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# Machine Learning's Impact on Creativity

An analysis on how Information Technology systems are shaping creativity in the video content production industry

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**Student Name:** Federica Bocchetti

**Student Number:** 485990

**Supervisor:** Dr. Trilce Navarrete Hernandez

**Second Reader:** Dr. Christian W. Handke

Master in Cultural Economics and Entrepreneurship

School of History, Culture and Communication

Erasmus University Rotterdam

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## ABSTRACT

Online content consumption is rapidly increasing among digital users, especially the one regarding videos. As result of this event, digital providers are producing more video contents based on Machine Learning generated insights. From these computational suggestions, video creatives shape ideas for future film and video contents. In this way, human and automatics insights are applied in the same creative process. Based on interviews with experts in the data research and film creation, the paper draws an overview of the supply chain of the video content production. Moreover, a focus on the consequent relationships between different stakeholders involved in the production will be provided. The aim of the research is to analyze the perception that video creators have about Information Technology systems applied to the creative process and its consequences on the consumers and on the content production itself.

*KEYWORDS: Machine Learning, Information Technology, content creators, online video production, creativity.*

Table of Contents

**ABSTRACT .....1**

**ACKNOWLEDGMENTS .....3**

**CHAPTER 1. INTRODUCTION .....4**

    1.1. MOTIVATION AND RESEARCH AIM ..... 5

**CHAPTER 2. LITERATURE REVIEW .....6**

    2.1. CREATIVITY AND INNOVATION ..... 6

    2.2. INNOVATIONS IN INFORMATION TECHNOLOGY IN THE VIDEO CONTENT PRODUCTION..... 8

    2.3. CONSUMERS’ ROLE ..... 15

    2.4. DIVERSITY ..... 17

**CHAPTER 3. METHODOLOGY .....20**

    3.1. RESEARCH GOALS AND QUALITATIVE APPROACH ..... 20

    3.2. SAMPLING..... 21

    3.3. DATA COLLECTION ..... 22

**3.3.1. Stakeholders ..... 23**

            ○ Brand Consultancy Multinational Agency ..... 24

            ○ Production and creative companies (Creators)..... 25

    3.4. DATA ANALYSIS ..... 26

**CHAPTER 4. FINDINGS AND ANALYSIS .....27**

    4.1. BUSINESS SIDE OF THE MARKET ..... 27

**4.1.1. Machine Learning in the Business side of the Market ..... 27**

**4.1.2. Effects on Consumers in the Business Side of the Market..... 29**

**4.1.3. Creativity and Diversity in the Business side of the Market ..... 31**

    4.2..... 33

    CREATIVE SIDE OF THE MARKET..... 33

**4.2.1. Machine Learning in the Creative Side of the Market ..... 33**

**4.2.2. Effects on Consumers in the Creative side of the Market ..... 35**

**4.2.3. Creativity and Diversity in the Creative side of the Market..... 36**

**CHAPTER 5. CONCLUSIONS .....40**

    5.1. FURTHER RESEARCH ..... 41

**REFERENCES .....43**

**APPENDIX A .....46**

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## Chapter 1. Introduction

In the recent years, the digital presence of videos is standing above all the other forms of entrainment (National Research Council, 2003). This increase has been assisted by the existence of social media platforms as YouTube or Vimeo and video-on-demand services (VOD) as Netflix. These kinds of platforms are releasing contents and they are conducting marketing strategies similar to the one applied by the cable televisions (Jenner, 2016). Moreover, other social platforms as Facebook and Instagram are using always more video content to provide advertisement on their platforms. Facebook's CEO, Mark Zuckerberg, said that by the 2020 most of the advertisements and contents on the platform will be videos ('Mark Zuckerberg: Facebook News Feed Will Be Mostly Video in Five Years', n.d.).

In this environment, the usage of algorithms and Machine Learning systems is always more applied. Still using the previous example, YouTube or Netflix use algorithms to increase the consumer experience. The platform suggests to its users what they should watch next, basing these recommendations on the previous consumption decisions of each users. Most of the consumers prefer to browse and be suggested by automatics than from other experts as gatekeepers, editors or journalists (Newman, Levy, & Nielsen, 2015). In addition, the algorithm's suggestions are exposing consumers to a wider range of products, that before would be unreachable for the audience (Newman, Levy & Nielsen, 2015).

Automatics are not used only in the consumer's side of the market. As already mentioned, media, entertainment and publishing industries are the first markets for producing video contents, followed by industries involved in the production of no creative goods as Food and Leisure or Healthcare ('2017 Video in Business Benchmark Report', n.d.). The production of videos in these industries has as aim the internal and external distribution of the contents. Indeed, always more companies are using the video production for business-to-business (B2B) communication strategies ('2017 Video in Business Benchmark Report', n.d.).

Once produced, the video consumption generates data, which is collected again by the distributors or by consultancy agencies, in order to use them as base during the creative process for next content productions. When automatics are used in this way, algorithms are feeding the Information Technology dynamics, which are powered by Machine Learning systems. Information Technology' insights represent a precious source of information, for matching the content topics with the expectations of the audience. The aim of the research is to analyze if creativity of content

creators is undermined by the introduction of this new automatized perceptions of the audience. The main tools for conducting the study has been a series of in-depth interviews with experts in the sector of the video content production and researchers who daily works with data. The results of the interviews have helped in drawing an overview of the supply chain of the video content market, the link between automatic inputs and human creativity, the effects of Machine Learning driven strategies on consumers and the bonds between video creators and their clients.

In the next chapter, the theories where this research is based on will be explain, with a concise explanation of Information Technology as innovative tool in the market. Chapter 3 describes the methodology approach of the research, introducing the interviewed experts and the limitations that took place during the study. The following chapter develop the outlines of the video content industry with a focus on the business and the creative sides of the market. The last chapter concludes with a review of the study and suggestions for the following ones.

## **1.1. Motivation and Research Aim**

The motivation behind the willing to conduct this research lies in the everyday consumption of video as daily source of entertainment. Talking about the last video on YouTube or the last tv series on Netflix has taken the spotlight during coffee breaks, lunches at the office or dinners with friends. Most of the time, users start to watch a tv series because is “suggested by Netlifix” or because the new viral video is “recommends for me” by Youtube. Most of these proposals come from previous analyses conducted by big providers and distributor, who pushes content inside the platforms’ feed pages. Consumers are always more aware about the fact that controlled suggestions are becoming a digital habits. However, what do creators think about it? How they perceive the influence of the “suggestion mentality” applied to their works? This was the starting point of the research. Suggestion’s algorithms are powered by deep consumer’s analysis, which is the starting point for the Machine Learning processes of data. From here, this issue was resumed into the following research question:

*How are Machine Learning systems involved in the creative process in the digital video content production?*

## Chapter 2. Literature Review

In the following chapter, there will be provided the theoretical framework that support the research. There are three main topics: creativity and innovation, consumer's role in the market and diversity. In addition, the differences between the concepts of creativity and innovation, in the first section there will be provide also the example of Information Technology (IT), as innovative tools used in the market of the video content production.

### 2.1. Creativity and Innovation

The first step of this research is to find a difference between the definitions of innovation and creativity in the creative industries. Creative industries have the unique feature of not being just a mere good, but they are also the medium (McLuhan & Fiore, 1967), which can create social and communal culture and trends. Even if the innovation can be easily found in the vehicle used for communicating with the society, as happened for the streaming arrival for example, it would be useful to analyze even how it can be recognized in the sphere of the creativity. The innovation in this research is related to the generation of new ideas, that should not be just factional ideas but tools to open a channel in the audience's mind (Leaf, 2005). These ideas should create and change the current customs and practices that are running among people. The innovative tools and the innovatite creativity in these industries have equal importance.

Since innovation is a new combination of existing ideas, capabilities, skills and resources, the concepts of innovation and creativity are often used as synonymous since both are involved in the generation of novel content or knowledge. The first step for the innovation is the imagination, which is the beginning phase of the creativity (Araeen, 2012). Creativity is the fundamental input for producing an invention, which is a new idea never seen in the market before. When the invention gains commercial purposes, it becomes an innovation. This commercial purpose can change the market, since it introduces a new way of creating, which is used firstly by the inventor and then by the rest of the producers (Fagerberg, 2004) in the market. It should be mentioned that creativity is not presented only under innovative production circumstances. In the creative field, creativity is related to the originality of a content, which occurs when the subject has the feature of novelty (Casteñer, 2016). Creativity is the human ability that brings new ideas in the process of content creation in the creative industries. It is not just the new idea; it is the practice and analysis made during the creative process of the content creation.

About this topic, Anderson (2014) focuses his attention on the concept of process when he tries to find a definition of creativity and innovation. On one hand, he recognizes creativity as the activity able to generate new ideas during the creation process (Anderson, 2014). On the other hand, innovation is the application of those ideas in the production chain of goods, from the procedures to the production tools (Anderson, 2014).

The process is a fundamental part of the creation of creative product, including the case of creative industries where the usage of automatize systems is daily applied in the production chain, as it happens in the production and application of computer generated imagery (CGI).

Algorithms and computer science have also been used to conduct consumers' tastes analysis and market research, with the aim of producing more suitable products. They represent a "technological process innovation", which brings improvements in the production systems (Fagerberg, 2004). Furthermore, the Information Technology (IT) falls also in the sphere of "organizational process" innovations (Fagerberg, 2004), because it brings changes in the distribution side of the supply chain. Thanks to those two aspects, the innovation introduced by automatized analysis of customers' tastes has radically changed the way of producing creative products: now the consumers directly deliver to the provider all the information, introducing a new source of inputs in the creative process (Fagerberg, 2004).

On one side, through this process, companies know what is popular inside their consumer's base, providing them what they expect next as new product. This kind of research gives an enormous competitive advantage to the content creators, since data that supplies the creative thinking is "relevant information, and it attempts to duplicate creative insights. Such demonstrations are interesting in that they duplicate creative discoveries and may provide some idea of exact steps involved in the creative thought process." (Williams & Yang, 1999, p. 378). On the other side, the Information Technology can fault the process, suggesting to the creator the path to follow during the creative practice. The economic aspect of following trends and consumers' tastes prevails on the artistic and creative one, since every decision taken is driven by the previous data collection.

Another argument in the role of creativity and innovation in the content's creation process is the utility that a creative product could have in the society's culture and in its growth. Casteñer (2016) does not recognize utility as a feature of creativity or of the creative process while Amabile (2004) believes that usefulness is a fundamental prerogative for recognizing creativity. In the media industries, usefulness could be seen as the reputation and the social message that the



creative products generate in the consumer's sphere, from the niche market to the mass culture. When the content is appreciated by the niche, it becomes innovative, converting the new message into a prototype (Casteñer, 2016) and then into a communal magnus opus.

Creative industries are the results of innovative and creative practices together, since they involve the business and social innovation through the channel of the creative productions (Lampel & Shamsie, 2003). The aim is to be profitably sustainable while it is carried out a creative output that follows the social and communal taste. Furthermore, creativity and innovation exists only in a condition of usefulness, which in terms of the content production can be found in the feature of novelty and in the emotional and social engagement with the audience.

Creativity and innovation are part of the same process of creation. Creativity is the first step for starting the novelty process, which would become an innovation. An innovation takes place only when it comes from an imaginative environment, where creativity is free to develop. Following these ideas, in the research the definition of creativity matches with the force that comes from the human practice of imagine and produce an output inspired by the personal exposure to the world and based on all the social, natural and cultural detected inputs. Regarding the definition of innovation, the paper refers innovation as a new combination of existing ideas, capabilities, skills and resources, highlighting as essential for its existence the feature of novelty.

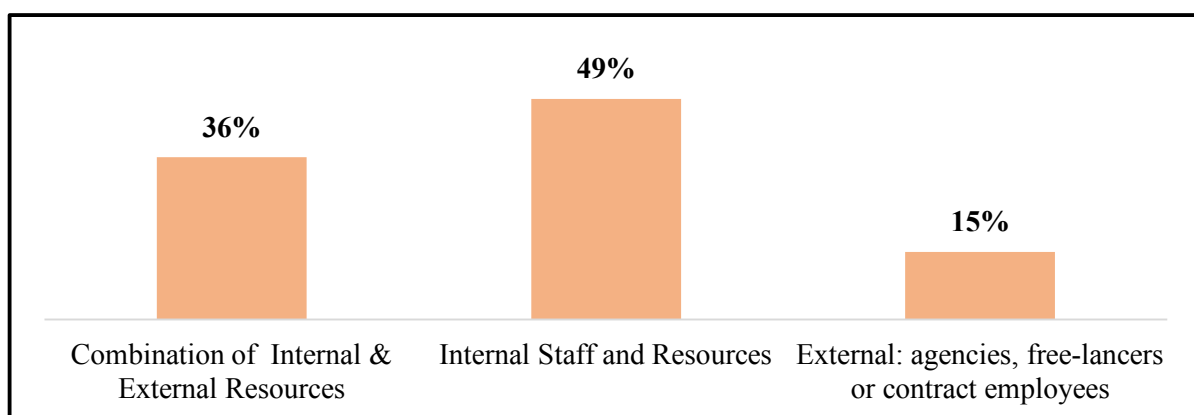
## **2.2. Innovations in Information Technology in the Video Content Production**

In the media fields, innovation takes place in tools used to produce the creative product, instead on the content itself (National Research Council, 2003). This assumption can be easily recognized, for example, in the way of producing and shooting vide, which passed from being shot with analogic and low-quality camcorders to new and high quality 4k camera or from edinting through the FX software. In this market, the concept of development is close to the innovation according to Schumpeter (1934), where the market is disturbed or destroyed forever by a new technology that introduces new ways of production. Another aspect of innovation that video production has introduced in the market regards the way of distributing the contents. Nowadays, the main distribution channel of video content is the digital environment. Since 2010 to 2016, the video consumption grew of the 85% ('Edelman Digital's 2017 Trends Report', 2017), mostly thanks to the easy and fast access to contents provided through laptops, tablets and smartphones.

The main digital content providers have understood this change in the market and they started to produce viral contents, featuring low fixed costs and easy consumer access. One recent

important innovation in the video industry has much to thank Information Technology (IT). IT has brought change in the video production process because it can “reframe and redirect the expenditure of human effort, generating unanticipated payoffs of exceptionally high value” (National Research Council, 2003, p. 15). Information Technology plays a core role in the analysis of consumers’ tastes and trends. It helps the providers in understanding what they should produce next by providing almost instant feedbacks from the market and reducing production costs in terms of money and time. IT not only lowers production costs freeing resources to be repositioned for content production, it has also disrupted the production process in the video industry. Firms have adopted IT as tool for launching the creative process: they conduct an explorative information strategy, in order to know the trends among consumers. This operation has become cheaper and deeper thanks Machine Learning (ML) processes. These tools provide instant output in terms of information that firms take into consideration for having an overview of the market.

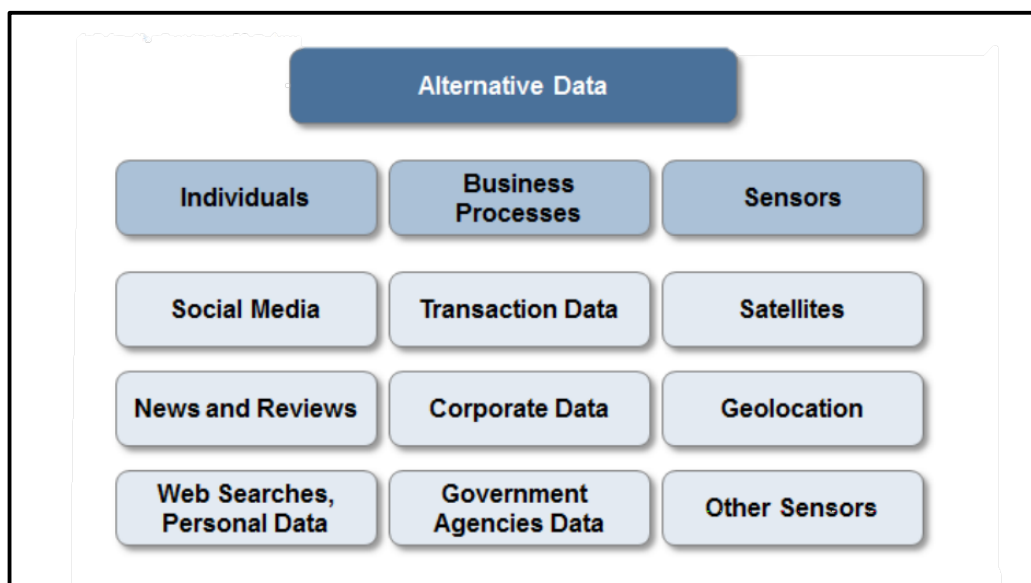
From here, a series of decisions are taken, as in which platform the video should be launched or how it should be advertised. Machine Learning analysis offers a new way of conducting consumer’s analysis, because it shows perfectly how consumers perceive the added value of a creative product. Consumers show through their behavior (and clicks) the content that they deem worth their time. After firms understood the strengths of the market and of their own brands, they start with developing a content. Usually this part of the supply chain is outsourced to production companies and brand and communication consultancy agencies. Only big distributors, as Netflix for example, have done a backward vertical integration of themselves by starting to produce contents internally (Jenner, 2016).



**Figure 1.** Resources used For Business Video Production (source: Video Content Marketing Benchmark Study Report, November 2016, Demand Metric, sponsored by Vidyad)

At the same time, firms create unintended content as their behavior forms, that become the base of information for the development of IT itself. Firms consume IT products, which in turn deliver user behavior data that can feed Machine Learning (ML) processes. ML is “the study and computer modeling of learning processes in their multiple manifestations” (Michalski, Carbonell & Mitchell, 2013, p. 3). It “is a form of artificial intelligence that enables computers to learn without explicit programming” (‘IDC Research: Can Machines Be Creative?’, n.d., p. 7) through the usage of algorithm that continuously collect data from consumers, such as firms using IT. Those unintended contents are “Data generated by Business” processes (Kolanovic & Krishnamachari, 2017), which are the data produced in the corporate environment, as for example supply chain data or internal records. Business generated data is usually highly structured.

Another kind of data is the one “generated by Individuals” (Kolanovic & Krishnamachari, 2017). It comes from different interconnected platforms, as social media or business reviewing websites or web searches. This data is very varied and fast (Chintagunta, Hanssens, & Hauser, 2016). Once collected, the algorithms try to improve automatically the consumer’s experience, mixing and processing information about tastes, lifestyle, education, and trends among customers (Jordan & Mitchell, 2015). Furthermore, those algorithms can “learn” from all the information they collect, creating every time a new combination of input-output (‘IDC Research: Can Machines Be Creative?’, n.d.) making them a continuous and circular Machine Learning process.



**Figure 2.** Classification of Data sources (Source: Kolanovic & Krishnamachari, 2017)

Once analyzed, the information helps the firms in setting the future strategies, based on ML's knowledge and performances. By doing this, it is easier for them to create a clear overview of the previous plans, helping them to build strong and successful future scenarios (Michalski, Carbonell & Mitchell, 2013). For many developers, automatized systems based on ML work better when the companies have already an approximate idea of future trends since the system created acts as an input-output behavior analysis and then companies build the future strategy around already-known output. This kind of algorithm is the most used in the Web 2.0, as Supervised Learning, where the ML system tries to predict the following trends, or Unsupervised Learning, where the ML analyzed the current market trends.

Of course, thanks to technological improvements of the last decade, big digital providers of content have improved systems of Deep Learning analysis, that work as emulating the human intelligence (Kolanovic & Krishnamachari, 2017). Deep Learning processes go more in depth in the study of human behavior to firstly identify easy variables and then they build on them future complex scenarios. In this way, they anticipate the future desire of consumers, opening the providers to a way of producing contents (Jordan & Mitchell, 2015). They do not have to predict anymore, but they can produce trends, which are pushed through the search and sorting activity in a highly personalized platform. Researchers think that Information Technology is also a useful tool for creative production since it can be shaped following needs of the society and create an output that was not there before.

Information Technology is mainly a tool used in the media production, which is the third main market where this technology is applied (Kolanovic & Krishnamachari, 2017). In the last decades, it has become an important helper in supporting the creation process in the arts and it has created even new types of creative productions (National Research Council, 2003). An example of this dual nature of IT could be found in the crowdsourcing competition launched by Netflix in the 2006. The "Netflix Prize" ended in 2009 and it was the first attempt to connect algorithm dynamics to a creative industry (Hallinan & Striphas, 2016). The competition was an open call for improving "Cinematch", the algorithm owned by Netflix. The purpose was to develop a recommendation system able to predict greater than the 10% of Cinematch's movie ratings. The competitors were from 186 countries worldwide and the reward was one million dollars. The race was won by BellKor's Pragmatic Chaos team, who developed a greater prediction of the 10.06% ('BellKor's Pragmatic Chaos Wins \$1 Million Netflix Prize by Mere Minutes | WIRED', n.d.) The competition

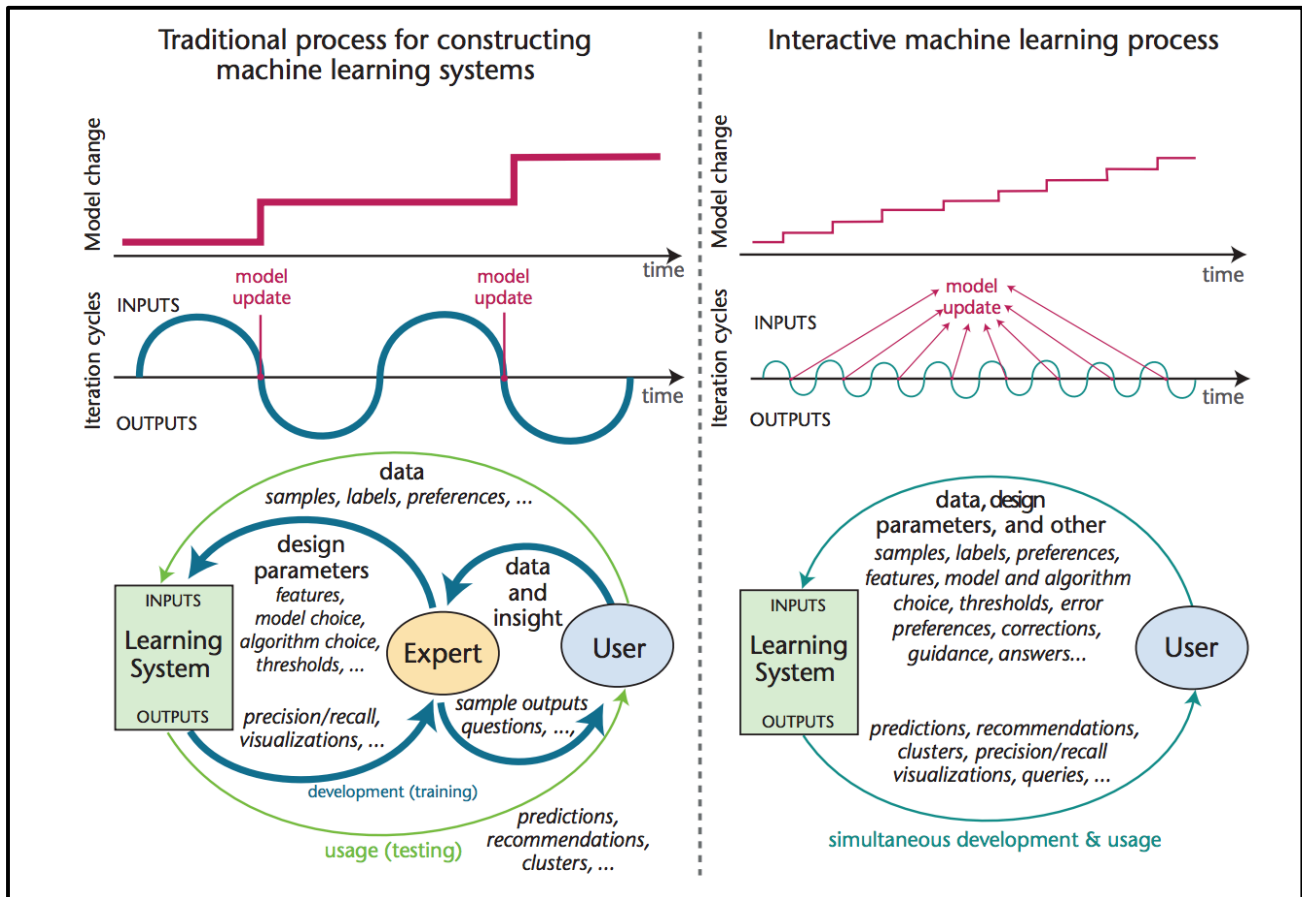
open the digital world to the algorithm culture and the algorithm to the culture (Hallinan & Striphas, 2016).

Moreover, still following the example of Netflix, the creation of video content has taken great advantages from the ML collection of data. The dataset collected from the users of the platform helped the producers in writing, producing and distributing the first big hit of Netflix as a production studio. During an interview for *The Hollywood Reporter*, Ted Sarandos, the Netflix's Chief Content Officer, said:

“... it's the overlaps that really matter. With *House of Cards*, it was identifying not just somebody who saw *The Social Network* or liked David Fincher but trying to figure out what everybody who liked *Benjamin Button*, *Seven*, *Fight Club* and *Social Network* have in common. It's that they love David Fincher's style of storytelling ... .You look at Kevin Spacey fans, and then you say, “How about people who love political thrillers?” We went back and pulled all the political thrillers people have watched and rated highly. So you've got all these populations, and right where they overlap in the middle is the low-hanging fruit. If we can get the show in front of these people, they will watch it and love it.” (quoted in ‘Netflix's Ted Sarandos Reveals His “Phase 2” for Hollywood | Hollywood Reporter’, n.d.)

*House of Cards*' example shows how algorithms offered to Netflix all the winning information for creating a definite success to launch in the market. Every decision, from the director to the actors, was driven by the data, which provided what people would be willing to watch on Netflix.

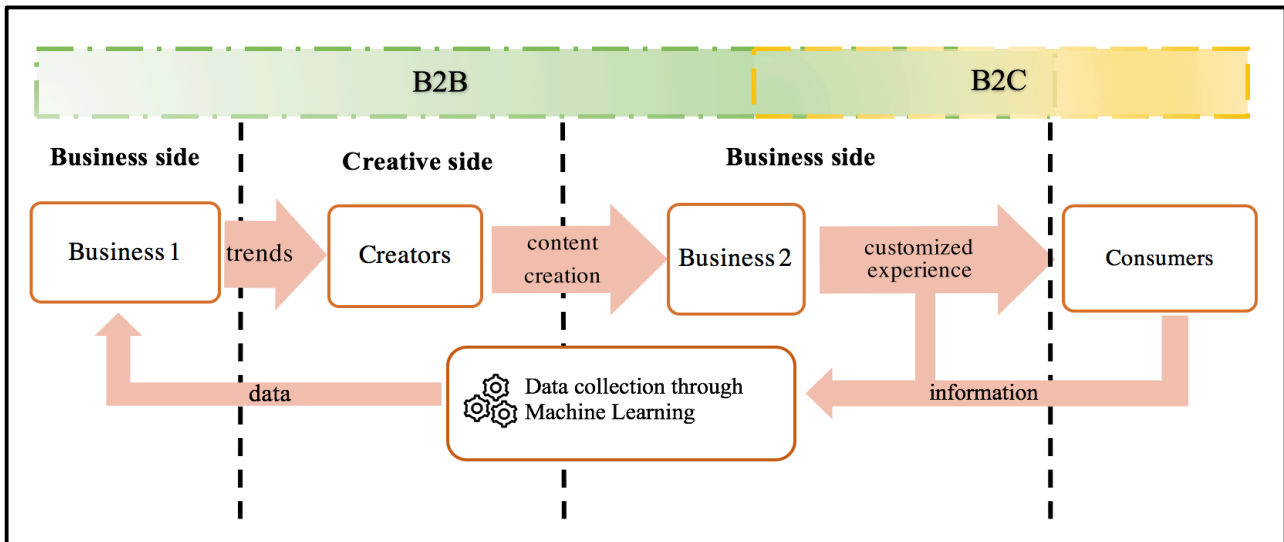
The Web makes easier to showcase products to consumers. Furthermore, it has introduced the unique feature of highly personalization of the offer. In this way, the offer it is really fragmented, because it is shaped and formulated on each individual batch of preferences. Before ML and IT, the consumer's analysis was mainly conducted through statistical approaches, which helped the firms in understanding the previous dynamics, in order to adjust them. Nowadays, through traditional automatized systems, companies use the past strategies as input for producing the new ones as output (Amershi et al., 2014). The ML systems could still need the adjustment of humans, called “experts” (Amershi et al., 2014), who interpret the filtered insights provided by the machines. In other cases, the ML's algorithm works autonomously and often it can just create an interactive synergy of data that can adjust itself (Amershi et al., 2014).



**Figure 3.** Traditional Applied and Interactive Machine Learning (Source: Amershi et al., 2014)

In the media industries, big corporations operate a business to consumer (B2C) (Mencarelli & Riviere, 2015) approach in the distribution of video content, since it permits to reduce the production costs through a vertical integration strategy (Jenner, 2016). The main reason for this approach comes from IT and ML because businesses can directly and continually draw consumers' analysis on tastes and trends, making the insights a daily source of inputs and feedbacks. This feedback come from a real-time responsiveness that the consumer has in purchasing and consuming creative products online. To incentivize the consumer to buy and consequentially provide data, the distributors of creative contents are developing a more personalized user experience, which can go in depth in collecting information and, at the same time, build engagement with the audience. Small companies and firms involved in other sectors tend to outsource the production of video to production companies, since the creative production is not their core business. Even if it is outsourced, the video content follows the dynamics of Machine Learning's suggestions of trends and tastes, shaping the creative production. The business sides of the supply chain could be connected or they could be totally outsourced, spreading the interests on each stakeholder involved in the production flow. This last case is the one that emerges more

often in the interviews, making the distribution channel related to what the interviewers call the “client” and setting the video production into the business to business (B2B) dynamics (Mencarelli & Riviere, 2015).



**Figure 4.** Supply chain of video content production (source: own)

The analysis made through data opens the businesses to an “imagineering” activity, which is the combination of artificial intelligent (AI) and human imagination (Fox, 2017). The ML becomes in this process the tool for covering all the activities that could not be done by humans: collecting information regarding tastes approximately instantaneously and in big volumes. In this way, the companies know almost everything about their consumers, with the chance of develop better products and services. For instance, a big corporation as Netflix has created all its digital fortune by applying this method of data analysis to the production of its tv-series like “Orange in the New Black” or “House of Cards” (Carr, 2013). Even if now Netflix applies a B2C approach, it represents the both business sides of the supply chain, since it passed from being just a distributor to be a producer of content by applying a backward vertical integration (Jenner, 2016). At the very beginning of the supply chain, the company takes the inputs about what to produce next from the data analysis conducted from the subscribers of its internal and private system of Internet broadcasting. Once obtained the information, the data are filtered, leading the creative process to what should be produced next. The creative product, for example a tv-series, is released on the own distribution channel and once consumed, it feeds the ML system again. Netflix represents the example of a total domineer of the market, which leads, not just in providing a service, but also in choosing the right contents for its targets using the data collection.

This example has been provided in order to make clearer to the reader how the leaders in this market work. This assumption follows the first limitation of the thesis, since it is easier to recognize the involvement of data analysis in big international providers, while becomes more complicated when it is applied to small or medium sized enterprises. In the earlier stages of this research, Netflix NL has been contacted, but as any big global player, it never went back to the researcher.

In conclusion, algorithms become the inputs and the vehicles for the fulfillment of creativity. In the media industries, creativity is the combination of scientific, business and cultural practices, which work together to produce a creative product (National Research Council, 2003). Information Technology is the result of an innovative design of the production process, since it becomes the bond that ties those activities together (National Research Council, 2003).

### **2.3. Consumers' role**

The usefulness of the message has to be found in the audience, who has a double role in the production chain of creative products in the digital era. Since Information Technology and computer science have entered in the market thanks to the Internet, the consumer has changed his part in the production flow. Web 2.0 has introduced the consumer to the technological implementation, because it allows the interaction between humans and machines. The interaction allows the manipulation and the display of data, which creates a significant exchange of information. The consumer in this virtual space can consume user-generated content and create new kind of media, which makes the user more engaged, active and participant (Allen, 2017). The Internet has enabled a new form of consumer participation (Bruns, 2013), “hive minded” mentality (Earls, 2009), audience engagement and co-option (Vesnic-Alujevic et al., 2018). Before the Internet era, the consumer was just the last player in the supply chain, who decided what to consume in a not highly supplied market.

Nowadays, consumers expect a highly personalized experience in the contemporary highly supplied market. For the consumer, it is easier to build a deep knowledge about the product is going to consume. The consumer in the digital world can play the role of perspective provider (Doan, Ramakrishnan, & Halevy, 2011) or provider of information through clicks, likes, tweets and other form of digital media interactions (Vesnic-Alujevic et al., 2018).

These last forms of exchanges are becoming more used in the video production industry, where the consumption of video content is drastically increasing (‘Edelman Digital’s 2017 Trends Report’,



2017). On one side, the data generated by individuals provides an enormous amount of quantitative interconnected data regarding trends and tastes. On the other side, it is lacking of quality in-depth information (Vesnic-Alujevic et al., 2018) making data the analysis modest in terms of qualitative analysis.

Furthermore, due to social media, consumers have become part of the production chain without even knowing it, being involved into piggyback systems (Doan, Ramakrishnan & Halevy, 2011), which are the results of clicking engagement and the commenting activity done in the digital communities (Vesnic-Alujevic et al., 2018). Doan, Ramakrishnan and Halevy (2011) call this type of consumers “slaves” since they “*help solve the problem in a divide-and-conquer fashion, to minimize the resources (for example, time, effort) of the owners*” (Doan et al., 2011, p.89). Those preferences are collected through all the information that users fulfill to have a highly personalized experience. Digital platforms offer an illusory greatly diversified offer, different for each user, that fails in quality in terms of contents, since the experience is based on the real time and permanent bond that media providers enlist with the audience through data analysis (Vesnic-Alujevic et al., 2018).

Moreover, the data collected are the results of “invisible” interconnected influences produced by the consumers, who live now in a digital “hive minded” mentality (Earls, 2009), where “[the] decisions about ‘what’s hot and what’s not’ may become less individualistic and more of a collective decision, eventually being governed by blind consensus” (Ashman et al., 2015). On one side, the collective decision reduces the effort that a single consumer makes before the purchase, since it creates a reliable and immediate network of reviews and feedbacks regarding the product. On the other side, “hive minded” mentality homologates the offer, because users will tend to consume just the products with highly positive reviews and high social hype in the community, increasing the consumption inspired by the quantity and not by the quality. Moreover, the high quantity in demand in the digital world has a connection with brand reputation as well, which is “the overall estimation in which a company is held by its constituents” (Fombrun, 1996, p. 37). The positive or negative perceptions created by the firm generates competitive advantage and engagement between the producer’s brand and the users of the community.

This is a core aspect of the relationship that a digital provider has with its users, mostly because the creative market is highly competitive. Reputation becomes e-reputation when it goes online, creating episodes of co-creation and co-managing of the product (Dutot & Castellano, 2015). Through this dynamic, the audience gains an active role in the production process, which is

legitimized by the community through buzz, rates and number of fans, followers or tweets (Vesnic-Alujevic et al., 2018). This process creates hype around the brand and users recognize the relevance of its offer, increasing their willingness to support and building a stronger relationship. This bond with the firm is based on trust and on the reliability of the market (Urde & Greyser, 2014). Once this relationship is strong, customers can easily spot the specific good in the market, through its “perceived” unique feature. Once that the product has its uniqueness in the market, credibility and moral responsibility are the tools for maintain high reputation with the product’s producer (Urde & Greyser, 2014).

The consumer is passively and actively involved in the production of the creative product: on one hand, the customers provide information regarding tastes and trends, which inform producers on consumer expectation. On the other hand, the audience consume mainly the mainstream products, like videos, films and so on. Digital platforms tend to push commercial products automatically through algorithms, promoting massive views and generating increased revenue. In this way, the producer uses the consumer twice: firstly, through automatized data analysis consumers are used as base for high hyped product. Secondly, the producer suggests and controls the consumption process via suggestions, set reviews and high click-bite contents. In this way, the provider generates easy sales, using consumers as easy buyers.

## **2.4. Diversity**

With the advent of Web 2.0, content providers have started working both in the analog and digital fields, providing a high quantity of content. Current content providers tend to “overproduce” (or in the case of the video and movie production industry “overuse”) successful ideas that worked in the past to face the uncertain feature of success (Caves, 2000). These overproduced ideas are consumed by the audience, that thanks to the globalization and the easy access to Internet, make real the possibility to open to wider and broader consumers all around the world (Benhamou & Peltier, 2007). For this reason, Benhamou & Peltier (2007) feel the need to separate diversity supplied and diversity consumed, even if they are to different aspect of the same argument, which are highly related one to the other. The diversity taken under consideration in this research is the one seen from the supply side, since it is there where the creative process takes place.

In this research, the idea of diversity is related to diversity in the arts and not as diversity of cultures (Araeen, 2012). Existing literature does not provide a clear definition of cultural diversity

(Benhamou & Peltier, 2007). Many researches refer to the UNESCO definition of cultural diversity to fulfill this gap: *“[c]ulture takes diverse forms across time and space. This diversity is embodied in the uniqueness and plurality of the identities of the groups and societies making up humankind. As a source of exchange, innovation and creativity, cultural diversity is as necessary for humankind as biodiversity is for nature. In this sense, it is the common heritage of humanity and should be recognized and affirmed for the benefit of present and future generations”* (‘Cultural Diversity | United Nations Educational, Scientific and Cultural Organization’, n.d). This explanation of diversity highlights the role of the human contribution in the creative and cultural production, since diversity’s uniqueness comes from this feature. Regarding diversity in the movie industry, Moreau and Peltier (2004) pointed out during their analysis of the film industry, that each movie is unique. This assumption comes from the idea that movies are not identical. For the purposes of this research, this definition results insufficient.

Originality and diversity could be researched in the three variables part of the way for analyzing diversity in the cultural fields: variety, disparity and balance (Moreau & Peltier, 2004). *“Variety refers to the number of categories into which a quantity can be partitioned”* (Moreau & Peltier, 2004, p. 125). In this case the authors recognize the feature of variety in the film genres, because they are looking at the market offer; in the case of the content, variety is related to the core themes and how they are developed during the storytelling. Moreau and Peltier (2004) see the balance as *“the pattern in the distribution of that quantity across the relevant categories”* (p. 125), which it is the fair allocation in the market of similar or different contents. Lastly, the disparity is the type and the grade of diversity among the offer, in other words it is difference of the specific characters that belong to the content (Moreau & Peltier, 2004). Even in this case, many movies and videos offer almost equal turning point and plot-twists, reducing the difference in the offered products.

In the creation of new contents, Information Technology process introduces an external kind of diversity, based on technological inputs and outputs, which is different from the internal diversity that comes from the human background of the members involved in the process (Wang, Fussell, & Cosley, 2011). In nowadays creative market, customers consume more and the growth in demand for spare-time goods increases the quantity of products, which are based on the information provided by mechanical data, creating a homologated offer in terms of content. A popular movie or tv series can influence the production of competitors’ products, delating diversity in the offer among different competitors.

Next, the variety in the cultural field is one of the main feature for recognizing diversity (Benhamou & Peltier, 2005). The high demand of creative products is deleting the novelty of creative goods. Creative industries are producing goods as any other industry, forgetting the importance that creativity and novelty have in the creative consumption. For instance, Farchy and Ranaivison (2011) pointed out that public television should run a highly diversified offer then private televisions, which provide homogeneous, repetitive programming (Farchy, Ranaivison, 2011).

Digital providers work in a global environment, which means that the diversity of their offer has to be present as consequences of their involvement in different cultures. At the same time and through the same good, the content communicates with different cultural backgrounds all around the world. Even in this case, all the products are shaped in a way that could be recognized by everyone, falling in stereotypes and with already-seen features. Lastly, digital platforms promise a high personalized and interactive experience, giving the impression to the consumer to control the consumption experience. Instead, the supply is offering more homologated products (that are the result of the machine learning process), forcing the consumption into safe-revenues' zone for the producers. By doing this, the human creative process is lost, making all of us watch always the same things. Consequentially, diversity in the cultural fields is recognized with the definition provided by Benhamou and Peltier: *“cultural diversity in a country means the quantitative and qualitative diversity of the production and consumption of cultural goods and services. It represents the possibilities open to consumers for gaining access to a large supply of a cultural product [...] including segments [...] of relatively well-balanced sizes and as diversified as possible. It also represents the effective consumption of these numerous and diversified cultural product.”* (Benhamou & Peltier, 2005, p. 90). Lastly, it should be noticed, that the Web 2.0 has expanded the area of consumption thanks to the absence of national boundaries: the freedom of browsing and the easy access to Internet have broadened the consumer base from the local to the global market.

## Chapter 3. Methodology

Firstly, in the following section, there will be explained the aim of the research and the method used for conducting the study and the reason why this approach was used. Secondly, the process of sampling will be described with the consequential limitations that took place in this phase of the research. Last part of the methodology is related to the data collection process, with a focus of the supply chain of the video content production, its stakeholders and the interviewees' role in the process.

### 3.1. Research goals and qualitative approach

The purpose of the research is to investigate if the data collected through automatized systems of consumer's analysis are used in the creative process in the production of digital content. All the interviews conducted and the consequential analysis are trying to answer to the research question, which is: *How are Machine Learning systems involved in the creative process in the digital video content production?*

Consequently, a qualitative approach (Bryman, 2016) was conducted during the research, since the interest of the study lies "in the interviewee's point of view" (Bryman, 2016, p. 470), in order to construct an overview of the creative content supply chain and its dynamics.

Regarding this topic, creatives as video producers and graphic designers has been interviewed, in the geographical areas of the Netherlands and the United Kingdom. Moreover, also researchers and managers are part of the sample, as experts in managing data and investigating consumer's tastes. The individual interviews have enabled to build an overview of all the all supply chain involved in the content production, investigating more in depth the relationship between the "human" aspect of creativity and the automatized systems. The goal of a qualitative approach is to understand how creativity is perceived by the creators of content in the supply chain. Concerning the interviews with the managers and researchers, the purpose is to ask to experts how the data analysis works and have an idea of the business-driven usage of those data. This methodology has a deductive nature (Bryman, 2016), since through the study of the interviews with experts and stakeholders, it was possible find more regarding the forces involved in the creative process as presented by theory.

### 3.2. Sampling

The sample of people interviewed was driven by the necessity to understand the dynamics of the market where the creative process of content takes place. For this reason, the sample was chosen by context (Bryman, 2016) and it was based on interviews done to creatives, managers and researchers.

During the sample phase, the first limitation of the thesis took place: due to the nature of the analysis, which is based on digital creativity and Information Technology, most of the contacted companies denied to participate in the research, due to the lack of time or even for the feeling of not having knowledge about it. Of the 30 creative and production companies contacted in the Dutch area, just two contacts showed their willingness to participate in the research. After a first via email invitation, the remaining part of the sample declined participation only when they were contacted via phone. Non-participation was caused by the novelty of topic, which led them to feel not be expert in this fields. In other cases, companies declined after showing an initial interest. The total number of people who denied to participate is equal to the 93% of the Dutch sample. The few who gave a positive response were enthusiastic to contribute to the study. For this reason, the first limitation of the research concerns the restricted number of persons interviewed, because it can reduce the application of the findings to a broader environment, decreasing the external variability of the thesis (LeCompte & Goetz, 1982).

The people interviewed came from a snowball sampling (Bryman, 2016), activated through the first interview conducted, who shared with the researcher contacts in the worlds of the advertisement, digital consultancy and video production. Thanks to this first contact, a snowball effect (Bryman, 2016) took place and the sample of this research has been built on that. The interviewees are all related in the creative production originated by data analysis: for example, the video producer and the film director work with big companies that develop ideas through data analysis. The decision of interviewing people from the Netherlands and from the United Kingdom was mainly due to a snowball effect (Bryman, 2016).

The English part of the sample is composed mostly by the creative team of a high qualified multinational company specialized in brand consultancy, which analyzed data and creates ideas for big companies. The Dutch part is composed by creators involved in the production of contents, with a focus on the video production. On one side, this geographical distance in the sample could represent another limitation for the external reliability (Bryman, 2016) of the research, since the sample could not be easily replicated. On the other side, the purpose of interviewing different

people is related to the intention of drawing a clear map of how the production chain of a content works, from the collection of data to the concrete production of the content itself, rather than the analysis of domestic or international market's behaviors. In addition, the distribution channels of these kind of information and contents take place in the virtual space of the Internet, where the globalization and the democratic consumption of creative goods (Allen, 2017) do not follow the national's market dynamics. From this point of view, the reliability of the people questioned comes from the job position that the interviewee has in supply chain, which could be applied to any other same position in other countries. Lastly, the United Kingdom and the Netherlands are geographically and socially two similar countries and they are used in trading creative and cultural knowledge between each other; this makes possible an association of links in terms of supply and creative production.

In the following sections, each part of the supply chain of a creative digital content will be explained, introducing also the role that each interviewee has in the production flow, to contextualize them in the industry. By doing this, the level of expertise of each person interviewed would be clearer and, at the same time, it would legitimize the researcher's decision to base the analysis on each working position.

### **3.3. Data collection**

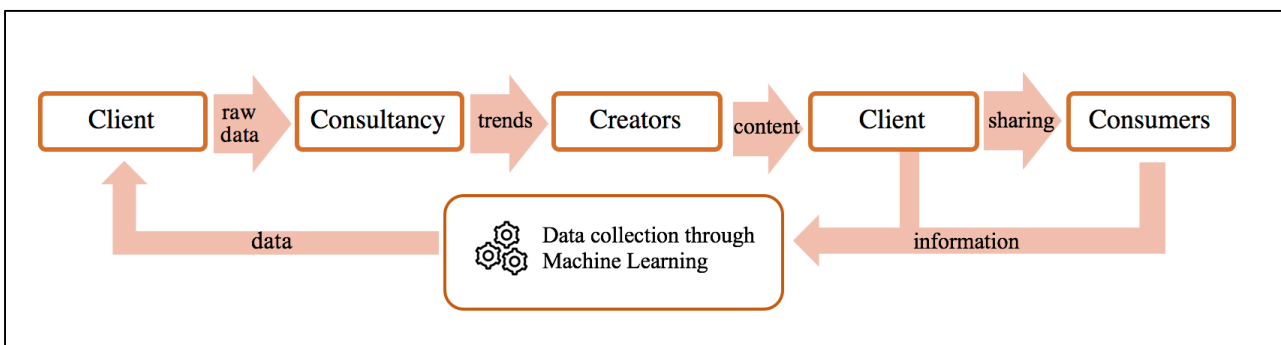
For this study, the questions focus on the nature of creativity, on the process of developing an idea and on the subsequent creation of the content. Due to the variety and the nature of the sample, the approach decided for the research is flexible (Bryman, 2016). This decision comes from the need of cover different aspects of the creative content's market and from the different job role covered by the interviewees.

The in-depth interviews (Bryman, 2016) discuss the idea of risks in the personal and corporate environments, the differences between personal intuition and inputs from data and the current characteristics of the market. The first interview was based on an interview guide (Bryman, 2016) and it helped improving the questions for the following interviews. Due to the qualitative nature of the interviews, the research follows a semi-structured approach (Bryman, 2016): the same kind of questions were asked to the all interviewees, expect to the researcher since her area of expertise is not related to the creativity, but only on the data collection. In this last case, the questions have the purpose of showing and explaining how the data gathering works, how this information is filtered and which kind of trends and inputs are most collected.

The interviewees are experts in the industry of video production and data collection. They come from independent production companies in the Netherlands and from a brand consultancy agency based in London, United Kingdom. From this last company, the members of the creative team and researches were interviewed, shifting the analysis close to a case study one. The decision of approaching to the sample in this way comes from the snowball effect (Bryman, 2016) experienced in the very beginning. The effect shaped the method, since now it is still a qualitative approach through in-depth interviews, but with some characteristics of a case study, mostly due to the presence of the consultancy firm in the sample.

### 3.3.1. Stakeholders

In this research, the total number of interviews conducted is seven, with an average lasting of 36 minutes for each interview. The interviews took place via phone or in person and they helped in providing an insight about the content creation process. The aim was to interview people related to the business and the creative side of the market. Consequently, on one hand, the business perspective was covered by the interviews with one senior researcher and the global design manager of a multinational corporation leader in the communication fields. On the other hand, the creative side of the supply chain is internal and external to the corporation’s fields. From the internal perspective, one graphic designer and one video senior editor were interviewed. Instead, outside the corporative area, one video producer, one video director and one head of concepts provided their idea regarding the topic. These five last interviews helped in contextualizing and finding the link between the corporate side and the creative production of a content.



**Figure 4** Interviewees’ role in the supply chain (source: own)



Regarding the structure and the topic, the interviews follow the semi-structured procedure, mainly due to the different work positions covered by the participant in the supply chain. The only interview with an unstructured approach (Bryman, 2016) is the one with the senior researcher, since the interviewee is not involved in the creative process, but only in the data gathering aspect. The persons interviewed are involved in different aspects of the production and they represent two different stakeholders of the creative market of content creation:

- **Brand Consultancy Multinational Agency**

The first group of interviewees is composed by four professionals in the sector of creative and brand consultancy. All the four experts work for a multinational brand consultancy company powered by data and insights, which provides the legitimation of being considered expert for the research's purposes. Moreover, the company works in the European market through its headquarter in London, but it operates worldwide and it is part of the second most important advertisement holding company in the world. The company use secondary tools of research as trends analysis and social listening. Instead, the company outsourced the collection of primary or raw data. The clients of the company, which are involved in different markets, ask to the company to provide them insights and consultancy regarding social behaviours.

For their decisions, they are going to be referred through their profession in the following parts of the research, since they asked to remain anonymous during the research writing.

The experts are:

- a. *Global Design Manager* (Interviewee 1, May 9, 2018): the interviewee's role in the company regards the management of every creative projects from the design to the strategy. She takes care of the supply chain of the creative content, which could be addressed internally or externally the consultancy agency.
- b. *Video Editor Designer* (Interviewee 2, May 9, 2018): the interlocutor's main tasks are the creative edits in the post-production processes in the video making. The decision of the combination and selection of the shoots pass through a creative operation. Additionally, the Video Designer has a working background in the research team of the same company.

- c. *Junior Graphic Designer* (Interviewee 3, May 9, 2018): even if not related to the video production itself, designers are involved in the first part of the concept creation. In these early stages of the production, the client and the creative team have briefings together, where conceptual sketches are realized by the graphic designer.
- d. *Senior Researcher* (Interviewee 4, May 11, 2018): as Senior Research, the interviewee runs ongoing researches and projects. She works with data and analyses, filtering the raw data for each client's needs. Furthermore, she is involved in the consultancy and data researches from creative companies as Gaming Firms and Red Bull Media House. For her involvement in the data and ML systems, she is relevant for the research's purpose.

- **Production and creative companies (Creators)**

The production companies interviewed are involved in the creative process of the supply chain. They operate as makers of content for the client, who does not have access to the creative tools. Production and creative companies' role is to produce contents from the client; once realized them, the client is the distributor of the projects. The main distribution channels where those companies operate are digital, as YouTube, Vimeo or Facebook but also analogic as television. The experts are mainly related to the video production industry, since it is the creative market where most of the Information Technology analysis find application. In addition, the research topic regards video production since videos are the most consumed contents in the digital world. The experts among the production companies are:

- a. *Video Producer* (Interviewee 5, May 3, 2018): the interviewee is involved in the production of film and content. Her role is to deal with the client, write production plans and coordinate all the phases of video production as scripts, writing, directing, writing and budget. It is on her the decision who should develop the script and she decides when the production can start. Lastly, she is involved in the pre, post and actual production. Her company worked with big corporations and she manage just the production and shooting aspect of video making.
- b. *Video Director* (Interviewee 6, May 11, 2018): in the research, he is considered an expert since the creative making of the video is assigned to him. The original

and initial ideas for the script come from him, who is involved in the creative production since the earlier stages. Every creative decision is entrusted on him. His company works both as creative and production company, mixing the business and creative skills of video production together.

- c. *Head of Concept* (Interviewee 7, June 1, 2018): same as the video director, the interviewed Head of Concepts works in a creative and production company. His role is to come up with ideas for the video. He is the one who has to develop the concept of the content. He works in order to create the best content for the client's needs. As Head of Concepts, he is aware of the market's trends and of the data provided by the client.

### 3.4. Data analysis

An inductive coding method (Appendix A) was used after the transcription of the interviews, which was completed using a free online software (oTranscribe). The coding approach was a useful tool for “classifying or categorizing individual pieces of data from the overall mass of data. The aim of coding is to identify patterns among the data that point to a theoretical understanding of the topic” (Strauss and Corbin, 1998, p. 102). The data driven method of the coding came from the lack of pre-codes, which were devised progressively during the interviews recording. Once the interviews were printed out, the coding was mainly carried out manually through a color scale system, in order to isolate topic categories and affine theories from the ones previously discussed. The code helped in formulating and making clearer the results of the research and it is based on two main categories:

- Business side of the Market;
- Creative side of the Market.

Then, for each of the two categories, three subcategories have been extracted consequentially to the theoretical framework of the research:

- Machine Learning;
- Effect's on Consumers;
- Creativity and Diversity.

## Chapter 4. Findings and Analysis

First consideration that as to be done regards the nature of the interviews. The interviews helped in drawing a clear overview of the supply chain of the content and video production market. From the interviews, it emerged that the market of video content production has a dual aspect. The role of each interviewee helped in recognizing these two sides: the business and the creative parts of the supply chain.

### 4.1. Business side of the market

Firstly, the business side will be explained. It is mostly money-driven, market oriented and not risk-taken. In the following section, according with the code procedure mentioned above, the results regarding the business side of this industry showed and contextualized into the market dynamics. The analysis of the business side starts with the result that considers the relationship between clients and production companies. Production companies are involved in the process thanks to the commissions provided by the clients, who are the firms involved in other markets. All the interviewees refer to these organizations as the “clients”. In addition, the client could also outsource the collection of data and the development of creative concepts to brand and advertising agencies, whose commissions are the development and the consequentially outsourcing of the video creation to production companies.

“(Corporate businesses) have this agency that creates for them an advertisement: it takes care about the posters, the digital or radio commercials, the television commercials. And this is a company, which works as PR, so they think about the strategy and how to put that out. So, they start to think about what they want [...] and we come in and we actually execute the video, because we have a director, the camera, the lights.” (Interviewee 5, video producer)

#### 4.1.1. Machine Learning in the Business side of the Market

Big clients are the ones who can afford the internal collection of trends and data from ML systems. In this way, the creative production process relates to this groups of insights and it is shaped on them. Additionally, the collection of data and insides is a service that can be outsourced as well. In fact, other providers of information and insights are brand or consultancy agencies, who are experts in the production of data sets and consultancy based on them. Most of the data collected have a quantitative or qualitative nature, which can be both

conducted digitally through Information Technology systems. Demographic information is a small part of the tracking, since, in these researches, the main aim is “to see what people like and see” (Interviewee 4, senior researcher). For this reason, the analyses scale the online contents as photos, tags and videos. The intention is to investigate more the behavioral data, because: “behavioral data, [...] is more likely an observation of how people live their life or live their tastes in life, making them in data and start from that.” (Interviewee 4, senior researcher).

The insights become the starting point for knowing in depth the consumers and their habits. When it is outsourced, the data is filtered into categories and only a certain type of categories are provided to the client to build his future creative strategy. The reason behind this decision is that databases are huge providers of information, so filtering becomes the best strategy to use this tool and not get lost. Once that the data is closed off into micro categories, clients or advertising agencies start to work on the concept, using as strategy base this information.

“(Advertising companies) use automatics, creating a storyboard that actually moves and they test this before they start a project. They test if the video performs good as a commercial and then when they have a green light from marketing research, they proceed with the actual movie.” (Interviewee 5, video producer)

Data provides a risk-free path to follow for the clients and they represent technological innovation in the process production (Fagerberg, 2004). ML drives the creative strategies, because it helps in understanding the consumers’ needs and feelings. All this information can help in the designing how the video content should be like. However, the insights have to be tested before the design process. Almost all the companies test the creative content before, during and after the production of the creative content itself. Most of the interviewees agreed, the reason behind this decision it is that data is not 100% sure and they can drive in the wrong strategic tactic, when wrongly decoded. The insecurity of the data has as main causes the validity of the data collection, the wrong filter procedure or target objective. This makes the data not sure and totally reliable. If it is not tested before, there will be the risk for the clients to have losses in terms of revenues, time and market research costs (Doan et al., 2011), as suggested by the Interviewee 1. Beyond this, according to the National Research Council (2013), data is a useful guide line to follow during the creation process, because it reframes and redirects the human effort. Additionally, the interviews highlight the fact that Machine Learning creates inputs that can be control. Due to this, data is more and more used and applied into the

business dynamics. Besides the fact that it can be controlled, it is still not a reliable input. According with the Interviewee 4, alternative leading inputs are the human experience and emotions; if experience suggests something opposite to the data, it should be followed. Experience is the wake-up call to listen to make the data insights reliable, when they suggest something outside the ordinary trends. On the contrary, emotions should not influence the strategic decisions, since they cannot be controlled. In this last case, emotions can be only follow to align the storyline of the content with the consumers' way of living, in order to create emotional impact.

#### **4.1.2. Effects on Consumers in the Business Side of the Market**

Machine Learning processes have changed the way of consuming video contest. Clients distribute contents that could get easily viral. Almost all the interviewees agree with the argument that a successful content is the one that creates awareness and digital impact among the consumers. Even if the impact can arise brand awareness, it is also a force that can be measured only in terms of quantity, leaving the quality behind.

“I really do not like the content market, it is more about the quantitative and not the qualitative.” (Interviewee 5, video producer)

“A (successful) project has a positive impact or achieve its goal. If you set goals, if you know exactly where you wanna go, you can measure through that if a project was a success.” (Interviewee 1, global design director)

“It is obviously all about the impact and then what is the key target of the film” (Interviewee 7, head of concept)

As already mentioned, the Machine Learning offers a great overview of consumers' tastes and ways of living through digital channels and interactions (Doan, Ramakrishnan & Halevy, 2011; Vesnic-Alujevic et al., 2018). It provides performance results in terms of quantitative data, which can be interpreted and transformed in behavioral information. The Interviewee 2, who works as a senior researcher in the quantitative team of a multinational consultancy agency, has recognized some changes in the last year in the consumers' decisional behavior.

Even if the customer's categories are very well defined and different between each other's, the behavior consumption is very fluid and it does not differ from one category to another one.

Instead, the performance's fluidity is caused by the viral thinking spread among digital platforms, which may lead to episodes of hive-minded mentality (Earls, 2009) or co-option (Vesnic-Alujevic et al., 2018). This result accords with the blind consensus theorized by Ashman, Solomon and Wolny (2015). The fluidity in the content consumption represents for the Interviewee 2 an "issue of attention", which has as result an urgency in consuming videos. This is the reason behind the quicker increment in the videos consumption ('Edelman Digital's 2017 Trends Report', 2017). Consumers are voraciously consuming, with the consequence of an increase in the demand for videos. Moreover, due to this viral thinking, consumers tend to develop a royalty towards the brand, which in some case can become brand attachment, even before the consumption itself. This are the results of an audience engagement behaviors (Vesnic-Alujevic et al., 2018) that comes from the viral impact of the video online. Lastly, the consumers' urgency for consumption pushes clients in producing more homologated and low quality content, in order to show continuously their presence in the market. For instance, YouTube or Vimeo pages of brands are full of contents, but they can create engagement only when two or more videos have big impact on the audience, increasing the reputation (Fombrun, 1996) e-reputation (Dutot & Castellano, 2015) and the trust in the brand's video provider (Urde & Greyser, 2014).

"(The consumption behavior's data) most of the time is very fluid, even often they are guided by specific need they have but, content leads them to another one. But this is also, an issue of attention so, if someone get bored quite quickly, we move quickly, so definitely a trend for or a need for urgency [...] there is more openness in terms of finding before instead of getting closer after, as it happens instead for other entertainment kind of things."

(Interviewee 4, senior researcher)

"I think that we come also from this mentality that you should be there every day, you should constantly say something to your audience before otherwise they are might think you are gone..." (Interviewee 7, head of concept)

#### **4.1.3. Creativity and Diversity in the Business side of the Market**

“The ugly thing about this industry is that it is very money driven” (Interviewee 5, video producer)

From the interviews, money and trust are the two energies that power the connection between the client and the creative agencies. Even if the client has trust in the production company, the industry has a money driven attitude, that allows the client to blow the commission up. Consequentially, the money driven nature gives more bargaining power to the client, since he can decline or change totally the project, even if it is the result of the outsourced creative work of someone else. All the interviewees often pointed out this topic during the interviews, which represents an issue for some creatives involved in the production process. The revenues are seen as the main force that pushes the market and, for the interviewees, it is also true that this condition is an inevitable feature of the market.

“There are for sure too many people in the market, but they are not good in covering their position. You can see that they are good in selling but they want to direct for their financial ego... you cannot just go and do everything... you need to be specialized in what you do” (Interviewee 6, video director)

“I think, it’s wrong think that doing good should be something completely else than earning money... you can only do good, if you have a healthy company and for a healthy company you have to earn money [...] Healthy companies are the companies that people wants actually to pay more, because they have a great vision” (Interviewee 7, head of concepts)

Being money driven is not only the main characteristic of the market, but it is also the condition for companies for developing and having impact in a high crowded sector. Regarding this topic, in the Netherlands, the market of creative agencies is one of the most crowded in the world. The Dutch public administration has as goal to become the first creative economy by the 2020 (‘Holland’s creative sector is rapidly outpacing traditional markets as the new global hotspot for the advertising industry.’, 2017). All those creative agencies are the suppliers of creative contents for national businesses, multinational companies and big global players.

It must be also pointed out that the money driven mentality is seen as a limitation of the market proposal, since it makes fall the market into homologation dynamics (Farchy & Ranaivision, 2011) of the offer, according with the fluid and quick consumption trends



mentioned above and for facing the uncertainty of this industry (Caves, 2000). The homologation tendency in the high crowded market has two opposite results for the interviewees.

From one point of view, it reduces the variety of the offer, since clients are demanding always for more and homologated videos. From the other point of view, the homologation of the market becomes a sprint for investing in building a competitive advantage, which in the interviews is related to the creative specialization. The individual style of the creators helps them in differentiate themselves in an oversupplied market.

Interviewees perceive the uniqueness of the creative specialization as a competitive advantage, which makes production companies more desirable from clients. As emerged from the interviews, in this market, the commissions are based on answers to open calls made by the client companies. The creative competitive advantage gives to the production companies the chance to be directly picked by the clients, without race during the open-call session.

“I think we always make quite unique content in the sense of the word, because... we do not have many clients, but the clients we work for they come to us, they see us as a creative agency as well” (Interviewee 6, video director)

Lastly, the Interviewee 1, who is a video producer, agrees with the argument that creativity could not be applied only to the content creation context. Due the nature of her role, she recognizes herself as a creative as well. In her case, creativity is related to the ability to creatively manage the money intended for the video production. Since everything is very uncertain in the video industry and budget are fixed before the beginning of the production, creativity can be observed in the way of dealing and handling with the budget.

“Of course also production could be creative, for example, you have a really small budget but you want to do a really cool movie and if I am very creative I can do this and that with that few money. [...] so I think there are more sides of the same story.” (Interviewee 1, video producer)

## 4.2. Creative Side of the Market

In the following section, the creative side of the market will be explained, since it is the second face of the video production industry. The results will consider the usage of data as an initial tool for inspiration in the production process, the social impact of the video content as main creative purpose, the creative process itself, the link between the client and the production company during the video creation and the uniqueness of the creative work of each creator.

### 4.2.1. Machine Learning in the Creative Side of the Market

“This information (collected through ML) helps when we have to discuss with the client about the story, because it helps with shaping it, because they can actually help me to understand what they (clients) are really want to say” (Interviewee 2, senior video editor)

As mentioned in the previous section, the insights provided by the data represents the innovative guide lines to start the creative production (Anderson, 2014). The client is the owner and provider of the information regarding consumers. He shows the filtered data to the creators, who can start briefing the idea. All the interviewees recognize in the initial briefing with the client a fundamental part of the creative process, because they interpret the client’s needs. The data became the ground base for developing an idea, the path to follow through the all process to check if the story is coherent with the consumer’s needs, brand’s style and common trends. In this way, IT becomes the useful tool that reduces time for developing concepts, since it provides insights that can power the inspirational process.

Moreover, the researchers are the closest link to the data and consequentially to the consumer’s information. For this reason, they become a useful initial focus group where to test the video concept, since they know every aspect of the consumer’s target. Besides that, researchers are too much narrowed into data analysis and for them is hard to go outside the automatics dynamics. In this case, creators help clients and researchers in understanding which are the most interesting insights in terms of creative production to craft and give them a shape.

“I can fundamentally prove this, because I can understand what they are talking about and change what the output is going to be.” (Interviewee 2, senior video editor)

At the beginning of the process, data helps creators in sketching a creative path to follow. In return, creators help clients and researchers in contextualize data in the creative fields, providing them, firstly the video concept and then the actual video. After that the video is released, clients receive new data, which comes from the consumption of the video. Through this circle, the companies are always aware of what is happening in the market. They can learn from there, since insights help in knowing what is wrong in a content once that is released.

It has to be added, that clients just rarely provide the raw results of the video releasing to the production companies. The information about the previous released contents arrive to the production company only during the next commission. In this way, the raw data about the fresh released video are not available to the creators of content, who have access only to the already-filtered insights for the next project, leaving behind the previous ones. From some creators, this attitude of the client is a limit in building more knowledge about current market's trends, for some others it is not a fundamental issue since the final goal is producing.

“We would be very interested (receiving the data after the release) but the thing is that we cannot change anything about it... [...] once that the video is in the hand of the client, it is out there” (Interviewee 7, head of concept)

“We do not get the results, we receive some information, like for example we did this big project for Redbull [...] for this one we received the data. We did also a 35mm clip of film but hardly any views and it was really weird because the reaction from the people who saw it was really positive but it did not get up there so we don't know what happened there...” (Interviewee 6, video director)

Last argument related to Machine Learning in the creative side of the market is the difference between human creative inputs and artificial intelligent (Fox, 2017). Information Technology's inputs embody an innovative support in the creative production (Fagerberg, 2004). However, the interviewed creators of contents argue against the creative role of data in the process, because, they agree with the assumption that IT inputs are too narrowed into the business dynamics. Even if algorithms can “learn” from their previous performances (Amershi et al. 2014), it is still missing of human imagination (Araeen, 2012). This assumption goes against the Imagineering activity theorized by Fox (2017). The application of ML processes in the video production market is not a combination of machine and human activity, but just a

supporting activity that the data provides to humans. Machine Learning systems can emulate the rational human way of solving problems (Kolanovic & Krishnamachari, 2017), but not the creative way of facing them.

During the interviews to the creators was asked: *Which is the most creative part of your job?* The answers pointed out that creativity is linked with the fact of being human. This is also one of the biggest issue of researchers, because they cannot exit from the loop generated by working so close with automatics and data. Furthermore, it can appear outside and inside the work place. Creativeness arises whenever is less expected, in a condition of free creative practice. Video creators feel trapped into the business dynamics of deadlines, commissions and internal briefings. Most of the time, the most creative part of the job takes place when they stop to think about the project. It is an instinctive process that comes naturally, because it is related to the human capacity of imagining.

“I guess the most creative part is when you sit down, [...] you are just having ideas and that is the creative process. It is when you stop to think about the projects, [...] it happens when I am daydreaming [...] then I think about the project again and I think «Oh that call would definitely works for that» and I have a visual shape in my mind” (Interviewee 1, global design director)

“Creativity is the virtue of human beings!” (Interviewee 7, head of concept)

#### **4.2.2. Effects on Consumers in the Creative side of the Market**

As it happens in the Business side of the market, also the main creative purpose is raising awareness and impact among consumers. Impact has a double nature because, it is the key goal for the business, while, in the creative fields, it is the tool for spreading a message and social development. Even if the video contents are intended for a for-profit market, “the purpose of the video is still to tell a story” (Interviewee 2, senior video editor) to the consumer. This result totally matches with the theory offered by Amabile (2004), where the social message and reputation are the feature of usefulness in the creative markets.

Creators of contents perceive this as main aim of their creative work, then there is the possibility of making revenues through the video production. All the creative interviewees agree that the purpose of a content is to share a message that could have a social impact, changing the audience’s way of living. The online video production is increasing and consumers

are becoming faster in browsing and watching videos. The only way to create impact among consumers is creating always more engaging videos with better stories.

“Often clients say «We want to create awareness»... No, you do not want to create awareness but what is the goal of the awareness... What do you want to people to do? Because this is the highest goal. Because you do not want to create awareness but you want that people do something.... So what do you want to do?” (Interviewee 7, head of concept)

The social message and the chance to get emotionally involved are the main reasons behind the personal motivation of creative that pushes creatives. When asked, all of them replied that the profit aspect is a side purpose from working in this industry, while the principal goal is spread a message that could make people think and let them change their behaviors. This is also the main motive why creatives feel the need to refuse projects that look merely marketing attractions or if they perceive those commission to not fit with their style. The only tactic for maintaining this personal ambition high and still producing high quality contents is to develop a personal style of producing. By doing this, the creators do not sacrifice their inner motivation but they could still fit into the business mentality.

“I really want to do HQ video and really good storytelling. And this one is a personal truth, it is really something... If you watch a video could be cool or not and someone can think «Oh I really identify with this person»” (Interviewee 6, video director)

#### **4.2.3. Creativity and Diversity in the Creative side of the Market**

“Many client wants cheesy commercials... because it is very money driven. For this reason, we like more independent projects because we have more freedom and we do what we want as filmmakers” (Interviewee 5, video producer)

Most of the experts do not feel creatively free when they are working with a client. The main reason why clients outsource the creative production is due to their lack of creativeness. Creators of content are there to produce videos, movies and clips because they can supply creativity as much as technical equipment, experience and knowledge. Production companies who provide also consultancy as PR or creative agency earn more, since they can build a strong competitive advantage based on their broad creative services. When this competitive

advantage is strong, they can produce more contents and build a bond of trust (Urde & Greyser, 2014) between them and the clients.

The main reason why they feel not free is related to the money driven nature of the market, which makes the clients demanding for standard and “safe” contents. Most of the time, clients do not know how to deal with the creative production itself, because they are too related to the data or to previous winning strategies. It could also happen that they are not aware about the new communication trends, techniques and strategies. For this reason, clients tend to ask for videos like successful videos provided from other companies on Vimeo and YouTube. This attitude matches with the theory that the overproduction (Caves, 2000) of videos is the result of a strategy for facing the uncertainty of the market. Here, the clients do not feel to take creative and economic risks in terms of content novelty. For this reason, they follow the past strategies performed by competitors in the market (Fagerberg, 2004) or past successful innovative contents, that have become prototypes to follow (Casteñer, 2016). In some cases, the creators arrive also when the creative strategy is already set and it has only to be carried out. When it happens, it becomes hard for the designers express their creativity or inspiration. In other cases, clients provide to the production company only the data without a clear idea of which could be the later output. Here, creatives have to interpret client’s needs following their personal intuition, in order to develop a clear and shaper concept on a vaguer set of information. In all these cases, the client follows the production process and have total decisional power on the strategy to follow, downgrading the role of the creative to just an executor (Anderson, 2014).

“Sometimes it is difficult understand what they (clients) mean and make them realize that some of the things that they feel are normal or an easy content are complicated for people [...] also because we do not see any of the total research so it is tough to create something in that way.” (Interviewee 3, graphic designer)

“I do not think there is so much room for creativity, mostly because we receive the script one it is already done and we create an interpretation of that script” (Interviewee 5, video producer)

“I write an interpretation about how the briefing should be and based on the input they gave me in the meeting” (Interviewee 7, head of concept)

Another important result emerged from the interviews is the relationship bond of trust (Urge & Greyser, 2014) between the production company and the client. According with the literature of Wang, Fusell and Cosley (2011), each production company has its own style, which is based on the personal creative background of the creators who work there. When the client likes the work and the style of a specific creator, they establish a long-lasting partnership in terms of production commissions. When it happens, the creators are free to produce contents without following the filtered insights or directives from previous briefings. Of course, the content production follows some initial instructions in terms of general goals and messages, but the creators are allowed to develop concepts without the client supervision. By approaching in this way, the creative production is not limited anymore in the business boundaries, but it can stretch according with the producers' ideas.

In this environment of trust, creators are free to challenge themselves with new topics, concepts and techniques. The result of this creative openness of the client is the increase of the distinctiveness of each production company and its consequentially competitive advantage. Moreover, when the bond of trust is strong, creators can push clients in being more risk taken and creative in terms of content experimentation. This experimental approach is based on the trust and on the experience that the creator share with the clients, creating new innovative video contents.

“Brunell was really cool because [...] we had complete freedom. So, every time we released a video, they watched it as well for the first time and they say «Wow!»” (Interviewee 6, video director)

“I think it is our responsibility to push them (clients) forwards and to gain trust and see how you can create impact in new ways.” (Interviewee 7, head of concept)

Even if there are clients who give to production company the space for being creative as much as they want, personal and side projects remain the most creative works for creators. Each interview (except the one with the senior researcher) ended with a question regarding personal project. All the interviewees answered that there are always personal work-in-progress projects. The primary reason lies on the personal needs to express the individual creativeness, which is limited usually in the business environment of the video production. The personal projects are used as test sites to try new ideas, techniques and trials. In this free

space, creatives have the full control over the creative process. An interesting result of the interviews is that those test-sites can be found also in the business sphere when the client does not have access to a budget. It is usually the case of young musicians or artists who need directors or video producer for video clips or video productions. In an event like this one, the creatives work for free to express with more flexibility their creativity and artistic prospective.



## Chapter 5. Conclusions

“...normally you are more connected to the emotive side, something looks good, even if it does not work you just feel it. This is the core part of a creative, but more you go inside the business side, sells are more important and you need to find a balance between creative impact through design while you are aligned it with the business objectives.” (Interviewee 1, global design director)

The presented research was designed to determine how works the link between Machine Learning insights and creative production in the fields of the video production industry. The three main topics related with different aspect of the video content production helped in investigating in depth this bond: creativity and innovation, consumer’s role in the market and diversity.

The study uses the expedient of the supply chain explanation to identify the existence of an influence. Consequentially, an analysis of the role of different stakeholders involved in the market was conducted, with a focus on the relationship between corporate businesses, called in the study the client and video production companies. These two gatekeepers base their connection on the insights offered by the Machine Learning systems and the creative human act of imagination. The aim of this association is the outsource of the production of the video, using as creative inputs the data collected through Information Technology systems. First main result of the research shows how data helps in drawing a safe content guideline to follow during the creative production, in order to face the uncertainty of this industry. For saving financial and managerial resources, the data produces a homologation of the offer in a highly crowded and supplied market. These environmental characteristics narrow down the creativity into the business dynamics, limiting the creative process only into commission works.

According with the findings of the study, the second main result regards the usage of data just as a tool for supporting the creative production. The business dynamics’ usage of data try to compare the inputs generated through Machine Learning analysis with the ones create through the human activity of imagining. The interviewed creators of content agree with the assumption that data has as limit the impossibility to emulate the creative process itself. Data only provides inputs that could lead to an assurance in terms of business goal. Creativity involves natural behaviors that are impossible to emulate for a machine and has a goal not the production of financial profits but societal developments. This last point represents the third big result of the research: the money driven attitude of the market is a driving force for the client, but not for the

video creators, who still recognize in the social and emotional message the main goal of the creative production.

Last result of the research concern the way of consuming video contents. The consumption of videos has increased in the last years, mostly thanks to the innovation in the distribution channels of the market. Consumers tend to watch more video but in a quicker and general way, becoming more attached to the brand reputation than to the story. This creates a loop of continuous urgency for more contents and videos, which is fed with the data of every consumption. Moreover, customers are inclined to get attached to brand and contents before the consumption itself, due to viral thinking behavior as for example hive-minded mentality (Earls, 2009). These dynamics make emerge in the market only big and very hyped videos, leaving behind the niche's one. The only way to move from the niche to the highly visible market is to create impact and awareness among consumers. Impact and awareness are the meeting point of business and creative goals, because they can generate visibility and revenues but, at the same time, they can change for the behavioral conduct of the consumers.

The research has tried to answer to the research question by using a qualitative approach interviewing experts involve in the video production supply chain, with a focus on content creators and researchers. Theoretically, this approach adds the understanding of how Machine Learning is used inside the market and how creatives relates to data during the creative process. Due to their in-depth feature, the interviews helped in finding that the business side of the supply chain is more willing to relate to data than creatives, who prefers to express their creativity instead than revenues.

## **5.1. Further research**

As already mentioned in the Chapter 3, the research presets some limitations caused mostly by the small sample of experts and the absence in the analysis of big providers of contents. In the further research, in order to investigate the connections between Information Technology and creativity, quantitative research would be a possible. By approach to the topic following this method, the research would have access to the concrete usage of data in terms of how many automatics insights are applied in the production of script and video contents. In addition, a qualitative approach could open the analysis also on the perception that consumers have of algorithm suggestions available on digital platforms. In this way, it would be possible investigate more sides of the market, opening the study new independent researches. Lastly, a further study

could be applied not only on the video content market, but to all those creative productions that are provided digitally, as music and live video broadcasting.

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# Appendix A

		Coding Book			
		Business Side		Creative Side	
		Keywords	Theory	Keywords	Theory
<b>Red</b>	<i>ML</i>	Data Behavioral Data Insights Clients Trends Qualitative Quantitative Feedbacks Automatics Control (No)Risk taken Creative Specialization Competitive Advatage Crowded Market	(Fagerberg, 2004) (Anderson, 2014) (Michalski, Carbonell & Mitchell, 2013) (Amershi et al., 2014) (Mencarelli & Riviere, 2015) (Farchy & Ranaivision, 2011) (‘Edelman Digital’s 2017 Trends Report’, 2017) (Doan, Ramakrishnan, & Halevy, 2011) (Vesnic-Alujevic et al., 2018)	Data Insights Story Guide-Line Clients Interpretation Trends Feedbacks Automatics Humans Creative Specialization Competitive Advantage Crowded Market	(Araeen, 2012) (Anderson, 2014) (Kolanovic & Krishnamachari, 2017) (Amershi et al., 2014) (Doan, Ramakrishnan, & Halevy, 2011) (Vesnic-Alujevic et al., 2018).
<b>Green</b>	<i>Effects on Consumer</i>	Purposes Market oriented Goal Urgency Quick Consumption Brand Awarness Impact Awarness	(Jordan & Mitchell, 2015) (Allen, 2017) (Earls, 2009) (Doan, Ramakrishnan, & Halevy, 2011) (Vesnic-Alujevic et al., 2018) (‘Edelman Digital’s 2017 Trends Report’, 2017) (Dutot & Castellano, 2015)	Purposes Societal oriented Goal Social Message Social Usefulness Awarness Impact Awarness	(Leaf, 2005) (Amabile, 2004) (Vesnic-Alujevic et al., 2018)
<b>Yellow</b>	<i>Creativity Diversity</i>	Resource Managing Trust Goal Briefing Money Driven Brand Identity Goal Impact Awarness (No)Risk taken	(Anderson, 2014) (Fombrum, 1996) (Urde & Greysier, 2014) (Caves, 2000) (Benhamou & Perltier, 2007) (Farchy & Ranaivision, 2011)	Freedom Personal Projects Interpretation Briefing Trust Goal Creative process Uniqueness Creative Indentity Creativity as Competitive Advantage Novelty Impact Awarness Risk taken	(Casteñer, 2016) (National Research Council, 2003) (Anderson, 2014) (Fagerberg, 2004) (Fox, 2017) (Wand, Fussell & Cosley, 2011) (Urde & Greysier, 2014) (Caves, 2000) (Benhamou & Perltier, 2007) (Araeen, 2012) (Peltier, 2004)