom of speech; it is up to the consumer to behave as a normal citizen online, as it does offline.

In terms of fair remuneration to content creators, platforms such as YouTube work on an ad revenue basis. If the consumer clicks on the ad, then the creator gets paid. It has been shown that such platforms largely operate with little to no profit margins (Sterling, 2015). In addition, when the ad bidding contest is low, it is understandable that content creators get a few cents from each ad.

In regards to protection from minors, the same argument as in the *Consumer Rights* section applies, whereas to increased transparency, the same argument as in *Parcel Delivery* applies.

7.6 Payments

As crucial and thorough PSD2 is, its relation with cryptocurrencies, is surprisingly positive. There are, however, a number of things that require some attention. Firstly, given the mutually complex nature (to some) of holding, obtaining and using cryptocurrencies, some services have appeared which provide a full package to consumers: payment services, deposits, payment initiation services, etc. As stated, this is to make the use of cryptocurrencies more convenient. In this context, payment institutions should be allowed to broaden their scope. Furthermore, it will not create any large risks to consumers due to how the wallet system is built (locally stored in most cases).

A more minor mention would be to allow exemptions or not impose any deadline for payment revocations or give any reimbursements in case of fraud, as it is impossible to re-route money within the Blockchain. In addition, given the strict system that is comprised within Blockchain, and wallets as well, cryptocurrency payment services should not be responsible for imposing additional security measures, unless the wallet is stored in the cloud.

7.7 Data Economy and Competition

With the Data Protection and ePrivacy Proposals drafted, the Commission has published a Communication on how it aims to promote a data economy withing the framework of the two documents. It is unfortunate that the potential of the data economy is hindered by restrictive Regulations and Directives, an occurrence which fully validates the premise of this study.

The Commission wants the consumer to have full access to the data he/she generates, whilst minimizing switching costs, and facilitating effective data portability. Firstly, the full access premise has been discussed before in the *Data Protection* section, thus it will not be reiterated. With regards to minimizing switching costs, it has the potential of increasing competition (which seems to be the focus of the Commission), yet when coupled with the fact that the Commission wishes data to be contained in a "technologically neutral" manner, it will place additional burdens on businesses.

The technological neutrality, to the EC, translates into promoting the use of open source standards

such as XML (Extensible Markup Language), JSON (JavaScript Open Notation), or CSV (Comma-Separated Values). Businesses, on the other hand, have developed their own "standards": Microsoft has the Open Office XML, Apple has developed its own programming language called Swift, whereas Amazon uses AZW for its eBooks. If the companies end up being forced to use the open standards, their products will have to deal with their limitations. For instance, Microsoft's own XML allows for greater processing of data located within a spreadsheet, as opposed to one using the original XML format. To evidentialize this, I invite the reader to compare the functionalities of Microsoft's Excel with that of an open-source equivalent (such as LibreOffice and OpenOffice).

Moreover, companies that want people to know how to use their own standards, then they will make sure people will have access to this knowledge. For instance, Facebook has revealed the APIs for Messenger's chatbot functionalities (Facebook, n.d.), an action that rocketed developments in the AI realm. Apple's Swift has become one of the fastest growing programming languages, whilst its simplicity allowed students to learn and understand the paradigms of programming (Apple, n.d.).

N.B.: The Competition aspect has been coupled with Data Economy due the shared principle of promoting open standards.

7.8 Summary and Position

In light of the above, the development and progression of technological innovations within eCommerce (and in general) is impeded by strict, unsubstantiated or technologically incompatible regulation. With a few exceptions, most of the regulations analysed by this study do not seem to create direct threats to the six technologies. However, they are imposing burdens to EU eCommerce businesses in way of consumer-centric over-regulation that promotes hyper-competition and is - at times - undemocratic.

Initiatives such as the General Data Protection Regulation and ePrivacy Directive are restricting businesses in way of data processing, position which comes in direct conflict with the EU strategy of developing a data economy. Other laws, such as those in the Parcel Delivery, and Geo-Blocking, are - rightfully - promoting EU-wide competition. However, it does a disservice to eCommerce businesses by pushing the concept to extreme levels - hypercompetition.

In order to have high level of technological innovation within the EU should regulate in such matter that promotes experimentation, as well as quick adoption of the latest in technology. That can translate into fast market-deployment of products and services based on new technologies. Furthermore, EU laws should be forward-thinking, thus allowing for new paradigms to seep into the European life (such as payment institutions that give a full-range of services to consumers).

Taking into account the scale and swiftness to which trends and technologies emerge, the concept of "basic" understanding of the digital environment is becoming more and more complex. In this regard, it would be more appropriate to have EU-wide "digital education" as opposed to imposing businesses (platforms especially) to take measures into moderating content to such extents that "freedom of speech" would be tainted. In the same line of thought, the principle of guaranteeing "freedom" to consumers is welcomed however, the principle should be applied to businesses as well.

Chapter 8

Conclusions

This study sought to provide a solution to the conundrum "technological innovation impeded by EU laws". After analysing a number of eCommerce-related regulations, the results were diametrical in terms of technological innovation as well as business-making in the EU.

The first sub-question of this study was to identify the upcoming technologies from within a short 0-10 year time- frame, as well as the barriers that EU law poses to their adoption. Here, six technologies were identified: Internet of Things, Drones, BitCoin, 3D Printing, Artificial Intelligence and Virtual Reality. All of these have the potential of being disruptive as well as swelling humanity into the next era. That being said, the eCommerce-related regulations are posing a serious threat to the adoption and attainment of that potential. It is not largely due to the laws implicitly blocking innovation, but due to the legal framework being restrictive and difficult for businesses to follow. Furthermore, it is hard to summarize in a few sentences the barriers when considering the level of complexity and nuance of these issues.

The second sub-question aimed to identify technologies that would emerge within 10-20 years from the time of writing, followed by identifying a number of aspects/principles to be taken into account so that EU law would ensure their adoption. Unfortunately, this task was not fulfilled due to the bogus nature and application for potential emerging technologies, as well as high uncertainty in regards to their arrival to market.

Finally, the last sub-question wanted to address the extent to which EU can regulate eCommerce without infringing technological progress. In short, this can be achieved by granting more freedom for experimentation to EU businesses. On a deeper level, it largely depends on the technology to emerge, current regulatory framework and the principles on which the laws are being adopted. For instance, if the EU wants to ensure consumer privacy, then it should strike a balance and not encumber businesses into processing a consumer's data, especially when considering that data is one of the driving forces behind technological innovation (Internet of Things and Artificial Intelligence).

All in all, these sub-questions were created to answer the main research question: *What can be made to the EU legal framework to facilitate technological innovation within the eCommerce industry, whilst fulfilling policy objectives (such as consumer protection and market harmonisation)?*. Previous answers point towards granting, preserving, and **balancing** the freedoms of both EU businesses and EU consumers. However, concerning each policy objective, the EU has to deal with a much more complex situation. Each of the areas that presents issues in eCommerce requires comprehensive knowledge from both the side of the consumer, as well as that of a business. As it stands, most policies are made with the former in mind, and not both. In addition, the Commission's position towards technology should not be only "technology neutral"; it should include the premise of "forward-thinking". Providing a simple and/or practical answer to the main research question is a difficult task. As stated, the level of complexity within each issue requires comprehensive knowledge of both sides of the table, as well as entrenched understanding of technology.

Chapter 9

Recommendations

EMOTA is strictly advocating for eCommerce and Omni-Channel businesses and thus, it will be unable to reach out to EU officials and entertain philosophical discussions on the principles and implications of democracy. However, it can propose amendments and suggestions to the EC and EP in regards to the analysed legal documents.

As such, in terms of Data Protection, EMOTA could propose children protection to apply only to specific types of websites, that businesses should process data on grounds of competition, and push back against the transparency obligation, the right of access to data, confidentiality of electronic communication (or at least have the EU provide the encryption services for free), and the obligation of consulting a supervisory authority.

With regards to Consumer Rights, EMOTA must be against business being required to take into account a consumer's physical, psychological, age and mental capacity unless the business itself does cater its products to such a target market, lower the 12-month limit of extended withdrawal to a more balanced period, and propose that a business' website should be fully compatible only to generic screen sizes.

In terms of Parcel Delivery, EMOTA must be against price regulating postal services. Onward to Geo-Blocking, the association must remove the obligation to sell as a whole, whereas for Platforms, it should propose that the EP and EC engage into a self-regulatory exercise (like it did with the postal operators). Furthermore, regarding the Payments sector, EMOTA should look into the possibility of allowing payment institutions to provide a full-range of services, whilst with Data Economy, the "technologically neutral" requirement should be removed. In continuation, EMOTA should propose that building a Data Economy must stand above the principle of Data Protection.

Chapter 10

Research Overview

The study has looked over EU policies with the aim of optimizing the legal framework in a way that allows for upcoming technologies to seamlessly integrate into the European society. By focusing on eCommerce-related laws, the study is by design limited in scope. In order to provide a precise roadmap, a holistic approach is obligatory. Although, it should not be denied that the eCommerce-centrism of this paper is a strategic positioning. With technological innovation - from a commercial standpoint - increasingly reliant on online shops, it is understood that uniformity in this industry is a key requirement in societal progress.

This study touched upon some of the most important aspects that relate to the eCommerce industry as a whole. Parcel delivery, web-site optimisation, geo-blocking, data processing, inter-compatibility, social media, entertainment, marketing practices, consumer rights, and many more, are integral parts in a daily eCommerce life. As such, it can be extrapolated that the study has looked at what seems to be a definitive list of topics that concerns the industry. While that may be true, it must be reminded that technological advancement will bring new business opportunities, and especially new business models. The latter is something which the study did not discuss (due to the fact that it was largely based upon the original communication of the Junckers Commission presidency), yet its potential impact can have disruptive implications in and of itself.

In continuation, the study focused on technologies which are overwhelmingly present in the media, traditional scientific fields, and computer science. This alone validates - to a degree - their importance, however it must be emphasized that this basis alone is not sufficient. It is especially the case of the media, which has an extensive track record of being biased, and provoking unnecessary and/or erroneous hype.

One aspect that is certain, is that there is an overwhelming consumer-centric bias within EU laws. The principle of protecting consumers is fully understood and welcomed. However, it is at the detriment of EU businesses which are an essential part of the EU economy. As such, by focusing on the entrepreneurial side this study tries to balance the aforementioned bias.

In addition to the above drawbacks, there are some more that need to be addressed. Firstly, the human factor - in this case the researcher - is of large importance. The lack of mastery in policy analysis, as well as the limited supply of time, coupled with the workload within and outside of the study are a recipe for potentially erroneous results.

Furthermore, in the analysis, the research has focused - where applicable - on recitals, and not articles. Whilst the former provide a short argumentation for the rationale behind the law and a summary of said laws, the latter paint a more accurate picture of those decisions. What's more, the analysis focused on the original documents, and excluded any amendments to the law made prior to and during the execution phase.

Finally, in spite of the resources available, the research managed to score only two expert interviews. More of these are largely welcomed, although interviews with online shops would provide a more accurate data.

Chapter 11

Further Research

In the case that another research body would like to take up the premise of this study for continuation or validation purposes, several aspects need to be changed. Firstly, the researcher(s) needs to be acquainted with policy analysis, as well as be well versed into technology and its nuances (extensive programming knowledge is plus, whilst elementary knowledge is a minimum requirement).

Next, a single research should be dedicated for each of the policy areas that this paper has touched upon, including new business models. This is due to the fact that most of the areas are highly nuanced and require a high degree of specialisation and background knowledge in the respective field.

Furthermore, while the key-hole comparative analysis is a powerful tool for this type of study, the grading system needs to be revamped. Firstly, a 7-point scale would allow for a more accurate analysis, with the inclusion of an 8th one; *Not Applicable* for fields and technologies that have no correlation. In addition, the grounds upon which a grade is given needs more refinement based on more objective criteria.

Lastly, when assessing the UCPD, the guidance document should be avoided (although it simplifies the process by a significant amount), in favour for the Directive itself. This would further increase the accuracy of the study.

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Appendix A

Word clouds



Figure A.1: Word cloud consisting of all titles

Appendix B

Analysis of legal documents

N.B.: The tables do not show a description of each technology due to the physical limitations of an A4 paper and the sheer size of such a table.

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Competition	ICT Standardisation Rolling Plan 2017	Cloud Computing: Existing standards should be checked to take account of the protection of individuals with regard to personal data processing and the free movement of such data under the General Data Protection Regulation. Specific standards for privacy/protection of personal data should be identified and where necessary developed	2	1	1	1	2	2
Competition	ICT Standardisation Rolling Plan 2017	Cloud Computing: Another factor for consideration in relation to cloud computing is work done in open source projects which address particular aspects of cloud computing (e.g. OpenStack (IaaS), Cloud Foundry (PaaS) and Docker (Container technology)). Open Source communities should be encouraged to collaborate with standardisation and submit their APIs for standardisation	2	2	2	2	2	2
Competition	ICT Standardisation Rolling Plan 2017	Big Data: The revised PSI Directive encourages the use of standard licences which must be available in digital format and be processed electronically (Article 8(2)). Furthermore, the Directive encourages the use of open licences available online, which should eventually become common practice across the EU (Recital 26). In addition, to help Member States transpose the revised provisions, the Commission adopted guidelines ²⁶ which recommend the use of such standard open licences for the reuse of PSI.	2	2	2	2	2	2
Competition	ICT Standardisation Rolling Plan 2017	Big Data: Existing standards should be checked to take account of the protection of individuals with regard to personal data processing and the free movement of such data in the light of data protection principles. Specific privacy by design standards should be identified and when necessary developed.	2	1	1	1	2	2
Competition	ICT Standardisation Rolling Plan 2017	IoT: The IoT requirements of e.g. from retail manufacturing, the automotive, aeronautics, pharmaceutical, and medical equipment industries and the medical sector in general should be taken fully into consideration. Security, privacy, and management of control of the access to and ownership of data are essential for the development of IoT. Without acceptance by commercial users and consumers, the role of IoT would be limited to specific vertical markets. Wide acceptance is essential in commoditising IoT mechanisms and make them accessible e.g. to manufacturing and for manufactured products, or into m/e/Health applications.	1	1	1	1	1	1
Competition	ICT Standardisation Rolling Plan 2017	IoT: IoT requires the interlinking of often disparate standards. These standards are often the product of different SDOs. There is a need to bring these bodies and their standards together to achieve the often small changes needed to allow products and services to interoperate	2	1	1	1	2	2
Competition	ICT Standardisation Rolling Plan 2017	Mobile Payments: Standardisation could include making a distinction between mobile platforms (e.g. secure element, mobile handset) and their functions/security which are generic in nature and provide support to all mobile services / applications and mobile payment applications (running on these platforms).	1	1	1	1	1	1
Competition	ICT Standardisation Rolling Plan 2017	Mobile Payments: In general regarding card, internet and mobile payments, some stakeholders believe that the following issues should in particular be addressed: security, access and accessibility, management and portability of customer data, and transparency	2	1	1	1	2	2

Table B.1: Analysis of ICT Standardisation Rolling Plan 2017

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Consumer Rights	Directive 2011/83 EU	the internal market is to comprise an area without internal frontiers in which the free movement of goods and services and freedom of establishment are ensured. The harmonisation of certain aspects of consumer distance and off-premises contracts is necessary for the promotion of a real consumer internal market striking the right balance between a high level of consumer protection and the competitiveness of enterprises, while ensuring respect for the principle of subsidiarity.	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	The information requirements provided for in this Directive should complete the information requirements of Directive 2006/123/EC of the European Parliament and of the Council of 12 December 2006 on services in the internal market (2) and Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (‘‘Directive on electronic commerce’’) (3). Member States should retain the possibility to impose additional information requirements applicable to service providers established in their territory	2	2	2	2	2	2
Consumer Rights	Directive 2011/83 EU	Member States should remain competent, in accordance with Union law, to apply the provisions of this Directive to areas not falling within its scope. Member States may therefore maintain or introduce national legislation corresponding to the provisions of this Directive, or certain of its provisions, in relation to contracts that fall outside the scope of this Directive. For instance, Member States may decide to extend the application of the rules of this Directive to legal persons or to natural persons who are not consumers within the meaning of this Directive, such as non-governmental organisations, start-ups or small and medium-sized enterprises. Similarly, Member States may apply the provisions of this Directive to contracts that are not distance contracts within the meaning of this Directive, for example because they are not concluded under an organised distance sales or service-provision scheme. Moreover, Member States may also maintain or introduce national provisions on issues not specifically addressed in this Directive, such as additional rules concerning sales contracts, including in relation to the delivery of goods, or requirements for the provision of information during the existence of a contract.	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	This Directive should not harmonise language requirements applicable to consumer contracts. Therefore, Member States may maintain or introduce in their national law language requirements regarding contractual information and contractual terms.	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	the consumer should have a right of withdrawal unless he has consented to the beginning of the performance of the contract during the withdrawal period and has acknowledged that he will consequently lose the right to withdraw from the contract. In addition to the general information requirements, the trader should inform the consumer about the functionality and the relevant interoperability of digital content. The notion of functionality should refer to the ways in which digital content can be used, for instance for the tracking of consumer behaviour; it should also refer to the absence or presence of any technical restrictions such as protection via Digital Rights Management or region coding. The notion of relevant interoperability is meant to describe the information regarding the standard hardware and software environment with which the digital content is compatible, for instance the operating system, the necessary version and certain hardware features	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	The definition of distance contract should cover all cases where a contract is concluded between the trader and the consumer under an organised distance sales or service- provision scheme, with the exclusive use of one or more means of distance communication (such as mail order, Internet, telephone or fax) up to and including the time at which the contract is concluded	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	The notion of an organised distance sales or service-provision scheme should include those schemes offered by a third party other than the trader but used by the trader, such as an online platform. It should not, however, cover cases where websites merely offer information on the trader, his goods and/or services and his contact details.	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	A public auction implies that traders and consumers attend or are given the possibility to attend the auction in person. The goods or services are offered by the trader to the consumer through a bidding procedure authorised by law in some Member States, to offer goods or services at public sale. The successful bidder is bound to purchase the goods or services. The use of online platforms for auction purposes which are at the disposal of consumers and traders should not be considered as a public auction within the meaning of this Directive.	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	The existing Union legislation, inter alia, relating to consumer financial services, package travel and timeshare contains numerous rules on consumer protection. For this reason, this Directive should not apply to contracts in those areas. With regard to financial services, Member States should be encouraged to draw inspiration from existing Union legislation in that area when legislating in areas not regulated at Union level, in such a way that a level playing field for all consumers and all contracts relating to financial services is ensured.	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	The trader should give the consumer clear and comprehensible information before the consumer is bound by a distance or off-premises contract, a contract other than a distance or an off-premises contract, or any corresponding offer. In providing that information, the trader should take into account the specific needs of consumers who are particularly vulnerable because of their mental, physical or psychological infirmity, age or credulity in a way which the trader could reasonably be expected to foresee. However, taking into account such specific needs should not lead to different levels of consumer protection.	2	2	1	2	2	2
Consumer Rights	Directive 2011/83 EU	The information to be provided by the trader to the consumer should be mandatory and should not be altered. Nevertheless, the contracting parties should be able to expressly agree to change the content of the contract subsequently concluded, for instance the arrangements for delivery.	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	In the case of distance contracts, the information requirements should be adapted to take into account the technical constraints of certain media, such as the restrictions on the number of characters on certain mobile telephone screens or the time constraint on television sales spots. In such cases the trader should comply with a minimum set of information requirements and refer the consumer to another source of information, for instance by providing a toll free telephone number or a hypertext link to a webpage of the trader where the relevant information is directly available and easily accessible. As to the requirement to inform the consumer of the cost of returning goods which by their nature cannot normally be returned by post, it will be considered to have been met, for example, if the trader specifies one carrier (for instance the one he assigned for the delivery of the good) and one price concerning the cost of returning the goods. Where the cost of returning the goods cannot reasonably be calculated in advance by the trader, for example because the trader does not offer to arrange for the return of the goods himself, the trader should provide a statement that such a cost will be payable, and that this cost may be high, along with a reasonable estimation of the maximum cost, which could be based on the cost of delivery to the consumer.	2	1	1	1	2	2
Consumer Rights	Directive 2011/83 EU	Since in the case of distance sales, the consumer is not able to see the goods before concluding the contract, he should have a right of withdrawal. For the same reason, the consumer should be allowed to test and inspect the goods he has bought to the extent necessary to establish the nature, characteristics and the functioning of the goods.	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	Trading websites should indicate clearly and legibly at the latest at the beginning of the ordering process whether any delivery restrictions apply and which means of payment are accepted	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	It is important to ensure for distance contracts concluded through websites that the consumer is able to fully read and understand the main elements of the contract before placing his order. To that end, provision should be made in this Directive for those elements to be displayed in the close vicinity of the confirmation requested for placing the order. It is also important to ensure that, in such situations, the consumer is able to determine the moment at which he assumes the obligation to pay the trader. Therefore, the consumer’s attention should specifically be drawn, through an unambiguous formulation, to the fact that placing the order entails the obligation to pay the trader.	1	1	1	1	1	1
Consumer Rights	Directive 2011/83 EU	The current varying lengths of the withdrawal periods both between the Member States and for distance and off-premises contracts cause legal uncertainty and compliance costs. The same withdrawal period should apply to all distance and off-premises contracts. In the case of service contracts, the withdrawal period should expire after 14 days from the conclusion of the contract. In the case of sales contracts, the withdrawal period should expire after 14 days from the day on which the consumer or a third party other than the carrier and indicated by the consumer, acquires physical possession of the goods. In addition the consumer should be able to exercise the right to withdraw before acquiring physical possession of the goods. Where multiple goods are ordered by the consumer in one order but are delivered separately, the withdrawal period should expire after 14 days from the day on which the consumer acquires physical possession of the last good. Where goods are delivered in multiple lots or pieces, the withdrawal period should expire after 14 days from the day on which the consumer acquires the physical possession of the last lot or piece.	1	1	1	1	1	1

Table B.2: Recital Analysis of Directive 2011/83 EU

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Consumer Rights	Directive 2011 83 EU	The provisions relating to the right of withdrawal should be without prejudice to the Member States' laws and regulations governing the termination or unenforceability of a contract or the possibility for the consumer to fulfil his contractual obligations before the time determined in the contract	1	1	1	1	1	1
Consumer Rights	Directive 2011 83 EU	If the trader has not adequately informed the consumer prior to the conclusion of a distance or off-premises contract, the withdrawal period should be extended. However, in order to ensure legal certainty as regards the length of the withdrawal period, a 12-month limitation period should be introduced.	2	2	2	2	2	2
Consumer Rights	Directive 2011 83 EU	Differences in the ways in which the right of withdrawal is exercised in the Member States have caused costs for traders selling cross-border. The introduction of a harmonised model withdrawal form that the consumer may use should simplify the withdrawal process and bring legal certainty. For these reasons, Member States should refrain from adding any presentational requirements to the Union-wide model form relating for example to the font size. However, the consumer should remain free to withdraw in his own words, provided that his statement setting out his decision to withdraw from the contract to the trader is unequivocal. A letter, a telephone call or returning the goods with a clear statement could meet this requirement, but the burden of proof of having withdrawn within the time limits fixed in the Directive should be on the consumer. For this reason, it is in the interest of the consumer to make use of a durable medium when communicating his withdrawal to the trader.	1	1	1	1	1	1
Consumer Rights	Directive 2011 83 EU	As experience shows that many consumers and traders prefer to communicate via the trader's website, there should be a possibility for the trader to give the consumer the option of filling in a web-based withdrawal form. In this case the trader should provide an acknowledgement of receipt for instance by e-mail without delay.	2	1	2	1	2	1
Consumer Rights	Directive 2011 83 EU	In the event that the consumer withdraws from the contract, the trader should reimburse all payments received from the consumer, including those covering the expenses borne by the trader to deliver goods to the consumer. The reimbursement should not be made by voucher unless the consumer has used vouchers for the initial transaction or has expressly accepted them. If the consumer expressly chooses a certain type of delivery (for instance 24-hour express delivery), although the trader had offered a common and generally acceptable type of delivery which would have incurred lower delivery costs, the consumer should bear the difference in costs between these two types of delivery.	1	1	1	1	1	1
Consumer Rights	Directive 2011 83 EU	Some consumers exercise their right of withdrawal after having used the goods to an extent more than necessary to establish the nature, characteristics and the functioning of the goods. In this case the consumer should not lose the right to withdraw but should be liable for any diminished value of the goods. In order to establish the nature, characteristics and functioning of the goods, the consumer should only handle and inspect them in the same manner as he would be allowed to do in a shop	1	1	1	1	1	1
Consumer Rights	Directive 2011 83 EU	The consumer should be required to send back the goods not later than 14 days after having informed the trader about his decision to withdraw from the contract. In situations where the trader or the consumer does not fulfil the obligations relating to the exercise of the right of withdrawal, penalties provided for by national legislation in accordance with this Directive should apply as well as contract law provisions.	1	1	1	1	1	1
Consumer Rights	Directive 2011 83 EU	Certain exceptions from the right of withdrawal should exist, both for distance and off-premises contracts. A right of withdrawal could be inappropriate for example given the nature of particular goods or services. That is the case for example with wine supplied a long time after the conclusion of a contract of a speculative nature where the value is dependent on fluctuations in the market (âvin en primeurâ). The right of withdrawal should neither apply to goods made to the consumer's specifications or which are clearly personalised such as tailor-made curtains, nor to the supply of fuel, for example, which is a good, by nature inseparably mixed with other items after delivery. The granting of a right of withdrawal to the consumer could also be inappropriate in the case of certain services where the conclusion of the contract implies the setting aside of capacity which, if a right of withdrawal were exercised, the trader may find difficult to fill. This would for example be the case where reservations are made at hotels or concerning holiday cottages or cultural or sporting events.	1	1	1	1	1	1
Consumer Rights	Directive 2011 83 EU	On the one hand, the consumer should benefit from his right of withdrawal even in case he has asked for the provision of services before the end of the withdrawal period. On the other hand, if the consumer exercises his right of withdrawal, the trader should be assured to be adequately paid for the service he has provided. The calculation of the proportionate amount should be based on the price agreed in the contract unless the consumer demonstrates that that total price is itself disproportionate, in which case the amount to be paid shall be calculated on the basis of the market value of the service provided. The market value should be defined by comparing the price of an equivalent service performed by other traders at the time of the conclusion of the contract. Therefore the consumer should request the performance of services before the end of the withdrawal period by making this request expressly and, in the case of off-premises contracts, on a durable medium. Similarly, the trader should inform the consumer on a durable medium of any obligation to pay the proportionate costs for the services already provided. For contracts having as their object both goods and services, the rules provided for in this Directive on the return of goods should apply to the goods aspects and the compensation regime for services should apply to the services aspects	1	1	1	1	1	1
Consumer Rights	Directive 2011 83 EU	The main difficulties encountered by consumers and one of the main sources of disputes with traders concern delivery of goods, including goods getting lost or damaged during transport and late or partial delivery. Therefore it is appropriate to clarify and harmonise the national rules as to when delivery should occur. The place and modalities of delivery and the rules concerning the determination of the conditions for the transfer of the ownership of the goods and the moment at which such transfer takes place, should remain subject to national law and therefore should not be affected by this Directive	1	1	1	1	1	1
Consumer Rights	Directive 2011 83 EU	In accordance with Article 52(3) of Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market (1), Member States should be able to prohibit or limit traders' right to request charges from consumers taking into account the need to encourage competition and promote the use of efficient payment instruments. In any event, traders should be prohibited from charging consumers fees that exceed the cost borne by the trader for the use of a certain means of payment	1	1	1	1	1	1
Consumer Rights	Directive 2011 83 EU	Where the goods are dispatched by the trader to the consumer, disputes may arise, in the event of loss or damage, as to the moment at which the transfer of risk takes place. Therefore this Directive should provide that the consumer be protected against any risk of loss of or damage to the goods occurring before he has acquired the physical possession of the goods. The consumer should be protected during a transport arranged or carried out by the trader, even where the consumer has chosen a particular delivery method from a range of options offered by the trader. However, that provision should not apply to contracts where it is up to the consumer to take delivery of the goods himself or to ask a carrier to take delivery. Regarding the moment of the transfer of the risk, a consumer should be considered to have acquired the physical possession of the goods when he has received them.	1	1	1	1	1	1

Table B.3: Recital Analysis of Directive 2011/83 EU (continued)

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Consumer Rights	COM(2016)283 final	In the digital environment in particular, the competent authorities should be able to stop infringements quickly and effectively, notably where the trader selling goods or services conceals its identity or relocates within the Union or to a third country to avoid enforcement.	1	1	1	1	1	1
Consumer Rights	COM(2016)283 final	In cases where there is a risk of serious and irreparable harm to consumers, the competent authorities should be able to adopt interim measures to prevent such harm or reduce it, including, where necessary, the suspension of a website, domain or a similar digital site, service or account. Furthermore, the competent authorities should have the power to take down or have a third party service provider take down a website, domain or a similar digital site, service or account,	2	2	2	2	2	2
Consumer Rights	COM(2016)283 final	Coordinated screening of online e-commerce websites (sweeps) are another form of enforcement coordination that has proven to be an effective tool against infringements that should be retained and strengthened in the future	2	2	2	2	2	2

Table B.4: Recital Analysis of COM(2016) 283 final

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Parcel Delivery	COM/2016/285 final	differences result in additional administrative burdens and compliance costs for parcel delivery service providers who operate cross-border. Those differences therefore constitute an obstacle to the cross-border provision of parcel delivery services and thus have a direct effect on the functioning of the internal market.	1	1	1	1	1	1
Parcel Delivery	COM/2016/285 final	In order to improve the affordability of cross-border parcel delivery services, especially for users in remote or sparsely populated areas, it is necessary to improve the transparency of public lists of tariffs for a limited set of cross-border parcel delivery services offered by universal service providers, which are mostly used by small and medium-sized enterprises and individuals. Transparency of public lists is also necessary to address the issue of high tariffs of cross-border delivery services and to reduce, where applicable, unjustified tariff differences between national and crossborder parcel delivery services.	2	3	1	1	1	1
Parcel Delivery	COM/2016/285 final	In most Member States there are several providers who provide domestic parcel delivery services, while only a few of those providers also provide cross-border parcel delivery services. In this context, it is essential to ensure, in order to safeguard and promote effective competition and to protect users, transparent and non-discriminatory access to the services and infrastructure necessary for the provision of cross-border parcel delivery services.	2	3	1	1	1	1
Parcel Delivery	COM/2016/285 final	This Regulation should therefore cover, in line with consistent practice, postal items weighing up to 31.5 kg,	1	1	1	1	1	1
Parcel Delivery	COM/2016/285 final	each step in the postal chain, i.e. clearance, sorting and delivery should be considered parcel delivery services. Transport alone that is not undertaken in conjunction with one of those steps should fall outside the scope of parcel delivery services as it can in this case be assumed that this activity is part of the transport sector	1	1	1	1	1	1
Parcel Delivery	COM/2016/285 final	Terminal rates are based on multilateral and bilateral agreements between universal service providers and ensure that the destination universal service provider is remunerated for the costs of the service provided to the originating universal service provider	1	1	1	1	1	1
Parcel Delivery	COM/2016/285 final	It is necessary that national regulatory authorities have knowledge and information for statistical purposes about parcel delivery service providers active on the market. However, in order to limit the administrative burden for small parcel delivery service providers who are only active on a national or regional market, a threshold should be applied, based on the number of persons working for the service provider and involved in the provision of parcel delivery services	2	2	1	1	1	1
Parcel Delivery	COM/2016/285 final	Therefore, the services for which tariffs should be provided by universal service providers should be clearly defined. Those tariffs should be published by the Commission on a dedicated webpage and should, together with the confidential regular provision of the underlying terminal rates, constitute the basis for the national regulatory authorities to assess the affordability of tariffs for cross-border parcel delivery services	2	2	1	1	1	1
Parcel Delivery	COM/2016/285 final	Because of their small size and dimensions, certain postal items should not be subject to the obligations set out with regard to transparency of tariffs	1	1	1	1	1	1
Parcel Delivery	COM/2016/285 final	Significant differences between domestic and cross-border tariffs for parcel delivery services should be justified by objective criteria, such as additional costs for transport and a reasonable profit margin. Universal service providers providing parcel delivery services should be required to provide such justification without delay.	2	2	1	1	1	1

Table B.5: Recital Analysis of COM(2016) 285 final

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Geo-blocking	COM/2016/289 final	in terms of material scope, consistency should be ensured between this Regulation and Directive 2006/123/EC. As a consequence, the provisions of this Regulation should apply inter alia to non-audio-visual electronically supplied services, the main feature of which is the provision of access to and use of copyright protected works or other protected subject matter, subject however to the specific exclusion provided for in Article 4 and the subsequent evaluation of that exclusion as provided for in Article 9. Audio-visual services, including services the main feature of which is the provision of access to broadcasts of sports events and which are provided on the basis of exclusive territorial licenses, are excluded from the scope of this Regulation. Access to retail financial services, including payment services, should therefore also be excluded, notwithstanding the provisions of this Regulation regarding non-discrimination in payments	1	1	1	1	1	1
Geo-blocking	COM/2016/289 final	services in the field of transport should remain outside the scope of this Regulation	1	1	1	1	1	1
Geo-blocking	COM/2016/289 final	Pursuant to Regulation (EC) No 593/2008 of the European Parliament and of the Council[1], the choice of law applicable to contracts between a consumer and a professional who pursues his or her commercial or professional activities in the country where the consumer has his or her habitual residence or, by any means, directs such activities to that country or to several countries including that country, may not have the result of depriving the consumer of the protection afforded to him by provisions that cannot be derogated from by agreement by virtue of the law of the country where the consumer has his or her habitual residence. Pursuant to Regulation (EU) 1215/2012 of the European Parliament and of the Council[2], in matters related to a contract between a consumer and a professional who pursues commercial or professional activities in the Member State of the consumer's domicile or, by any means, directs such activities to that Member State or to several States including that Member State, a consumer may bring proceedings against the other party in the courts of the Member State where he is domiciled and proceedings may be brought against the consumer only in those courts	1	1	1	1	1	1
Geo-blocking	COM/2016/289 final	The discriminatory practices that this Regulation seeks to address typically take place through general terms, conditions and other information set and applied by or on behalf of the trader concerned, as a precondition for obtaining access to the goods or services in question, and that are made available to the public at large. Such general conditions of access include inter alia prices, payment conditions and delivery conditions. They can be made available to the public at large by or on behalf of the trader through various means, such as information published in advertisements, on websites or pre-contractual or contractual documentation. Such conditions apply in the absence of an individually negotiated agreement to the contrary entered into directly between the trader and the customer. Terms and conditions that are individually negotiated between the trader and the customers should not be considered general conditions of access for the purposes of this Regulation	1	1	1	1	1	1
Geo-blocking	COM/2016/289 final	Both consumers and undertakings should be safeguarded from discrimination for reasons related to their nationality, place of residence or place of establishment when acting as customers for the purposes of this Regulation. However, that protection should not extend to customers purchasing a good or a service for resale, because it would affect widely used distribution schemes between undertakings in a business to business context, such as selective and exclusive distribution, which generally allow for manufacturers to select their retailers, subject to compliance with the rules on competition.	2	1	2	2	2	2
Geo-blocking	COM/2016/289 final	The effects for customers and on the internal market of discriminatory treatment in connection to commercial transactions relating to the sales of goods or the provision of services within the Union are the same, regardless of whether a trader is established in a Member State or in a third country. Therefore, and with a view to ensuring that competing traders are subject to the same requirements in this regard, the measures set out in this Regulation should apply equally to all traders operating within the Union	2	2	2	2	2	2
Geo-blocking	COM/2016/289 final	traders should not, through the use of technological measures or otherwise, prevent customers from having full and equal access to online interfaces on the basis of their nationality, place of residence or place of establishment. Such technological measures can encompass, in particular, any technologies used to determine the physical location of the customer, including the tracking of that by means of IP address, coordinates obtained through a global navigation satellite system or data related to a payment transaction. However, that prohibition of discrimination with respect to access to online interfaces should not be understood as creating an obligation for the trader to engage in commercial transactions with customers	3	3	3	3	3	3
Geo-blocking	COM/2016/289 final	Certain traders operate different versions of their online interfaces, targeting customers from different Member States. While this should remain possible, redirecting a customer from one version of the online interface to another version without his or her explicit consent should be prohibited. All versions of the online interface should remain easily accessible to the customer at all times.	3	1	1	3	3	3
Geo-blocking	COM/2016/289 final	In certain cases, blocking, limiting of access or redirection without the customer's consent to an alternative version of an online interface for reasons related to the customer's nationality, place or residence or place of establishment might be necessary in order to ensure compliance with a legal requirement in Union law or in the laws of Member States in accordance with Union law. Such laws can limit customers' access to certain goods or services, for instance by prohibiting the display of specific content in certain Member States. Traders should not be prevented from complying with such requirements and thus be able to block, limit the access or redirect certain customers or customers in certain territories to an online interface, insofar as that is necessary for that reason	1	1	1	1	1	1
Geo-blocking	COM/2016/289 final	In a number of specific situations, any differences in the treatment of customers through the application of general conditions of access, including outright refusals to sell goods or to provide services, for reasons related to the customers' nationality, place of residence or place of establishment cannot be objectively justified. In those situations, all such discrimination should be prohibited and customers should consequently be entitled, under the specific conditions laid down in this Regulation, to engage in commercial transactions under the same conditions as a local customer and have full and equal access to any of the different goods or services offered irrespective of their nationality, place of residence or place of establishment. Where necessary, traders should therefore take measures to ensure compliance with that prohibition of discrimination if otherwise the customers concerned would be precluded from having such full and equal access. However, the prohibition applicable in those situations should not be understood as precluding traders from directing their activities at different Member States or certain groups of customers with targeted offers and differing terms and conditions, including through the setting-up of country-specific online interfaces.	3	3	3	3	3	3
Geo-blocking	COM/2016/289 final	the trader sells goods and there is no cross-border delivery of those goods by or on behalf of the trader to the Member State where the customer resides. In that situation the customer should be able to purchase goods, under exactly the same conditions, including price and conditions relating to the delivery of the goods, as similar customers who are residents of the Member State of the trader. That may mean that a foreign customer will have to pick up the good in that Member State, or in a different Member State to which the trader delivers. In this situation, there is no need to register for value added tax ("VAT") in the Member State of the customer, nor arrange for the cross-border delivery of goods	3	3	3	3	3	3
Geo-blocking	COM/2016/289 final	the trader provides electronically supplied services, other than services the main feature of which is the provision of access to and use of copyright protected works or other protected subject matter, such as cloud services, data warehousing services, website hosting and the provision of firewalls. In this case, no physical delivery is required, as the services are being supplied electronically. The trader can declare and pay VAT in a simplified manner in accordance with the rules on VAT Mini-One-Stop-Shop (MOSS)	1	1	1	1	1	1
Geo-blocking	COM/2016/289 final	the trader provides services and those services are received by the customer in the premises of or at a location chosen by the trader and different from the Member State of which the customer is a national or in which the customer has his or her place of residence or place of establishment, the application of different general conditions of access for reasons related to such criteria should not be justified either. Those situations concern, as the case may be, the provision of services such as hotel accommodation, sport events, car rental, and entry tickets to music festivals or leisure parks. In those situations, the trader does not have to register for VAT in another Member State nor arrange for cross-border delivery of goods.	1	1	1	1	1	1
Geo-blocking	COM/2016/289 final	when providing electronically supplied services, the prohibition of applying different general conditions of access for reasons related to the nationality, place of residence or place of establishment of the customer would imply a requirement to register in order to account for VAT of other Member States and might entail additional costs, which would be a disproportionate burden, considering the size and characteristics of the traders concerned. Therefore, those traders should be exempted from that prohibition for such time as such a scheme is applicable	1	1	1	1	1	1

Table B.6: Recital Analysis of COM(2016) 289 final

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Geo-blocking	COM/2016/289 final	traders may in some cases be prevented from selling goods or providing services to certain customers or to customers in certain territories, for reasons related to the nationality, place of residence or place of establishment of the customer, as a consequence of a specific prohibition or a requirement laid down in Union law or in the laws of Member States in accordance with Union law. Laws of Member States may also require, in accordance with Union law, traders to respect certain rules on the pricing of books. Traders should not be prevented from complying with such laws in as far as necessary	1	1	1	1	1	1
Geo-blocking	COM/2016/289 final	Under Union law, traders are in principle free to decide which means of payment they wish to accept, including payment brands. However, once this choice has been made, in view of the existing legal framework for payment services, there are no reasons for traders to discriminate customers within the Union by refusing certain commercial transactions, or by otherwise applying certain different conditions of payment in respect of those transactions, for reasons related to the nationality, place of residence or place of establishment of the customer. In this particular context, such unjustified unequal treatment for reasons related to the location of the payment account, the place of establishment of the payment service provider or the place of issue of the payment instrument within the Union should be expressly prohibited as well	3	3	1	3	3	3
Geo-blocking	COM/2016/289 final	Payment service providers are obliged to apply so-called strong customer authentication, an authentication process that validates the identity of the user of a payment service or of the payment transaction	2	2	1	2	2	2

Table B.7: Recital Analysis of COM(2016) 289 final (continued)

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
VAT	COM/2016/757 final	the burden for micro-businesses established in a Member State occasionally supplying such services to other Member States of having to comply with VAT obligations in Member States other than their Member State of establishment should be reduced. A Community-wide threshold should therefore be introduced up to which these supplies remain subject to VAT in their Member State of establishment	1	1	1	1	1	1
VAT	COM/2016/757 final	the requirement of having to comply with the invoicing and record keeping requirements of all Member States to which supplies are made is very burdensome. Hence, to minimise burdens on business, the rules concerning invoicing and record keeping should be those applicable in the Member State of identification of the supplier making use of the special schemes	1	1	1	1	1	1
VAT	COM/2016/757 final	[for] telecommunications, broadcasting or electronically supplied services [...] the deadline to submit the VAT return should be extended from 20 to 30 days following the end of the tax period and taxable persons should be allowed to correct previous VAT returns in a subsequent return instead of in the returns of the tax periods to which the corrections relate.	1	1	1	1	1	1
VAT	COM/2016/757 final	The realisation of the internal market, globalisation, and technological change have resulted in an explosive growth of electronic commerce and, hence, of distance sales of goods, both supplied from one Member State to another and from third territories or third countries to the Community. The relevant provisions of Directives 2006/112/EC and 2009/132/EC should be adapted to this evolution, taking into account the principle of taxation at destination, the need to protect Member States' tax revenue, to create a level playing field for the businesses concerned and to minimise burdens on them	1	1	1	1	1	1
VAT	COM/2016/757 final	The special scheme for telecommunications, broadcasting or electronically supplied services supplied by taxable persons established within the Community but not in the Member State of consumption should therefore be extended to intra-Community distance sales of goods and a similar special scheme should be introduced for distance sales of goods imported from third territories or third countries.	1	1	1	1	1	1
VAT	COM/2016/757 final	To reduce the burden for businesses making use of the special scheme for intraCommunity distance sales of goods, the obligation to issue an invoice for such sales should be removed. To provide legal certainty to such businesses, the rules determining the place of those supplies of goods should clearly state that they apply also where the goods are transported or dispatched indirectly on behalf of the supplier.	1	1	1	1	1	1
VAT	COM/2016/757 final	The scope of the special scheme for distance sales of goods imported from third territories or third countries should be restricted to sales of goods of an intrinsic value not exceeding EUR 150, as of which a full customs declaration is required for customs purposes upon importation. In order to avoid double taxation, an exemption from value added tax upon importation of the goods declared under this special scheme should be introduced. In addition, in order to avoid distortion of competition between suppliers inside and outside the Community and to avoid losses of tax revenue, it is necessary to remove the exemption for imports of goods in small consignments of negligible value provided for in Directive 2009/132/EC	1	1	1	1	1	1
VAT	COM/2016/757 final	Following the explosive growth of electronic commerce and the resulting increase in the number of small consignments of an intrinsic value not exceeding EUR 150 imported in the Community, Member States should systematically permit the use of special arrangements for declaration and payment of import VAT. This arrangement can be applied where the special scheme for distance sales of goods imported from third territories or third countries is not used and where the final customer did not opt for the standard import procedure in order to avail himself of a potential reduced VAT rate.	1	1	1	1	1	1

Table B.8: Recital Analysis of COM(2016) 757 final

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
VAT	COM/2016/811 final	In order to limit the risk of fraud shifting between Member States, all Member States that fulfil certain criteria as regards their fraud level, in particular in relation to carousel fraud, and who are able to establish that other control measures are not sufficient to combat that fraud, should be allowed to use a GRCM	1	1	1	1	1	1
VAT	COM/2016/811 final	If Member States choose to apply the GRCM, they should apply it to all supplies of goods and services above a defined threshold per invoice. The GRCM should not be restricted to any specific sector.	1	1	1	1	1	1
VAT	COM/2016/811 final	Member States choosing to apply the GRCM should introduce specific electronic reporting obligations on taxable persons so as to ensure the effective functioning and monitoring of the application of the GRCM. They should detect and prevent all new forms of tax fraud	1	1	1	1	1	1
VAT	COM/2016/811 final	In order to ensure uniform conditions for the implementation of this Directive, implementing powers should be conferred on the Commission as regards granting the authorisation to the requesting Member State in order to introduce the GRCM	1	1	1	1	1	1
VAT	COM/2016/811 final	Given the unexpected effects that such a GRCM might have on the functioning of the internal market because of the possible shift of fraud to other Member States that do not apply it, the Commission should be able, as a safeguard measure, to repeal all implementing decisions approving the application of the GRCM.	1	1	1	1	1	1
VAT	COM/2016/811 final	In view of the uncertain effects that such a mechanism might have, [GRCM] should be limited in time.	1	1	1	1	1	1

Table B.9: Recital Analysis of COM(2016) 811 final

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Platforms	Draft 2016/2276 (INI)	Urges the Commission to prioritise actions that allow European start-ups and new European online platforms to emerge and to scale up; stresses that facilitating investments in start-ups is vital to the development of online platforms in Europe;	1	1	1	1	1	1
Platforms	Draft 2016/2276 (INI)	Stresses the need for online platforms to prevent illegal and inappropriate content and unfair practices through regulatory, effective self-regulatory or hybrid measures	1	1	1	1	1	1
Platforms	Draft 2016/2276 (INI)	emphasises the need to avoid over-regulation; stresses the importance of technology neutrality and having the same rules apply online and offline	1	1	1	1	1	1

Table B.10: Analysis of DRAFT document 2016/2276 (INI)

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Platforms	COM/2016/288 final	Firstly, in order for Europe to reap the full benefits from the platform economy and stimulate growth in European platform start-ups, self-evidently, there cannot be 28 different sets of rules for online platforms in a single market.	1	1	1	1	1	1
Platforms	COM/2016/288 final	Effective enforcement is crucial. The cross-border nature of platforms means that enforcement requires good cooperation between relevant authorities, such as that envisaged in the reform of the Regulation on Consumer Protection Cooperation 17 and as provided for in the General Data Protection Regulation	1	1	1	1	1	1
Platforms	COM/2016/288 final	principles-based self-regulatory/co-regulatory measures, including industry tools for ensuring application of legal requirements and appropriate monitoring mechanisms, can play a role. Underpinned by appropriate monitoring mechanisms, they can strike the right balance between predictability, flexibility, efficiency, and the need to develop future-proof solutions	1	1	1	1	1	1
Platforms	COM/2016/288 final	As a general principle, comparable digital services should be subject to the same or similar rules, duly considering opportunities for reducing the scope and extent of existing regulation	2	1	1	2	2	2
Platforms	COM/2016/288 final	the Commission is assessing the possibility of proposing a targeted mix of proposals involving a degree of deregulation (taking into account certain rules that are at present only applicable to traditional electronic communications services such as for example some universal service obligations), together with the application, where necessary, of a more limited set of communications-specific rules to all relevant and comparable services including when provided by OTT players.	1	1	1	1	1	1
Platforms	COM/2016/288 final	The first issue relates to the proliferation on online video sharing platforms of content that is harmful to minors and of hate speech. Children are increasingly exposed to harmful content through video sharing platforms, ³¹ while the incitement to violence or hatred through online audio-visual material is a particularly acute problem. The Commission is addressing this through sector-specific regulation as part of the amendment of the Audio-visual Media Services Directive.	2	1	1	1	2	2
Platforms	COM/2016/288 final	will also aim to address the issue of fair remuneration of creators in their relations with other parties using their content, including online platforms.	1	1	1	2	2	2
Platforms	COM/2016/288 final	In the context of the evaluation and modernisation of the enforcement of intellectual property rights the Commission will assess the role intermediaries can play in the protection of intellectual property rights, including in relation to counterfeit goods, and will consider amending the specific legal framework for enforcement. The Commission will also continue to engage with platforms in setting up and applying voluntary cooperation mechanisms aimed at depriving those engaging in commercial infringements of intellectual property rights of the revenue streams emanating from their illegal activities, in line with a "follow the money" approach.	1	1	1	1	1	1
Platforms	COM/2016/288 final	As online platforms continue to scale-up and expand into additional sectors, these efforts have to be sustained and developed across the EU to reinforce their positive role in society.	1	1	1	1	1	1
Platforms	COM/2016/288 final	Providing more clarity to online platforms with regard to the exemption from liability for intermediaries under that Directive in light of any such voluntary measures taken by them would, therefore, be important in enabling them to take more effective self-regulatory measures.	1	1	1	1	1	1
Platforms	COM/2016/288 final	assess the results of ongoing reforms such as the review of the Audio-visual Media Services Directive, the copyright review and voluntary initiatives such as the EU Internet Forum.	1	1	1	1	1	1
Platforms	COM/2016/288 final	with its proposal for an updated Audio-visual Media Services Directive to be presented alongside this Communication, the Commission will propose that video sharing platforms put in place measures to protect minors from harmful content and to protect everyone from incitement to hatred.	2	1	1	3	2	3
Platforms	COM/2016/288 final	- in the next copyright package, to be adopted in the autumn of 2016, the Commission will aim to achieve a fairer allocation of value generated by the online distribution of copyright-protected content by online platforms providing access to such content	1	1	1	2	2	2
Platforms	COM/2016/288 final	The Commission will, during the second half of 2016, explore the need for guidance on the liability of online platforms when putting in place voluntary, good-faith measures to fight illegal content online	1	1	1	1	1	1
Platforms	COM/2016/288 final	The Commission will, during the second half of 2016, explore the need for guidance on the liability of online platforms when putting in place voluntary, good-faith measures to fight illegal content online	1	1	1	1	1	1
Platforms	COM/2016/288 final	The Commission will review the need for formal notice-and-action procedures, in light of the results of, inter alia, the updated audio-visual media and copyright frameworks and ongoing self-regulatory and co-regulatory initiatives.	1	1	1	1	1	1
Platforms	COM/2016/288 final	However, large parts of the public remain apprehensive about data collection and consider that more transparency is needed. Online platforms must respond to these concerns by more effectively informing users what personal data is collected and how it is shared and used, in line with the EU data protection framework	2	1	1	1	2	2
Platforms	COM/2016/288 final	the frequent practice of using one's platform profile to access a range of websites and services often involves non-transparent exchanges and crosslinkages of personal data between various online platforms and websites. As a remedy, in order to keep identification simple and secure, consumers should be able to choose the credentials by which they want to identify or authenticate themselves	2	1	1	2	2	2
Platforms	COM/2016/288 final	Greater transparency is also needed for users to understand how the information presented to them is filtered, shaped or personalised, especially when this information forms the basis of purchasing decisions or influences their participation in civic or democratic life.	2	1	1	2	2	2
Platforms	COM/2016/288 final	In order to empower consumers and to safeguard principles of competition, consumer protection and data protection, the Commission will further promote interoperability actions, including through issuing principles and guidance on eID interoperability at the latest by 2017. The aim will be to encourage online platforms to recognise other eID mean	1	1	1	1	1	1
Platforms	COM/2016/288 final	The decision of users to stay with an online platform and share their data should be a free choice linked to the quality of the service provided, and not due to obstacles to switching to another platform, including transferring their data	2	1	1	2	2	2

Table B.11: Recital Analysis of COM(2016) 288 final

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Data Protection	COM/2012/011 final	The protection of individuals should be technologically neutral and not depend on the techniques used; otherwise this would create a serious risk of circumvention. The protection of individuals should apply to processing of personal data by automated means as well as to manual processing, if the data are contained or are intended to be contained in a filing system	1	1	1	1	1	1
Data Protection	COM/2012/011 final	In order to determine whether a processing activity can be considered to 'monitor the behaviour' of data subjects, it should be ascertained whether individuals are tracked on the internet with data processing techniques which consist of applying a 'profile' to an individual, particularly in order to take decisions concerning her or him or for analysing or predicting her or his personal preferences, behaviours and attitudes.	1	1	1	1	1	1
Data Protection	COM/2012/011 final	The principles of protection should apply to any information concerning an identified or identifiable person. To determine whether a person is identifiable, account should be taken of all the means likely reasonably to be used either by the controller or by any other person to identify the individual. The principles of data protection should not apply to data rendered anonymous in such a way that the data subject is no longer identifiable.	1	1	1	1	1	1
Data Protection	COM/2012/011 final	When using online services, individuals may be associated with online identifiers provided by their devices, applications, tools and protocols, such as Internet Protocol addresses or cookie identifiers. This may leave traces which, combined with unique identifiers and other information received by the servers, may be used to create profiles of the individuals and identify them. It follows that identification numbers, location data, online identifiers or other specific factors as such need not necessarily be considered as personal data in all circumstances.	1	1	1	1	1	1
Data Protection	COM/2012/011 final	Consent should be given explicitly by any appropriate method enabling a freely given specific and informed indication of the data subject's wishes, either by a statement or by a clear affirmative action by the data subject, ensuring that individuals are aware that they give their consent to the processing of personal data, including by ticking a box when visiting an Internet website or by any other statement or conduct which clearly indicates in this context the data subject's acceptance of the proposed processing of their personal data. Silence or inactivity should therefore not constitute consent. Consent should cover all processing activities carried out for the same purpose or purposes. If the data subject's consent is to be given following an electronic request, the request must be clear, concise and not unnecessarily disruptive to the use of the service for which it is provided.	2	1	1	1	1	2
Data Protection	COM/2012/011 final	Children deserve specific protection of their personal data, as they may be less aware of risks, consequences, safeguards and their rights in relation to the processing of personal data. To determine when an individual is a child, this Regulation should take over the definition laid down by the UN Convention on the Rights of the Child	1	1	1	2	2	2
Data Protection	COM/2012/011 final	Any processing of personal data should be lawful, fair and transparent in relation to the individuals concerned. In particular, the specific purposes for which the data are processed should be explicit and legitimate and determined at the time of the collection of the data. The data should be adequate, relevant and limited to the minimum necessary for the purposes for which the data are processed; this requires in particular ensuring that the data collected are not excessive and that the period for which the data are stored is limited to a strict minimum. Personal data should only be processed if the purpose of the processing could not be fulfilled by other means. Every reasonable step should be taken to ensure that personal data which are inaccurate are rectified or deleted. In order to ensure that the data are not kept longer than necessary, time limits should be established by the controller for erasure or for a periodic review.	3	1	1	1	3	2
Data Protection	COM/2012/011 final	Where processing is based on the data subject's consent, the controller should have the burden of proving that the data subject has given the consent to the processing operation. In particular in the context of a written declaration on another matter, safeguards should ensure that the data subject is aware that and to what extent consent is given.	2	1	1	1	2	2
Data Protection	COM/2012/011 final	Any person should have the right of access to data which has been collected concerning them, and to exercise this right easily, in order to be aware and verify the lawfulness of the processing. Every data subject should therefore have the right to know and obtain communication in particular for what purposes the data are processed, for what period, which recipients receive the data, what is the logic of the data that are undergoing the processing and what might be, at least when based on profiling, the consequences of such processing. This right should not adversely affect the rights and freedoms of others, including trade secrets or intellectual property and in particular the copyright protecting the software. However, the result of these considerations should not be that all information is refused to the data subject.	2	1	1	1	2	2
Data Protection	COM/2012/011 final	Any person should have the right to have personal data concerning them rectified and a 'right to be forgotten' where the retention of such data is not in compliance with this Regulation. In particular, data subjects should have the right that their personal data are erased and no longer processed, where the data are no longer necessary in relation to the purposes for which the data are collected or otherwise processed, where data subjects have withdrawn their consent for processing or where they object to the processing of personal data concerning them or where the processing of their personal data otherwise does not comply with this Regulation. This right is particularly relevant, when the data subject has given their consent as a child, when not being fully aware of the risks involved by the processing, and later wants to remove such personal data especially on the Internet. However, the further retention of the data should be allowed where it is necessary for historical, statistical and scientific research purposes, for reasons of public interest in the area of public health, for exercising the right of freedom of expression, when required by law or where there is a reason to restrict the processing of the data instead of erasing them.	2	1	1	1	2	2
Data Protection	COM/2012/011 final	To strengthen the 'right to be forgotten' in the online environment, the right to erasure should also be extended in such a way that a controller who has made the personal data public should be obliged to inform third parties which are processing such data that a data subject requests them to erase any links to, or copies or replications of that personal data. To ensure this information, the controller should take all reasonable steps, including technical measures, in relation to data for the publication of which the controller is responsible. In relation to a third party publication of personal data, the controller should be considered responsible for the publication, where the controller has authorised the publication by the third party	3	1	1	1	3	3
Data Protection	COM/2012/011 final	To further strengthen the control over their own data and their right of access, data subjects should have the right, where personal data are processed by electronic means and in a structured and commonly used format, to obtain a copy of the data concerning them also in commonly used electronic format. The data subject should also be allowed to transmit those data, which they have provided, from one automated application, such as a social network, into another one. This should apply where the data subject provided the data to the automated processing system, based on their consent or in the performance of a contract.	3	1	1	1	3	3
Data Protection	COM/2012/011 final	Where personal data are processed for the purposes of direct marketing, the data subject should have the right to object to such processing free of charge and in a manner that can be easily and effectively invoked..	1	1	1	1	1	1
Data Protection	COM/2012/011 final	Every natural person should have the right not to be subject to a measure which is based on profiling by means of automated processing. However, such measure should be allowed when expressly authorised by law, carried out in the course of entering or performance of a contract, or when the data subject has given his consent. In any case, such processing should be subject to suitable safeguards, including specific information of the data subject and the right to obtain human intervention and that such measure should not concern a child	2	1	1	1	2	1
Data Protection	COM/2012/011 final	The protection of the rights and freedoms of data subjects with regard to the processing of personal data require that appropriate technical and organisational measures are taken, both at the time of the design of the processing and at the time of the processing itself, to ensure that the requirements of this Regulation are met. In order to ensure and demonstrate compliance with this Regulation, the controller should adopt internal policies and implement appropriate measures, which meet in particular the principles of data protection by design and data protection by default	2	1	1	1	2	2
Data Protection	COM/2012/011 final	In order to enhance transparency and compliance with this Regulation, the establishment of certification mechanisms, data protection seals and marks should be encouraged, allowing data subjects to quickly assess the level of data protection of relevant products and services	3	1	1	1	3	3

Table B.12: Recital Analysis of COM(2012) 011 final

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Data Protection	Com/2017/010 final	Confidentiality of electronic communications ensures that information exchanged between parties and the external elements of such communication, including when the information has been sent, from where, to whom, is not to be revealed to anyone other than to the parties involved in a communication. The principle of confidentiality should apply to current and future means of communication, including calls, internet access, instant messaging applications, e-mail, internet phone calls and personal messaging provided through social media	2	1	1	1	2	2
Data Protection	Com/2017/010 final	Similarly, metadata derived from electronic communications may also reveal very sensitive and personal information. These metadata includes the numbers called, the websites visited, geographical location, the time, date and duration when an individual made a call etc., allowing precise conclusions to be drawn regarding the private lives of the persons involved in the electronic communication, such as their social relationships, their habits and activities of everyday life, their interests, tastes etc.	3	2	1	1	2	3
Data Protection	Com/2017/010 final	This Regulation should apply to providers of electronic communications services, to providers of publicly available directories, and to software providers permitting electronic communications, including the retrieval and presentation of information on the internet. This Regulation should also apply to natural and legal persons who use electronic communications services to send direct marketing commercial communications or collect information related to or stored in end-users' terminal equipment	2	1	1	1	2	2
Data Protection	Com/2017/010 final	This Regulation should apply to electronic communications data processed in connection with the provision and use of electronic communications services in the Union, regardless of whether or not the processing takes place in the Union	2	1	1	1	2	2
Data Protection	Com/2017/010 final	The transmission of machine-to-machine communications involves the conveyance of signals over a network and, hence, usually constitutes an electronic communications service. In order to ensure full protection of the rights to privacy and confidentiality of communications, and to promote a trusted and secure Internet of Things in the digital single market, it is necessary to clarify that this Regulation should apply to the transmission of machine-to-machine communications.	2	1	1	1	2	2
Data Protection	Com/2017/010 final	Electronic communications data should be defined in a sufficiently broad and technology neutral way so as to encompass any information concerning the content transmitted or exchanged (electronic communications content) and the information concerning an end-user of electronic communications services processed for the purposes of transmitting, distributing or enabling the exchange of electronic communications content; including data to trace and identify the source and destination of a communication, geographical location and the date, time, duration and the type of communication. Whether such signals and the related data are conveyed by wire, radio, optical or electromagnetic means, including satellite networks, cable networks, fixed (circuit- and packet-switched, including internet) and mobile terrestrial networks, electricity cable systems, the data related to such signals should be considered as electronic communications metadata and therefore be subject to the provisions of this Regulation.	2	1	1	1	2	2
Data Protection	Com/2017/010 final	Therefore, this Regulation should require providers of electronic communications services to obtain end-users' consent to process electronic communications metadata, which should include data on the location of the device generated for the purposes of granting and maintaining access and connection to the service. Location data that is generated other than in the context of providing electronic communications services should not be considered as metadata	2	1	1	1	1	1
Data Protection	Com/2017/010 final	Consent for processing data from internet or voice communication usage will not be valid if the data subject has no genuine and free choice, or is unable to refuse or withdraw consent without detriment.	2	1	1	1	3	2
Data Protection	Com/2017/010 final	Any interference with the content of electronic communications should be allowed only under very clear defined conditions, for specific purposes and be subject to adequate safeguards against abuse. This Regulation provides for the possibility of providers of electronic communications services to process electronic communications data in transit, with the informed consent of all the end-users concerned	2	1	1	1	2	2
Data Protection	Com/2017/010 final	Given the sensitivity of the content of communications, this Regulation sets forth a presumption that the processing of such content data will result in high risks to the rights and freedoms of natural persons. When processing such type of data, the provider of the electronic communications service should always consult the supervisory authority prior to the processing	3	1	1	1	3	3
Data Protection	Com/2017/010 final	Exceptions to the obligation to obtain consent to make use of the processing and storage capabilities of terminal equipment or to access information stored in terminal equipment should be limited to situations that involve no, or only very limited, intrusion of privacy.	1	1	1	1	1	1

Table B.13: Recital Analysis of COM(2017) 10 final

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Data Economy	COM/2017/9 final	any Member State action affecting data storage or processing should be guided by a "principle of free movement of data within the EU", as a corollary of their obligations under the free movement of services and the free establishment provisions of the Treaty and relevant secondary legislation.	1	1	1	1	1	1
Data Economy	COM/2017/9 final	The principle of free movement of personal data enshrined in primary and secondary law should also apply in the cases where the GDPR allows Member States to regulate specific matters. Member States should be encouraged not to make use of the opening clauses in the GDPR to further restrict the free flow of data.	1	1	1	1	1	1
Data Economy	COM/2017/9 final	Improve access to anonymous machine-generated data:	2	2	2	1	2	2
Data Economy	COM/2017/9 final	Facilitate and incentivise the sharing of [machine-generated] data	2	2	2	2	2	2
Data Economy	COM/2017/9 final	Minimise lock-in effects: The unequal bargaining power of companies and private individuals should be taken into account	2	2	2	2	2	2
Data Economy	COM/2017/9 final	Data producer's right: A right to use and authorise the use of non-personal data could be granted to the "data producer", i.e. the owner or long-term user (i.e. the lessee) of the device.	2	1	1	1	2	1
Data Economy	COM/2017/9 final	Effective portability policies must be supported by appropriate technical standards in order to implement meaningful portability in a technologically neutral manner. The Commission has committed itself to support the appropriate standards to improve interoperability, portability and security of cloud services, by better integrating the work of open source communities into the standard-setting process at European level	2	1	1	1	2	2
Data Economy	COM/2017/9 final	Developing recommended contract terms to facilitate switching of service providers: As data portability and switching of data service providers are mutually dependent, the development of standard contract terms requiring the service provider to implement the portability of a customer's data could be examined.	2	1	2	2	2	2
Data Economy	COM/2017/9 final	Building on the data portability right provided by the GDPR and on the proposed rules on contract for the supply of digital content, further rights to portability of non-personal data could be introduced, in particular to cover B2B contexts, whilst taking due account of the outcome of the ongoing Fitness Check on key pieces of EU marketing and consumer law	2	1	2	2	2	2

Table B.14: Recital Analysis of COM(2017) 19 final

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Payments	Directive 2015/2366	Equivalent operating conditions should be guaranteed, to existing and new players on the market, enabling new means of payment to reach a broader market, and ensuring a high level of consumer protection in the use of those payment services across the Union as a whole.	1	1	1	1	1	1
Payments	Directive 2015/2366	The provisions of this Directive on transparency and information requirements for payment service providers and on rights and obligations in relation to the provision and use of payment services should also apply, where appropriate, to transactions where one of the payment service providers is located outside the European Economic Area (EEA) in order to avoid divergent approaches across Member States to the detriment of consumers. Where appropriate, those provisions should be extended to transactions in all official currencies between payment service providers that are located within the EEA.	1	1	1	1	1	1
Payments	Directive 2015/2366	This Directive introduces a neutral definition of acquiring of payment transactions in order to capture not only the traditional acquiring models structured around the use of payment cards, but also different business models, including those where more than one acquirer is involved. This should ensure that merchants receive the same protection, regardless of the payment instrument used, where the activity is the same as the acquiring of card transactions. Technical services provided to payment service providers, such as the mere processing and storage of data or the operation of terminals, should not be considered to constitute acquiring. Moreover, some acquiring models do not provide for an actual transfer of funds by the acquirer to the payee because the parties may agree upon other forms of settlement.	1	1	1	1	1	1
Payments	Directive 2015/2366	A payment instrument should be considered to be used within such a limited network if it can be used only in the following circumstances: first, for the purchase of goods and services in a specific retailer or specific retail chain, where the entities involved are directly linked by a commercial agreement which for example provides for the use of a single payment brand and that payment brand is used at the points of sale and appears, where feasible, on the payment instrument that can be used there; second, for the purchase of a very limited range of goods or services, such as where the scope of use is effectively limited to a closed number of functionally connected goods or services regardless of the geographical location of the point of sale; or third, where the payment instrument is regulated by a national or regional public authority for specific social or tax purposes to acquire specific goods or services	1	1	1	1	1	1
Payments	Directive 2015/2366	The exclusion relating to certain payment transactions by means of telecom or information technology devices should focus specifically on micro-payments for digital content and voice-based services.	1	1	1	1	1	1
Payments	Directive 2015/2366	The definition of payment services should be technologically neutral and should allow for the development of new types of payment services, while ensuring equivalent operating conditions for both existing and new payment service providers.	1	1	1	1	1	1
Payments	Directive 2015/2366	This Directive lays down rules on the execution of payment transactions where the funds are electronic money as defined in Directive 2009/110/EC. This Directive does not, however, regulate the issuance of electronic money as provided for in Directive 2009/110/EC. Therefore, payment institutions should not be allowed to issue electronic money.	1	1	1	1	1	1
Payments	Directive 2015/2366	technological developments have given rise to the emergence of a range of complementary services in recent years, such as account information services. Those services provide the payment service user with aggregated online information on one or more payment accounts held with one or more other payment service providers and accessed via online interfaces of the account servicing payment service provider. The payment service user is thus able to have an overall view of its financial situation immediately at any given moment. Those services should also be covered by this Directive in order to provide consumers with adequate protection for their payment and account data as well as legal certainty about the status of account information service providers	1	1	1	1	1	1
Payments	Directive 2015/2366	The requirements for the payment institutions should reflect the fact that payment institutions engage in more specialised and limited activities, thus generating risks that are narrower and easier to monitor and control than those that arise across the broader spectrum of activities of credit institutions. In particular, payment institutions should be prohibited from accepting deposits from users and should be permitted to use funds received from users only for rendering payment services. The required prudential rules including the initial capital should be appropriate to the risk relating to the respective payment service provided by the payment institution. Payment service providers that provide only payment initiation services should be considered to be of a medium risk with regard to the initial capital	1	1	2	1	1	1
Payments	Directive 2015/2366	Payment initiation service providers and account information service providers, when exclusively providing those services, do not hold client funds. Accordingly, it would be disproportionate to impose own funds requirements on those new market players. Nevertheless, it is important that they be able to meet their liabilities in relation to their activities. They should therefore be required to hold either professional indemnity insurance or a comparable guarantee.	1	1	2	1	1	1
Payments	Directive 2015/2366	In order to avoid abuses of the right of establishment, it is necessary to require that the payment institution requesting authorisation in the Member State provide at least part of its payment services business in that Member State.	1	1	1	1	1	1
Payments	Directive 2015/2366	Provision should be made for payment service user funds to be kept separate from the payment institution's funds. Safeguarding requirements are necessary when a payment institution is in possession of payment service user funds. Where the same payment institution executes a payment transaction for both the payer and the payee and a credit line is provided to the payer, it might be appropriate to safeguard the funds in favour of the payee once they represent the payee's claim towards the payment institution. Payment institutions should also be subject to effective anti-money laundering and anti-terrorist financing requirements.	1	1	1	1	1	1
Payments	Directive 2015/2366	When engaging in the provision of one or more of the payment services covered by this Directive, payment service providers should always hold payment accounts used exclusively for payment transactions. In order to enable payment service providers to provide payment services, it is indispensable that they have the possibility to open and maintain accounts with credit institutions	1	1	2	1	1	1
Payments	Directive 2015/2366	This Directive should regulate the granting of credit by payment institutions, namely the granting of credit lines and the issuance of credit cards, only where it is closely linked to payment services. Only if credit is granted in order to facilitate payment services and such credit is of a short-term nature and is granted for a period not exceeding 12 months, including on a revolving basis, is it appropriate to allow payment institutions to grant such credit with regard to their cross-border activities, on condition that it is refinanced using mainly the payment institution's own funds, as well as other funds from the capital markets, and not the funds held on behalf of clients for payment services.	1	1	1	1	1	1
Payments	Directive 2015/2366	In view of the specific nature of the activity performed and the risks connected to the provision of account information services, it is appropriate to provide for a specific prudential regime for account information service providers. Account information service providers should be allowed to provide services on a cross-border basis, benefiting from the 'passporting' rules.	1	1	1	1	1	1
Payments	Directive 2015/2366	In order to enhance efficiency the information required should be proportionate to the needs of users and should be communicated in a standard format. However, the information requirements for a single payment transaction should be different from those of a framework contract which provides for a series of payment transactions.	1	1	1	1	1	1
Payments	Directive 2015/2366	This Directive should provide for a right for consumers to receive relevant information free of charge before being bound by any payment service contract. Consumers should also be able to request prior information as well as the framework contract, on paper, free of charge at any time during the contractual relationship, so as to enable them both to compare the services and conditions offered by payment service providers and in the case of any dispute, to verify their contractual rights and obligations, thereby maintaining a high level of consumer protection.	1	1	1	1	1	1
Payments	Directive 2015/2366	This Directive should therefore distinguish between two ways in which information is to be given by the payment service provider: either the information should be provided, i.e. actively communicated by the payment service provider at the appropriate time as required by this Directive without any prompting by the payment service user, or the information should be made available to the payment service user on the basis of a request for further information. In the second situation, the payment service user should take active steps in order to obtain the information, such as requesting it explicitly from the payment service provider, logging into a bank account mail box or inserting a bank card into a printer for account statements. For such purposes the payment service provider should ensure that access to the information is possible and that the information is available to the payment service user.	1	1	1	1	1	1

Table B.15: Recital Analysis of Directive 2015/2366

Topic	Source	Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Payments	Directive 2015/2366	The consumer should receive basic information on executed payment transactions at no additional charge. In the case of a single payment transaction the payment service provider should not charge separately for that information. Similarly, subsequent information on payment transactions under a framework contract should also be provided on a monthly basis free of charge. However, taking into account the importance of transparency in pricing and differing customer needs, the parties should be able to agree on charges for more frequent or additional information.	1	1	1	1	1	1
Payments	Directive 2015/2366	In order to facilitate customer mobility, it should be possible for consumers to terminate a framework contract without incurring charges. However, for contracts terminated by the consumer less than 6 months after their entry into force, payment service providers should be allowed to apply charges in line with the costs incurred due to the termination of the framework contract by the consumer	1	1	1	1	1	1
Payments	Directive 2015/2366	In the case of an unauthorised payment transaction, the payment service provider should immediately refund the amount of that transaction to the payer. However, where there is a high suspicion of an unauthorised transaction resulting from fraudulent behaviour by the payment service user and where that suspicion is based on objective grounds which are communicated to the relevant national authority, the payment service provider should be able to conduct, within a reasonable time, an investigation before refunding the payer. In order to protect the payer from any disadvantages, the credit value date of the refund should not be later than the date when the amount has been debited. In order to provide an incentive for the payment service user to notify, without undue delay, the payment service provider of any theft or loss of a payment instrument and thus to reduce the risk of unauthorised payment transactions, the user should be liable only for a very limited amount, unless the payment service user has acted fraudulently or with gross negligence. In that context, an amount of EUR 50 seems to be adequate in order to ensure a harmonised and high-level user protection within the Union.	1	1	3	1	1	1
Payments	Directive 2015/2366	In the case of payment initiation services, rights and obligations of the payment service users and of the payment service providers involved should be appropriate to the service provided. Specifically, the allocation of liability between the payment service provider servicing the account and the payment initiation service provider involved in the transaction should compel them to take responsibility for the respective parts of the transaction that are under their control.	1	1	1	1	1	1
Payments	Directive 2015/2366	In view of the speed with which modern fully automated payment systems process payment transactions, which means that after a certain point in time payment orders cannot be revoked without high manual intervention costs, it is necessary to specify a clear deadline for payment revocations. However, depending on the type of the payment service and the payment order, it should be possible to vary the deadline for payment revocations by agreement between the parties. Revocation, in that context, should apply only to the relationship between a payment service user and a payment service provider, thus being without prejudice to the irrevocability and finality of payment transactions in payment systems.	1	1	2	1	1	1
Payments	Directive 2015/2366	The payer's payment service provider, namely the account servicing payment service provider or, where appropriate, the payment initiation service provider, should assume liability for correct payment execution, including, in particular, the full amount of the payment transaction and execution time, and full responsibility for any failure by other parties in the payment chain up to the account of the payee	1	1	1	1	1	1
Payments	Directive 2015/2366	Payment service providers are responsible for security measures. Those measures need to be proportionate to the security risks concerned. Payment service providers should establish a framework to mitigate risks and maintain effective incident management procedures. A regular reporting mechanism should be established, to ensure that payment service providers provide the competent authorities, on a regular basis, with an updated assessment of their security risks and the measures that they have taken in response to those risks.	1	1	3	1	1	1
Payments	Directive 2015/2366	Security of electronic payments is fundamental for ensuring the protection of users and the development of a sound environment for e-commerce. All payment services offered electronically should be carried out in a secure manner, adopting technologies able to guarantee the safe authentication of the user and to reduce, to the maximum extent possible, the risk of fraud.	1	1	1	1	1	1
Payments	Directive 2015/2366	Payment services offered via internet or via other at-distance channels, the functioning of which does not depend on where the device used to initiate the payment transaction or the payment instrument used are physically located, should therefore include the authentication of transactions through dynamic codes, in order to make the user aware, at all times, of the amount and the payee of the transaction that the user is authorising.	1	1	1	1	1	1
Payments	Directive 2015/2366	Safe use of personalised security credentials is needed to limit the risks relating to phishing and other fraudulent activities. In that respect, the user should be able to rely on the adoption of measures that protect the confidentiality and integrity of personalised security credentials. Those measures typically include encryption systems based on personal devices of the payer, including card readers or mobile phones, or provided to the payer by its account servicing payment service provider via a different channel, such as by SMS or email. The measures, typically including encryption systems, which may result in authentication codes such as one-time passwords, are able to enhance the security of payment transactions. The use of such authentication codes by payment service users should be considered to be compatible with their obligations in relation to payment instruments and personalised security credentials also when payment initiation service providers or account information service providers are involved	1	1	1	1	1	1

Table B.16: Recital Analysis of Directive 2015/2366 (continued)

Topic	Source		Excerpt	IoT	Drones	BitCoin	3D Printing	AI	VR
Platforms	UCPD	Guid- ance	Enabling relevant third party traders to clearly indicate that they act, vis-à-vis the platform users, as traders	1	1	1	1	1	1
Platforms	UCPD	Guid- ance	Clearly indicating to all platform users that they will only benefit from protection under EU consumer and marketing laws in their relations with those suppliers who are traders;	1	1	1	1	1	
Platforms	UCPD	Guid- ance	Designing their web-structure in a way that enables third party traders to present information to platform users in compliance with EU marketing and consumer law – in particular, information required by Article 7(4) UCPD in the case of invitations to purchase	1	1	1	1	1	2
Platforms	UCPD	Guid- ance	ensure that companies do not treat consumers differently on the basis of their place of residence or nationality, unless justified by objective criteria. It concerns both outright refusals to sell, including automatic re-routing, and the application of different prices taking place online or offline.	2	1	1	2	2	2

Table B.17: Analysis of UCPD Guidance

Appendix C

Interview Notes

C.1 Maurits Bruggink

1. How soon do you think will a business integrate Internet of Things in its daily operations? Please elaborate as to why.

1. Not sure: does not see application in eCommerce
2. Push: factories and process automation
3. Reply: needs to make more aware & easy to integrate

2. How soon do you think will a business integrate Drones in its daily operations? Please elaborate as to why.

1. Unknown: regulation must allow drones in cities;
2. Takes time till will be touched upon

3. How soon do you think will a business integrate BitCoin in its daily operations? Please elaborate as to why.

1. Probably never: needs wide acceptance by states

4. How soon do you think will a business integrate 3D Printing in its daily operations? Please elaborate as to why.

1. Years; hard to say: once more affordable will take over the market & cut the middleman (warehouses, distributors, etc.)

5. How soon do you think will a business integrate Artificial Intelligence in its daily operations? Please elaborate as to why.

1. Unsure: Alexa is barebones and expensive to develop
2. Push: chatbots
3. Reply: Needs room for consideration

6. How soon do you think will a business integrate Virtual Reality in its daily operations? Please elaborate as to why.

1. Soon: Mobile Commerce is rising
2. With increasing Cheap mobile phone VR it's a matter of time to make the software & apps for it

C.2 Razvan Antemir

1. How soon do you think will a business integrate Internet of Things in its daily operations? Please elaborate as to why.

1. Quite Soon: Consumers buy IoT enabled products
2. Economies of scale will make them affordable
3. In B2B: have to come up with more solutions for that (SaaS)

2. How soon do you think will a business integrate Drones in its daily operations? Please elaborate as to why.

1. Depends: can be soon for out of city delivery
2. Else: depends on postal operators to implement & EU laws

3. How soon do you think will a business integrate BitCoin in its daily operations? Please elaborate as to why.

1. Unknown to never: cryptocurrencies must get out of the criminal scene

4. How soon do you think will a business integrate 3D Printing in its daily operations? Please elaborate as to why.

1. Idem Maurits
2. Market with high potential & equally disruptive

5. How soon do you think will a business integrate Artificial Intelligence in its daily operations? Please elaborate as to why.

1. Soon: companies need to populate FB Messenger with own offering
2. Need for more creative AI based services

6. How soon do you think will a business integrate Virtual Reality in its daily operations? Please elaborate as to why.

1. Idem Maurits