

## ASPECTS REGARDING VIRTUAL REALITY AS INNOVATION IN CREATIVE INDUSTRIES

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### ABSTRACT

The paper focuses on innovation generated by using virtual reality in one of the most innovative economic sector, the creative industries, aiming to identify the characteristics and the context of innovation by using virtual reality in this complex domain. As new combinations of knowledge and resources, innovation, regardless of its type, creates possibilities of new innovations, and thus set the framework for continuous development; innovation in services, and especially in cultural-creative industries, became a theme of interest during the last years, because its effects extend beyond this sector and affect activity in the whole economy. From strengthening imaginary reality within gaming and entertainment, to simulate reality for educational or social purposes, virtual reality has proved to be an unrivaled innovation strategy. The paper will include an empirical research based on semi-structured interview guide addressed to some entrepreneurs in three different areas of creative industries (architecture, journalism, advertising) from three different European countries, aiming to identify the internal and external factors that determined the use of virtual reality as an innovative technology, the modalities and consequences of its implementation in these three fields of creative industries.

**Keywords:** virtual reality, creative industries, innovation, services sector.

### 1. INTRODUCTION

Although virtual reality has been used as a technology for nearly 40 years, the widespread adoption and in particular the application of technology inside the creative industries is a relatively new phenomenon that challenges innovators to find different ways of implementation through creative applications of technology,

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by integrating it into the existing workflows, as well as by creating new working methodologies to facilitate this phenomenon's growth.

Virtual reality (VR) has rapidly become one of the most exciting computer technologies – exercising a strong influence on the popular imagination, attracting hundreds of researchers, and spawning a booming industry.

As the goal of VR is to create immersive virtual environments (VEs) that let the user experience a computer-generated world as if it were real – creating a sense of presence, or *being there* in the user's mind –, its benefits had graduated from impressive visual demonstrations to producing results in practical applications. (Bowman & McMahan, 2007, p. 36)

Today, virtual reality extends beyond IT&C, being used in many industries, in various forms, often involving new ways of introducing experiences to public. Virtual reality allows the reproduction of an environment and simulates a physical presence in places in the real world, in the imaginary world, or in a hybrid of the two.

The analysts have insufficiently researched the role of innovation and technological change in services, although services are increasingly appreciated as engendering a diverse range of innovation activities. Moreover, among services firms, creative-industries organizations such as advertising, design, architecture, marketing, public relations, market research etc. represent the most innovative companies, offering innovative solutions to solve problems of their clients every day.

In this context, our paper aims to investigate which is the current situation of using VR technology as a strategy for innovation in an innovative economic sector par excellence, creative industries, and what is the context in which these new technologies have been implemented (organization's internal and external favorable factors, barriers etc.). To create a comparative overall picture, field research respondents are entrepreneurs in various creative industries, from different European countries, of different ages and genders.

## 2. LITERATURE REVIEW

### 2.1. CREATIVE INDUSTRIES AND THEIR ROLE IN EUROPEAN ECONOMY

In recent years, many different definitions were elaborated to describe the specific features of the creative industries: notions as “creative sector”, “creative industries”, “cultural industries”, “creative economy” etc. refer to a wide range of activities that involve the commercial exploitation of creative and artistic inputs.

According to concentric circles model (Throsby, 2008, p. 149), “at the center are core industries whose proportion of cultural to commercial content is judged (...) to be highest, with layers extending outwards from the centre as the cultural content falls relative to the commercial value of the commodities or services

produced”: core creative arts (literature, music, performing arts, visual arts), other core cultural industries (film, museums, galleries, libraries, photography), wider cultural industries (heritage services, publishing and print media, sound recording, television and radio, video and computer games), related industries (advertising, architecture, design, fashion).

Some official European institutions (European Commission, 2010, p. 5–6) distinguish between “cultural industries” (those industries producing and distributing goods or services considered to have a specific attribute, use or purpose which embodies or conveys cultural expressions, irrespective of the commercial value they may have – performing arts, visual arts, cultural heritage, but also film, DVD and video, television and radio, video games, new media, music, books and press) and “creative industries” (those industries which use culture as an input and have a cultural dimension, although their outputs are mainly functional – architecture, graphic design, fashion design or advertising).

The creative and cultural industries contributed in 2012 to 4.2% of Europe’s GDP. This economic sector is the third-largest employer in Europe, after construction and food and beverage service activities (bars and restaurants). More than 7 million Europeans are directly or indirectly employed in creative and cultural activities – 3.3% of the EU’s active population. Performing arts (1,234,500), visual arts (1,231,500) and music (1,168,000) employ more than 1 million people each, followed by advertising (818,000), books (646,000) and film (641,000) (Ernst & Young, 2014, p. 10). Some sectors have a higher percentage of youth employment than the rest of the economy. (European Commission, 2013, p. 12)

Moreover, some authors identify a relation between cultural and creative sectors development and the prosperity of those regions: “those regions with above average concentrations of Europe’s creative and cultural industries employees are generally those where economic prosperity is highest” (Power, 2011, p. 8): Europe’s wealthiest regions house great levels of creative and cultural industries concentration – maybe creative and cultural firms and employees are drawn to the markets from prosperous regions, but maybe the creative and cultural industries are themselves important contributors to the economies of Europe’s wealthiest regions.

Other authors (Marco-Serrano, Rausell-Koster and Abeledo-Sanchis, 2014, p. 81–91) try to identify a possible causality between regional income generation and employment in the cultural and creative sectors. Using regional European data for 1999–2008, their results show that there is significant bidirectional causality between the per capita GDP and employment intensity in the cultural and creative industries, allowing them to conclude that there is a “virtuous circle” fed by these industries.

## 2.2. THE INNOVATION AND ITS SPECIFIC TRAITS IN CREATIVE INDUSTRIES

Joseph Schumpeter considered innovation as a *creative destruction*, as a *commercial exploitation of an invention*, as a replacement of an outdated thing through the creation of something new and better. Thus, the innovative entrepreneur forces the market to adapt to his inventions and forces his competitors to find solutions for the new market conditions. (Glodeanu et. al., 2009, p. 31)

According to Drucker (1993, p. 159–163), there are different possibilities to create innovative products: changing the values and characteristics of a product, so that “the strategy itself becomes an innovation”, innovation of the price system, innovation of the services performed by the product, introduction of maintenance/consulting/installing costs in the sale price of some products, innovation related to new value criteria which are taken into consideration when designing and developing a product. As new combinations of knowledge and resources, innovation creates possibilities for new innovations, but also for new business opportunities and, thus, set the framework for continuous change and development. (Leovaridis, 2014, p. 10–11)

In recent years, innovation in services became a topic of interest, as services sector begins to employ an increasingly part of actual young and educated workforce in cities and to contribute to economic development of regions in which it operates. According to Miles (2011, p. 433), innovation in services extends beyond the services sector and thus it affects activities in the entire economy; some services represent important pillars in innovation processes throughout the economy as transfer agents, innovation support and sources of innovation for other sectors.

In some European countries, the creative industries report higher innovation than *non-creative* industries: for example, in Great Britain over 40 % of firms in creative industries report use of in-house R&D; over 20 % report use of design inputs and almost 35 % innovations in marketing; each of these is higher than their *non-creative* counterparts. (Bakhshi, McVittie & Simmie, 2008, p. 21–22) Miles and Green (2008) call innovation that is performed in the creative industries as “hidden innovation”, because it may remain hidden if it is evaluated by using traditional innovation indicators.

This applies especially for creative products and services that are designed individually for each client, for example in graphic design, architecture or performing arts: “these customized products may be viewed as *aesthetic innovations* since their appearance differs from that of any other product produced by the same producer before. From the designer’s, architect’s or artist’s point of view, they are not new products, however, since they simply represent their standard product”. (Müller, Rammer, and Trüby, 2009, p. 5)

Aesthetic innovation, as a specific form of innovation often used in creative industries, is also called “soft innovation” and it includes: “the creation and launch of new books, CDs, theatre productions, movies or advertising promotions; others

reflect aesthetic components of *functional* products – new clothing lines, ranges of furniture, designs for motor vehicles, food products”. *Soft innovations* also include “the development and launch of new financial instruments, which may have neither technological nor aesthetic components at their core”. (Miles, Green, 2008, p. 14)

The same authors classified the hidden innovations in creative industries in different types: product innovation I (repackaging and repurposing content), product innovation II (new products, new markets, improved quality); process innovation; using users; delivery innovation and new interfaces. (Miles, Green, 2008, p. 48–50) Other types of innovation frequently used in creative industries sector are innovations in human resource management and in work organization, called organizational innovations.

### 2.3. VIRTUAL REALITY – A SYNTHETIC VIEW ON CURRENT THEORIES

The technology exists since 1960 and although we have been using the oxymoronic expression *Virtual Reality (VR)* for more than fifteen years, defining it is still not an easy task. French authors Philippe Fuchs, Guillaume Moreau and Pascal Guitton argue that we must reject the definitions that “inappropriately mix the purpose of virtual reality, its functions, applications and the techniques on which it is based”. (2011, p. 5) According to their theoretical and pragmatic approach of virtual reality, the definition regarding the purpose of virtual reality, as a simulation of certain aspects of the real world, a symbolic world or an imaginary world must be completed by the technical definition that classifies virtual reality as a „scientific and technical domain that uses computer science and behavioral interfaces to simulate in a virtual world the behavior of 3D entities, which interact in real time with each other and with one or more users in pseudo-natural immersion via sensory motor channels.” (Fuchs, Moreau & Guitton, 2011, p. 8)

Thornhill-Miller and Dupont’s research emphasizes the need, as well as the advantages and consequences of using virtual reality, one of the most complex and developed of the emerging technologies of cognitive enhancement, as an indispensable tool among researchers, educators, trainers, designers, managers and other professionals working in the area of creativity and innovation because of the useful perspectives and significant contributions it can make to human performance and understanding. Their study reveals that the VR technologies offer a cost-effective means of optimizing and enhancing creativity and problem solving techniques by enhancing interactions and collaborations having a positive impact on the environmental conditions and influences, by facilitating guidance and gamification of the problem-solving process. (Thornhill-Miller & Dupont, 2016, p. 102–121) According to other studies (Abulrub, Attridge & Williams, 2011, p. 5–13), virtual reality has achieved an adequate level of development for it to be considered in innovative applications such as education, training and research in higher education, generating a considerable amount of interest in this field.

In a recent comprehensive report released by the Interactive Advertising Bureau (IAB) and its Mobile Marketing and Digital Video Centers of Excellence, over two dozen leading voices in advertising, publishing, VR software and developer platforms were interviewed in order to describe the current state of the VR landscape: “VR contains stereoscopic video allowing each eye to view a different display or video that – when combined with the view from the other eye – creates a visual, virtual reality. Spatial audio – where sound has direction and volume relative to its source – enhances that virtual experience with 3D sound. The ability to walk around this virtual world can help to maximize the immersion effect. And the self-awareness provided by one’s own hands and feet in a virtual world can further immerse the participant in an alternate reality”. (IAB, 2016, p. 2)

Called also “the next big thing” in digital advertising, the VR technology is improving, and hardware is becoming cheaper and easier to access. Other terms and acronyms used are AR (Augmented Reality), MR (Mixed Reality) and IR (Interactive Reality), which, despite their own definitions, each provide immersion to lesser degrees than VR. An example is the “recent mobile game called Pokémon GO that harnesses Augmented Reality and has drawn millions of people across the world to chase down imaginary creatures in the real world, using their mobile phones”. (IAB, 2016, p. 3) The challenge, as well translated into risk by the interviewees, is the current rate of adoption and the monetization challenges, given the relative limited audience. The consumers’ critical first impressions are also a VR weakness – “while it is possible they will be dazzled by the experience, there’s an equal chance for them to have an underwhelming, or worse, nauseating experience” (IAB, 2016, p. 8) Regarding strengths and opportunities, experts in domain “use terms such as *immersion*, *presence* and *empathy* to highlight the difference in storytelling capabilities that VR brings”; more, it “enables the viewer to control what they see as they move their head or their virtual bodies (avatars) through space, essentially turning the viewer into the storyteller”. (IAB, 2016, p. 5–6)

The innovations in this technological field itself promise to unlock the next generation of groundbreaking VR experiences, including software development that will make possible the participation of each and one of us in creating and instantly sharing personal or customized virtual reality applications, pushing the boundaries of the immersive by offering the framework for it: a virtual reality creators’ platform, followed by a virtual reality browser and, of course, a virtual reality social platform.

### 3. RESEARCH METHODOLOGY

The purpose of our research is to identify the internal and external factors that determined the use of virtual reality as an innovative technology, the modalities and consequences of its implementation in three fields (and professions) belonging to creative industries mentioned as preferred by young Romanians: journalism, architecture, advertising.

According to the sociological research called *Attractiveness of creative professions and entrepreneurial orientation among young people in creative fields* conducted by the University of Bucharest and Gea Strategy & Consulting in 2011 (whereas the study aimed to identify the entrepreneurial orientation among young people aged 15–25 years from our country in the field of creative industries), the most attractive creative professions' top positions are occupied by the following: journalist, photographer, architect, IT programmer, fashion designer, actor, dancer, TV producer, musician, film director, illustrator, writer, designer of industrial products, singer, copywriter in an advertising agency etc. (Moise, Jderu, and Cristea, 2011, p. 2–3)

Several specific research objectives are the following: to identify the internal situation of the organization when introducing the new technology based on virtual reality and the effects of the participant factors within the organization on the approach of the initial stage of implementation; to identify the effects of external factors (such as the market condition, the degree of interest of customers and consumers, the competitors' attitude) on the implementation process of the technology based on virtual reality in the mentioned domains; to identify the future directions in using applications based on virtual reality in the organizations our subjects refer to, and the potential risks arising from these directions of development.

The main reason that guided us towards the qualitative research, more specifically to the descriptive, exploratory approach, it is the very nature of the investigated problem itself: only such a method could lead us to the core and the details of a phenomenon so new and complex as it is the use of virtual reality in the creative industries. Moreover, the studied phenomenon is not so well known yet to measure its intensity, but we are dealing with a remarkable development that must be first understood, since its' features are not sufficiently delineated and they have to be yet identified and thoroughly studied by following descriptions and explanations as complex and complete as possible.

As a core component of the qualitative research, the technique we associated to this method was the in-depth face to face interview based on a semi-structured interview guide, which focused on the perspective of the subjects in their natural environment (working organization) – on their values, on how they see the problem – offers the possibility of a complex interpretation and exhaustive knowledge over the investigated phenomenon making it possible to identify new research directions that were not originally considered by the investigator. All the questions of the interview guide can be found in the *ANNEX*.

Approaching a fresh, not so known perspective on a domain (in our case, the creative industries as a sector that provides space for implementation, facilitates its applications and benefit from the use of virtual reality), it was highly recommended the use of the semi-structured interview as it is known for offering an increased degree of freedom for researcher, in order to explore as many as possible facets of the phenomenon, one question at the time; although the theme of the conversation

was established, the questions and their sequence (all the more the answers) were not predetermined – it was only used an interview guide that included a few directions for discussion. The goal was to gather information in order to: identify the internal factors within the organization that aroused the interest of these entrepreneurs belonging to the creative field to approach the virtual reality as an innovative strategy (including the interviewees' personal reasons, as well as the organizations' initial resources); to identify the types of VR applications preferred by the professionals from the chosen domains; to identify the advantages and disadvantages of the VR technology implementation in the services offered by mentioned sectors; to identify the barriers in creating and implementing innovation strategies based on VR applications; to identify the external factors (outside the organization) influencing the innovative introduction of VR technology in the creative industries (including the market, the competitors, the attitude of interest/acceptance/rejection of the consumers); to outline an overview on the future prospects regarding the VR technology implementation in the creative industries as a form of innovation, including the benefits and risks of it.

In order to find out information about the use of virtual reality as an innovation strategy in the field of creative industries, there were chosen as interviewees three professionals from the top of the attractive creative industries for youngsters, professionals with experience in their areas of expertise (so they can understand the need for innovation but also are passionate about the domains they excel in). All three interviewees were chosen to be entrepreneurs in their field, so they can give us information that is complete and relevant regarding their sector of activity. Each interview lasted about 2 hours; all the interviews took place in the month of September 2016.

Moreover, since our aim is to offer a heterogeneous overview on the phenomenon, our interviewees do not have the same nationality, nor the same gender or the same age: R.G., Spain, aged 55, represents the advertising field; A.B., UK, 38 years old, works in the field of journalism; R.V. from Romania, 27 years old, works in the field of architecture.

## 4. RESEARCH RESULTS

### 4.1. DESCRIPTION OF RESPONDENTS' LOT

R.G., originally from the Alicantine area, has developed his own business, a successful advertising agency in Alicante, bearing the imprint of innovation since its inception. The business stirs interest and popularity locally, in terms of attracting customers, but also on a national and European level due to the agency's involvement in numerous corporate social responsibility campaigns initiated with the purpose of promoting tourism and gastronomy of Orihuela, South Coast.



Regarding the innovation strategies of the agency, he says that most of it is the result of the young team that is heavily interested in integrating “global trends in advertising” in their own agency. To be noticed the open-mindedness of the leader – whose motto is, as he states: “nothing wrong ever happened for using creativity” –, which enables the team to be extremely free when it comes to proposing, and even implementing ideas. Whilst he assumes his part in growing the business when it comes to client acquisition, customer service, new business, his attachment and involvement in the agency life do not affect or limit in any way the juniors or the seniors in experimenting new tools, technologies or strategies. The innovation strategy through virtual reality technology started out as an experiment due to the agency’s organizational culture of experimenting itself.

A.B., originally from Manchester, dedicated herself to journalism studies for eight years, continuing the professional path with an internship in Stockholm, the city that she calls “a focal point of innovations in journalism”. Later on, while working on business news for New York Times, London, she came across different business models in journalism. Together with her husband, a major figure in the world of journalism, she opened a newsroom on their own, putting into circulation a niche market newspaper created with the purpose of delivering the English (or English-speaking) public original and factual reports on what is happening in Spain, with professional content and editorial analysis. The desire for innovation led to implementing and tackling various methodologies and technologies to bring the news faster and closer to the audience. As a result, they created editing software that shortens the verification time, the review system between reporters and editors and the authorization process across the newsroom hierarchy, reaching record times up to 6 minutes for breaking news publishing.

R.V. was still in high school when he started to study on his own the effects of new technologies in architecture. Passionate about the futuristic architectural visualization, he started his career as an architect not on the benches of the Faculty of Architecture, but as a self-taught 3D visualiser. He points out that “there is a gap between what is taught in the architecture schools or faculties and what is really required in practice”. With ten years of experience, R.V. is among the first ones who started working in 3D software right when they were launched on the market for mass use, even though initially they were designed for game developers only. He states that “he is fortunate to be growing with the software itself, but that he will continue to work hard to consolidate his leader position in an environment as unstable, yet as challenging as the 3D industry is”. Unlike his colleagues, he started working since he was a teenager, mostly during night time since his clients were all active in another time zone (Canada, Australia, US, Japan), getting involved in visualization projects that contributed to his professional evolution by being challenged to execute accordingly to high quality standards, spending his time on constant self-improving jobs, rather than to be employed in a Romanian architecture firm. According to him, “the problem is not that Romania lacks great

architects, but the fact that the bureaucracy and the whole system of constructions' authorizations is unethical, are forcing the architects to sell their work very cheap, thus demotivating them to create quality products at a competitive level". By becoming an entrepreneur (pixeller.net), he is doing "everything in his power to differentiate himself and his services on the market so he can attract clients all around the world". Passionate about technology, he says that "VR applications fit him like a glove, allowing him to encapsulate the strengths and capabilities of architecture for a better understanding on the behalf of the clients, an easier transmission and sale of it to the customers, being a natural step when it comes to perfecting his own studio".

#### 4.2. INTERNAL FACTORS (WITHIN THE ORGANIZATION) THAT INFLUENCE THE INTRODUCTION OF VR TECHNOLOGY

On the first objective, which aims to outline an overview on the internal situation along the pre-implementation (motivations, factors), implementation (resources, costs), and post-implementation (risks, benefits) stages of innovation by using the virtual reality applications, it is ascertained that one of the main reasons that influenced the development of an innovation strategy based on virtual reality in all three domains was the intention to "keep up" with the evolution of the technology and with the large companies belonging to the same markets: „Every time the *league players* (Coca Cola-Sleigh Ride, Mc Donalds-Happy Meal VR Set, Michelle Obama-Speech, Volvo-XC90 Test Drive) approach a new strategy or innovate somehow, we pay attention on how much longevity is foreseen regarding the new trend they embraced. When it came to VR, we figured out quickly that it will not go away anytime soon, on the contrary, the more we wait, the more we lag behind, because in advertising, especially in advertising, the future happened yesterday..." (R. G., advertising, Spain) In journalism as well, the benchmark is set by the future evolution of the industry: "Among editors and producers there is a clear consensus about the use of virtual reality as a medium for news narration that will complete the wide range of existing resources the same way the television completed, but not replaced, the radio". (A.B., journalism, U.K.)

Among the internal factors that determined the interviewees to choose the virtual reality as an innovation strategy, are listed: the tech savvy team (R.G., advertising, Spain), the chance to avoid additional costs by using virtual imaging before building or altering a building, so customers can "see the house they want before existing in real life" (R.V., architecture, Romania), the importance of interactivity when it comes to sending a message to the audience (A. B., journalism, U.K.): "Marshall McLuhan was right when he said that *the medium is the message*. More so, as nowadays the message is storytelling, we need an interactive medium to forward it. The first time I interacted with the virtual reality was the time I was still working at the NYT, where I had the chance to put on the

Oculus and be placed right in the middle of events, and since it was a historical-themed documentary, the effect was even more unexpected. I said to myself that this experience, brought to the world, will change the way we relate to everything that happens in the world. We will not be just spectators, but participants”. (A.B., journalism, U.K.)

Regarding the implementation stage, this was carried out accordingly to the available resources, but always relative to the expected results: “The costs had an impact on the human resources as it is very hard to keep working on current projects and to innovate at the same time, with the same team, in the same 24 hours that a day has. (...) These costs were however insignificantly small next to the ones that could have incurred if we would have lag behind the market” (R. G., advertising, Spain); “Our current editorial staff is not very big so we only invested in a mid range 360-degree camera. Besides the equipment costs, we also have to invest in professionals who know how to process the 360 digital material, because the editing and montage processes are very different” (A.B., journalism, UK); “We have expanded our team and invested in equipment”. (R.V., architecture, Romania)

The innovation strategies based on the use of virtual reality are very diverse in these three domains due to the specific nature of each field of activity, but they do have in common the adaptation to the public/clients’ demands: “Creating virtual environments, more specifically multiple design solutions, from lighting, to decor, to furniture or to materials became the holy grail of architecture. For example, we can propose a wooden bed that comes in white or in black, placed on the left side or on the right side of the bedroom. The client walks into the room and moves the objects, changes their shape or their color accordingly to his own tastes and desires, shortening our working time by 3 hours (instead of the classical back and forth discussions about the details)” (R.V., architecture, Romania); “(...) until now, we experimented VR mostly in the game advertising area, as our clients requested. The entertainment function is at the core of our VR services, at least for the moment”. (R.G., advertising, Spain) As for the journalism, the virtual reality application is not seen as a tech innovation, but rather as a “one-time” sensitization tool.

#### *4.3. EXTERNAL FACTORS (OUTSIDE THE ORGANIZATION) THAT INFLUENCE THE IMPLEMENTATION OF THE VR TECHNOLOGY*

The next objective examines the relationship between the organizations we study and the external environment and factors such as the market, the customers, the consumers and the competitors.

Regarding the market, there is a high degree of competitiveness in the architecture field, where the aesthetic value of the product of virtual reality is the final product created with the purpose of ensuring business profitability, whereas in advertising and journalism, virtual reality is only a service, a means, or an extra option added to the firm’s services, so it does not define the business in the way

that it does for architecture. The virtual reality is in a very advanced stage in the field of architecture because “architects are already working in 3D environments and software, so the transition to virtual reality is quite natural... Now, the mastery of virtual reality creates competitive advantage and propels you to the top of the industry if you do your job well. There are no boundaries, not global, nor local, or from the point of view of the resources, because in our situation the start-up costs are relatively small. The only real differentiator is the personal creativity added to simulation scenarios inspired from real life”. (R.V., architecture, Romania) At the opposite, in advertising the battlefield is still clean, the main advantage on the market being “the primacy that is translated in earned media, even though it does not influence the number of clients. Furthermore, regarding the competitiveness, we can say that we have not encountered any competitive or copycat attitude; on the contrary, there is a spirit of mutual support. Inevitably, everybody will start using VR in the future, but for now we are happy to be leaders in innovation in this segment”. (R.G., advertising, Spain) Meanwhile, the journalist keeps a reluctant attitude towards the VR applications: “We are already fighting with the economy of attention, so we are still wondering how effective really the virtual reality is when it comes to news distribution. We must be very careful how and when to use this technology so we won't turn it against us. (...) At this stage, there are still unanswered question in our industry: how to do, how to do and when to do VR content?” (A.B., journalism, U.K.)

Investigating the consumers, their general response is positive as they keep an open mind and an attitude characterized by acceptance and receptivity, although as our study proves, it is fair to make a distinction between the consumers and the customers. In advertising and architecture, the client is the brand or the developer, whereas the end-consumer is the buyer of the advertised/visualized product or service. “We have noticed that our clients see VR differently: there are the ones who want to offer the consumers an amazing experience, such as taking them to a concert or a beach, or a sports event, opening new ways for them to relate to the brand, and there are the skeptical ones who argues that virtual reality is yet another creative way to escape the daily routine which means that if advertising enters this field, too, it will be considered as intrusive and obnoxious as it is considered to be in offline currently”. (R.G., advertising, Spain) Architects classify the clients into “big budget clients, usually real estate developers who are very interested in using this new technology because they see it as a way of investing in... advertising. (...) For the other clients, usually individuals who are looking into building or redesigning a house, it is us who prefer to work more to put at their disposal the virtual reality application just to avoid the unnecessary modification rounds that, in the end, take up more of our time and resources” (R.V., architecture, Romania). In journalism, “VR is not a service or a product created with the aim of being sold, but rather a way to bring people closer to events and to dismiss the often subjective barriers raised by reporters or correspondents”. (A.B., journalism, U.K.)

4.4. OPINIONS REGARDING FUTURE PERSPECTIVES ON USING VR TECHNOLOGY  
IN THE CREATIVE INDUSTRIES; ADVANTAGES AND DISADVANTAGES

The main advantages regarding the use of VR technology refer to its “memorability and experimentation power” (R.G., advertising, Spain) and to its “immersive and storytelling ability, or better said, story-living” (A.B., journalism, U.K.), that are increasing the audience’s interest and trust. On the other hand, in architecture the main advantage stands in its practicality, facilitating the work with the clients. Besides that, “we enjoy discovering new things in VR everyday, since tech innovation is in our DNA”. (R.V., architecture, Romania)

Although the same in all of the three domains, the disadvantages of using VR applications display various consequences and have different effects depending on the field of use. While in architecture the emphasis is on the “postproduction cumbersome, translated into resource planning problems, time management challenges and financial risks” (V.R., architecture, Romania), in advertising the main focus is the monetization, part of conversion, as well as the reach, since “in this stage, the reach is not big enough so stir the brands’ interest, whose lack of support makes it harder to make it appealing for consumers... it is a vicious circle” (R.G., advertising, Spain). In journalism, professionals are still questioning this technology’s power to interfere with the private aspects of life, and the ethical and legal considerations it raises. “Because it still lacks legal and moral regulations, VR can create great controversy regarding the exploration of virtual reality. We are still in a stage of inception where the *right* or moral use of VR applications is still fuzzy. Isn’t it possible that this immersion phenomenon may be too realistic or, on the contrary, too manipulative, or could create frightening, uncomfortable or misleading experiences? (...) As it happened for photography, or video, I assume that VR needs to go through a period of adjustment as well”. (A.B., journalism, U.K.)

Other mentioned disadvantage was the still limited accessibility of the technology itself, which affects the reach and the conversion, as a result of the scarcity of equipment and specialized professionals.

Regarding future prospects, advertisers are counting on the entertainment aspect when making future plans, but they are still following the *trendsetters*, whereas the architects consider themselves as trendsetters since they are able to evolve along with the technology. “The hardest part is to plan the equipment acquisition for the next three months, not to mention for the next years, but we are happy to work along on developing new techniques and applications in the VR sector. As technology advances, the process will become more and more agile” (R.V., architecture, Romania). “There is still a need for more technology in creating customized interfaces and workflows to facilitate the work of those who are not tech-savvy by nature or profession”. (A.B., journalism, U.K.)

## 5. CONCLUSIONS

The changes arising from the introduction of virtual reality were mostly felt in the field of journalism, which traditionally focuses more on the quality of the message than on its form of transmission, unlike the architectural field, where the visual factor already encouraged its professionals to work with 3D environments, making the progress and the transition to the virtual reality more natural and seemingly effortless. Regarding the advertising, a domain which will always find new ways to reinvent itself, it will most probably embrace the virtual reality trend and successfully overcome the challenges regarding the cultural and social adjustments to this new technology, since advertising represents each society as an “authentic mirror”.

The research results refute that innovation strategies involving virtual reality are used in the creative industries to create market differentiation and preference. The latter can be the effects of a successful implementation, but before the implementation itself, that is not the main reason why these innovators started using this technology.

VR strategies create an important competitive advantage through media attention (earned media) in advertising and journalism, and economical profitability for architecture.

Another finding of the research provided information regarding the relationship between innovators and consumers, more specifically the results showed that the virtual reality trend starts with the innovators, getting to consumers, not the opposite, from consumers to innovators, since in this moment the demand is lower than the supply.

The entrepreneurs are approaching the field of virtual reality in order to be prepared for demand when this technology will be required by a wider audience, on large scale, even if for the moment, they are the ones influencing the demand through their belonging to the creative industries, having an important role in forming the public opinion.

Regarding the degree of risk or entrepreneurial failure, we can only say that it is a very propitious time for experimentation. The market is not repulsive, and even if open to these new technologies, the consumers are not yet trained enough to judge or to make comparisons based on a high-end standard or norm.

Given the fact that the business profitability depends on the innovation strategy based on the virtual reality technology, the architecture firm is subject to both a greater risk of failure and to exponentially bigger incomes if successful. In advertising, the risk of failure is relatively small, since the VR products are being associated with the brand itself rather than to the agency that created it. The journalism field still lacks a sustainable ecosystem regarding the VR market.

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ANNEX

#### INTERVIEW GUIDE

1. Please describe briefly the main stages of your professional activity, highlighting the business you run in the present.
2. What are the reasons for having implemented the VR technology and not another one, in the context of the services provided by your company?
3. What factors determined your choice for virtual reality as an innovation strategy? Can you name a few, both internal and external?
4. What (kind of) costs did the implementation require?
5. What does your innovation strategy involve more specifically in your field of expertise? Please detail your answer.
6. What was your position on the market when you approached this type of technology? Did it change your position as against competitors? Did this strategy become a differentiation tool?
7. What was the competitors' attitude towards you, once you implemented this new type of service?
8. How did the clients receive/react to the new service? What was the consumers' attitude towards this new technology? How long it took you to make the innovation known on the market and how did you win the clients' trust?
9. Did you encounter any difficulties while implementing this strategy (both internal and external)? Please provide a few examples.
10. Can you name a few advantages (benefits) you experienced specifically due to the implementation of the virtual reality technology into your architecture/advertising/journalism projects?
11. What would be the disadvantages, if they exist, when using the VR technology in advertising/journalism/architecture?
12. What do you think is the current stage of development of this technology? Where is it situated now and what do you think the future holds for your business (or industry) in this area?