

How do ArtTech startups enter the art market, and how do they position themselves?

Student name: Elena Kirpu

Student number: 575714

Supervisor: Prof. Dr. Filip Vermeulen

Department of Arts & Culture Studies

Cultural Economics and Entrepreneurship

Erasmus School of History, Culture and Communication

Erasmus University Rotterdam

Master Thesis

June 2021

How do ArtTech startups enter the art market, and how do they position themselves?

ABSTRACT

This study sheds light on a distinct segment of the art market that has exploded in popularity in recent years: ArtTech startups. There are no specific studies on them at the moment. If they are referenced at all, it is in articles about the entire area of startup research. The combination of two seemingly different areas - technology and art is of interest for this research and establishing a common utility for both participants and the art market as a whole. Furthermore, given the situation with the pandemic, these startups are of interest to traditional players (galleries, museums, auctions) for the introduction of special technologies and the development of organizations. As a result, such startups are frequently separated into those that sell their technology, organizations to larger corporations, and those who are attempting to establish themselves as a separate participant in the market. This study investigates the path of ArtTech startups before they enter the market and how do they position themselves after. 16 ArtTech startups were selected to research a recently formed phenomenon. The author conducted 5 in-depth interviews with founders of these startups to understand how the idea was invented, why the market needs it, and how startups manage to convey it to the art market participants. In addition to that, the desktop analysis of 16 startups' websites was performed, which revealed their vision and mission as well as the ability to convey their ideas to the audience. As a result, it was found by the author of this thesis that the founders of ArtTech startups develop their innovative ideas based on their education and experience in both art and other industries. Identifying the key problems in a particular niche of the cultural sphere, ArtTech startups offer a ready-made solution for the participants of the art market. Their entry into the market is associated with the support of the surrounding network, and further positioning depends on the business strategies of the enterprise. Nonetheless, it was concluded that the phenomenon of ArtTech startups does not yet have a proper impact on the art market, having a point influence only in certain sectors.

Key words: art market, ArtTech startups, technologies, investment, innovations, blockchain

Table of Contents

List of Tables.....	4
List of Figures.....	4
1. Introduction.....	6
1.1. Relevance of the thesis.....	6
1.2. Problem definition.....	7
2. Literature review.....	8
2.1. Art market structure.....	9
2.1.1. Digitalization of the art market.....	11
2.2. CCI's startup ecosystem.....	12
2.2.1. Entrepreneurial ecosystem.....	13
2.2.2. Founders motivation.....	14
2.2.3. Startup difficulties.....	16
2.3. Support for startups.....	16
2.4. COVID-19 impact.....	17
2.5. Blockchain.....	19
2.5.1. Blockchain on the art market.....	21
3. Methodology.....	23
3.1. Case study approach.....	23
3.2. Case selection.....	24
3.3. Data collection.....	27
3.3.1. Implementation of data collection.....	30
3.3.2. Interview protocol.....	30
3.4. Data analysis.....	30

3.4.1. Case study analysis.....	31
3.4.2. Data coding.....	31
3.5. Validity and reliability.....	31
3.5.1. Validity.....	31
3.5.2. Reliability.....	31
3.6. Conclusion to the methodology section.....	31
4. Case study analysis.....	32
4.1. Desktop analysis of ArtTech startups' websites.....	32
4.1.1. Robot Muralist.....	32
4.1.2. Muzing.....	33
4.1.3. FRESCO.....	34
4.1.4. DADA.....	35
4.1.5. ArtBinder.....	36
4.1.6. Otis.....	37
4.1.7. KOVET.ART.....	38
4.1.8. V-Art.....	39
4.1.9. The Art Exchange.....	40
4.1.10. Cappacity.....	41
4.1.11. ArtAML.....	42
4.1.12. Foundwork.....	43
4.1.13. ROKBOX.....	44
4.1.14. Fair Warning.....	45
4.1.15. Glass.....	46
4.1.16. Oxia Palus.....	47
4.1.17. Conclusion to desktop analysis of ArtTech startups' websites.....	48

4.2. Discussion of the results of semi-structured interviews.....	48
4.2.1. Motivation behind the idea.....	48
4.2.2. Relevance of the idea.....	50
4.2.3. Professional background.....	51
4.2.4. Speed of development.....	52
4.2.5. External help.....	53
4.2.6. Startup difficulties.....	54
4.2.7. Funding.....	55
4.2.8. Market position.....	56
4.2.9. Influence on the market.....	57
4.2.10. COVID-19.....	59
5. Conclusion.....	60
5.1. Discussion of the results.....	60
5.2. Theoretical contribution.....	62
5.3. Limitations.....	63
6. Reference List.....	64
7. Appendices.....	72
Appendix A. Methodology.....	72
Appendix A.1. Interview protocol.....	72
Appendix B. Data analysis.....	73
Appendix B.1. Thematic analysis.....	73
Appendix C. Interview transcripts.....	80
Appendix C.1. ArtAML.....	80
Appendix C.2. KOVET.ART.....	93
Appendix C.3. Muzing.....	105

Appendix C.4. Robot Muralist.....	118
Appendix C.5. ROKBOX.....	125

List of Tables

Table 1. Selection of 16 ArtTech startups.....	25
Table 2. Operationalized table with ten core concepts.....	27

List of Figures

Figure 1. Robot Muralist website – screenshot (Source: Robot Muralist, 2021).....	33
Figure 2. Muzing website - screenshot (Source: Muzing, 2021).....	34
Figure 3. FRESCO website - screenshot (Source: FRESCO, 2021).....	35
Figure 4. DADA website - screenshot (Source: DADA, 2021).....	36
Figure 5. ArtBinder website - screenshot (Source: ArtBinder, 2021).....	37
Figure 6. Otis website - screenshot (Source: Otis, 2021).....	38
Figure 7. Kovet.Art website - screenshot (Source: Kovet.Art, 2021).....	39
Figure 8. V-Art website - screenshot (Source: V-Art, 2021).....	40
Figure 9. The Art Exchange website - screenshot (Source: The Art Exchange, 2021).....	41
Figure 10. Cappasity website - screenshot (Source: Cappasity, 2021).....	42
Figure 11. ArtAML website - screenshot (Source: ArtAML, 2021).....	43
Figure 12. Foundwork website - screenshot (Source: Foundwork, 2021).....	44
Figure 13. ROKBOX website - screenshot (Source: ROKBOX, 2021).....	45
Figure 14. Fair Warning website - screenshot (Source: Fair Warning, 2021).....	46
Figure 15. Glass website - screenshot (Source: Glass, 2021).....	47

Figure 16. Oxia Palus website - screenshot (Source: Oxia Palus, 2021)..... 48

1. Introduction

1.1. Relevance of the thesis

In the last few years, the art industry has been undergoing significant changes. The modern art market is actively developing, exploring new areas, and introducing more modernized elements into its activities. Nowadays, an important trend in the art market is its digitalization. Museum mobile applications and digitalization of the collections of leading museums are becoming more popular. Technologies from the gaming industry are actively used: AR (augmented reality) и VR (virtual reality). Under the influence of new digital technologies in the art market, a separate segment of support tools and products provided by new organizations is being formed. More and more participants of the art market resort to new technologies for the promotion, display, and preservation of artworks (Sidorova, 2019).

The relevance of technology in the life of the art industry has rapidly grown due to the pandemic. Over the past two years, under the influence of digitalization and COVID-19, the market and its agents have had to turn their attention to the digital field and those innovative solutions that allow them to improve their activities in the new realities. Classical institutions are changing under the influence of new ideas coming from startups. Leading positions in this regard are now occupied by auction houses that either buy out innovative technologies or try to enter the digital space themselves. Both large market players and small companies appeal to startups that offer a ready-made tech solution. In addition to the already existing classical technologies, which could be used by the participants of the art market, more innovative forms were also in sight. Thus, recently, attention has turned to companies that combine technology and art, namely ArtTech startups to support and develop the work of the art industry.

A startup is a company that develops an innovative idea from scratch, it provides a product or service that did not exist before (Belkevich, 2020). With the beginning of the new technological revolution of the 1990s, innovative companies began to appear in many industries, and the art sphere was no exception, with the first manifestation in the form of Artnet. This company was one of the first to introduce a combination of technology and art. It became an example for many young companies that appeared after it, who decided to develop in the same direction. Since 2017, more than 30 ArtTech startups have appeared (Deloitte Art & Finance, 2019), and their number continues to grow. Often startups are at risk, since when they exit, their product is simply not needed by the market. However, in the case of ArtTech startups, the pandemic has allowed them to raise the level of importance of their product for the art industry. Most ArtTech startups have an extremely versatile focus, so they occupy different niches of the art market, increasing their

chances of more serious market indicators. Despite the rather rational approach of startups in the distribution of different areas of the art industry, there is an opinion that ArtTech startups do not have enough knowledge about the internal processes of the art market, as they come to art from such areas as technology, finance, etc. Therefore, the innovativeness of their ideas may seem to someone to be a secondary indicator, since initially there is a distrust of the organizational form as such.

ArtTech startups are inherently different from startups from other sectors, such as IT, Bio, FinTech, etc. Despite the key common factor in the form of innovation, the popularity, and importance of the sector also play a big role. Unlike the art industry, startups in the world of IT or finance have been around for a long time. Thus, they gradually adopted the environment in their sector for their needs. As a result, society, realizing the important role of these sectors for life and development, accepted and supported the flow of new ideas implemented by startups. Based on the thematic focus of startups that annually participate in accelerator programs, for example, it is possible to determine in which sectors entrepreneurs prefer to develop their innovative ideas. It is through incubators and accelerators that the cohesion of startups from other industries is noticeable, exchanging knowledge and experience among themselves. In turn, ArtTech startups do not have such a collective communication with each other, due to their small number at the moment. The diversity of niches occupied by ArtTech startups in the art market also plays a role. Having the general term ArtTech, companies can have completely different ideas that do not overlap in any way. Another important difference is the involvement of investors. And if there is an opinion that the art sphere does not provide much monetary potential for financing, then investors are ready to invest in startups from other sectors, just because of the confidence in the profitability of the industry itself.

1.2. Problem definition

This thesis aims to illuminate a separate sector of the art market, which has been developing rapidly over the past few years. At the moment, there are no specific studies on ArtTech startups, since it's a relatively new, little-explored phenomenon. If they are mentioned, it is only in passing and in articles under the general theme of the entire field of startup research. The combination of two seemingly different areas - technology and art is of interest for research and establishing a common utility for both participants and the art market as a whole. Also, given the situation with the pandemic, these startups are of interest to classic players (galleries, museums, auctions) for the introduction of special technologies and the development of organizations. Therefore, such startups are often divided into those who eventually sell their technology, organizations to larger companies, and those who are trying to gain a foothold in the market as a separate player.

Moreover, special attention should be paid to the multidisciplinary nature of ArtTech startups' innovative ideas. Some of them focus on increasing the transparency of the market, others offer technologies in the classical sense, for example, the creation of programs for 3D design; others develop the introduction of blockchain. But the most important thing is that before entering the market and bringing their revolutionary ideas to companies, startups have to go a long way. And this path should be analyzed in a separate study.

Therefore, the purpose of this study is to research ArtTech in more depth in order to provide more representative research results. The author aims to find out more about the founders of ArtTech startups, how they come up with their innovative ideas, and why they believe that these ideas are important for the art market. In addition, it is important to understand what field these people come from and whether they have sufficient experience in the art industry to solve its problems. Moreover, it is necessary to trace the path of ArtTech startups from their creation to the present day in order to understand what place they occupy in the art market. A detailed study of the internal processes of ArtTech startups, including an analysis of their financial, technological aspects, and their activities during the pandemic, will contribute to the formation of a coherent understanding of the ArtTech startups' phenomenon. By filling in this research gap, it will be possible to draw a conclusion whether ArtTech startups are game-changers of the art industry or not. Moreover, such research can be a kind of guide to the world of some ArtTech startups. Which will help other similar organizations improve themselves in the future, or simply draw the attention of the art community to this part of the art industry.

The objectives of this thesis are directly related to filling the existing research gap and answering the following research questions: **How do ArtTech startups enter the art market, and how do they position themselves?**

2. Literature review

In order to establish the guidelines for researching the ways how ArtTech startups are entering and positioning themselves within the art market, it is important to review the literature that could propose valuable insights regarding the topic. Since the ArtTech startup sector has not yet been sufficiently studied and there is no specific literature on it, attention will be focused primarily on related topics. Firstly, the art market structure, the descriptions, and relevant information for startup ecosystems are determined. Secondly, the impact of the COVID-19 pandemic on the agents of the art market and the development of startups, in general, is considered. Finally, the

technological innovations applied by ArtTech startups are discussed, which provides topics for further research.

2.1. Art market structure

The art market is a socio-economic and cultural-historical phenomenon and a mechanism that represents a system of commodity circulation of works of art (Dolganova & Hangeldieva, 2010). The art market performs several diverse functions such as informational, intermediary, price-forming, stimulating, and regulating, as well as artistic and aesthetic. Thus, currently, the modern art market constitutes a multifunctional phenomenon. Its artistic side is emphasized by the aesthetic value of an artwork, of lesser but also of significant importance is the economic value of an artwork - its market value. The distinctive feature of the art market is its comprehensive nature, which arises at the intersection of the spiritual-artistic (immaterial, pragmatically disinterested) and material (economically and pragmatically significant) spheres of public life (Dolganova & Hangeldieva, 2010). Therefore, the art market may be considered as a set of monopsonistic markets (Velthuis, 2011). In other words, it is a complex multi-level industry, that integrates a large number of subjects that carry out all the processes of its actualization.

The art market can be represented in the form of a pyramid, from the bottom, at the base, the market, having a plentiful supply, remains quite competitive due to free entry and product uniformity. Sellers support competition by differentiating similar products (Zorloni, 2005). The market becomes more concentrated when moving to those parts of it that represent products from a higher category. Entry is becoming more restricted, with market participants such as galleries facing high barriers to entry. The art market is divided into many different categories, of which there is one key distinction that should be noted. This difference lies between the primary and secondary markets. On the primary market, artists sell their works for the first time, while in the secondary market there is a resale (Velthuis, 2011). Usually, more attention is paid to the secondary market, since data on the primary market is either not available, or it is rather complicated to find and analyze it. The common scheme of selling in the primary market is the sale of an artist's works from his studio or through a gallery that represents him. However, sales are associated with a certain risk for both dealers and customers because the art appears on the market for the first time, and there is little information about the works (Zorloni, 2005). Although it should be noted that the amount of information depends on the number of works of the artist since if there is a market background, the buyer has the opportunity to compare with existing works, which reduces the risks. In the secondary market, existing works of art are exchanged. One of the differences from the primary market is the greater awareness of buyers about artists and their works. That is why the secondary market is less risky and more foreseeable. This sector of

the market is dominated by auction houses. But in addition to such key institutions as Christie's and Sotheby's, this segment also includes art dealers. The role of the art dealer is either to sell the works or to buy them for further resale. Despite the characteristic differences between the primary and secondary market, they are still connected by the small number of living artists who are actively involved in artistic activities. Collectors can be considered a kind of connecting link since they track and acquire works when they move from the primary market to the secondary market. Another interrelation between markets is related to the pricing aspect. Commonly, on the primary market art dealers adjust prices according to the price level reached at the auction. Inversely, estimates in auction houses' catalogs are based on the price levels on the primary market (Velthuis, 2011).

The activities of art market agents largely depend on the general situation and established norms. Thus, further analysis of such representatives of the system, such as those considered in this study by ArtTech startups, is impossible without identifying certain problems inherent in the art market. One of the main obstacles to the development of the art market is the lack of proper transparency of the industry (Velthuis, 2011). Most of the market operates in the shadows, although there are fundamental values in the market, estimates can be highly subjective and based on expert opinion, making it difficult to set appropriate prices. While data and transparency are improving in some sectors, they are regressing in others, and some companies, such as online auction companies, do not publish sales prices at all. When there is a private sector in any market, there is always a need to engage in the measurement and analysis process using methods such as surveys and qualitative approaches (for example, interviews, etc.). This means that quantitative models that can be built using micro-level transaction data will always be limited to using data from the public auction sector (Arutyunova, 2015).

Transparency is frequently seen as a key goal for regulators in this opaque market. Most of them focus on key areas such as provenance (links in the chain from artist to seller) and proof of authenticity (Sedyh, 2018). In addition to fraud issues, there is also a focus on transparency in the pricing and strategies of those working in the art market. Privacy has been valued in the art market since its inception, but with the development of cultural industries and higher rates, it is much more difficult to imagine that the market will be able to maintain its private nature. Nonetheless, the risk of excessive control of individual markets remains acute because of the absence of worldwide regulatory and transparency solutions. The art market is divided into different segments, where operations are performed separately from each other. Each participant in the art market has its own interests, the implementation of which can lead to changes in pricing, evaluation of works, etc. Thus, sometimes excessive freedom of action leads to conflicts between

market players, and not a proportional distribution of power in individual markets leads to market manipulation. For example, the art industry has many complaints about auction houses that retain and abuse their power over the market. Market participants have been negotiating for a long time about the need for market regulation due to systemic shortcomings that allow trading in internal information, tax evasion, and money laundering (Hufnagel & King, 2019).

2.1.1. Digitalization of the art market

The modern art market is making gradual steps towards improving the internal infrastructure and the general situation with trade in the market. There are several studies of the modern art market and its trends with a focus on the use of new technologies. Most often, the authors of such articles note that most researchers in the art market do not pay attention to new organizational models or technologies with high development potential. Which, in turn, are already used in the market and are successful. The general consensus is that 'cyberspace is a mere supportive tool to boost art sales' (Sidorova, 2019). The issue of digitalization in the modern art market is partially affected; academic research by Sidorova (2019) concluded that technologies that are developing in the online art market have potential and influence, and their study will create a separate layer of online art market studies. Nevertheless, the prevailing traditional views of representatives and researchers of the art market can significantly slow down the coverage of new ideas, and therefore their direct application.

That is why research on the current state of affairs is so necessary for the development of the market in general, and for understanding the main applications of technologies that some ArtTech startups operate in particular. Based on reports of online sales for different years, as well as other studies on the online art market, an overall picture of the key features of the modern online market, as well as three key technological innovations, including cryptocurrency, blockchain, and artificial intelligence, is compiled. A systematic analysis of the reports showed that in recent years, there has been a noticeable increase in online sales in the art market, which in turn was made possible by the introduction of new technologies. In the last few years, the art community has begun to raise the topic of cryptocurrency and the use of blockchain. In 2018, several conferences were held: the Ethereum Summit, Art + Tech Summit, ERM Développement, which considered the potential applications of blockchain technology, including for creating decentralized, secure, and trustworthy channels of online art market operations (Sidorova, 2019). Cryptocurrency is more often associated with the concept of bitcoin, virtual money. Cryptocurrency is a digital asset used as a medium of exchange and based on the principle of decentralized control that enables users to send payments without passing through a central authority, such as a bank or a payment gateway (Rosenberger 2018, p. 9). However, although the blockchain technology, which is used to conduct

transactions using bitcoin, increases the transparency of transactions conducted in the online space, and also maintains an account, many experts fear that cryptocurrencies could also create a black market of dubious transactions that could worsen the reputation of the online market with new buyers” (The Art Market 2018, p. 249). More and more applications of these technologies are associated with the concept of globalization, as through the virtual field it is possible to reach a wider audience around the world. This is why businesses gradually turn to bitcoins and other cryptomoney as an alternative payment method. Blockchain also affects other areas, such as classical art institutions, museums, and this technology also develops the art banking sector.

AI, in turn, is used in many programs. The most common applications are AI Art and AI-based art marketing. But it is much more important to pay attention to three new AI technologies that are only gaining momentum and can further increase online sales (Sidorova, 2019). First, a machine-learning algorithm that detects art forgeries. ‘It uses AI to analyze thousands of tiny strokes that compose a picture and detect fake pieces’ (Sidorova, 2019). Second, VR. With this technology, it is not necessary to visit the gallery physically, it is possible to view its contents from home. The same applies to various art shows, which can now be held in the virtual space. The third, Augmented Reality (AR). AR makes it possible to combine physical elements with the digital world (Sidorova, 2019). Thus, the buyer can, for instance, see how the picture that they buy online will look in their interior.

This kind of research becomes a starting point for identifying new trends and ideas in the modern art market. Despite a broad analysis of current tendencies, the study does not provide an overview of specific market intermediaries, organizations that build their business models based on the described technologies, as well as how they manage to enter the market with these ideas and establish their product.

2.2. CCI's startup ecosystem

The gradual transition of art market agents to online due to innovative ideas is not a new phenomenon at all. Artists (entrepreneurs) have always had a choice between ordinary creative activity for a service of a market and an attempt to make innovative changes to existing processes (Caves, 2003). In the early 2000s, Caves argued that technology has little to do with the innovations occurring in the creative industries. In our time, however, technology has come to the fore and plays almost a key role in the changes taking place in the market. One of the carriers of fresh ideas is considered to be startups since they are the ones who bring new ideas to the market during the launch phase and later transform into economically sustainable enterprises (Spender, Corvello, Grimaldi & Rippa, 2017). It can be said, that in the case of the art market, startups play

a key role in innovation processes. In fact, they need to develop their open innovation (OI) practices more than other market agents to overcome issues of its newness and smallness (Bogers, 2011). Thus, the function of startups in the cultural industries can be considered their ability to generate new ideas and options for their application in relation to the development of the art market. Colombelli, Krafft & Vivarelli (2016) argue that startups whose main motivation is related to innovative projects have a better chance of survival, and can expect better results after entering the market. The successful entry of a startup into the market depends on the novelty of its product (or an improved version of an existing one). Further, the survival of a startup is directly related to the methods of production of this product or service. The most important conclusion that can be drawn from existing research is that innovative startups are a key source of sustainable value creation. By bringing this value, ArtTech startups are changing the art market in its diverse segments.

2.2.1. Entrepreneurial ecosystem

To maintain and develop any activity that includes the presence and operating in the art market, an entrepreneurial spirit is necessary. It is best supported in the entrepreneurial ecosystem, especially in start-up companies where ideas are still fresh and there is a high level of motivation. Startups play an important role in the economic development of the market, to some extent they show a vector of orientation (Motoyama & Knowlton, 2017). Commonly, attention is paid to startups and their ecosystem since a startup can be considered the starting point of entrepreneurial activity. It is through the study of the internal organization of startups that important conclusions about new business models are made. However, no activity can exist without the entrepreneur himself. The issue of personalization is emphasized by Motoyama & Knowlton (2017) in their study about the connections between individuals and organizations within the ecosystem. The study first considers entrepreneurs, then organizations or individuals, for example, investors, who help entrepreneurs develop their own business. Thus, thanks to this approach, a complete picture of the network is compiled. In the created social environment entrepreneurs can also support each other emotionally through the rough and uncertain journey that all entrepreneurs face (Motoyama & Knowlton, 2017). However, in the case of ArtTech startups, it is not fully known about their relationship with each other. And although they all operate in the art industry, due to their small number at the moment and their diversity, they have not yet come to realize themselves as a common phenomenon. The study of the ecosystem is important for understanding the relationships within the formed network. All startups that are located in the same ecosystem tend to support each other, exchange solutions to problems, for instance, startups from the IT field, which sometimes share the same knowledge. Also, the connecting link is usually a mentor to whom you

can turn for help. Similarly, support organizations operate in the startup ecosystem, which can sometimes arrange lunches with representatives of startups to share certain information with them.

The entrepreneurship ecosystem is primarily a self-regulating system that fills in the missing elements by analogy with the mechanism inherent in market evolution at the organizational level (Motoyama & Knowlton, 2017). Even though the study conducted interviews with startup employees from different fields, as well as with investors and organizations that provide support to startups, the conclusions made showed a minimal relationship between the agents of the startup ecosystem. In this regard, a clearer theoretical basis is provided by Marakhina (2020). Characteristics of the startup ecosystem - strengths and weaknesses of these enterprises - determine how successful the startup will be. The key approach of the study is to divide the ecosystem into micro-and macro-levels. Special attention is paid to the development of the ecosystem itself, and the factors that influence it are highlighted. An analysis of the elements of the startup ecosystem is presented, and a theoretical model of the startup ecosystem is proposed based on the results. It describes the nature of relations with organizations and events that provide startups with resources. The proposed model can be used to assess the level of development of a particular ecosystem, find bottlenecks and problems of its functioning, and develop recommendations for the creation and development of a startup ecosystem.

Startups differ from other classic small businesses in the organization of their work, approach, and goals. In the art market, many small businesses operate, with which the art industry has built relationships. In the case of startups that are based on innovative ideas, the market is still trying to get used to their new business models. Also exploring two levels, external and internal, the author concludes that the results of the startup ecosystem's operation are determined by the performance of startups, which are the only producing element, the other elements of the system only create conditions and provide the necessary resources for startups. This study confirms the general theoretical basis regarding the elements of the startup ecosystem and the characteristics inherent in startups. It confirms the relationships described in more detail in the case study 'Examining the Connections within the Startup Ecosystem: A Case Study of St. Louis'. Both papers use the same concepts and agree in their definition of the key features of startups and the agents who support them at all stages.

2.2.2. Founders motivation

Initially, entrepreneurial activity is defined by the following type of activity: the identification of opportunities, the mobilization of resources, and the creation of an organization (Spender, Corvello, Grimaldi & Rippa, 2017). It is at these stages that the general direction of the future

enterprise is determined. The innovative nature of startups is directly related to the aspect of entrepreneurial motivation. To understand the motivation behind the idea that led to the formation of a separate organization, it is necessary to consider a couple of points. Firstly, the prior entrepreneurial experience (Spender, Corvello, Grimaldi & Rippa, 2017), which will help to understand the entrepreneurial behavior of startup founders. Entrepreneurs launching new ventures are usually divided into those who have some professional experience in creating and managing an enterprise, and those who have less business experience, as a result of which they need the help of external organizations for the purpose of mentoring and support. Also, the presence of previous experience in certain sectors, in the case of ArtTech startups - this is artistic, financial, and technological, shows a significantly positive impact on the propensity of aspiring entrepreneurs to create firms (Hayter, 2013). Secondly, the social capital of an entrepreneur can have a special impact on the desire to develop innovative processes. The presence of a well-developed network in the operating sector has a positive effect on the overall development of startups and their innovations. Active participation in events that take place in the art market and are directly related to new technologies and art provides startups with the visibility of potential customers, helps to build a technical reputation, and allows them to overcome potential limitations by attracting external support in the field of development (Spender, Corvello, Grimaldi & Rippa, 2017).

Often, the motivation for starting a business can be monetary profit, but in the case of the art market, where creativity prevails over financial opportunities, the motivation of startups is largely tied to the implementation of the idea. In many ways, the advantage of the founders of ArtTech startups in the market is the fact that they develop their ideas in a well-known area where they have already worked before. Thus, they are better prepared for entrepreneurship (e.g., Block & Sandner, 2009) and there is a strong chance that they will generate innovation by being more risk-averse (Powell & Sandholtz, 2012). It has been proven that innovative entrepreneurs are distinguished by their ability to ask questions, observe, and experiment. This implies that the founders of innovation spend more time observing the environment, as well as constantly experimenting and exploring the world. (Dyer et al., 2008). It is these characteristics of the founders of ArtTech startups that contribute to the ongoing changes in the art market. An entrepreneurial mindset coupled with innovative ideas moves the art industry into new development vectors, preventing other agents from standing still and using outdated schemes that slow down the activity of the art market. Moreover, the employee workforce of start-ups usually has current technical knowledge (Dorner et al., 2017; Ouimet & Zarutskie, 2014), manifesting itself in the form of alternative perspectives that can lead to new solutions to problems (Marengo et al., 2000). However, startups need to show not only the novelty of the idea but also its usefulness

for a particular market. Thus, the generation of ideas by startups should also have a “necessity-driven” characteristic (van Burg et al., 2012). In the case of the art market, this leads to the emergence of an increasing number of ArtTech startups whose goal is to modify the market and solve some of its problems.

2.2.3. Startup difficulties

Salamzadeh and Kawamorita (2015) distinguish three stages of the lifecycle of startups: bootstrapping stage, seed stage, and creation stage. Bootstrapping stage is the earliest stage in which an entrepreneur tries to develop a set of activities to translate their idea into a working business model. However, at this stage, they are at risk, while assembling a team and most often being self-sufficient. The goal of this stage is to create the necessary conditions for the growth of the enterprise by demonstrating product feasibility, as well as the management of the team and monetary funds (Brush et. al., 2006). After that startup enters the seed stage, where the key role is played by the development of a prototype, teamwork, evaluation of the enterprise, and the search for investments for subsequent entry into the market. At this stage, it is also important to find support mechanisms, whether they are in the form of accelerators, government programs, or other representatives of a particular network. The last stage, the creation stage, is characterized by the startup entering the market, selling its product, and hiring new staff (Salamzadeh, 2015). Despite the diversity of startups, they all have to face a number of common challenges. Unavoidable difficulties usually arise with finance, human resources, support mechanisms, and environmental elements. Financial issues for startups appear at every stage, from finding money for self-funding to convincing investors of their ideas. Further, the process of recruiting a team is not always easy and simple. It is often difficult for entrepreneurs to find the right people and eventually have a common view of the idea and its development. This also applies to external support, the lack of which increases the risk of failure (Salamzadeh, 2015). Finally, startups ignoring existing trends, limits in the markets, legal issues, etc. can lead to the failure of the enterprise.

2.3. Support for startups

Due to their organizational characteristics, startups, especially at the first stages, need support. Most of the research is devoted to the ecosystem in which startups are located, and it is best to observe it when startups participate in accelerator programs at the initial stages. Cohen, Fehder, Hochberg, Murray (2019) conclude that accelerator programs are an important part of the entrepreneurial ecosystem. An analysis of the organizational and functional aspects of these programs, and how they relate to the effectiveness of startups participating in these programs, sheds light on the emerging base of the new enterprise.

Startup accelerators are a phenomenon that appeared relatively recently, but at the same time, it is developing and gaining momentum. These programs usually last from 3-6 months and are aimed at helping startups with their entrepreneurial activities. Research on accelerator programs is divided into two groups. Those who find a positive impact of acceleration on startups (Winston Smith et al., 2013; Fehder, 2018; Hallen et al., 2019). And those who find negative impacts of accelerators on startups (Yu, 2020; Gonzalez-Uribe and Leatherbee, 2017). The accelerator can be defined as ‘A fixed-term, cohort-based program for startups, including mentorship and/or educational components, that culminates in a graduation event.’ (Cohen, Fehder, Hochberg, Murray, 2019). The organizational structure of such programs includes the provision of resources, places, mentoring to startups for a certain period. As for the financial side of the issue, it is divided into stages of financing and attracts various types of investors interested in a particular start-up company. The final day of the program is a demo day, where startups show the results of their journey. Despite the detailed description of the internal infrastructure of accelerator programs, the paper does not specifically consider the positive or negative effects of passing these programs. That could give a broader understanding of the importance of such organizations in the market, and most importantly their integral role in the life of startups.

2.4. COVID-19 impact

A major role in how the art market operates now was played by one unforeseen circumstance, namely the COVID-19 pandemic. For startups, which mostly rely on external assistance, the virus has become another challenge. The activity of many startups before the pandemic was focused on the physical art market, but when all activity shifted to the digital space due to lockdowns, startups had to quickly modify their business models to adapt them to the new reality. However, it is the organizational type of startups that allows them to turn critical situations into a plus for themselves. The changes that have taken place in the art market, including widespread digitalization and a shift in the needs of its participants, have opened up additional opportunities for those organizations that were able to adapt and rebuild at the right time. In other words, startups saw new opportunities. The pandemic launched a process of changes in the art market, which could only come in 10-20 years. The need for technology and change that has been brewing for a long time has finally manifested itself in this critical time. On the one hand, the crisis can be said to have forced the art market to digitize, on the other hand, consumer demand has greatly changed. Past needs have been replaced by the necessity of technological solutions. They can be provided in such a short period, first of all, by organizations, namely startups that either previously developed innovative solutions, or which, due to such characteristics of startups as rapid growth, were able to bring the necessary ideas and approaches to the art market in time.

Certainly, the pandemic has affected all the subjects of the business ecosystem. And to highlight the challenges faced by entrepreneurs during the crisis, how they are coping with the consequences, and what measures the authorities can take to protect and support representatives of the entrepreneurial ecosystem, it is more logical to use interviews with entrepreneurs as a source of information (Kuckertz et al., 2020). The resulting COVID-19 consequences, expressed in the form of an unforeseen crisis, entailed political and economic changes. The researchers' focus is on innovative startups, as they should shape economic activity in the future. But right now, during the crisis, they are presumably most vulnerable. The topic of entrepreneurship and crisis management has been discussed by many authors (e.g., Williams and Vorley, 2015; Smallbone et al., 2012; Cowling et al., 2012; Parker et al., 2012), but the specific nature of COVID-19 adds to the research novelty of this work. The first focus is on the theory related to the sustainability of business and its response to the crisis (Doern, 2014; Doern et al., 2018). The second theoretical basis concerns policies that could help a firm survive during a crisis (Alesch et al., 2001; Dahlhamer and Tierney, 1998) and what barriers exist (Runyan, 2006).

The first results of the interviews showed that startups feel the effects of COVID-19 instantly, this is expressed in the form of reduced sales while maintaining constant costs (Kuckertz et al., 2020). This combination poses a threat to the liquidity of startups and their long-term survival. Also, all efforts are aimed at survival, and the issue of innovation fades into the background. The respondents were divided into those who had to change the organizational structure of the startup, and those who were not particularly affected by the crisis. The latter was left unaffected because their business remains relevant, and the startup took pre-crisis measures aimed at sustainability.

Resilience in entrepreneurial crisis management is the key concept of the research conducted by Doern et al., (2018). It describes the ability of organizations to function in times of crisis. Another related concept is the concept of bricolage (Mallak, 1998). This study shows that startups survived by combining existing internal resources, as well as accessing external resources from their network. In short, startups used their anti-crisis bricolage measures to solve new problems. They identified new business opportunities and based on this, set new directions for their firms (Kuckertz et al., 2020). Most governments have responded quickly and decisively to the COVID-19 crisis. The most common measure taken was the improvement of loan availability. The key dynamics model was also proposed, which suggests that entrepreneurs use the bricolage approach as part of their initial response to turning crisis-induced adversity into resilience. Interviews conducted in support of this research suggest that startups will rely heavily on the support of their entrepreneurial ecosystem to cope with the crisis. Through the analysis of the impact of the pandemic on startups, the characteristic features inherent in innovative startups and how they cope

with crisis situations are revealed, which is extremely necessary to understand when considering their life path, entering the market, and existing on it in today's conditions.

Any crisis also carries certain opportunities, the main issue becomes how to recognize them. At a time when the business environment needs to resort to innovative solutions more than ever, startups are much faster to respond to changes (Kuckertz et al., 2020). In research circles, there is an opinion that innovative startups are easier to adapt to the situation after the crisis, more effectively than large, rigid firms or universities. Analyzing data from a commercial innovation database, it was concluded that, for example, universities for the most part do not differ in the response time to innovations. Startup-corporate collaboration and open innovation are also important. However, there is no significant analysis of startups. The conclusion that startups are easier to handle crisis situations, due to their maneuverability and ability to adapt to the situation, is made from general information about the structure and characteristics of startups. Which of course does not reflect the real state of affairs and the problems that startups had to face during the pandemic (Kuckertz et al., 2020).

2.5. Blockchain

Under the influence of digitalization, agents of the art market in recent years have begun to use new technologies to improve internal problems of the market such as its opacity, poor-quality data collection, stagnation in the processes of classical organizations, etc. During the pandemic, when many businesses have been moved online, the entrepreneurial potential of many technologies has increased. This also affected the art industry structure. During the quarantine period, the art market faced organizational problems, which reinforced the question of the development of this cultural sector. Many have turned their attention to technology as a solution in the upcoming future. Digitalization has tenaciously entered the art industry, widening the audience that an artist can reach. This shift enhances the accessibility of the entire industry, but so far only from the outside. The problem of the market's transparency should be first tried to be solved from the inside. Blockchain can help initiate this process towards transparency. Even though "blockchain is the least advanced of all the technologies" (World Economic Forum, 2018), it draws the attention of "many creators because of its potential to change the control artists have over their work, in particular remuneration, production rights, third-party monetization and data transfer of creative work." (World Economic Forum, 2018). Moreover, last year blockchain was considered by leaders as integral to organizational innovation (Deloitte's 2020 Global Blockchain Survey).

Blockchain technology can be described as an entirely distributed database, first implemented in the 'Bitcoin' system (Belkevich, 2017). Modern artists, especially those working in the digital

space, usually face the artwork's authenticity problem. This is where a blockchain can have a positive impact. For people, who perceive art as a kind of asset (Aryanova, 2018), it is crucial to be sure of the authenticity of the artwork. Firstly, it is essential to use the correct methods of works' certification. One of these methods is the use of blockchain technology. For instance, when a work of art is put up for auction, its value formation depends greatly on provenance. If the origin of the work is not reliably confirmed, then potential buyers will have a rather low credit of confidence in it. Transactions created within the framework of the blockchain, each of which has its record, are a modern way of maintaining and tracking the so-called 'reporting' and reliability of origin (Belkevich, 2017). The opacity of the art market is not only one of its main drawbacks, but also increases the level of fraud in this area. The annual volume of fraudulent transactions in the art market is estimated at \$ 6 billion, of which 80% are related to fakes (Samoyduk, 2018). Due to these circumstances, artists are beginning to pay attention to individual certificates of authenticity.

Besides the full story of creation, selling, and movement of the work, the certificate also holds a mini-version (reproduction) of the confirmed picture, the so-called 'image hash'. The individual blocks contain the hash sum, which is the result of processing the data of various hash functions. The blockchain itself can be represented as an incessant chain of such blocks, linked together by information reserved in the hash. The 'hash image' is a kind of transformation performed by a cryptographic hash function, of the specified data into a string of letters and numbers. Therefore, a unique string of 64 characters is derived, and this hash is assigned to the entered data. Thus, the immutability of blockchain transactions is achieved, which guarantees both the security of transactions and their transparency, based on the verifiability of all operations. Nevertheless, not everyone accepts such information transparency of the records. A large number of art buyers, especially private collectors, perform their deals confidentially. The reason behind it is the justifiable desire to avoid disclosing information about their activities to the public. If a single electronic register of expert opinions were created, the functions of an expert as a market entity would not only decrease but most likely simply exhaust themselves (Blinova, 2019).

Furthermore, the digitalization of art had an essential part in the adoption of blockchain technology in the creative domain. The art market and its institutions have been significantly impacted by digitalization. The distribution of digital content (a set of files that must be provided to a consumer) has altered not just the content of visual arts, but also how the artworks are sold, consumed, and evaluated. Websites and data systems are used by the great majority of art market participants institutions, for organizational, educational, and marketing objectives. Nevertheless, just a few people have been able to figure out how to profit from initiatives made on the Internet (Web 2.0).

The art market's informal approach, which focuses on a network of dealers and collectors who prefer to perform deals in person, is currently displacing the widespread use of social media. Despite this, the art industry, like the rest of the cultural economy, is changing dramatically due to the digital revolution.

Digitalization has resulted in the development of databases in the sphere of art such as Artsy, Artnet, Art Report, Art Facts, etc. holding a wealth of information about the prices, qualities of art objects, as well as provenance, authorship, and sales records, which is now available to professionals and art enthusiasts. Hundreds of millions of photographs of the paintings have been digitalized and distributed, primarily on the websites of museums and galleries, research institutes, etc. The growing availability of information on artists and their works has benefited the art market's activities. Overall, this has helped to increase market transparency and lower the cost of trading activities. Communication technologies allow collectors and dealers to interact considerably more efficiently than in the past. (Blinova, 2019). Moreover, without the assistance of specialists, potential purchasers can find the information they require about works or artists. As a result, art buyers are better informed and focused on their prospective purchases.

2.5.1. Blockchain on the art market

Most ArtTech startups, which are full-fledged participants of the art market, operate in the blockchain system. That is why the analysis of this technology to the art industry has an important role in this study. Integration of blockchain technology for transactions in art directly depends on the economic state of the art market and the desire of its agents to change the established format. Participants of the art market use the blockchain to manage physical and digital assets, record internal transactions. Cloud-based blockchain services can help companies manage multiple internal databases (Iansiti & Lakhani, 2017). To increase the utility the blockchain-based solution must have functionality as good as a traditional solution (Kochetkova, 2020). The applications being developed should be easy to adapt to facilitate the transition of the art market to a new reality. The new transformative applications can achieve a greater effect due to the development of a new business model that will differ from existing approaches. Such business models usually take the form of startups, and although they are difficult to adopt, they determine future growth for art market participants (Iansiti & Lakhani, 2017).

Organizations operating in the blockchain system are changing the art market in different industries. Artists, collectors, investors, auction houses, all use this technology in their activities in one way or another. Thus, artists are increasingly creating digital art and confirming their authorship with the help of the blockchain. Collectors use the blockchain to verify the authenticity

of their purchased works (Lee, 2019). One way or another, the transition to new technologies is already taking place, but the presence of technology does not always guarantee positive changes. What is more important is whether some organizations and platforms broadcast blockchain technology in such a way that it is useful for the participants of the art market. The mission of the art blockchain platform is to utilize the blockchain to create new business channels, as well as to facilitate access to the art world to a wider audience (Lee, 2019). Usually, blockchain companies specialize in a certain part of the art market. For example, some organizations may act as intermediaries between artists and collectors. Other blockchain platforms carry out fractionated sales of works of art, that is selling fractions of the ownership of works of art. Another variety is the tokenization of art which enables the sale of artworks in Bitcoin (Kochetkova, 2020). Tokenizing through blockchain promotes transparency of the art market. More and more investors can access works of art through tokenization. Partial ownership with smart contracts on the blockchain can create new investment opportunities (Styx, 2019). Many new technology companies are focusing on sharing ownership. In other words, art collectors can use the blockchain to jointly own individual works of art. Thus, art investors, in turn, diversify their art holdings. Such applications of the blockchain emphasize the reduced role of the intermediary in the art market. Using the blockchain platform, it is possible to create and store smart contracts – lines of code that are automatically executed when the specified conditions are met (Kochetkova, 2020). Smart contracts allow you to ensure compliance with the agreement in such a way that all participants are confident in the result in the absence of an intermediary. In a normal transaction, both parties may have disagreements and distrust, in which case smart contracts can simplify this multi-step process (Gopie, 2018). However, perhaps the most common application is to track the provenance of the work. Tracking of provenance is essential before making a transaction. Blockchain offers an unchangeable and decentralized record. This record describes the chain of ownership, while authentication proves the authorship. The emerging digital art market is more technologically demanding than physical art (Kochetkova, 2020). Participants in this segment of the art market use the blockchain to create and sell digital art. The problem with selling digital art, however, is that it is not easy to create a limited edition of an easily reproducible file. One of the prototypes of 'monetized' graphics helps artists to record their artworks on the blockchain. With the help of technology, digital artists can specify sales conditions and sharing rights for their work (Whitaker, 2019).

Despite the opportunities that are opening up, blockchain also has its challenges. According to a Deloitte report, most blockchain companies in the market cannot send or receive information from another blockchain. This lack of interaction complicates the situation of cooperation (Modex,

2019). Many companies on the market use blockchain systems, each of which is created with a specific purpose. However, the mission of blockchain technology is to connect multiple users to create additional value. At the moment, competing companies are creating separate registers to compete for specific market niches (Werbach, 2018). Moreover, the introduction of blockchain technology requires large investments in infrastructure. So, an ordinary company must first find a specialist in this field, manage a team that deals with various aspects of blockchain technology (Singh, 2020). In this regard, it is startups that are much more adapted in their initial characteristics to the most profitable distribution and development of blockchain applications. If a startup focuses its activities exclusively based on a blockchain system, its provision plays a key role for the entrepreneur. In other words, all attention and all funds are directed to the development of one of the options for using blockchain technology. It is the experiments of startups with blockchain systems that increase the level of trust in this technology.

3. Methodology

This chapter is aimed at describing the methodology of this research. It includes the justification for choosing the case study approach, elaborates on the process of case selection, data collection, and analysis. The validity and reliability of the research is discussed at the end of this chapter.

3.1. Case study approach

This research aims to gather insights into how ArtTech startups are establishing themselves in the market. Understand the founders' motivation behind their idea, and follow similar trends in the development of organizations in the market. To understand the path of their formation, an exploratory multiple case study research design is chosen. The case study research method is appropriate as a question of 'how' is explored and the emphasis is on the analysis of new information and its theorization (Benbasat, Goldstein & Mead, 1987; Yin, 2013). It is also the preferred method when the focus of the study is a poorly researched modern phenomenon, and the researcher has little information in the public domain. Given that the entry of ArtTech startups into the market is determined by numerous variables, such as the funding system, a favorable ecosystem, the availability of a decent idea for functioning in the market, and other variables, this is a complex multi-level context. Cases are based on past knowledge or current data from official sources. Thus, the multiple case study approach was chosen for this study.

Case study research generally deals with a variety of sources in the data collection stage (Yin, 2013). This particular research study uses in-depth interviews with founders or employees of ArtTech startups, as well as desktop analysis of data from their websites to build the case characteristics. The selection is however limited since there are a small number of companies that profile themselves as ArtTech startups. Nonetheless, such a restriction opens up the potential for further research in this area.

3.2. Case selection

The case study approach allows a higher diversity of information of formed groups of startups. Since ArtTech startups remain an unexplored area of the art market, a case selection method that would enhance the utility of information from a small sample was chosen. In other words, the maximum variation cases sampling method was used.

There are sixteen case studies selected for the study. To determine the ArtTech startups that would be relevant for this research, certain criteria were needed. Thus, when selecting companies for the study, attention was primarily paid to the following characteristics. The company must be a participant in the art market, in the sense that it is directly connected in one way or another with some aspect of the art sphere. The selected companies were founded in the last 2-3 years, although during the collection of information it turned out that some of the startups were founded much earlier. Further, the enterprise must operate based on a certain technology or have its own promoted technology. It was the relationship between these two factors, technology, and art, that determined the scientific interest for this study. Of course, an important aspect is the size of the company, as the research is aimed at studying startups. However, there were no problems with this, since all such initiatives that reflect the essence of the term ArtTech are small enterprises or are identified by the market as startups. In addition to their small size, startups also have a small number of employees, mobility compared to giant companies, and an innovative idea.

ArtTech startups were selected to show the variety of ideas that companies have that influence the art market in one way or another. Despite the diversity of ArtTech startups' focus, it is important to consider them all together as a single phenomenon, as they are still a developing and unexplored niche of the art market. At the moment, only a small number of organizations position themselves as ArtTech startups. Therefore, the analysis of each case will help to make a whole picture of the general state of affairs. Each organization under study is somehow connected with the use of technologies in the art field. But still, their approaches are very different from each other. One group builds its business model based on blockchain and NFT, the tokenization of art, and the use of technologies such as VR, AR, and AI. This group should be considered as one of the most

technologically advanced with a focus on using the opportunities of digitalization. The second group includes organizations that develop their products around art objects. For example, robotics or high-tech equipment for the transportation of art. The next group is formed by startups, which are different types of platforms. They come in the form of a marketplace, an online gallery, digital art promotion platforms, and an online auction. All these organizations are in some way intermediaries. Another group provides a technological solution related to access to various databases. The activities of these startups are aimed at opening access to the necessary information in a convenient and accelerated format. The latter group is formed based on providing certain auxiliary tools or software for the participants of the art market.

Despite the above-mentioned diversity, all startups have common characteristics. All of them are participants in the art industry, and their activities are ultimately aimed at improving the internal processes of the art market. Also, due to the use of technology and virtual space, startups have the opportunity to reach a larger audience. All the ArtTech startups under consideration operate at the international level. It is worth noting that the time of the creation of startups was about the same. Most were founded between 2015-2020. This also highlights the novelty of this phenomenon and its position in the role of startups. The period of the foundation indicates that at a certain point there was a need for changes.

The following table demonstrates 16 ArtTech startups with the names of founders or employees, some of whom formed separate case studies for this research. As for the rest of the organizations, their analysis is based on a detailed review of their websites and a comparison of related elements between other startups (Table 1).

ArtTech Startup	CEO/Founder/Employee	Founded in	Country	Territorial focus	Type of activity
Robot Muralist	Richard (CEO)	2015	Estonia	International	Art Robotics
Muzing (app)	Timothy Heckscher (Founder)	2019	France	International	Museum Business
FRESCO	Roy Huang, Ting Liu (Founders)	2017	Switzerland	International	Blockchain
DADA	Abraham Milano (Co-founder)	2012	New York, US	International	Digital Media, Blockchain
ArtBinder	Alexandra Chemla (Founder)	2010	New York, US	International	Software,

					Application for galleries
Otis	Michael Karnjanaprakorn (Founder)	2018	New York, US	International	Marketplace for alternative assets
KOVET.ART	Saras Rachupalli (CEO and Founder)	2020	UK	International	Online Art Gallery
V-Art	Anastasia Glibova (CEO and Co-Founder)	?	Ukraine (?)	International	Digital Art, NFT+ platform
The Art Exchange	Inna Bazhenova, Andrey Belyakov	2019	Amsterdam, London	International	Online Platform, tokenized art
Cappasity	Alex Chegaev, Kosta Popov, Marianna Alshina (Founders)	2013	California, US	International	3D, VR, AR
ArtAML	Susan J Mumford (CEO and Co-Founder)	2019	UK	International	Anti-Money Laundering Solution
Foundwork	Adam Yokell (Founder)	2017	Los Angeles, US	International	Platform for artists, tool
ROKBOX	Andrew Stramentov (CEO)	2014	UK	International	Artwork protection
FairWarning	Loic Gouzer (Founder)	?	New York, US	International	Private auction platform
Glass	Christian Huhnt (Founder)	?	UK	International	Catalogue raisonné information (WhatsApp)
Oxia Palus	Anthony Bourached, George Cann (Founders)	2019	UK	International	AI

3.3. Data collection

The data analysis of this multiple case study research consists of interviews and the data collected from companies' websites. All these various types of data are used for the analysis of the research question and mostly for proper case description.

Since this thesis research reveals such concepts as the art market, technologies, investment, and the stock exchange, the element of flexibility is necessary for data collection. The highlighted keywords include the multi-layered aspect, which is often best considered with pre-determined questions, to obtain more extensive answers. Therefore, the semi-structured interview is chosen, which allows to touch on many issues and learn more specific insights. To ensure fruitful data collection during semi-structured interviews, a prepared interview guide has been compiled. The operationalization table below was composed simultaneously with the main concepts that arose from the theoretical framework provided above. Ten core concepts have been identified and operationalized through questions in the interview guide (Table 2).

Concept	Description	Question
Motivation behind the idea	To understand the motivation behind the idea that led to the formation of a separate organization, it is necessary to consider a couple of points. Firstly, the prior entrepreneurial experience (Spender, Corvello, Grimaldi & Rippa, 2017), which will help to understand the entrepreneurial behavior of startup founders.	How did you come up with this particular combination of art and technology? What is the main reason for such an interrelation between technology and art?
Relevance of the idea	Startups need to show not only the novelty of the idea, but also its usefulness for a particular market. Thus, the generation of ideas by startups should also have a "necessity	What are the pros and cons of developing this idea in the art market?

	driven" characteristic (van Burg et al., 2012).	
Professional background	The founder's professional experience plays a special role in the future organization of the startup's activities. The presence of previous experience in certain sectors, in the case of ArtTech startups - this is artistic, financial and technological, shows a significantly positive impact on the propensity of aspiring entrepreneurs to create firms (Hayter, 2013).	What kind of education do you have? What is your professional background?
Speed of development	Not all startups enter the market at the same rate. Someone is trying with all their might to move to a new stage as soon as possible. Others choose slower development for various reasons (quality improvement, promotion aspect, fundraising, etc.)	What were your key milestones? What helped you in promotion of your business model?
External help	Due to their organizational characteristics, startups, especially at the first stages, need support. Usually, startups take part in accelerator programs or seek support from the state, private investors, etc. (Cohen, Fehder, Hochberg, Murray, 2019).	Have you asked the state or other external organizations for help? For example, start-up accelerator programs or government support for small businesses?

Startup difficulties	Startups have to face many obstacles, especially before entering the market. Problems can be both internal and external. And how startups cope with them shows the level of their preparation (Salamzadeh & Kawamorita, 2015).	Being a startup, what difficulties did you have to face before entering the market?
Funding	A special role in understanding the startup ecosystem is played by the aspect of its financing. Often, it is the type of investment that determines the overall target orientation of a startup. When researching the financial side, the focus is usually on the transaction itself, the amount and volume of investment. (Alexy, Block, Sadner, Ter Wal, 2011)	<p>Did you have any problems with funding?</p> <p>How did you attract investments, and did you manage to correctly allocate the received resources?</p> <p>Have you managed to attract more large investors?</p> <p>What is the current situation with financing and self-sufficiency?</p>
Market position	After entering the market, startups occupy a certain place in the ecosystem of the art industry. Someone manages to immediately gain a foothold, someone even after the exit continues to search for their position.	<p>How would you describe your current market position?</p> <p>What has changed after strengthening your position in the market?</p> <p>Is there a difference between startups and small business?</p>
Influence on the market	With their activities, startups have a certain influence on other players in the art market. Either by competing with	<p>How do you influence the market and its participants?</p> <p>Would you say that you have competitors in your area of activity? If not what makes you unique?</p>

	them, or by changing the rules of the game, or on the contrary, by helping and supporting classic agents.	Can new technologies change the art market?
COVID-19	The activities of many startups fell on the coronavirus pandemic. At a time when the business environment needs to resort to innovative solutions more than ever, startups are much faster to respond to changes (Kuckertz et al., 2020).	How has the coronavirus pandemic affected your company? Have your ideas become more popular during this period, and has the digitalization of the art market helped you?

3.3.1. Implementation of data collection

In order to conduct interviews, ArtTech startups were contacted via e-mail. The positions of the interviewees of ArtTech startups are CEOs, founders, or co-founders of the companies. Although not all companies have responded, 5 interviews were carried out via Zoom with a video. The average interview lasted for 55 minutes. Each interview was recorded with a Zoom recorder tool and transcribed to simplify the coding analysis of the data. All interviews were transcribed with the help of the software Otter.ai. The transcriptions' content will be manually coded and placed into a thematic analysis framework, involving constant comparison of texts (Bryman, 2012).

3.3.2. Interview protocol

As mentioned before the semi-structured interview was selected as the main data collection instrument of this thesis. Before the interview, the respondents received an e-mail with an invitation, in which there was a summary on the subject under study and a couple of questions that were asked to think about before the conversation itself. The questions in the interview guide were divided into several topics that were generated after the literature analysis. It included questions: 1. about the idea itself, 2. about the founders of the company, 3. about the business organization before entering the market, 4. about the company's position after entering the market, 5. about the Covid-19, 6. about the future. The interview protocol can be found in Appendix A.1.

3.4. Data analysis

3.4.1. Case study analysis

The case study research method used in this thesis includes two key aspects of such analysis: the cross-case analysis and within-case analysis. Within-case analysis implies a detailed description of each case under study. This also includes familiarizing with the company's websites and reviewing them from the point of view of the research question. A cross-case analysis in this thesis is necessary for considering data from different sides and points of view. A few dimensions are selected to observe within-group similarities. The key milestones before entering the market, the idea itself, and other resulting elements are going to be analyzed.

3.4.2. Data coding

The gathered data were analyzed using Atlas.ti. 9.0 software. Thematic analysis was chosen to construct an index of central themes and subthemes (Bryman, 2012). Firstly, key themes and categories were outlined from the reviewing of initial transcriptions of interviews. Then the data was coded using Atlas.ti. The thematic analysis can be found in Appendix B.1.

3.5. Validity and reliability

3.5.1. Validity

To increase the internal validity of this study, the following measures were taken. Comparing the patterns described in similar case studies, the author of this paper accepted the role of the researcher in data analysis. The explanatory role, in turn, is necessary to start a discussion, the results of which can be used in further research on a given topic. As for the directly related aspect of external validity, multiple case study research was done. Thus, external validity is enhanced by the number and variety of overall case study analysis. A special role in this is also played by the results of the cases, which in fact may have similar patterns.

3.5.2. Reliability

The reliability of the research determines whether another researcher would be able to replicate the study and discover the same findings (Yin, 2013). This research not only raises a little-researched topic, touching on new forms of organizations operating in the art market but also examines in detail each ArtTech startup selected for this work. The results of the analysis of the data obtained from the interviews are a valuable contribution to understanding the current state of the modern art market and its trends. Therefore, this research could be stated to have high reliability.

3.6. Conclusion to the methodology section

This section covers such aspects of research as the reasoning and process of the research approach, the selection of cases in the framework of data collection and analysis, as well as validity and reliability. From all of the above, it can be concluded that this study meets all the necessary criteria and can be considered valid and reliable in the eyes of other researchers.

4. Case study analysis

4.1. Desktop analysis of ArtTech startups' websites

Content analysis in a form of desktop analysis of websites was used in this research. This approach was chosen to explore the content component of the websites of ArtTech startups, to find out what does the information provided tells the website visitor, how it may interest or help them. The author conducted an internal and external analyses of the websites. Internal analysis refers to the digital performance of the website, information about which was collected using the Nibbler and Website Grader tools. The external one is an overview of the content presented on the startup's website itself.

4.1.1. Robot Muralist

Robot Muralist has developed sprayprinting robots that make it easy to create art media murals. Designed not only for artists but also for art lovers, their robots can transform any design into wall art. The structure of their website consists of the main home page and 5 subpages which are: 2 pages about with robot's description, services, blog, and contact. Regarding the digital performance, the website overall shows good results. Almost all pages have metadata, some of them with the description meta tag which is required to display on Google search results pages. Further, over the past three months, the level of attention to this website has increased slightly (Nibbler, 2021). This growth could have been facilitated by defined headings as they aid accessibility and are crucial for search engine optimization. The average amount of content on a website relates to its ranking in search engines. The largest amount of content (words) is on the page about the Leonardo Robot. This website is also optimized for viewing on mobile devices. Besides, server behavior is in excellent condition. Moreover, this website uses various forms of analytics software that help with the analysis of visitor behavior (Nibbler, 2021). The marketability of this website is supported by the appropriate web addresses (URLs) and the fact that the site is updated regularly. This is a good sign as visitors tend to have more credibility in up-to-date websites. The content presented on the website properly describes all the products provided by the startup. Both technical characteristics and methods of using these robots are disclosed. The website also has good visual support in the form of photos and videos showing the process of working with

the robot and its results. Moreover, statistics are provided on the number of products used and the works created by them. The distinguishing point is the story of the startup creation, the positioning of the idea, the mission, and the goal. The page also displays media that mention the startup, and partners. The services page displays potential stakeholders of the startup with a description of how the startup's products can be useful to them. The final point is the company's blog about technology and art, which, however, has not been updated for a long time. As a result, the website very clearly describes the company's product and its application options, while explaining its significance for the art market. Revealing its usefulness to potential customers, the website also invites to participate in partner programs, thereby expanding its network.

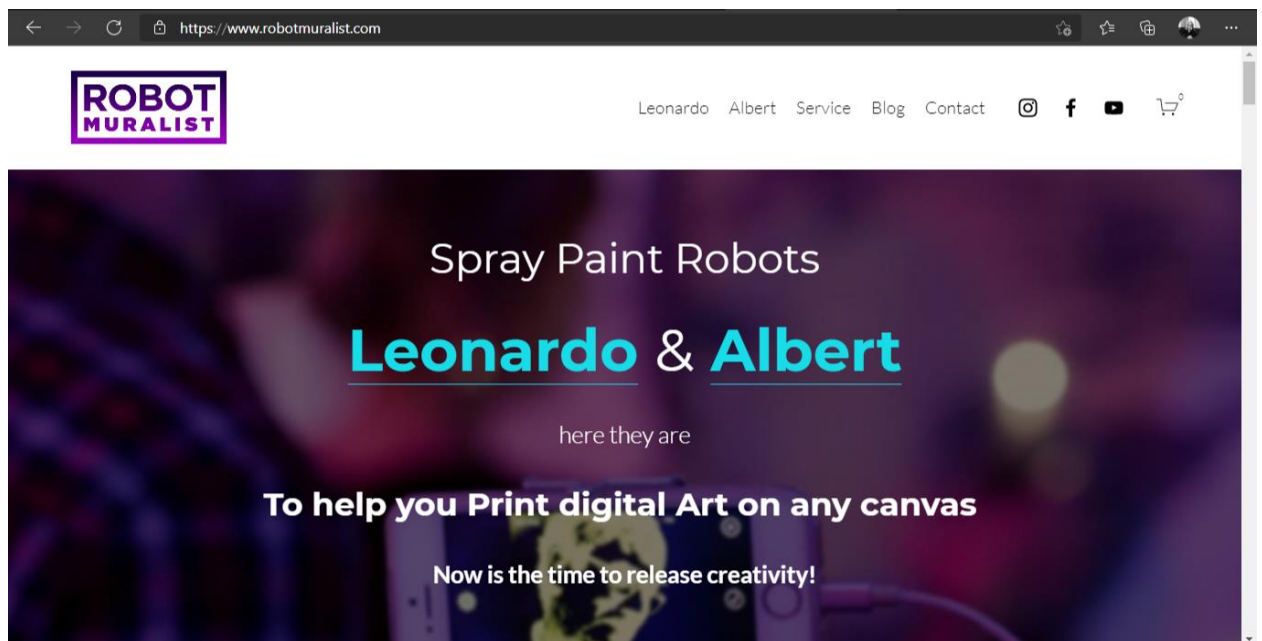


Figure 1. Robot Muralist website – screenshot (Source: Robot Muralist, 2021)
<https://www.robotmuralist.com/>

4.1.2. Muzing

Muzing is an app that allows discovering people interested in the same art shows, connect with them and plan your visit to a museum. By sharing your cultural interests with others, the social component of the cultural experience increases. Since Muzing is primarily an application, the startup website itself is only the outer shell of the product. Its structure consists of the home page with the link to the app and 3 subpages which are: 2 pages with the information for stakeholders and contact. The digital performance of the website shows the same results as the previously analyzed case (Robot Muralist), differing only in some criteria. First, this website is linked to the company's social networks such as Twitter. And secondly, the updating of the website is not too

regular, since it contains only general information about the application, which does not require frequent updates (Nibbler, 2021). As mentioned earlier, the website provides only general information, focusing the visitor's attention on the fact that Muzing is an app. Therefore, most of the home page is occupied by a link to downloading the app, and next to it is a photo of its interface. Next, there are two sections with detailed information for two types of stakeholders, namely: art lovers and institutions. The website also lists the company's mission statement and shows team members with links to their LinkedIn. The last section of the site contains a list of media that covered this startup. Thus, the key information about the idea of the company and its product is conveyed to the website visitor. Art market participants who fall into the category of potential stakeholders will be able to find primary information that reveals potential utility.

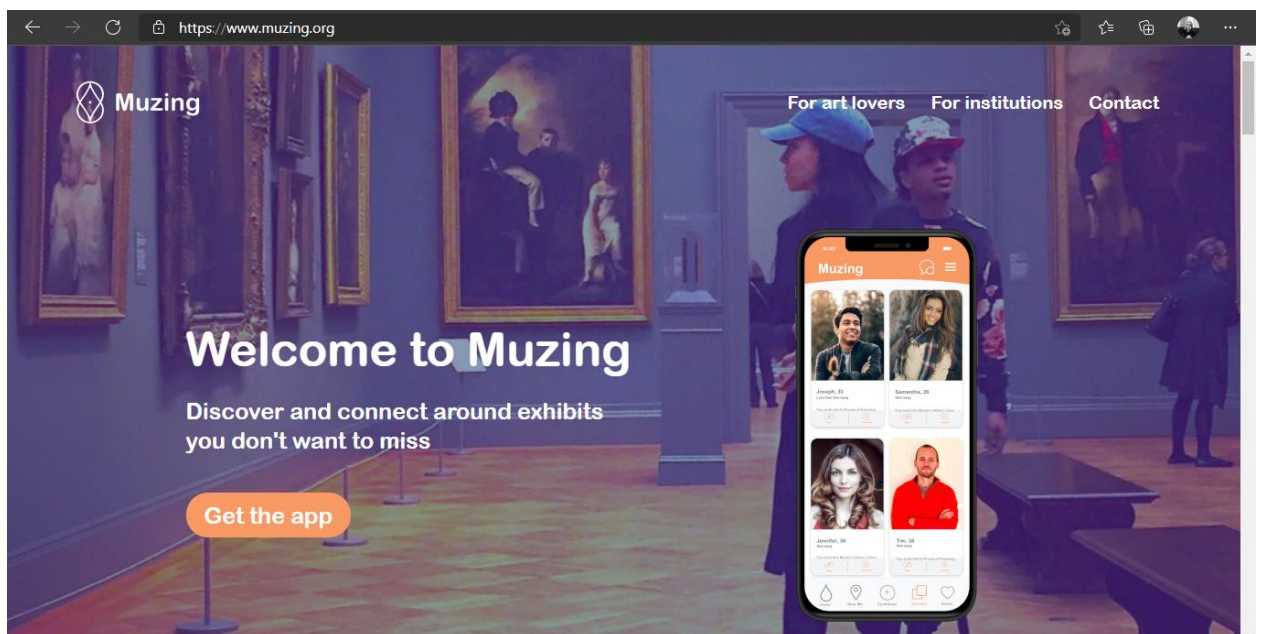


Figure 2. Muzing website - screenshot (Source: Muzing, 2021) <https://www.muzing.org/>

4.1.3. FRESCO

FRESCO is a distribution platform for artists, art dealers, and cultural organizations. It was created to simplify the art market's trust-checking process. Through blockchain technology, the platform enables liquidation, promotion, and provenance of artworks on a global scale. Holders of FRESCO token can allocate their FRES Cash to artworks on the platform. The amount of FRES Cash equals the sum of trust value (FRES Trust) they can distribute to the artwork (FRESCO, 2021). The addition of a unique index of trust to the work reflects its market value in the artistic environment. The structure of the website consists of the home page and 11 subpages that are dedicated to separate aspects of the platform. Its digital performance meets almost all the necessary

characteristics for the successful operation of the website. However, the website was last updated on 15 April 2018, which isn't good as the visitors may dismiss it as outdated (Nibbler, 2021). Also, due to the lack of updates, the attention to the website has significantly decreased over the past three months (Nibbler, 2021). The content component is heavily divided into too many subpages. From the user's point of view, the website contains too much information that is difficult to perceive consistently. Despite the detailed description of the functioning of the platform and its capabilities, there is no clear understanding of the proposed product in my head. The website has a lot of links to various social networks, which in turn have not been updated since 2018. Due to such a long absence from the media field, it seems that the startup has stopped its work, which of course may not be true. If the website had more structure, it would be easier for visitors and potential stakeholders to understand the idea of the platform and its mission. So far, despite the many announced initiatives on the blockchain platform, the organization itself cannot provide any results.

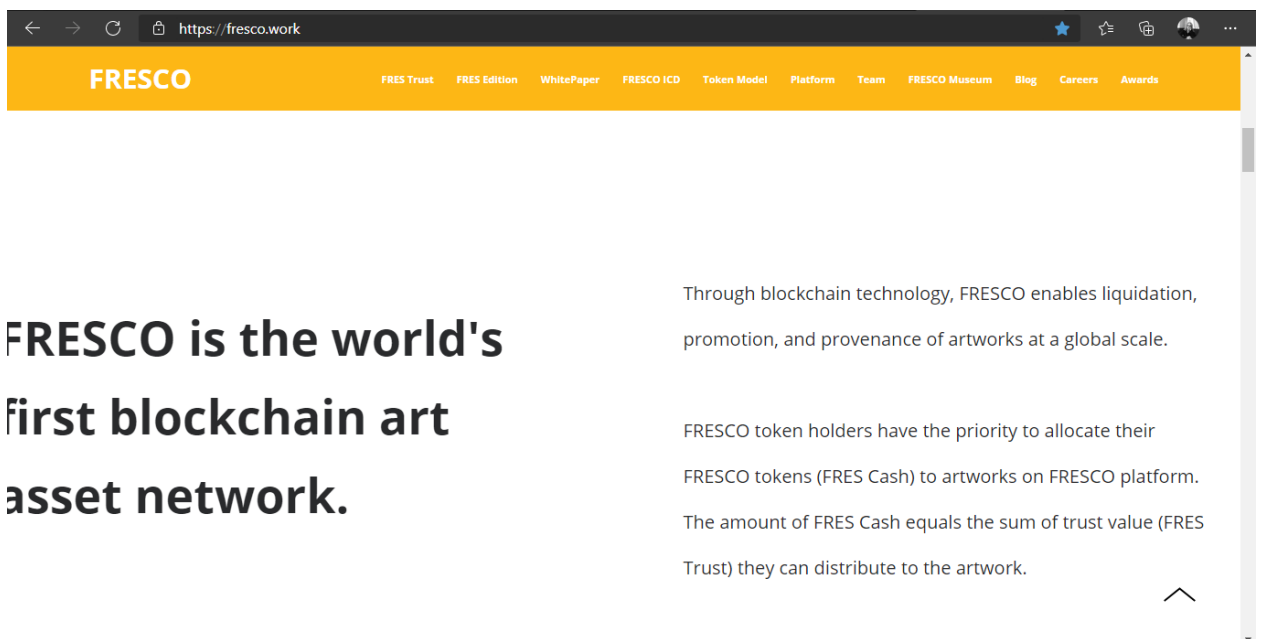


Figure 3. FRESCO website - screenshot (Source: FRESCO, 2021) <https://fresco.work/>

4.1.4. DADA

DADA is an online visual platform that operates as a social network to bring artists together. After the creation of artworks, they can be displayed on the platform which serves as a blockchain-based marketplace where artists can sell their work using smart contracts. The structure of the website consists of the home page and 1 subpage that leads to examples of posts made by artists. The website's digital performance has average indicators as it lacks few important aspects. First, there

aren't enough headings which mean that users find it harder to determine the content of this website's pages. Secondly, the amount of content on the website is very little, only 20 words per page (Nibbler, 2021). Since it's a social network the visitor should have an account to explore its services to a full extent. An ordinary visitor can only see limited information. However, one of the subpages leads to startup's Medium profile which is regularly updated with fresh news and events from the life of the company and the art world. To sum up, it is possible that after the registration stage, the user will have more options, but it is quite difficult for an ordinary visitor to take out some useful information from the website. It is necessary to search for relevant articles on Medium, at least to understand the mission of the startup and its idea.

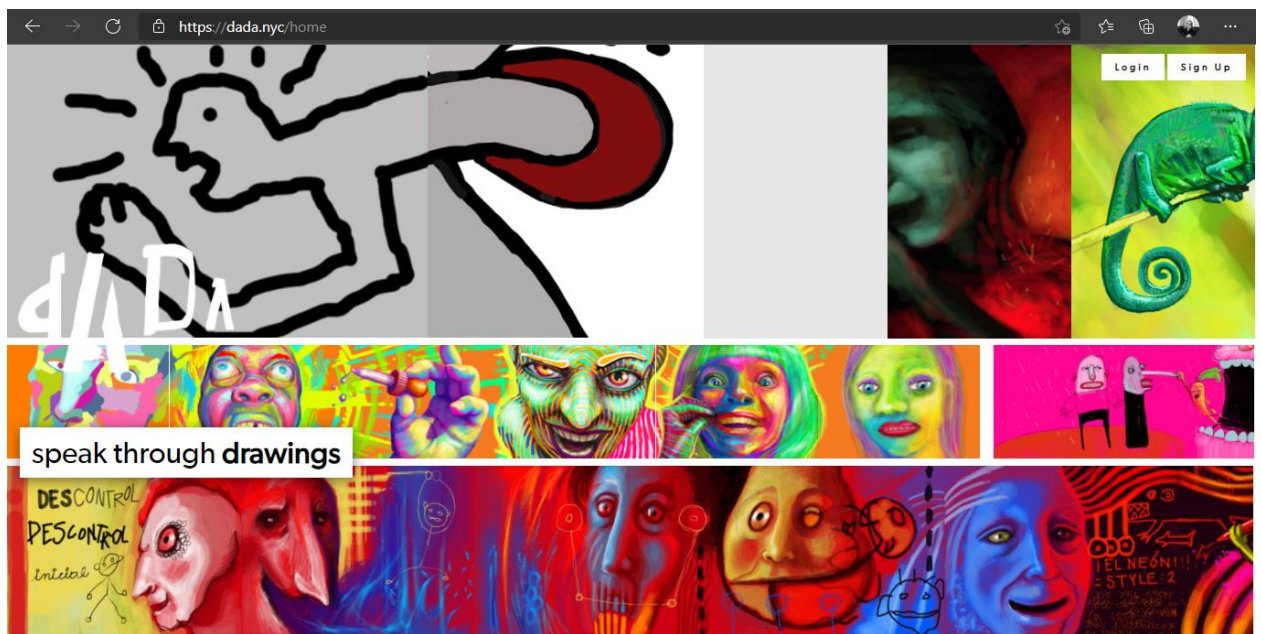


Figure 4. DADA website - screenshot (Source: DADA, 2021) <https://dada.nyc/home>

4.1.5. ArtBinder

In 2014 ArtBinder helped galleries make a transition into mobile, which helped them attract a large number of international clients. The company offers an all-in-one mobile and desktop inventory management and sales solution for art market participants. The structure of the website consists of the home page divided into separate content blocks. Its digital performance is almost perfect in terms of keeping the website constantly updated, using enough headings and meta tags, giving lots of content, and using analytics software for an analysis of visitor behavior. The only issue arises from the poor service behavior and the decrease in the website's popularity over the past 3 months (Nibbler, 2021). In the content plan on the website, users can find all the necessary information without spending time searching for it in individual subpages. On the running line, visitors can

find the company's partners, and just below is an explanatory section describing the services and benefits of the company. The following 4 mini sections cover the entire process of using the system, highlighting the key points. The final sector is the 'Features & Pricing' table, which describes the differences between the two subscriptions. In other words, the website clearly reveals its product, providing a detailed description, which makes life easier for the average visitor.

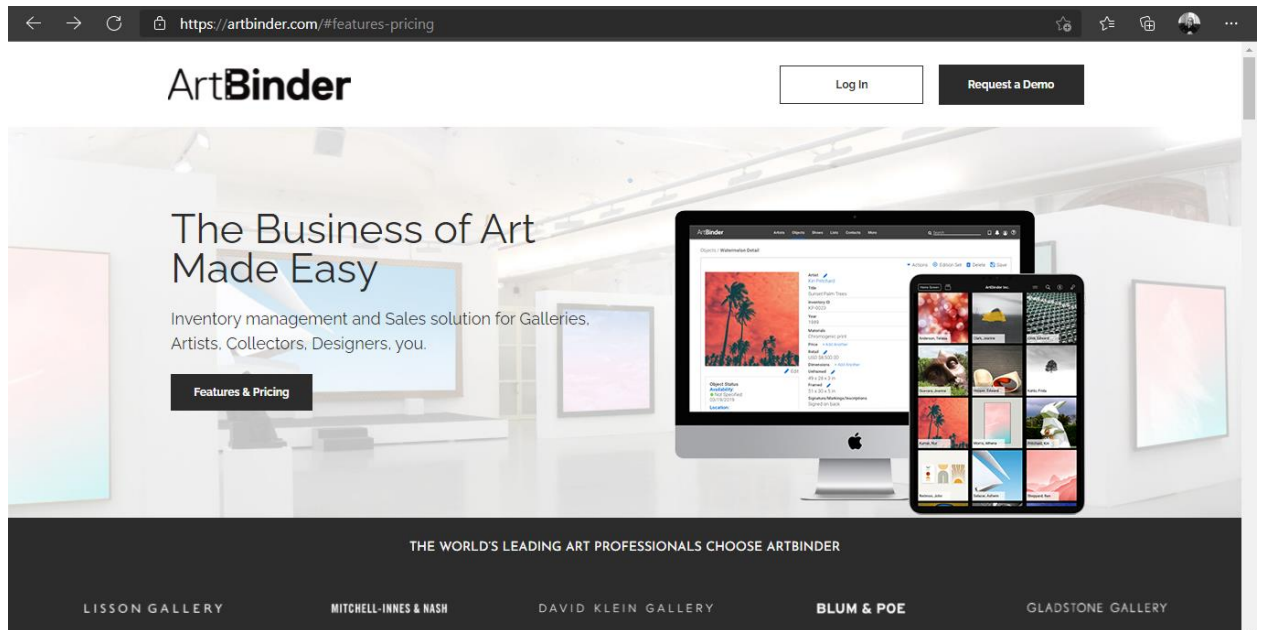


Figure 5. ArtBinder website - screenshot (Source: ArtBinder, 2021) <https://artbinder.com/>

4.1.6. Otis

Otis is a platform and an app where you can invest in culturally significant collectibles or art easy and accessible. Each cultural asset on the platform has been securitized with the SEC and broken into shares. Thus, members can buy and sell shares 24/7, and trades are matched daily. Also, new cultural assets are launched on the app weekly (Otis, 2021). The structure of the website consists of the home page and 4 subpages: how it works, assets, consign, and magazine. The website's digital performance is indicated as rather good since it meets most of the crucial technical characteristics. The only concerning aspect is that the website was last updated on November 11, 2020 (Nibbler, 2021), which is yet normal, since the information on the website is quite general. In terms of content, the website is in perfect order. In addition to the excellent visual support, on the subpages, user can find all the necessary information about how the platform works, what its mission is, and what is the advantage of working together on it. The 'Assets' section also contains a list of products with their detailed description. The company also offers a subscription to their magazine to tell about insides of the art world. In general, the website has a clear structure, well-

chosen images, and short but clear wording describing the operation of the platform and the application.

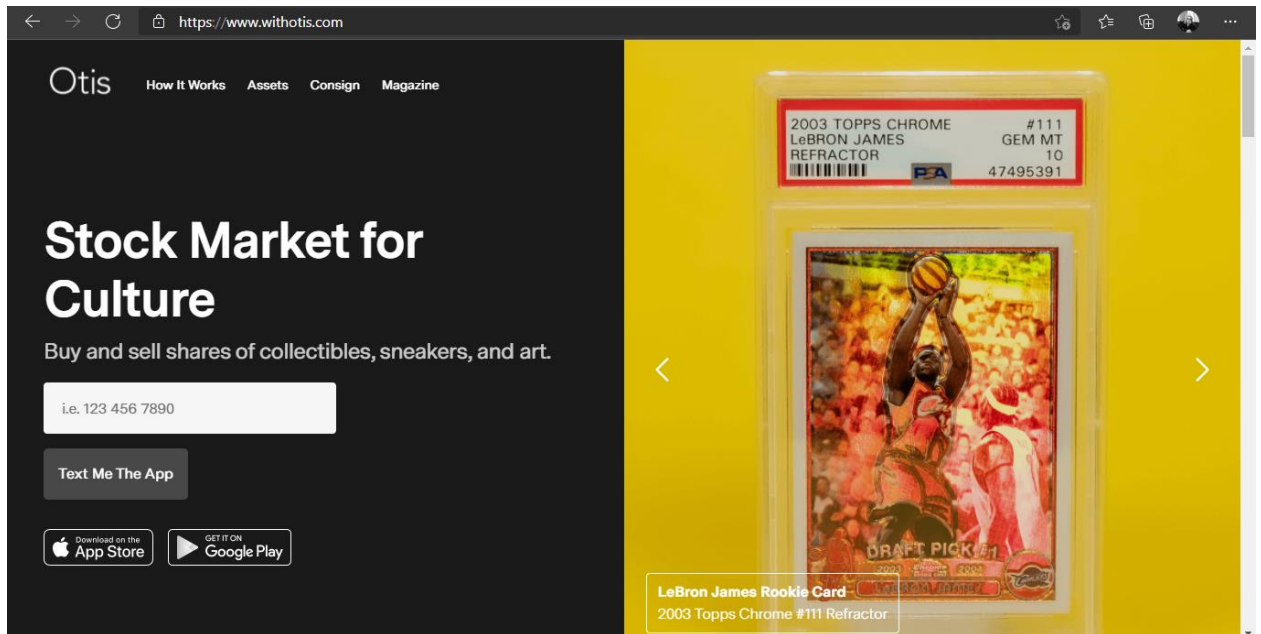


Figure 6. Otis website - screenshot (Source: Otis, 2021) <https://www.withotis.com/>

4.1.7. KOVET.ART

Kovet.Art is an online gallery and an educational incubator focused on the development of an artist's career, a cross between a lecture class and an art residency. The startup offers an acceleration of the creative career, as well as profitable positioning through exhibitions with the involvement of eminent curators. By combining curatorial expertise and technological innovation, Kovet.Art presents thought-provoking online, and pop-up exhibitions based on the results of which you can invest in rising artists. The structure of the website consists of the home page and 9 subpages, some of them are devoted to different artistic subsections, while others relate to the positioning of the company. The digital performance of the website shows an average rate having drawbacks in analytics, shortage of meta tags, and the lack of defined headings (Nibbler, 2021). Since the startup is involved in extensive activity, the amount of content on the website is appropriate. Each subpage describes a separate gallery activity. First, the newest online exhibition with its works is presented. Further on, the 'Your journey' section describes the options for interacting with the gallery. The next few subpages contain information about exhibitions, artists, and art fairs that the gallery's artists have participated in. In the other sections, users can learn about the history and mission of the startup, its team, as well as find links to publications that have covered the company's activities. As a result, the website provides absolutely all the information

about the startup's activities, and despite a large number of subpages, a good structure is viewed, which is easy to understand.

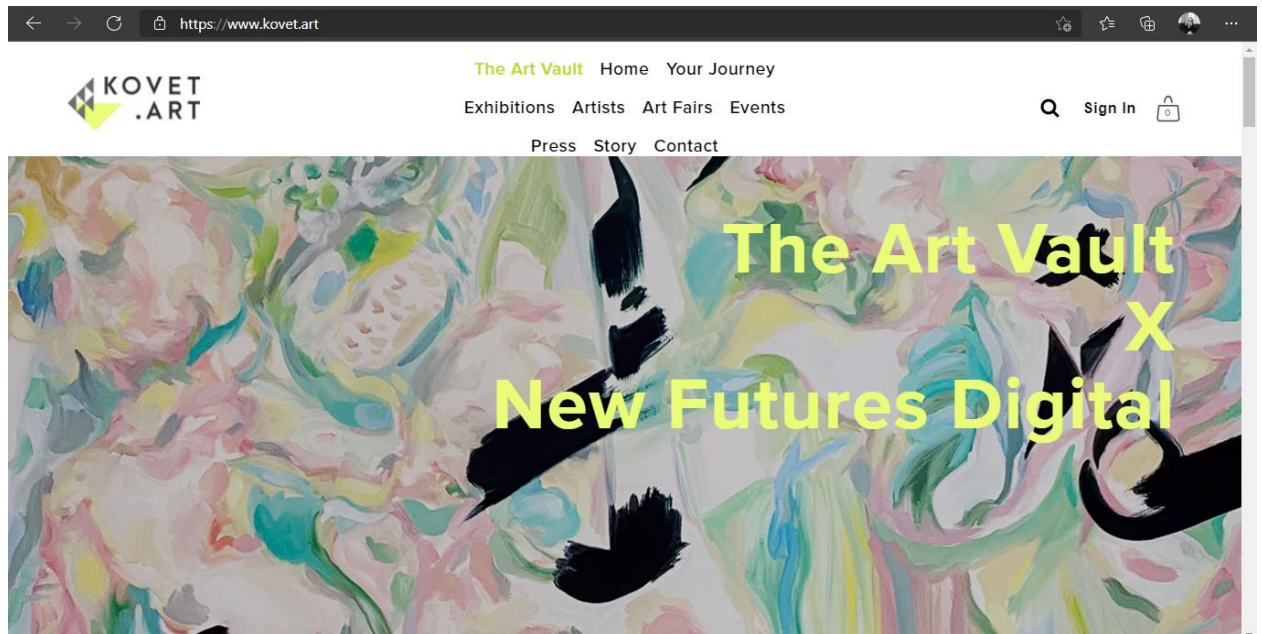


Figure 7. Kovet.Art website - screenshot (Source: Kovet.Art, 2021) <https://www.kovet.art/>

4.1.8. V-Art

V-Art is an online platform to exhibit, sell and collect digital art. It is a multifunctional ecosystem for digital art that covers a full cycle of services for digital art as an asset (V-Art, 2021). The structure of the website consists of the home page and 5 subpages. Its digital performance is rather proper, except for not defined headings and the lack of meta tags' description. In other respects, the indicators are decent, which is due to the recent update of the website and the subsequent increase in the level of attention to it (Nibbler, 2021). There is a lot of content on the website, but not all sections are still accessible, as the website is still being finalized. From the available materials, users can learn about the history of the company, its mission, and services, which have a detailed description of what exactly the project provides. The 'Digital art' section contains artists and their works that can already be viewed. The other sections contain the projects developed by the company related to the virtual space of the gallery. To sum up, the structure of the website is present as well as a complete display of all the activities that the company is engaged in. The only point is that most of the content is still in the development stage, and it is not clear when it will appear. However, the positive side is that new topics have already been identified, which means that visitors can only track the appearance of this information.

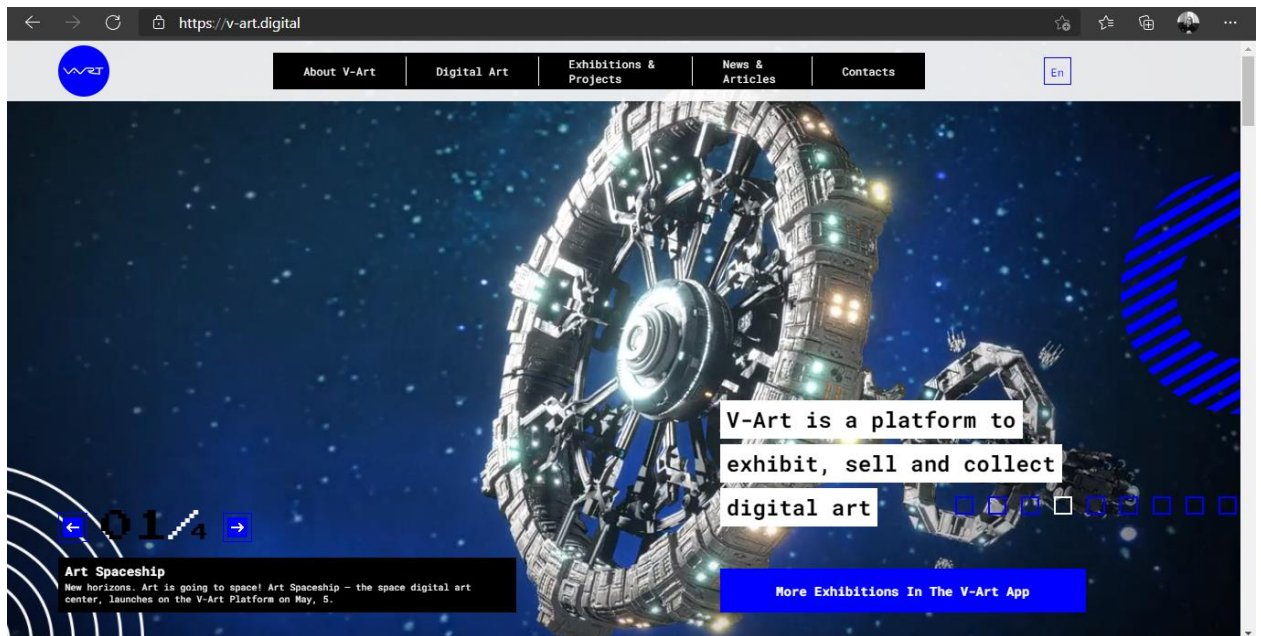


Figure 8. V-Art website - screenshot (Source: V-Art, 2021) <https://v-art.digital/>

4.1.9. The Art Exchange

The Art Exchange is an online platform, a market of shared ownership of art and collectibles on the blockchain. Everyone can participate in a future sale, provide a guarantee or make a complex financial contract on an artwork in a peer-to-peer transaction, secured by blockchain technology (The Art Exchange). The structure of the website consists of the home page and 4 subpages. The website's digital performance has an average index; all the features are in good condition, and the website is constantly updated, which adds to its credibility. As for the popularity of the website, it does not show any changes (Nibbler, 2021). The content provided on the website highlights the main aspects of the company and its activities. The first thing to notice is the description of the project itself with links to a large document describing such aspects as a market opportunity, summary, value proposition, etc., and direct registration on the platform. Further, the diagrams show how the platform works, and the other sectors contain information about the team, press mentions, and key milestones. The website has a clear structure, with a competent emphasis, special attention should be paid to the document, which is a guide to the application.

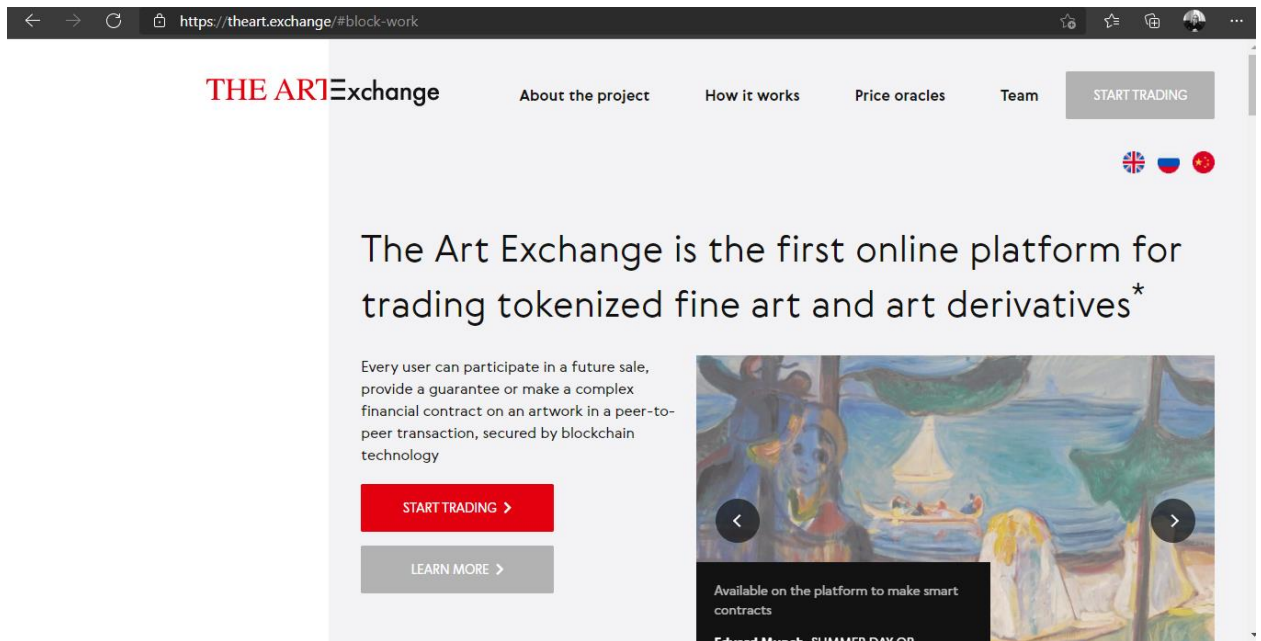


Figure 9. The Art Exchange website - screenshot (Source: The Art Exchange, 2021) <https://theart.exchange/>

4.1.10. Cappasity

Cappasity is a 3D visualization platform that creates solutions in VR and AR for many brands. The company offers a simplified process of digital scanning of the object, high-quality visualization, and analysis of the elements of the virtual product. In 2020, Cappasity entered the art market, starting with the academic part of it: the visualization of sculptures of students became interested in the Academy of Arts. The structure of the website consists of the home page and 7 subpages. Its digital performance has a high index of its characteristics which can also be seen in the growing popularity of this website in recent time (Nibbler, 2021). Nonetheless, internal links are weakly described which is not benefiting search engine optimization. Since the company provides services not only to the art market, the number and variety of content on the website are extensive. First, the visitor learns about the platform itself and its capabilities, then reviews from partners and customers, as well as case studies as an example of the company's work are shown. The remaining sections can be divided into two types. The first tells about the company's products and pricing, the second is a kind of instruction with a step-by-step description of the process, as well as tips for improving the quality of the result. One of the subpages '3D gallery' offers to see an example of objects in 3D. The final segments are information about the company, its mission, and team, as well as a link to the blog. To sum up, the company is closing several niches, which is noticeable by the amount of information on its website. Despite some repetitions, it is not difficult to understand the main idea.

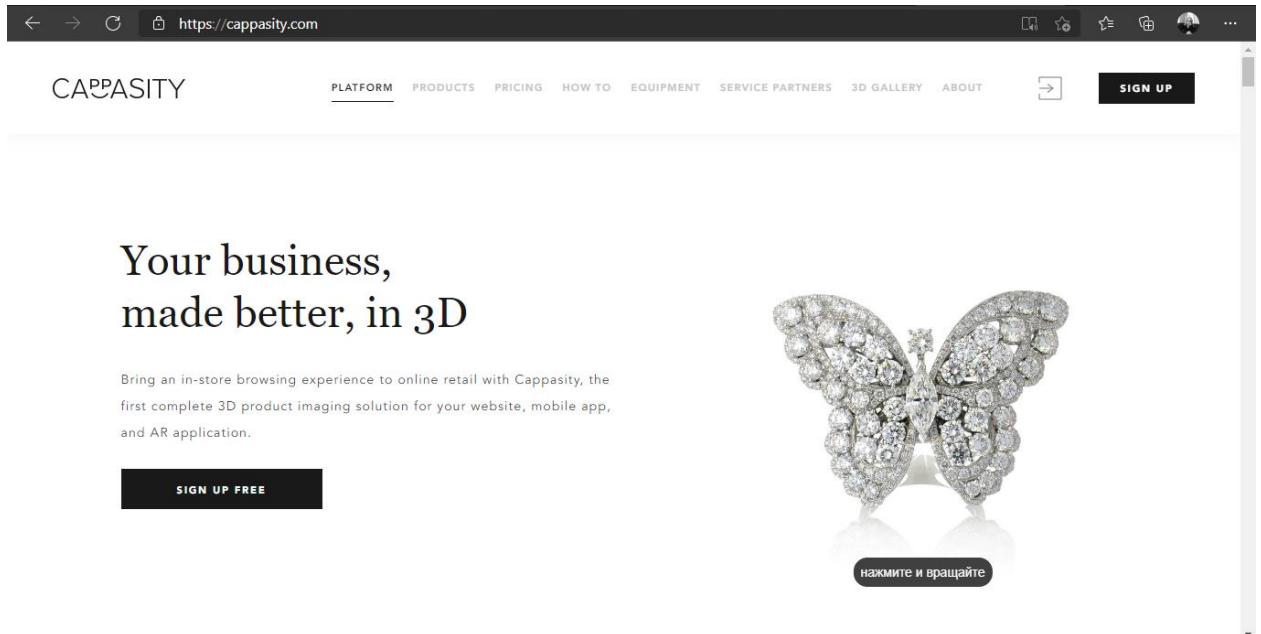


Figure 10. Cappasity website - screenshot (Source: Cappasity, 2021) <https://cappasity.com/>

4.1.11. ArtAML

ArtAML is a technology solution that incorporates the UK legislation and guidance, which is broadly applicable under the EU's Fifth Money Laundering Directive. On the platform, you can fulfill anti-money laundering checks. The application allows scanning of the names of clients in several databases, including checking whether the client is a politically significant person, whether they are under any sanctions, and whether their place of origin and residence is a high-risk country. The app's search capabilities can also help art sellers check and confirm the provenance of works when selling on the secondary market. The structure of the website consists of the home page and 6 subpages. The website's digital performance has an average index showing a good result in the security of the website and the usage of meta descriptions. One of the few shortcomings is the minimum description of links' text that helps visitors know what they'll see if they click the link (Website Grader, 2021). In terms of content, the website has a clear interface. On the website, visitor can find the history of the startup, learn about its team and its mission. The 'Solutions' section presents all three products provided by the company with a detailed step-by-step description of each. Next, the user can find out the price for a subscription and the specific benefits of each plan. The website also maintains a permanent blog, telling about the news in the field of AML. In other words, the website is a kind of hint about what steps you need to take to avoid becoming a victim of money laundering and fulfill all legal obligations. Each subpage not only describes the importance of the product but also offers support throughout the process. The idea

of a startup is easily read from the website due to precise wording and examples in the form of images.

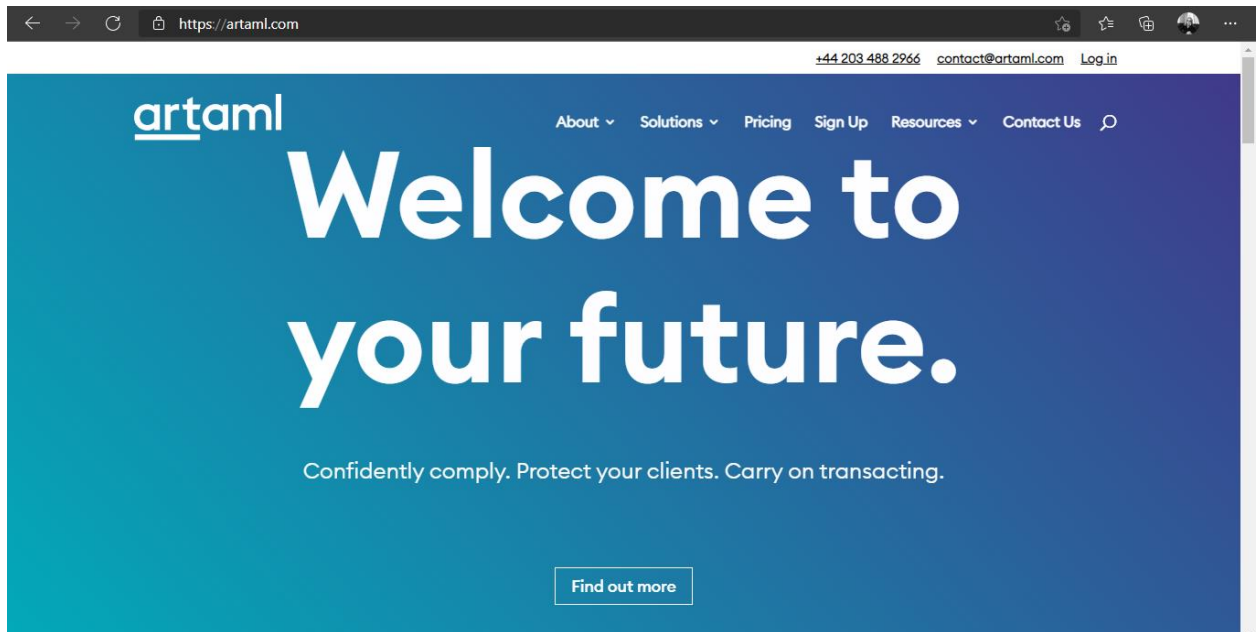


Figure 11. ArtAML website - screenshot (Source: ArtAML, 2021) <https://artaml.com/>

4.1.12. Foundwork

Foundwork is a platform for artists to introduce their work to people across the contemporary art community. The platform is a mix of virtual portfolio, gallery, and residence giving curatorial attention and institutional support. It allows creating of groups based on regional or creative characteristics, forcing artists to interact with each other and at the same time making it easier for the collector to search. In order not to search for artists on personal sites, you can go to the geographical profile that unites all of them on the site. Also, the collector can find the artist by specifying their geographical point and the desired search radius. The structure of the website consists of the home page and 6 subpages. Its digital performance is pretty average as it has some drawbacks such as slow page speed, heavy page size, and too many page requests (Website Grader, 2021). Nevertheless, the rest of the characteristics are in order. The content of the website fully reflects the idea of the platform. In the first two sections, all artists and their works are presented without specifying prices, since the idea is to use the Contact Artist tool to reach out directly by email when showing interest. The other three subpages reveal initiatives such as Guest Curators, Dialogues, and Foundwork Artist Prize. Everything is aimed at connecting the participants of the art market. To sum up, the website's lightweight interface facilitates the search

for new talent and communication options with them and curators, which reflects the startup's mission.

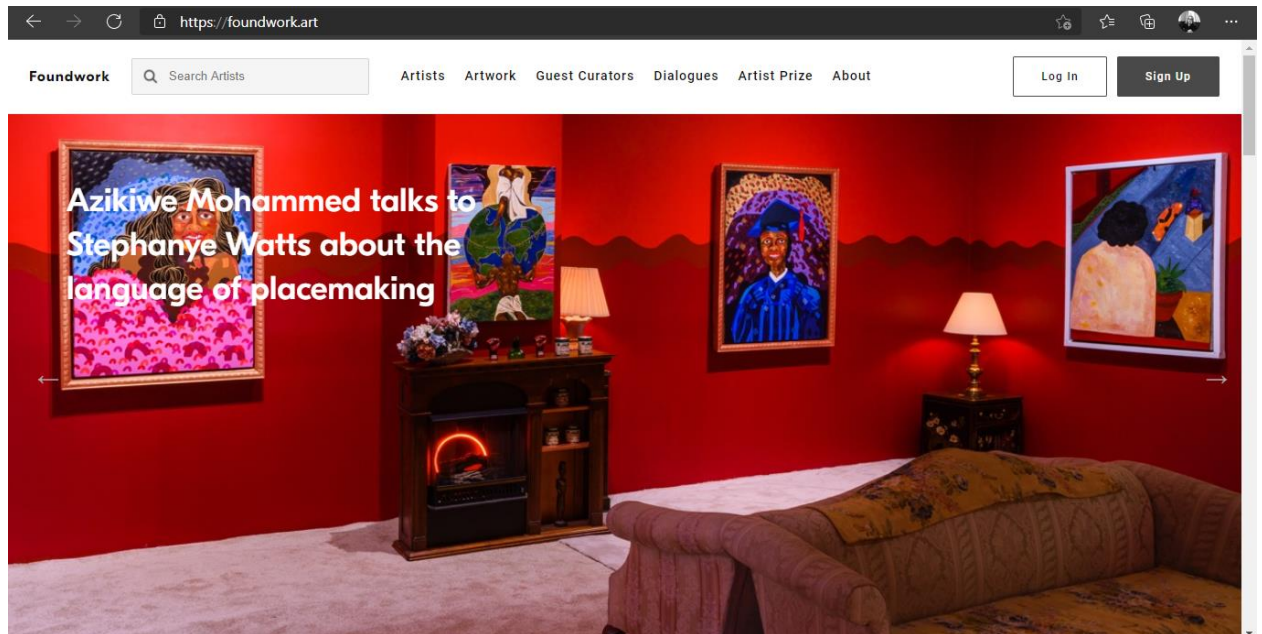


Figure 12. Foundwork website - screenshot (Source: Foundwork, 2021) <https://foundwork.art/>

4.1.13. ROKBOX

ROKBOX offers a safe and sustainable art shipping solution designed to reduce the environmental impact, risk, and cost of shipping high-value art (ROKBOX, 2021). The startup provides reusable, lightweight, transformable boxes that easily take the form of an art object, providing a secure attachment and safe transport. The structure of their website consists of the home page and 7 subpages. The websites' digital performance shows an average index since it has slow page speed, lots of page requests, and vulnerable security (Website Grader, 2021). Since the startup at this stage represents a single product, then all the content on the website is devoted to its detailed description. First, users can find the company's performance data to track its success. As proof of their credibility, the home page lists significant partners and customers who trust this product. A large amount of information on the website is devoted to an extremely detailed description of every detail of the product, all this is supported by impressive visual support in the form of images and video instructions. Since the startup translates the idea of environmental friendliness and sustainability, one of the subpages is dedicated to the ROKBOX environmental summary study, which supports the startup's initiative. In general, the website displays the idea of the company and also provides a large amount of material and documents for downloading to study their product in more detail.

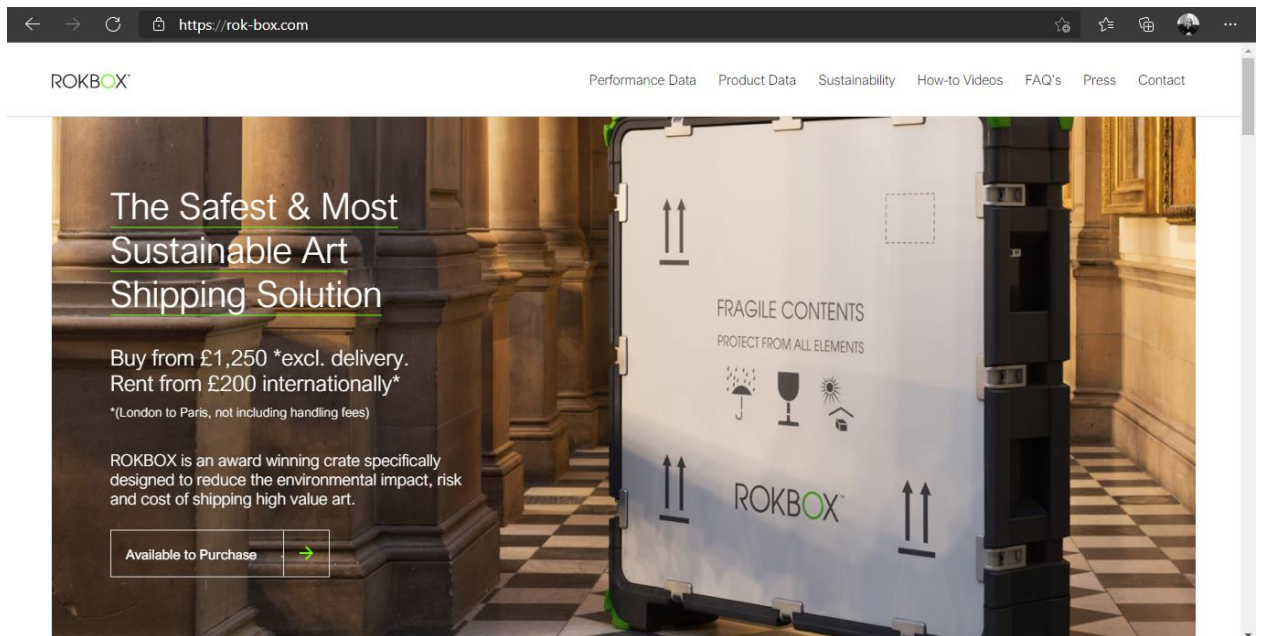


Figure 13. ROKBOX website - screenshot (Source: ROKBOX, 2021) <https://rok-box.com/>

4.1.14. Fair Warning

Fair Warning is a private auction platform and an app that only selected customers have access to, an auction catalog consists of lots of the highest price category, art objects are announced just a few days before the auction. The structure of their website consists of the home page and one link to the contact address. The digital performance of the website is perfect due to the minimum of pages (Website Grader, 2021). The website itself responds to the concept of a private closed auction, offering no information and only inviting you to download the application itself. The website lacks any information about the company's idea, mission, or product, which leaves the visitor at a loss. If an ordinary user, who does not intend to download the application and participate in auctions, wants to know something about the startup itself, then they will not be able to find absolutely any information from their official website. The remaining option is to search for articles about the company in the public domain. Being an ArtTech startup, Fair Warning, however, does not seek to promote itself in wide circles and apparently tries to leave its activities behind closed doors for selected clients.

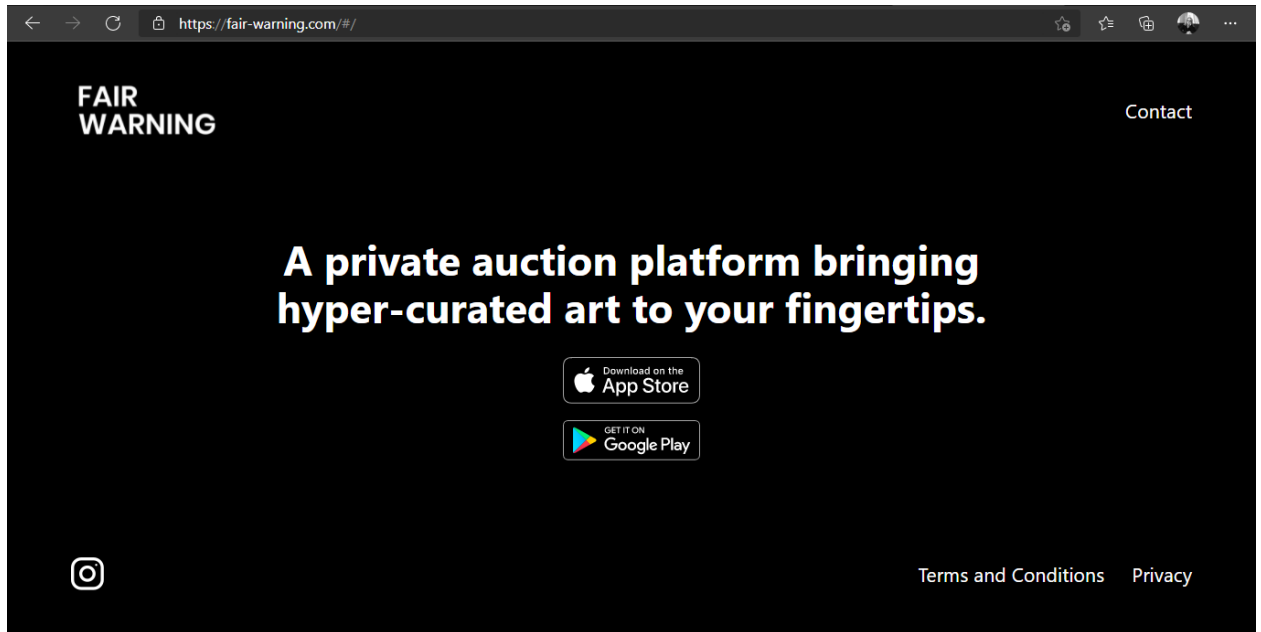


Figure 14. Fair Warning website - screenshot (Source: Fair Warning, 2021) <https://fair-warning.com/>

4.1.15. Glass

Glass is an application that helps to attribute, appraise and verify an artwork. You need to send a photo of the art object to a special WhatsApp chat. Then the system will recognize the image and send in a response message to the owner all the available information from the catalogs Raisonné or the documented provenance of this work. The structure of their website consists of the home page and 3 subpages. The websites' digital performance has a moderate index since it has some weaknesses in its performance and security. The page size is too heavy which slows the page speed (Website Grader, 2021). Besides, the website is only half-secured which decreases visitors' trust in it. The website has classic content that describes the idea of the company, its partners, as well as a description of the platform itself and a list of its advantages. Also, on the website, there is a video tutorial on using the application and a full description of the entire process of the startup's activities. Extensive visual support for each stage fully reveals the company's mission. As a result, the website reveals all the insides of its product as much as possible, supporting the information with a useful visual series.

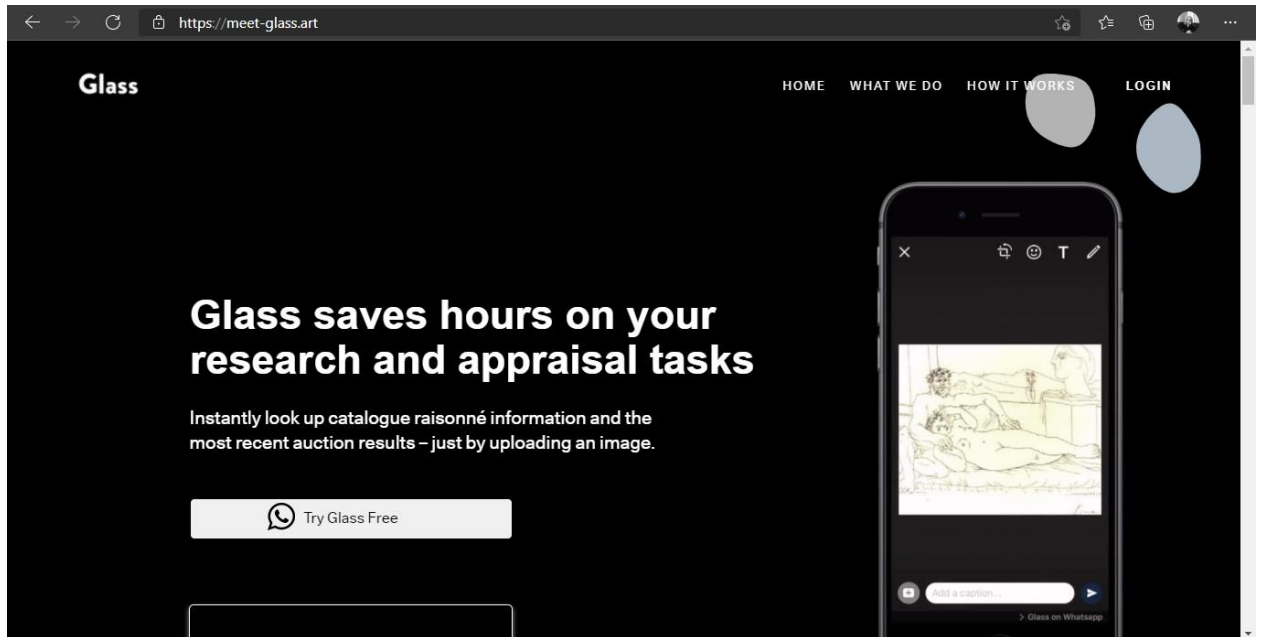


Figure 15. Glass website - screenshot (Source: Glass, 2021) <https://meet-glass.art/>

4.1.16. Oxia Palus

Oxia Palus restores the world's masterpieces of art using artificial intelligence. The project uses machine learning and transfer algorithms to analyze ghostly X-rays of overpainted artworks. The computer can generate a full-color version of the artwork based on the artist's masterpieces. The structure of their website consists of the home page and 7 subpages. Its digital performance is slightly better than average having drawbacks in performance. The performance isn't optimal due to heavy page size, slow speed, and excessive page requests. The content of the website does not reflect the idea of a startup. Almost all subpages describe the project itself, its team, and its press coverage. But there is no detailed information about the product itself and the process of using AI. The only explanation is the article in the section 'Our impact', which sheds light on the activities of the startup. Otherwise, visiting the website gives the impression that it is more crucial for a company to show its importance in terms of media coverage about them than to tell more about its product. The only interesting aspect is the news section showing the startup's involvement in various projects. However, the big drawback is that the website visitor learns little about the product itself and all his attention is redirected to stories about the external shell of the startup.

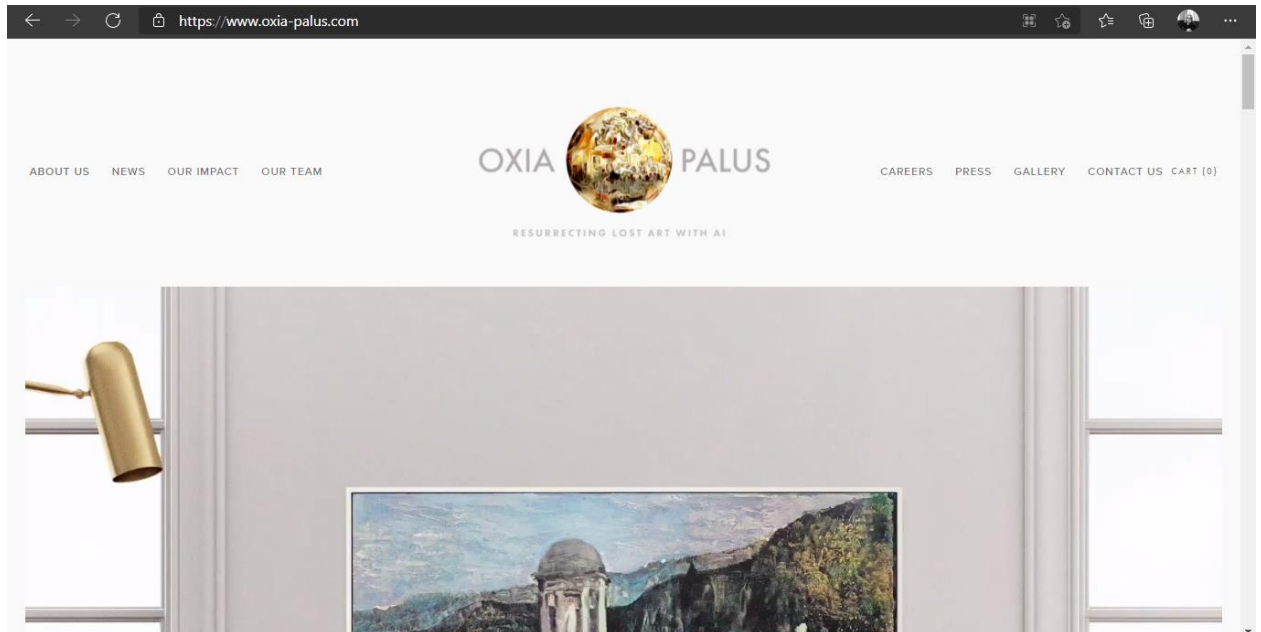


Figure 16. Oxia Palus website - screenshot (Source: Oxia Palus, 2021) <https://www.oxia-palus.com/>

4.1.17. Conclusion to desktop analysis of ArtTech startups' websites

The majority of websites show a good example of promoting and highlighting their product. Almost everywhere there is an easy-to-use interface for users and clear wording that positions the idea of startups. Only in some cases did the websites leave the visitor perplexed. With excessive information without structure in subpages and vice versa with minimal information, forcing the visitor to learn about the startup from other sources. However, the content provided by startups on their websites is only an external shell. From it, you can learn the basic idea of the company and learn about their product, but it is possible to understand the path of a startup, its motivation, and significance for the market only from primary sources. Therefore, attention should be paid to individuals, founders, or employees of a startup, who directly talk about their activities in various articles or interviews. That is why the author took a certain number of in-depth interviews with the founders of startups to learn more about the internal component.

4.2. Discussion of the results of semi-structured interviews

In this part, the case studies of 5 startups the founders of which agreed to an interview are described and analyzed based on the concepts identified in Table 2. This analysis will reveal those crucial parts that couldn't be identified via a website overview. Thus, through the analysis of the interviews will be discovered the context of the startups' organization, their path, and their role in the art market.

4.2.1. Motivation behind the idea

Since the phenomenon of ArtTech startups is quite new both for the art market and for its researchers, first it's crucial to understand where the idea of combining art and technology came from. Each startup has its unique idea, behind which there is a certain reason for its appearance. Often, the implementation of their ideas into reality is perceived by the founders as the culmination of their accumulated experience, as a new stage in their long career. All respondents are somehow connected with the art industry or had a cultural influence from their network. A common motivator for the creation of a startup was the need for changes in the art field.

Being a long-standing entrepreneur in the art market, one of the founders, by visiting Art business conference became aware of the incoming legislation. Based on this knowledge, the founder of ArtAML concluded that businesses will not be able to understand what their requirements are regarding the conduction of their AML checks. Thus, the opportunity to fill the gap was seen. It is the identification of such gaps among the activities of the cultural industry that allows entrepreneurs to form their business ideas from them. Besides, an important part of the motivation for the combination of art and technology was the life background and the identification of their passions. The influence of the environment from an early age forms the mindset of the entrepreneur. The creator of Kovet.Art noted that her passion for both culture and technology has had a gradual development, fueled by a passion for various innovations and communicating with people who also have a lot of creative ideas. As a result, the collection of information from different areas contributes to the understanding of one's own needs, which manifest themselves in the form of a specific idea. So, at a certain point, the founder of Kovet.Art decided that the time is right to create the gallery of the future.

As already mentioned, one of the motivators of the founders of ArtTech startups is the desire to solve a particular problem in a new innovative way. The founder of Muzing was on the board of a museum in New York, where he determined that the problems of museums by reaching audiences and connecting with them are worth solving in more effective ways. The motivation to leave the museum and start a business was the fact that the way of problem-solving of such a classical institution as a museum is not enough optimized and it's not supported by real-time data. The founder of ROKBOX also came to his idea through work in the art industry. Two reasons were identified as motivators for creating his product: the amount of waste that was produced and the inefficiency of the traditional way of doing things by such big agents as Gagosian Gallery or Sotheby's. The designation of benchmarks in the form of changes in favor of the environment and optimization of processes prompted the entrepreneur to develop a business model that can meet the set criteria. At the same time, the reason behind the idea arises not only from the identification of the problem but also a simple desire to provide impact on society and the industry through his

invention. The founder of Robot Muralist decided to change the visual environment, handing over power to artists, not corporations using public space for advertising. Thus, the motive takes the form of a kind of protest against the established activities of influential players. It can be said that for most of the respondents, the decisive motive was the belief from personal experience that the art market needs changes to improve efficiency. One way or another, the founders faced a problem that they are trying to solve in a new innovative way.

4.2.2. Relevance of the idea

Coming up with an idea for a startup is only half of the way, its subsequent promotion in the market – that's what determines its significance and usefulness. The founders of startups note that in the process of implementing the idea, not only its positive aspects but also negative ones are manifested. There are always both supporters of the idea and its opponents. Interestingly, despite highlighting such advantages as the accessibility of the market, increasing transparency, or expanding the audience, more attention was paid to the negative aspects. As if the founders were trying to show that organizations with innovative ideas are much more difficult to find supporters and gain a foothold in the market. As for the disadvantages, some startups have highlighted the human factor aspect. First, it was noted that in the end, technology cannot solve everything, the key decision is always left to the person. Secondly, the opinion that art needs to be enjoyed in person still matters, so people's subjective preferences don't always work in favor of new digital media. Another type of human factor was the moment of dissatisfaction of art market participants with the introduction of new technologies, which in their essence can replace them after some time. Several founders noted that art industry workers feel threatened by their innovations. Although Robot Muralist, for example, tries to change the visual environment together with artists, presenting them with their technology, many artists believe that the startup thus takes away their work on the contrary. This is also the case with other art market participants who have been building relationships with their clients for a long time. The emergence of something new that can somehow perform persons' functions, represents a direct competition and a threat to the art market which is very resistant to change.

Thus, someone is faced with the fact that the art market has long-established order of business. Few people want to change the rules of the game, so startups have to face a certain wariness of the art market to their new ideas and technologies. One of the founders emphasizes that the sector is not technologically literate. For instance, people who have worked for several decades in a museum are used to being able to touch everything in the physical world, to see the work in person. Having such attitudes, they do not understand the power of technology and do not see the need for them, which in turn complicates the promotion of new ideas in the industry. Not only people but

also the technologies themselves, because of their characteristics and properties, can sometimes influence how ideas will develop in the market. The founders point out that technology takes time to learn, and not everyone is willing to invest it to further understand those. Therefore, both for entrepreneurs themselves and for consumers of their products and services, understanding and adopting an innovative idea takes time. Another disadvantage of the technology is a possibility of hacking in various forms. And while solutions such as blockchain are developing to avoid those situations, no platform is immune from such challenges. Interestingly, one of the founders did not highlight any drawbacks in promoting his idea.

Moreover, only half of the founders mentioned the positive aspects of their ideas, expressed in their usefulness for the art market, and the departure from classical models in favor of technological progress. So, the founder of Kovet.Art believes that the shift of the art market to online is undoubtedly a pro. In the case of an online gallery, such a transition means accessibility of collectors, who can virtually discover new talents among young artists. The development of blockchain also allows them to be confident that the artwork is made by a particular artist, which is the certificate of authenticity. In turn, this solution helps to track provenance as well, which is considered a great advantage. The creator of Muzing also sees the potential of his startup in attracting a new audience, involving it in the process. Providing real-time data to museums optimizes its programming and marketing approaches.

4.2.3. Professional background

The future organization of the startup's activities is directly related to the education and professional experience of the founders. The presence of previous experience in certain sectors shows a significantly positive impact on the propensity of aspiring entrepreneurs to create firms (Hayter, 2013). All but one of the respondents have an education related to economics, engineering, or culture. Based on this, their professional experience included working on obtaining the knowledge in the listed areas that they are currently applying in their business. Initially, it was the education received that could influence founders' entrepreneurial mindset. The founder of ArtAML has BA in Fine Arts with an emphasis in photography and a Master's of Arts (arts management). Education in the field of art served as an informative base, which determined the further vector in the career. The founder of Kovet. Art, in turn, received education from different fields, which allowed her to combine the acquired knowledge and turn it into a business that interests her. She studied electronics and Telematics Engineering then financial engineering with the following shift to business school. Having a deep interest in art, she also did a course in contemporary art at Christie's, and financial markets at Sotheby's. The last stage was a course in innovation and entrepreneurship at Stanford University. Such diversity indicates that the

entrepreneur is aware of the processes in different industries, which can increase the chances of a successful business introduction due to their awareness. Other founders also have several degrees, in areas such as economics, marketing, political science, or even liberal arts, which has been proved to develop critical thinking necessary for future entrepreneurs. The founder of ROKBOX, however, skipped the education stage, working for some time as an English teacher, and immediately got a job at an auction house.

Thus, the founders of ArtTech startups have a fairly diverse and numerous education in various fields, which nevertheless form the basis of the term ArtTech, that is, the combination of art and technology. Their professional background, however – is what led them to the idea of a startup. For some, the work has become a reliable basis for their current experience, for others, it has been an indicator of shortcomings that can only be solved in a new way. Not everyone started in the art industry, one of the founders after university worked as a manager in a retail shop, after the promotion, she was part of a team that helped position the business to be bought by a large corporation. Thanks to this, the team and business management skills were formed. After the first job, many founders shifted to an area that was closer and more interesting to them, thus combining their activities with culture. The same founder later moved into the curating and gallery business, while also being a dealer and mentoring people from an art sphere. The accumulated experience of more than 10 years in the art industry has formed a complete understanding of it from the inside. It is through direct work that entrepreneur's ideas about this industry are formed. Those whose first job was not related to the art industry came to it through other specialties, the characteristics of which were then included in the organizational model of the startup. So, two of the founders worked in the financial sector, namely in the bank, providing consulting services. Despite the transition to the cultural sphere, the accumulated experience has shaped their attitude to the financial aspect of their startups. The founder of ROKBOX unlike others began his career with the art industry, having worked for more than 10 years in Gagorian Gallery and several auction houses. Almost all respondents mentioned that gaining different kinds of experience in diversified jobs contributed to their self-awareness as entrepreneurs first, and gave them the necessary skills in running a business and understanding the industry second. Thus, working for a corporation allowed some respondents to acquire skills of managing large projects and budgets along with multitasking. Others noted that their experience in the art industry has led them to recognize themselves as cultural entrepreneurs. As a result, after realizing their entrepreneurial potential, many decided to take a risky step to develop their innovative idea.

4.2.4. Speed of development

Not all startups go through the same development path in terms of time and events. The founders also determine their key milestones based on their business development and success guidelines. 1-2 milestones are most often the launch of the company itself or its product. Usually launching the beta and registration of the company consider as the 1 step. Next, all respondents note their launch to the market and attracting the first customers as the key milestone. Later, everything goes on increasing, someone marks for themselves an important stage when the first big customer actually finds the business value from their providing. For others, closing financial issues, such as fundraising, is particularly important. Two of the founders noticed their chosen speed of development, indicating that it is better to spend a certain amount of time on high-quality product development than in a hurry to try to enter the market. A slow and steady approach, in their opinion, is necessary to create a credible business. There is an opinion that many startups race to the market to launch their business as soon as possible. In the case of the respondents, it was highlighted that their position is to take some time to do everything right. Spending time on high-quality research and product development pays off by the fact that at this stage the company has products that are market fit. Thereby, this approach is defined as more quality rather than quantity. The time allotted for development also includes what methods startups choose to promote their business model. In this regard, opinions were divided into two camps. The first used media for news coverage. Instead of flashy advertising campaigns, founders worked closely with journalists on interviews. Moreover, in the case of, for example, an online gallery, an approach was chosen with the promotion of just a few artists across media, using VR. As a result, the startup received extensive press attention. The latter relied on the uniqueness of their idea, that is, they expected that people who recognized the product would start talking about it, thereby supporting the startup.

R.4., Robot Muralist: "So if you have this polarized element, then people start talking about it. And when people start talking about it, it's all about supporting this process."

4.2.5. External help

Usually, due to their organizational characteristics, startups need the help of external organizations, such as accelerators and government programs, to get mentoring or financial support. In the case of ArtTech startups, this order has become the exception rather than the rule. The majority of respondents did not apply for external assistance in the form of organizations. Two respondents stressed that their companies are funded by the founders at this stage in form of self-funding or self-fundraising. They prefer to work with some core individuals rather than use any external organizations or VCs. The startup Kovet.Art, in turn, took part in the state program, receiving mentoring. They have been mentored by the government body in the UK, and the Mayor of London as well. It was the government support within the framework of the program for

entrepreneurs and businesses. The founder mentioned that the support was only in the form of mentoring, which was extremely necessary at that time, not only because of the crisis with the pandemic but also because of the lack of experience in the introduction of their enterprise. And only one of the respondents noted that they took part in different accelerator programs. Robot Muralist have gone through several accelerators and incubators. The purpose of this participation was to receive competent feedback and advice, which can then be adapted to their business model. The three-month programs in each accelerator included investment from the accelerator and networking with other investors and industry specialists. Only the founder of this startup dealing with robotics noted that for startups, the accelerator environment is a great help for development. In his opinion environment of accelerators and incubators helps companies grow well. He also emphasized that there is not always a chance of having that high level of the contact network, and it is thanks to accelerators environment that it becomes possible to enter a certain industry, to carry your idea with minimal losses. Perhaps because of their acquired experience, some founders did not need mentoring and other program services.

4.2.6. Startup difficulties

Before entering the market, ArtTech startups faced many various difficulties and obstacles. For some, the main problem was the pandemic, which made its changes in the established rules. The rest of the respondents noted internal difficulties, such as the constant need for money, finding people, building relationships within the team, etc. The last type of challenge can be called the faith in yourself and your business that the founders noticed. Thus, two respondents mentioned that it is not so easy to decide to open your own business, as well as to maintain faith in your idea. To begin with, entrepreneurs have to accept the fact of a new beginning, the creation of something of its own required the respondents to have unconditional faith in their work. Defining your vision and the goals that an entrepreneur sets for himself also becomes a difficult aspect. Before entering the market and generating income, a lot of preparatory work is done first. All this is based on the faith of the founder, so for some respondents, maintaining confidence in their ideas has become one of the biggest challenges. In addition to maintaining confidence in their business, startups also need to think about their financial support, and since few turned to special programs for help, they were engaged in self-funding or self-fundraising, which are also some of the challenges. For the development of a startup, money is needed, and it must be constantly available. Several founders underline that raising money is not an easy task, which has become one of the obstacles for them. Interestingly, the money aspect often goes in conjunction with people, the search for a team. For two respondents, the recruitment of people to the team was one of the key stages. For startups, especially those just starting, the issue of money and people is very acute. Since this organizational

form is characterized by a small number of employees, their search and further maintenance of their interest in working for a small enterprise require efforts from the employer. The founder of ROKBOX notes that it is constantly necessary to make sure that the people within the company get the benefit of working for a company because working in a startup is usually unprofitable. But even after recruiting a team, it becomes difficult to retain people, to make sure that they are suitable for the implementation of the promoted idea. The creator of Muzing emphasizes that at first, you can make a lot of mistakes when choosing the right person to work with. Another challenge for the founder of Muzing was the conviction of classical institutions in partnership, as he noticed that they have a different rhythm. In his understanding, such classical institutions as museums are slow-moving, and even though they can negotiate, everything agreed on remains only in words, in reality, it's really hard to get them to act. It is precise because of the difference in working approaches that startups do not always manage to establish useful connections with classic art market agents. Returning to the external difficulties, the rest of the startups felt the impact of the pandemic. The needs of startups' target audience began to change rapidly during COVID-19. Lockdowns brought a lot of problems to businesses, with many businesses closing down, it was difficult for startups to decide to launch their enterprise. Summing up the above, the founders did not delve into the classic problems faced by startups but showed their vision on the main difficulties that they personally had to face. Because for each startup, the question of difficulties turned out to be extremely individual. The two main topics that will be covered in future concepts are money and COVID-19 issues.

4.2.7. Funding

An important role in the organizational model of startups is played by its financial side, which includes both the time of investing money in the enterprise, finding investors, creating revenue streams, etc. As already mentioned, most of the founders chose the self-funding or self-fundraising scheme, and only one respondent received financial support from accelerator programs. Nevertheless, everyone had a different opinion on attracting investment. A couple of startups noted that with investors comes their influence on the company, which does not suit some founders. Among the respondents, there is an opinion that if a company receives investments, then there are also people who try to influence the internal processes of the enterprise and push the creators in certain directions. One of the founders positions this type of investment as "external pressures". The creator of Kovet.Art also points to the self-funded nature of her enterprise, claiming that at the moment she does not want to dilute her equity. However, she admits that providing the company with its savings is quite expensive in terms of marketing, having a team, etc. That is why they're considering attracting investors in the future. The founder of Muzing, in turn, is sure that

cultural startups are not particularly popular, so investors are not very interested in them. He believes that investors do not see the monetary potential in the cultural industry. A different opinion is held by the startup Robot Muralist, working with several investors, and having control over decision-making. With a few investors on board, the startup receives information assistance from them in the form of tips or pointers to improve the business. Nevertheless, investors do not interfere in making key decisions in the company, the last word is left to the founder. However, the creator recognizes that there is still some influence, because of which there may also be conflicts within the company. Sometimes the advice of investors can lead to mistakes in the company's activities, since the more opinions, the more difficult it is to make a final decision. The last respondent also notes the importance of the lack of strong influence from investors on the enterprise, it is much more important for him to have shareholders that can add value to the business. He claims that not being owned by one shareholder or a private company has huge benefits. In his opinion, a startup should have 15-20 shareholders and be on good terms with them so that they are conditionally partners, rather than people who make changes without proper knowledge about the product. As for revenue streams, all startups make a profit from subscriptions to their services or from sales of the products presented. Besides, many mention the development of all new services that will become new sources of income.

4.2.8. Market position

After overcoming all the steps on the way to entering the market, ArtTech startups eventually occupy a certain position in the art market. Each startup described its market position depending on the type of their activity since it is necessary to take into account the fact that despite the general classification as ArtTech startups, each enterprise occupies a certain niche in the art industry, having a different target audience. Positioning itself in three directions, Kovet.Art touches on expertise in the art world, the tech world, and the contemporary art market. Their market positioning directly reflects the diversity of their activities and overall mission. Muzing in turn feels confident in the market, combining the social, and the cultural. This positioning allows them to be more recognizable among potential consumers. Robot Muralist unlike others determines its place in the market based on the concept of the post COVID world. The founder is confident that now startups can dictate how the industry will look like soon. It can be said that all startups evaluate their market position as profitable and full of development opportunities. Having implemented their idea, everyone managed to find their place in the art market and use it wisely. Nonetheless, another question that arises is when a startup ceases to be a startup and turns into a small or average business. The founders tried to explain the differences between the two organizational forms, as well as to establish their affiliation. ArtAML considers itself a startup that is a small business,

explaining that a startup is more of a phase of a business. Since they clearly divide their business into time phases, the moment of exit from the startup stage is also already known. The founder noted that the company will operate as a startup for another 1 year. The startup phase will eventually take the company 2-3 years. The respondent also mentioned that it is important for the company to pass the startup phase for businesses to grow. Nevertheless, it is not worth delaying at this stage. Kovet.Art has a slightly different opinion, considering startups and small businesses as similar concepts. The only highlighted criterion is ambition. So, Kovet.Art defines a startup as an enterprise that has a prototype, a plan for its development, and besides the company must constantly learning, growing, and scaling. The exit from the startup phase, according to Muzing, occurs when a certain culture is formed in the company, they have a positive dynamic of development, generating income that can be invested in their employees. Robot Muralist gives a more classic definition of a startup. A startup is a company that is designed for quick growth, but other than that, the company should have some kind of solution that makes people act differently. This means that a startup is primarily an organization that offers a new, innovative product.

Many respondents, speaking about this difference, noted that many companies continue to call themselves startups because of the special aura that people used to attribute to startups. As if a company, being already a big business, positions itself as a startup, then more attention and interest will be paid to it. For instance, some FinTech firms, which have raised billions still consider themselves as a startup. According to Kovet.Art, this can be considered as marketing tactic for hiring. Muzing also claims that established companies prefer to call themselves a startup because of a certain culture of significance, which is invested in the concept of a startup. Such companies adopt the characteristics of startups, even if they do not match them.

4.2.9. Influence on the market

Although startups are considered only fledgling companies, ArtTech startups already have some influence on the art market. This is especially expressed through their special characteristics. The focus of ArtTech startups is based on the theme of change, on bringing new things to the traditional way of life. The founders, reflecting on their impact on the market and its participants, focus on the future. They are the first impetus for the changes that, with the proper pressure, should occur. So, one of the respondents believes that their influence is in being part of the wider cultural change towards a more transparent art market. The time, however, has not yet come, this cultural change, according to ArtAML will happen over some time. This means that now the startup is only forming and strengthening its influence for changes to eventually happen. Kovet.Art, in turn, is already feeling its influence on the art industry, making it more democratized in terms of pricing and accessibility to artworks. Influence is also based on reputation, so now the startup is focused on

building it, which itself will make others respect your business. Nonetheless, two respondents emphasize that at the moment they do not have much impact on the art market, but hope for changes after their expansion. Muzing emphasizes that their influence is on a very limited basis right now. Even though museum professionals are interested in the idea, so far they only recognize the potential of the startup and hope to see more.

Making an impact as a startup is not easy, despite the originality of the idea, there is always competition. The future viability of startups depends on the quantity and quality of competition. Opinions about the presence of active competitors were divided between the founders on those who distinguish competitors in their niche, and those who consider their idea to be one of a kind. ArtAML confirms the presence of competition in the niche of AML for the art market and notes that what they do is potentially competitive. Robot Muralist also notices the competition, but the startup's view of it is slightly different from the previous respondent. Robot Muralist defines itself as trend makers, so if someone in the market promotes a similar idea, then according to the founder it only plays into their hands, making their message clearer and more widespread. By contrast, two respondents consider their idea to be unique and cannot yet note a clear competition in their field of activity. Kovet.Art claims that being an online gallery, their approach to working with artists is radically different from all existing models. That is why the startup considers itself a unique company. And although Muzing is sensible about possible competition, noting that if your idea starts working, there will always be someone who will want to copy you, at the moment, after a thorough study of the presence of potential competitors, the founder says that no one is doing something similar. By positioning themselves as ArtTech startups, the founders thus declare their confidence in new technologies and the changes that they can bring. The indicators of 2020, with its transition to digital, reinforce the beliefs of startups that have linked their activities with technology, in the correctness of their choice. Absolutely all respondents noted that new technologies can not only change the art market in the end but are already changing it. The founder of ArtAML emphasizes that according to her observation art market participants increasingly willing to use technology. These same people had no interest in it until some time ago. Despite the fact that such small examples are becoming more noticeable, the art industry did not take them into account until 2020. Because of the consequences of the pandemic people are now much more minded to embrace technology. Muzing also notes that art and technology are evolving together. Some artists are already trying to catch on to new trends, developing digital art, for example. Robot Muralist has great faith in technology, defining technology as a key driver behind the creation of something big and scalable regardless of the industry. Thus, according to the respondent, in addition to creativity, it is a technology that contributes to the creation of new things. As a result,

despite the positive attitude of respondents to the technologies, and the confirmation of the changes taking place in the art market due to them, some startups objectively notice that the art industry is not ready to accept them completely:

R.5., ROKBOX: “<...> technology certainly has come to the art market is just as the art market likes to be perceived as a very traditional.”

4.2.10. COVID-19

The pandemic has had both a positive and negative impact on the activities of ArtTech startups. On the one hand, they had to endure financial difficulties, changes in market demand, on the other hand, the crisis allowed them to reconsider the basics of their idea, gave them time to adapt to new realities, and adjust their business model to a new type of post-covid market. ArtAML adapted their business by thinking through the platform that could be used for remote transactions anywhere around the world. In this way, they tried to fight the resistance of the gallery businesses, dealerships, advisories, and even the auction houses to spend any money on anything new. At the same time, the respondent emphasizes that such resistance has benefited the startup and given them more opportunities. One of the advantages was the closure of borders and the inability to travel. This contributed to the focus on preparing the business to enter the market, and improving the flexibility in their options and decision-making. Kovet.Art, in turn, launched in the middle of a pandemic, but due to its digital nature, the startup decided to continue its activities. The changes, however, affected the number of sales, and everyone had to work in enhanced mode to overcome this crisis. One of the advantages of the pandemic, according to Muzing, was the opportunity to try new approaches for reasons that there is nothing to lose. This example applies well to museums that lost the flow of visitors during the restrictions imposed everywhere. Since the startup had nothing to lose, they took advantage of that period and changed the app completely. The monetary losses became extremely noticeable for some respondents. Robot Muralist mentioned that in 2020, they lost a lot of big projects and large amounts of money. Nevertheless, the startup also took the crisis as an opportunity to change its business model to meet the new needs of the market. ROKBOX also tried to make the most of the pandemic, although their product is maximally tied to the movements that stopped during COVID-19. The startup decided to spend this time on product development exercises with their designers developing marketing and exploring new digital areas. As a result, in a crisis situation, ArtTech startups were able to adapt their business models to the new needs of the market, which proves the ability of a startup as an organization to quickly adapt to changes and offer an essential product.

5. Conclusion

5.1. Discussion of the results

Having analyzed 16 ArtTech startups' websites and 5 in-depth interviews with their founders, it is clear that these organizations, despite the diversity of their ideas, have much more in common than it seems at first glance. Also, from the information that the author managed to get from the few founders who agreed to the interview, it can be concluded that the initial assumptions about ArtTech startups may be wrong.

First, there were concerns about the relevance of startup ideas to the art industry. There was an opinion that ArtTech startups are organized mainly by people from areas other than art. However, according to the results of the interview, it became clear that this is not quite true. Most of the founders either worked in the art industry for a decent amount of time or being involved in another field, they were simultaneously involved in culture. Thus, the founders of ArtTech startups have a clear understanding of the art industry from the inside, which means they can generate ideas that should resonate with the art community. The professionalism of the founders is also confirmed by their numerous and diverse education, experience in different areas, thanks to which they managed to reduce risks and run their business without much loss. The opinion of Hayter (2013) that the presence of previous experience in certain sectors increases the chances of aspiring entrepreneurs to create firms has been confirmed. All respondents came to start their own business after working in such sectors as art, finance, and technology. That is, after collecting and combining a certain amount of knowledge, they decided to express their experience in their organization. It is the understanding of the art industry by startups that increases the level of consumer confidence in them.

Secondly, when talking about startups, it often seems that they need to have a lot of investors or other external financial support to maintain their activities. As it turned out most of ArtTech startups are funded by the founders themselves, and although some have a couple of investors or have turned to fundraise, the main investments remain with the founders. There are two reasons for this: the first is that the founders came to start a startup after having already had a solid career, which means that they have both sources of profit for self-financing and knowledge about financial literacy; the second is that the founders do not want to share their right of decision making with investors. However, some still resorted to the help of both state programs and accelerators.

Moreover, as discussed by Salamzadeh and Kawamorita, (2015) ArtTech startups face challenges at all three stages of their lifecycle. At the first stage, it was not easy for some startups to formulate their idea into a specific business model, as well as to find the right team. Since ArtTech startups

are at the intersection of spheres, the founders do not always manage to find like-minded people who are ready to work in a startup enterprise. Further, ArtTech startups are easier to find funding and support from the network than is usually described in the literature. Startups had to put in more effort during the pandemic, as market demand and their target audience changed. However, despite the loss of money and time, ArtTech startups managed to turn the crisis in their favor. As mentioned by Kuckertz et al., (2020) they identified new business opportunities from the crisis. Thanks to the ubiquitous digitalization, the ideas of ArtTech startups became much more relevant for the art market. ArtTech startups as discussed by Mallak, (1998) used the concept of bricolage. That is, they survived by a combination of internal and external resources. Thus, they proved that innovative startups adapt to changes faster (Kuckertz et. al., 2020).

Finally, after entering the market, ArtTech startups manage to gain a foothold in certain niches of the art industry, which was predicted by experts to increase their usefulness and survival. The founders are well aware of their market position and operate within their target audience. Moreover, startups reflect sensibly about their influence on the market and have no misconceptions about the level of their usefulness. It is assumed that after COVID-19, startups see their shortcomings more clearly, which in normal times might not interfere so much with the development of their activities. Now the goal is to optimize the processes and further expand, as after the release, startups are nearing the end of such a business phase as a startup and plan to move on to the next stage.

The purpose of this study was to find out what is the essence of the phenomenon of ArtTech startups and what place they occupy in the art market. The author managed to learn in detail about the founders of ArtTech startups, many of whom were themselves direct participants in the art industry. They have nurtured their innovative ideas for a long time, observing the internal processes of the art sphere, and analyzing the problems to which they now offer solutions. The combination of their interests in these two areas led to the formation of a separate firm. The path of ArtTech startups turned out to be rather similar to startups from the other industries, with the only exception that their key milestones were deployed in the cultural field, which means that they required different approaches, largely tied to the network around startups. An analysis of the internal aspects of ArtTech startups was conducted, revealing their financial schemes and business models aimed at marketing or branding. In addition, many startups took important steps in the pandemic, but ArtTech startups managed to survive, thereby proving their usefulness and ability to adapt.

Based on the results of this research, the assumption could be made that ArtTech startups are strengthening and expanding a new segment of the art market every year. They position themselves

as enterprises that carry new technologies into the global art market. Gradually gaining the trust of the art industry, companies are trying to prove the importance of their creations for market participants. They must win their place in a competitive and non-favorable environment to assert their right to exist. Besides, at the moment, companies operate on their own, each occupying a certain place in the market. Moreover, not all ArtTech startups meet the characteristics of their organizational form. A couple of companies give the impression of those who have only slightly modernized existing ideas on the market, but at the same time position themselves as innovators. Also, some startups are so narrowly specialized that it is not clear how they are going to survive in the future, proving their usefulness to the market.

It is rather unclear whether ArtTech startups will stand a chance in the upcoming future with the development strategies that they have now. Despite the encouraging results now, not everyone will be able to survive the competition or be accepted by the art community. Due to their limited number, ArtTech startups are only beginning to attract attention in various areas of the art industry. However, the traditional mindset of participants in the cultural field is still only getting used to the digitalization catalyzed by the pandemic, and they will need time not only to search for ArtTech startups themselves but also to accept their ideas. Nevertheless, this study sheds light on the inner life of ArtTech startups and marks these enterprises as those that are already becoming the basis for future changes. And although the author managed to take only a limited number of interviews, their results can help participants in the art industry or other ArtTech startups to learn more about the promotion of certain business models.

5.2. Theoretical contribution

This thesis is aimed to bridge the research gap in the innovative entrepreneurship literature, precisely focusing on ArtTech startups. The academic contribution consists of the analysis of new organizational form as ArtTech startup, researching its position on the art market and the path it takes to enter the market. This research supports the main insights delivered by other scholars about startup ecosystems, state of the art market, crisis management, etc. This study is an addition to very little existing literature about new segments of the art market, formed by the digital switch of the industry. The author proposes to future researchers of this topic to focus on the grouping of ArtTech startups to identify individual classifications. The creation of such classifications within the group will increase the transparency of this market segment and the phenomenon of ArtTech startups may eventually become more understandable.

5.3. Limitations

This research has several limitations. Firstly, despite the case selection of 16 ArtTech startups, only 5 in-depth interviews were conducted, which cannot fully disclose the raised research question. At the same time, more sources of information, in the form of interviews with the rest of the founders are needed to enhance the objectivity and informativeness of this study. Secondly, there is a theoretical limitation in the existing literature about startups in CCI. Even though there is a large amount of literature separately about the art industry and startups, their diverse nature can not reflect the essence of their combination. Moreover, while examining the literature and conducting interviews, the author noticed that the art market is far from the ecosystem that welcomes startups. Startups are more commonly seen in other industries, which also have a favorable ecosystem for the development of novice companies and their further implementation in the activities of the sector. The small number of ArtTech startups confirms that the art market is not ready to create an ecosystem that will support startups in their initiatives. This, in turn, also limits the amount of existing information about such a phenomenon as ArtTech startups, which makes it difficult to study them.

6. Reference List

Alesch, D., Holly, J., Mittler, E., Nagy, R. (2001). Organizations at Risk: what Happens when Small Business and Not-For Profits Encounter Natural Disasters? *Technical Report*. Public Entity Risk Institute, Fairfax, VA, October.

Alexy, O. T., Block, J. H., Sandner, P., & Ter Wal, A. L. J. (2011). Social capital of venture capitalists and start-up funding. *Small Business Economics*, 39(4), 835–851. <https://doi.org/10.1007/s11187-011-9337-4>

Art Basel and UBS. (2018). *The Art Market 2018*. <https://d2u3kfw92fzu7.cloudfront.net/Art%20Basel%20and%20UBS%20The%20Art%20Market%202018-1.pdf>

Arutyunova, A. (2015). Art rynek v XXI veke. Prostranstvo hudozhestvennogo eksperimenta. [Art market in the XXI century. The space of artistic experiment.]. Publishing House of the Higher School of Economics. <https://id.hse.ru/data/2015/05/14/1098553151/%D0%90%D1%80%D1%83%D1%82%D1%8E%D0%BD%D0%BE%D0%B2%D0%B0-%D1%82%D0%B5%D0%BA%D1%81%D1%82%D1%81%D0%B0%D0%B9%D1%82.pdf>

Aryanova, T. (2018, March). Iskusstvo kak valyuta: Pochemu blokchein neobhodim art-rynku. [Art as a currency: Why the blockchain is necessary for the art market.]. ihodl.com <https://ru.ihodl.com/lifestyle/2018-03-27/iskusstvo-kak-valyuta-pochemu-blokchein-neobhodim-art-rynku/>

Belkevich, D. (2017, August 24). Kak blokchein mozhet izmenit' art-rynok. [How blockchain can change the Art market.]. artinvestment.ru https://artinvestment.ru/invest/analytics/20170824_blockchain_for_russian_art_market.html

Belkevich, D. (2020, March 2). Iskusstvo i tehnologii. Rynek ArtTech-startapov. Tschast 1. [Art and Technology. The ArtTech startup market. Part 1.]. artinvestment.ru https://artinvestment.ru/invest/analytics/20200302_technologies_startups.html

Benbasat, I., Goldstein, D. K., & Mead, M. (1987). The Case Research Strategy in Studies of Information Systems. *MIS Quarterly*, 11(3), 369. <https://doi.org/10.2307/248684>

- Blinova, O. (2019, May 20). Blokchein na rossijskom art-rynke. [Blockchain in the Russian art market.]. if24.ru <https://www.if24.ru/blokchejn-na-rossijskom-art-rynke/>
- Block, J., & Sandner, P. (2009). Necessity and opportunity entrepreneurs and their duration in self-employment: Evidence from german micro data. *Journal of Industry, Competition and Trade*, 9(2), 117–137. <https://doi.org/10.1007/s10842-007-0029-3>
- Bogers, M. (2011). The open innovation paradox: knowledge sharing and protection in R&D collaborations. *European Journal of Innovation Management*, 14(1), 93–117. <https://doi.org/10.1108/14601061111104715>
- Brush, C. G., Carter, N. M., Gatewood, E. J., Greene, P. G., & Hart, M. M. (2006b). The use of bootstrapping by women entrepreneurs in positioning for growth. *Venture Capital*, 8(1), 15–31. <https://doi.org/10.1080/13691060500433975>
- Bryman, A. (2012). *Social Research Methods* (4th ed.). Oxford University Press, USA.
- Caves, R. E. (2003). Contracts Between Art and Commerce. *Journal of Economic Perspectives*, 17(2), 73–83. <https://doi.org/10.1257/089533003765888430>
- Cohen, S., Fehder, D. C., Hochberg, Y. V., & Murray, F. (2019). The design of startup accelerators. *Research Policy*, 48(7), 1781–1797. <https://doi.org/10.1016/j.respol.2019.04.003>
- Colombelli, A., Krafft, J., & Vivarelli, M. (2016). To be born is not enough: the key role of innovative start-ups. *Small Business Economics*, 47(2), 277–291. <https://doi.org/10.1007/s11187-016-9716-y>
- Cowling, M., Liu, W., & Ledger, A. (2012). Small business financing in the UK before and during the current financial crisis. *International Small Business Journal: Researching Entrepreneurship*, 30(7), 778–800. <https://doi.org/10.1177/0266242611435516>
- Dahlhamer, J. M., & Tierney, K. J. (1998). Rebounding from disruptive events: Business recovery following the Northridge earthquake. *Sociological Spectrum*, 18(2), 121–141. <https://doi.org/10.1080/02732173.1998.9982189>
- Deloitte. (2019). *Art & Finance Report 2019* (6th edition). <https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/financial-services/artandfinance/lu-art-and-finance-report-2019.pdf>

- Deloitte. (2020). *Global Blockchain Survey*.
<https://www2.deloitte.com/mt/en/pages/technology/articles/2020-global-blockchain-survey.html>
- Doern, R. (2014). Entrepreneurship and crisis management: The experiences of small businesses during the London 2011 riots. *International Small Business Journal: Researching Entrepreneurship*, 34(3), 276–302. <https://doi.org/10.1177/0266242614553863>
- Doern, R., Williams, N., & Vorley, T. (2018). Special issue on entrepreneurship and crises: business as usual? An introduction and review of the literature. *Entrepreneurship & Regional Development*, 31(5–6), 400–412. <https://doi.org/10.1080/08985626.2018.1541590>
- Dolganova, E. A., & Hangeldieva, I. G. (2010). Art rynek: polifunktionalizm i polifonizm osnovnyh subektov. [Art market: polyfunctionalism and polyphonism of the main subjects.]. *Социология власти*, (5), 118-128. <https://cyberleninka.ru/article/n/art-rynek-polifunktionalizm-i-polifonizm-osnovnyh-subektov>
- Dolganova, E. A. (2011, May 2). Art rynek: teoria. [Art market: theory]. Artandyou.ru https://artandyou.ru/art/art_ryinok_teoriya/
- Dorner, M., Fryges, H., & Schopen, K. (2017). Wages in high-tech start-ups – Do academic spin-offs pay a wage premium? *Research Policy*, 46(1), 1–18. <https://doi.org/10.1016/j.respol.2016.09.002>
- Dyer, J. H., Gregersen, H. B., & Christensen, C. (2008). Entrepreneur behaviors, opportunity recognition, and the origins of innovative ventures. *Strategic Entrepreneurship Journal*, 2(4), 317–338. <https://doi.org/10.1002/sej.59>
- Fehder, D. (2018). Coming from a Good Pond: The Organizational Consequences of a Startup’s Early-Stage Ecosystem. Available at SSRN
- Gonzalez-Uribe, J., & Leatherbee, M. (2017). The Effects of Business Accelerators on Venture Performance: Evidence from Start-Up Chile. *The Review of Financial Studies*, 31(4), 1566–1603. <https://doi.org/10.1093/rfs/hhx103>
- Gopie, N. (2018). What are smart contracts on blockchain? *Blockchain Pulse: IBM Blockchain Blog*. Available at: <https://www.ibm.com/blogs/blockchain/2018/07/what-are-smart-contracts-on-blockchain>

- Hallen, B. L., Bingham, C., & Cohen, S. (2019). Do Accelerators Accelerate? If So, How? The Impact of Intensive Learning from Others on New Venture Development. *SSRN Electronic Journal*. Published. <https://doi.org/10.2139/ssrn.2719810>
- Hayter, C. S. (2013). Harnessing University Entrepreneurship for Economic Growth. *Economic Development Quarterly*, 27(1), 18–28. <https://doi.org/10.1177/0891242412471845>
- Hufnagel, S., & King, C. (2019). Anti-money laundering regulation and the art market. *Legal Studies*, 40(1), 131–150. <https://doi.org/10.1017/lst.2019.28>
- Iansiti, M., & Lakhani, K. (2017). The Truth About Blockchain. *Harvard Business Review*, 118–127. Available at: <https://hbr.org/2017/01/the-truth-about-blockchain>
- Kirpu, E. (2021). *How does digitalization affect industry structure?* Unpublished essay, Erasmus University Rotterdam.
- Kochetkova, M. (2020). *Blockchain in the art market: Opportunities and Challenges*. [Bachelor's thesis, LAB University of Applied Sciences]. Open Repository Theseus. <https://www.theseus.fi/handle/10024/341840>
- Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Morales Reyes, C. A., Prochotta, A., Steinbrink, K. M., & Berger, E. S. (2020). Startups in times of crisis – A rapid response to the COVID-19 pandemic. *Journal of Business Venturing Insights*, 13, e00169. <https://doi.org/10.1016/j.jbvi.2020.e00169>
- Lee, Y.-S. (2019). Analysis on Trends of Artworks Blockchain Platform. *International Journal of Advanced Culture Technology*, 7(3), 149–157. <https://doi.org/10.17703/IJACT.2019.7.3.149>
- Mallak, L. (1998). Putting Organizational Resilience to Work. 40. 8-13.
- Marakhina, I. V. (2020). Theoretical Aspects of the Functioning of Startup Ecosystem. *Digital Transformation*, 3, 31–38. <https://doi.org/10.38086/2522-9613-2020-3-31-38>
- Marengo, L. (2000). The structure of problem-solving knowledge and the structure of organizations. *Industrial and Corporate Change*, 9(4), 757–788. <https://doi.org/10.1093/icc/9.4.757>
- Modex, T. (2019). The challenges of blockchain adoption. *Modex* [accessed 15 April 2020]. Available at: <https://modex.tech/the-challenges-of-blockchain-adoption/>

Motoyama, Y., & Knowlton, K. (2017). Examining the Connections within the Startup Ecosystem: A Case Study of St. Louis. *Entrepreneurship Research Journal*, 7(1). <https://doi.org/10.1515/erj-2016-0011>

Nibbler, (2021). Report for robotmuralist.com. Retrieved from: <https://nibbler.silktide.com/en/reports/www.robotmuralist.com>

Nibbler, (2021). Report for muzing.org. Retrieved from: <https://nibbler.silktide.com/en/reports/www.muzing.org>

Nibbler, (2021). Report for fresco.work. Retrieved from: <https://nibbler.silktide.com/en/reports/fresco.work>

Nibbler, (2021). Report for dada.nyc. Retrieved from: <https://nibbler.silktide.com/en/reports/dada.nyc/home>

Nibbler, (2021). Report for artbinder.com. Retrieved from: <https://nibbler.silktide.com/en/reports/artbinder.com>

Nibbler, (2021). Report for withotis.com. Retrieved from: <https://nibbler.silktide.com/en/reports/www.withotis.com>

Nibbler, (2021). Report for kovet.art. Retrieved from: <https://nibbler.silktide.com/en/reports/www.kovet.art>

Nibbler, (2021). Report for v-art.digital. Retrieved from: <https://nibbler.silktide.com/en/reports/v-art.digital>

Nibbler, (2021). Report for theart.exchange. Retrieved from: <https://nibbler.silktide.com/en/reports/theart.exchange>

Nibbler, (2021). Report for cappasity.com. Retrieved from: <https://nibbler.silktide.com/en/reports/cappasity.com>

Quimet, P., & Zarutskie, R. (2014). Who works for startups? The relation between firm age, employee age, and growth. *Journal of Financial Economics*, 112(3), 386–407. <https://doi.org/10.1016/j.jfineco.2014.03.003>

Parker, S. C., Congregado, E., & Golpe, A. A. (2012). Testing for hysteresis in entrepreneurship in 23 OECD countries. *Applied Economics Letters*, 19(1), 61–66. <https://doi.org/10.1080/13504851.2011.566175>

Powell, W. W., & Sandholtz, K. W. (2012). Amphibious entrepreneurs and the emergence of organizational forms. *Strategic Entrepreneurship Journal*, 6(2), 94–115. <https://doi.org/10.1002/sej.1129>

Rosenberger, P. (2018). *Bitcoin und Blockchain*. Berlin: Springer.

Runyan, R. C. (2006). Small Business in the Face of Crisis: Identifying Barriers to Recovery from a Natural Disaster¹. *Journal of Contingencies and Crisis Management*, 14(1), 12–26. <https://doi.org/10.1111/j.1468-5973.2006.00477.x>

Salamzadeh, A., & Kawamorita K. H., (2015). Startup Companies: Life Cycle and Challenges. Proceedings of the 4th International Conference on Employment, Education and Entrepreneurship (EEE), Belgrade, Serbia.

Samoyduk, A. (2018, February 5). Kak blokchein perevernul ryok iskusstva [How Blockchain turned the Art Market upside down.]. rb.ru <https://rb.ru/story/art-blockchain/>

Sedyh, I. & National Research University Higher School of Economics. (2018). Rossijskij ryok predmetov iskusstva. [*Russian art market*]. <https://dcenter.hse.ru/data/2018/12/18/1144615288/%D0%A0%D0%BE%D1%81%D1%81%D0%B8%D0%B9%D1%81%D0%BA%D0%B8%D0%B9%20%D1%80%D1%8B%D0%BD%D0%BE%D0%BA%20%D0%BF%D1%80%D0%B5%D0%B4%D0%BC%D0%B5%D1%82%D0%BE%D0%B2%20%D0%B8%D1%81%D0%BA%D1%83%D1%81%D1%81%D1%82%D0%B2%D0%B0%202018.pdf>

Sidorova, E. (2019). The Cyber Turn of the Contemporary Art Market. *Arts*, 8(3), 84. <https://doi.org/10.3390/arts8030084>

Singh, N. (2020, April 17). 10 disadvantages of blockchain technology. *101 Blockchains* Available at: <https://101blockchains.com/disadvantages-of-blockchain/>

Smallbone, D., Deakins, D., Battisti, M., & Kitching, J. (2012). Small business responses to a major economic downturn: Empirical perspectives from New Zealand and the United Kingdom. *International Small Business Journal: Researching Entrepreneurship*, 30(7), 754–777. <https://doi.org/10.1177/0266242612448077>

Spender, J. C., Corvello, V., Grimaldi, M., & Ripa, P. (2017). Startups and open innovation: a review of the literature. *European Journal of Innovation Management*, 20(1), 4–30. <https://doi.org/10.1108/ejim-12-2015-0131>

Styx, L. (2019). What does blockchain mean for art museums and could it bring transparency to the art market? *MuseumNext*. Available at: <https://www.museumnext.com/article/how-blockchain-could-change-the-museum-industry/>

van Burg, E., Podoynitsyna, K., Beck, L., & Lommelen, T. (2012). Directive Deficiencies: How Resource Constraints Direct Opportunity Identification in SMEs. *Journal of Product Innovation Management*, 29(6), 1000–1011. <https://doi.org/10.1111/j.1540-5885.2012.00976.x>

Velthuis, O. (2011). Art Markets. In *A Handbook of Cultural Economics*, 2nd ed. (pp. 33–42). Edited by Ruth Towse. Cheltenham: Edward Elgar.

Website Grader, (2021). Report for artaml.com. Retrieved from: <https://website.grader.com/tests/artaml.com>

Website Grader, (2021). Report for foundwork.art. Retrieved from: <https://website.grader.com/tests/foundwork.art>

Website Grader, (2021). Report for rok-box.com. Retrieved from: <https://website.grader.com/tests/rok-box.com>

Website Grader, (2021). Report for fair-warning.com. Retrieved from: <https://website.grader.com/tests/fair-warning.com>

Website Grader, (2021). Report for meet-glass.art. Retrieved from: <https://website.grader.com/tests/meet-glass.art>

Website Grader, (2021). Report for oxia-palus.com. Retrieved from: <https://website.grader.com/tests/www.oxia-palus.com>

Werbach, K. (2018). *The Blockchain and the New Architecture of Trust (Information Policy)* (Illustrated ed.). The MIT Press.

Whitaker, A. (2019). Art and Blockchain: A Primer, History, and Taxonomy of Blockchain Use Cases in the Arts. *Artivate: A Journal of Enterprise in the Arts*, 21–47. <https://doi.org/10.34053/artivate.8.2.2>

Williams, N., & Vorley, T. (2015). The impact of institutional change on entrepreneurship in a crisis-hit economy: the case of Greece. *Entrepreneurship & Regional Development*, 27(1–2), 28–49. <https://doi.org/10.1080/08985626.2014.995723>

Winston Smith, S., Hannigan, T., & Gasiorowski, L. L. (2013). Accelerators and Crowd-Funding: Complementarity, Competition, or Convergence in the Earliest Stages of Financing New Ventures? *SSRN Electronic Journal*. Published. <https://doi.org/10.2139/ssrn.2298875>

World Economic Forum. (2018). Creative Disruption: The impact of emerging technologies on the creative economy.

Yin, R. K. (2013). Validity and generalization in future case study evaluations. *Evaluation, 19*(3), 321–332. <https://doi.org/10.1177/1356389013497081>

Yu, S. (2020). How Do Accelerators Impact the Performance of High-Technology Ventures? *Management Science, 66*(2), 530–552. <https://doi.org/10.1287/mnsc.2018.3256>

Zorloni, A. (2005). Structure of the Contemporary Art Market and the Profile of Italian Artists. *International Journal of Arts Management, 8*(1), 61–71.

7. Appendices

Appendix A. Methodology

Appendix A.1. Interview protocol

Types of questions by topic

Questions about the idea itself:

- How did you come up with this particular combination of art and technology?/ What is the main reason for such an interrelation between technology and art?
- What are the pros and cons of developing this idea in the art market?
- Which side prevails in your idea, technological or artistic?

Questions about the founders of the company:

- What kind of education do you have?
- What is your professional background?
- How long have you been involved in the process you are currently engaged in?

Questions about business organization before entering the market:

- Being a startup, what difficulties did you have to face before entering the market?
- What were your key milestones?
- What helped you in promotion of your business model?
- Have you asked the state or other external organizations for help? For example, start-up accelerator programs or government support for small businesses?
- Did you have any problems with funding?
- How did you attract investments, and did you manage to correctly allocate the received resources?
- Is there a difference between startups and small business?

Questions about the company's position after entering the market:

- How would you describe your current market position?
- How do you influence the market and its participants?
- What has changed after strengthening your position in the market?
- What was the final step that made you realize that your company now is one of the players of the market?
- Have you managed to attract more large investors?
- What is the current situation with financing and self-sufficiency?

Questions about the Covid-19:

- How has the coronavirus pandemic affected your company?
- Have your ideas become more popular during this period, and has the digitalization of the art market helped you?

Questions about the future:

- Would you say that you have competitors in your area of activity? If not what makes you unique?
- Do you think that the future belongs to young companies?
- In your opinion, can new technologies change the art market?

Appendix B. Data analysis

Appendix B.1. Thematic analysis

During the data coding of 5 in-depth interviews, a number of key themes were identified. Since the order of the questions asked did not change in each interview, the themes appeared in a certain order. However, despite the general questions, depending on the person, the order of themes could also change, since respondents could answer a particular question in different ways, thereby bringing out this or that information in a different chronological order. That is why the themes will be described as they appear in the interview, but some themes will appear several times in different parts.

The first set of questions was devoted to the idea of each startup, the respondents first provided something like a small background about what prompted them to start their business, what was their motivation, in short, what was the reason for their choice in favor of combining art and technology. One of the first themes is 'professional background'. Most often, it is with it that respondents begin their story about the formation of the idea. In total, this theme appeared in the first block in two interviews and in one of them went along with the theme 'education'. These two themes are linked in all interviews, as the respondents, starting the story about themselves, touch on their past in a fairly chronological order. In this way, they describe the areas of their education for a more detailed understanding of their interest in new technologies and art. Next, they move on to their professional background, listing a couple of their jobs or just the last job before they started their own business. Since the first set of questions concerns the idea itself, the next highlighted themes were 'description of the idea' and 'mission'. When talking about the idea, the respondents briefly described their business model, and only one person took the time to describe it in detail. Also in this block, the theme 'missions' appeared only twice, the other 4 times fell on other blocks of questions. A large number of codes formed the most popular theme 'technology',

which was revealed in one aspect or another throughout all 5 interviews in different parts. The first mentions began in the block of ideas, since speaking about ArtTech startups, it is impossible to miss their technological component. Firstly, some gave a description of the technologies within their activities:

R.1.: “So, when it comes to technology, technology is basically something that in the context of doing the required checks, it both is very efficient. And it is fast. And the other piece is that it helps people take all of the steps that they need to.”

Another respondent had a similar view of ‘technology’, confirming the usefulness of using technology. In their answer to the question which side dominates their ideas, artistic or technological, the respondent answered:

R.2.: “And that’s why when I mentioned that, you know, ArtTech goes with art first. But underlying is obviously tech, and then building on these layers of integrating exciting new technologies like blockchain. <...>, so industry vertical first, because you need to be experts in that industry. And technology is more like an enabler.”

Thus, both respondents stressed the importance of the technology as a kind of implementation tool for their idea. A similar thought was expressed by the third respondent, claiming that in our time, every person has a particular gadget, so the opportunity to create a solution based on technology could not be overlooked. Since the development of technology that supports some kind of applications is much faster and cheaper in terms of implementation. The next version of the development of thought under the theme ‘technology’ was the answers to the question about the pros and cons of developing startup ideas in the art market. First, the thought was expressed that technologies take time to understand them, and often people take this knowledge for granted. At the same time, other respondents, answering this question, raised the theme of ‘technology’ in a positive way. Speaking about the transition of many events to online and about reaching a global audience, one of the founders underlined that it is because of such opportunities that it is important to use technology and move forward. The founder of another startup confirmed this statement with his idea that technology is equated with all kinds of opportunities:

R.3.: “I mean, basically, that’s the beauty of technology, today’s you have the means you can build whatever the hell you whatever you want.”

The last question of the first block revealed the theme ‘technology’ from the side of how the founders of startups evaluate the technological side of their business. The first respondent stressed that they ultimately consider themselves a technology company operating in the technology

industry, but with a focus on the art market. Another founder claims that his idea could not have been realized without the help of technology. In his opinion, it is technology that acts as a support for art. However, on the other hand, if this technology does not support the cultural interest of consumers, then the company does not cope with the needs of the cultural sector. Another respondent said that he considers technology and art only in conjunction:

R.4.: "I think that building the technology and finding non-existent solution to some problems. It's also a form of creativity, which is by definition art. So, I would say it's all together. It's like an art movement that we are creating. And this art movement is definitely powered by technology and robots."

An important theme highlighted from the codes was 'help/influence of the network'. It includes information about people or organizations that have had a particular impact on the founders of startups and their businesses. This theme is also expressed in many ways. One of the startups worked with several individuals who were kind of advisors, and from whom the respondent received inspiration for their work. By receiving such help from their network, startups were able to work out many key points, including, for example, working on the business model and revenue streams. Another variation of the 'help/influence of the network' theme was the influence of their close environment, often family. For example, some respondents indicated that their family members were artists, so they grew up surrounded by art. Or, as children, they spent a lot of time in galleries and museums, getting involved in culture. The latest variation on this topic was the influence of people who move in the same circle as the founders of startups. Two of the respondents said that communicating with various interesting people who also generate such ideas, they were not only inspired to create their own business, but also listened and learned from them.

When talking about technologies, the respondents did not forget to point out the attitude with which the market perceives new technologies. From this information, the theme 'market's view on technology' was derived. According to one of the respondents the art market is slowly adapting to new technologies:

R.1.: "...the art market is you no doubt know has been slower to adopt technology, it really does require understanding the model of technology. And there's a lot of fear that we see that people have about using technology. <...>. And it doesn't replace humans, what it does with say, increasing amounts of legislative requirements such as with AML, it saves time to help you then be efficient and be able to spend more time doing what it is that you love doing."

Besides, within the industry there is a lack of presence of technology solutions in the art market. However, the same founder stresses that thanks to the pandemic, many have had to master

technologies like Zoom, and that they expect having a much more efficient workplace from now on. Since the respondent noticed an increase in interest among the networks to the technologies and the desire to use them. Another founder also mentioned that people working in the art industry have long been accustomed to the physical world, and that they not only do not understand the power of technology, but even feel threatened by it. Based on this, the topic 'human factor' was highlighted, which included the respondents' thoughts that technology will not be able to completely replace the physical experience that a person receives during the same communication with people from the art industry or a real visit to a museum or buying a real painting. Moreover, respondents note that technology is only a tool, key decisions are still made by a person.

A large number of codes formed the 'COVID-19' theme. Many noticed that the pandemic gave them a lot of opportunities, not only in terms of a sharp transition of the art market to online, which otherwise would have taken another 10 years, but also in terms of adapting to the situation and revising their business model depending on the new reality. The changes affected all participants of the art market, because they had to reconsider their priorities. This also affected consumers, who eventually changed the supply and demand in the art market.

A very small theme, which appeared only 4 times, was 'future plans'. The founders spoke about their intentions to expand, provide new services, and form new partnerships. The next topic was 'experience', which indicated some experience that the respondents had gained during their studies or work, which eventually helped them in running their business. Many point out that the skills they received helped them understand how to properly build their business, manage it, and how to approach the problems that arise along the way. Almost all respondents note that it was all the experience gained that made them entrepreneurs. Some respondents came to the start-up through the experience of managing other organizations. Thus, the topic 'other business' was derived, which included information that some founders had or still have other businesses.

One of the most frequently raised themes was 'network'. It included the idea that the support of the art industry network is important for ArtTech startups. One of the respondents notes that she attends a large number of art and technical events, expanding her network. Another variation was the creation of a new network thanks to her idea. Based on this, the theme of 'industry understanding' was formed. Due to their professional background and experience, some respondents had a clear understanding of the internal features of the industry. Through this, they understood what problems exist and how they can be improved. One of the founders emphasized that it is this understanding that helps to develop the business more successfully:

R.1.: “Understand how you find out the business, develop income streams, understand business models, there's just so much to get your head round. And if you don't understand the pain points for your intended target market, if you don't understand what their needs are, it's gonna make it much more difficult to build a solution for them to actually satisfies those needs.”

The second largest number of codes displayed was the theme ‘difficulties’, which revealed all the main problems that startups had to face. The first of these problems was the pandemic, for the reasons already described above. A related problem was the change in the needs of the target audience. One of the respondents noted that there was a lot of uncertainty associated with the widespread closure of businesses. For one of the founders, it was difficult to make the decision to leave a stable job and form a vision for a new idea. The next problem was the recruitment of a team that fully understands the essence of the idea. The same respondent noted that the recruitment of the team was a difficult test for him. The same applies to the search for partners and options for collaborations with classical institutions. For one of the founders, maintaining faith in their business at all stages of implementation was a challenge. Also, the most obvious problem for startups was the issue of financing.

Another theme was ‘digitalization’, which included references to the transition of the market to the online space. Many people mention this topic in a positive way, focusing on the new access to the art market, the opportunity to reach a large audience. Moreover, almost all respondents mentioned that the classic players of the art market during the pandemic invested a large amount of money in digital presence. With the pandemic, another theme came up, ‘adaptation’. Founders have had to adapt their business models to the reality created by the COVID-19. However, this was perceived more in a positive way, as an opportunity to review its structure and make an upgrade.

This is followed by several subthemes that can be combined into one common theme ‘key milestones’. The subthemes data includes: ‘1 milestone’, ‘2 milestone’, ‘3 milestone’, ‘last milestone’ and ‘final step’. These themes reveal the events that the founders of startups consider to be key marks on their way to the development of their business. Under the ‘final step’, the respondents shared their thoughts on what they thought was the final touch, which made them understand that they are now agents of the art market. For three respondents, the final step was a particular conference or fair, where they realized the importance of their idea and the attention of the industry to them. Speaking of milestones, the theme ‘speed of development’ stood out. One of the respondents claimed that they chose a slow but steady path of development, with the goal of working towards being a credible business. Which is different from the approach of many when they want to race to the market.

A crucial highlighted topic can be considered ‘funding’, in which respondents told about the financing of their business. So many people have developed a self-funding or self-fundraising scheme. This topic set the direction for the codes that formed the topic ‘external organizations’. In this topic, respondents shared their experience or lack of interaction with external organizations, such as accelerator or government programs, etc., which provided mentoring and partial funding to the startup. One of the founders emphasizes that the environment of accelerators and incubators, helps startups grow very well. Speaking of which, the topic of ‘investment’ was touched upon. There was a different attitude to investing among the founders. Someone argued that it leads to external influence, which startups need to adapt to. Someone said that they have several investors, but the founder remains in control of the company. The discussion of finance led to the formation of the topic ‘financials’, which reveals the revenue models of startups, the costs of maintaining the business and the team. Many also argued that maintaining a business requires constant investment, so there is always a need for money.

Another common formed theme was ‘idea's promotion’. It includes information about how startups promoted their idea, what methods they resorted to. Usually, startups did not use flashy advertising campaigns, but worked directly with journalists or gave interviews to trusted media. Collaborations with well-known art market players have also helped startups strengthen their brand. Besides, the uniqueness of the idea and the independence of the startup played an important role in promoting it on the market.

An interesting theme was formed from codes describing the difference between startups and small businesses. Under the theme ‘startup or small business’, the respondents shared their point of view about the concepts of a startup as such. Many have concluded that a startup is a phase of a business, describing a startup as a state of mind. Others consider the distinctive feature of startups to be their ambition and whether the idea is scalable. Everyone also mentioned that most companies position themselves as startups solely for the sake of this aura of coolness and novelty. The startup was also defined by its mission of rapid growth. The same respondent noted that startups have a solution that makes people act differently or do something differently. Answering the question of whether startups have any influence on the market, the theme ‘influence’ appeared. For many, the impact manifests itself as providing access to the market to more people, bringing the market closer to transparency. Someone, however, admitted that so far it is still at the stage where it does not have a significant impact on the market. Based on this, the following question about competition gave rise to the theme ‘competitors’. It revealed whether respondents believe they have competitors in the market or whether their idea is one of a kind. Only two respondents said that in their field of

activity there are no competitors. These discussions revealed the topic ‘market position’, in which respondents explained their place in the market at the moment.

Another highlighted theme was ‘focus’, which revealed what a particular startup focuses on in terms of its business. Some pay more attention to branding, some to the financial side, others work on target markets. A separate topic was ‘blockchain’, as it is now the focus of one of the respondents. This startup wants to introduce blockchain into their system soon. Mentioning technology, many respondents described the current state of affairs in the art market. From which the theme ‘state of the art market’ was identified. Describing the art market, the founders emphasized the traditional nature of the activities of the participants of the art market, how it is arranged and how business is usually conducted on it. Also, almost everyone mentioned its technological backwardness and obvious problems with self-development. Based on this knowledge, the respondents talked about the advantages of their new ideas, which formed the theme ‘pros’. Founders talked about how their technologies can help the art market. In other words, what is their advantage, how can they be useful. Under the theme of ‘innovation’, two lines of thought were formed. The first touched on the description of innovative technologies, the second explained the need for innovation to the art market, since it has not changed for more than 50 years. Returning back to the theme of ‘technology’, a few more thoughts were formulated on the topic of whether new technologies can change the art market. There was a statement that technology is already changing the market, especially in the last year it has become much more noticeable.

As a result, 37 themes were formed from the coding. Most of the codes concerned the theme of ‘technology’, which is not surprising, since ArtTech startups work with new technologies and have their own opinions about them. From all the discussions, it can be concluded that the attitude of startups to technology is overwhelmingly positive. Being in this field, they have a greater understanding of internal processes, and most importantly, faith in the power of new technologies. Despite the positive aspects, the second most mentioned theme was ‘difficulties’, which highlights the vulnerability of startups. The COVID-19 crisis also had a particular impact. The 3rd place was shared by two related themes ‘professional background’ and ‘state of the market’. An extensive discussion of which showed that the founders of ArtTech startups have extensive knowledge about the art market and experience in it, sufficient to establish an organization whose goal is to provide a certain technological solution for the development of the art industry. To sum up, the formation of such themes is the basis for further more detailed analysis of the life path and the role of ArtTech startups in the art market.

Appendix C. Interview transcripts

Appendix C.1. ArtAML

Interviewee: Respondent 1

Interviewer: Elena Kirpu

Date and Time: 20/04/2021 14:30

Location: Zoom

R.1.: “So, he has developed onboarding and including AML solutions for some of the big retail banks in the UK, he was very familiar with the challenges presented by anti-money laundering, even in the large banks. And when we found out I was in attendance in September of 2018, at the Art business conference, and I became aware of the incoming legislation, which became live, in fact, in the on the 10th of January 2020. And I, because I'm a long standing entrepreneur in the art market, I went, Oh my gosh, how on earth with wide swathe of business models, how on earth will these businesses all be able to understand what their requirements are and actually be able to conduct their checks their AML, and compliance checks. And the whole point of that is to prevent their businesses being the target of money laundering and terrorist financing activities. So, when it comes to technology, technology is basically something that in the context of doing the required checks, it both is very efficient. And it is fast. And the other piece is that it helps people take all of the steps that they need to. So, one of the things that we saw early on, before we had launched our platform, bearing in mind that it launched in December of 2020. We'd started work on it in September of 2018. So that was a pretty long run before actually launching and then we did send the middle of pandemic, which was also an interesting experience, shall I say?

So, one of the things that we came across is that a well-meaning organization called ‘The responsible art market’, we'd like the work that they do, we have actually used their guidance for provenance. As part of what's guided us for building our own module on including provenance in our platform, which actually brings in what's called the proceeds of crime act in the UK, there are other equivalent pieces of legislation around the EU or the US. And we saw this kind of checklist and it was these tiny boxes that you were kind of supposed to complete and we thought how on earth is that going to cover all the steps they actually need to take and be it's so easy to forget your stops (steps). So, what we say about art AML is that it brings together technology and the human mind to be able to take risk based decisions and you just can check so much more than that. Let's say for example, one thing is that one of the requirements is that you see is the person who you are sending a work of art to, are they a politically exposed person, and if they are, you're expected to

do additional checks. And the whole point of that is they have recourse to public funds, and they could abuse that they might also be subject to bribes. And by using our system, you can basically click check or screen for politically exposed person. And it will check the data from over 1000 databases, and literally in a second and a half or something, it just boom, and some people go did it actually do anything? Yes, it did. It doesn't actually go to each database. What we do is the system we use pulls together all of information from those databases has it in one location, and then you can quickly do a call on that. So, basically, for the solution that we are providing, it was an absolute no brainer to use technology.

And furthermore, a couple of other points to bear in mind is that you're collecting highly sensitive data, personal data in terms of individual some of the most highly sensitive data that you can get on someone such as their passport image. So how do you securely store that you're required to for a minimum of five years, and secondly, you have to keep it in a GDPR compliant solution. And not all people are the most technically minded individuals, and so far solves a big part of our solution. It's not only guiding people through and saving time, but it's also securely holding that information in the cloud, so that they don't need to worry about it. And if their individual computer get hacked. The good news is that the data they've collected for their ml tracks, if they're using our system, and they haven't downloaded it locally, none of that's going to be accessed. And more widely. The other point too, just in terms of art, and technology is a wider conversation piece, the art market is you no doubt no has been slower to adopt technology, it really does require understanding the model of technology. And there's a lot of fear that we see that people have about using technology. So, what I, my kind of piece of advice to people out there is, is to just do it, just jump in and try it. And it doesn't replace humans, what it does with say, increasing amounts of legislative requirements such as with AML, it saves time to help you then be efficient and be able to spend more time doing what it is that you love doing.”

E: “So the following question also arising from this, what do you think are the pros and cons of developing this idea in the art market?”

R.1.: “I mean, one thing to recognize is maybe that technology cannot do everything. So, you can use a platform like ArtAML, but it doesn't remove the need to think yourself as a human to make decisions. And what we do is we prompt people to ask the right questions, but let's say somebody is politically exposed. And this doesn't mean you can't necessarily sell a work of art to them, or even buy a work of art from them in a situation that, in fact, actually being a pap is only applicable when you're selling a piece. But it means that you might actually.. Do you know, I don't know how they attend their wealth. And I need to go find that out. So, you go do some internet searches and you see, and then you put that information and some screenshots into our platform, because we

enable you to continually document the fact that you are thinking about it that you are seeing what information you can find, you're making informed decisions based on the information available to you. And you also might engage a company, we have providers who can help people do source of wealth checks. So, in terms of technology, it doesn't solve all problems, but it can help you not miss any steps. And that's what some people who are really ofay with compliance have said about our platform is it helps them to not miss the steps they might have otherwise missed. And I don't know. Um, in terms of other cons, I think it takes time to learn about technology, and it takes time to understand the model of how it works. And people take their existing knowledge for granted. Yeah, so I may not tell somebody every single thing that they need to know if they're starting from square one and don't understand anything. So, I guess maybe a learning curve for people?

And actually, the pandemic has, really, I would say, putting aside all of the challenges and all of the pain and everything that's been really horrible about it, if we try to see some silver linings, it has really pushed the art market forward in a way that it was going anyway. And it's probably what people saying is, it's better put in might have been five to 10 years of change, and in kind of a year, so it means that people do realize that they can use this platform. I know, plenty of galleries are now delighted about doing studio visits virtually. I did my first studio visit in probably 2009 when I was a gallerist. And I would have been using Skype. So, I was an early adopter of technology, the technology is there.”

E: “We will get back to the pandemic topic a bit later. But the last question about idea itself. In your opinion which side do you think prevails technical or artistic in your company?”

R.1.: “So, technically speaking, it is a technology company. And the market that we are servicing is the art market. But yeah, if we have to complete forms, because you do have to say, what's your industry? Well, our actual industry is technology. And we have to stay on top of security changes, and compliance changes for ourselves in terms of how you hold data and how you process data, we have to continuously be aware of that. And when you bear in mind that we are providing the support, right now the focus is the UK, the EU, but we're also expecting to expand whenever the US stops in their legislation, you know, we are going to need to provide a service that essentially supports people around the globe, with their needs to comply with AML.”

E: “So now you operate only locally, in the UK?”

R.1.: “So, all of our current year's users are currently in the UK, their collectors are based around the world. So, there are people around the world accessing the platform. And it looks like we're beginning to have some incoming first e based customers coming soon. And then we expect the States will come in the next couple of years. The reality is people don't really want to do anything

about this legislation until they have to. And even though auction houses, the large auction houses were self-regulating for a number of years, it's not until they have to that most likely to do anything about it.”

E: “Let's talk about you and your professional background. Could you tell me what kind of education do you have? You mentioned that you have artistic background, and your co-founder has technological background, right?”

R.1.: “Yes, that's right, although he's actually a photographer and a jewelry designer on the side. So, we both were very creative people. And I studied as a photographer. And I didn't pursue that as a career. But if you'd ask somebody who knew me when I was 20 years old, and didn't know anything else, they would say, oh, Susan's a photographer. So, my background was getting a BA in Fine Arts with an emphasis in photography. That was in the United States. I then went to what kept me moved to London, and I attained a Master's of Arts in that, that was an arts management. And that was at Birkbeck college, part of the University of London. And that's kind of my background I did in terms of work experience. My first job in the UK in 2000, after I graduated from university, was working as a manager in a retail shop. That was a natural foods chain around the UK that actually became Whole Foods Market. And after a year, I decided I wanted to get into the art world. And I handed in my notice at the management job, and the operation structure, got in touch and shoot and we had a meeting. And she basically said, Yes, Susan, go try your little artworld thing. What we'd really like would be for you to come back to the company. What would you like to do in the meantime, we'll give you a part time job doing whatever you want. I joined what was called the retail team. I was then basically promoted to middle management company. And I helped run one department for the whole of the company across all of the shops. And then I was part of a team that kind of helped position the business to be bought by Whole Foods Market. And that experience that foundation in retail management has proven to be invaluable. After a year I was like what am I doing, I'm supposed to be in the art world. But actually, I'm really glad I did it. And at one point in time, I was juggling a gallery job. I was juggling my masters and the retail job. And it was really excellent preparation to end up realizing I'm an entrepreneur. I've been running little enterprises since I was a kid in small town America. And it means that you do need to juggle so many things. So, when I was about 24 years old, I would wake up in the morning and go, who am I today? What am I doing? I was freelance curating during all of that as well. I worked in various galleries and, and then eventually in 2004, set up our own company and run a gallery in Soho in London from 2006 to 2011. I was a dealer for about a decade, dealer, Garston advisor.

So, in 2009, I founded the Association of Women art dealers. And so today, I'm the CEO, still, it's a multi chapter International, not for profit trade association with chapters in London, New York, and on lines that supports women and women identifying art dealers, that was set up in the credit crunch in recession. So that was inspired by wanting to bring people together to help them during very difficult economic time. And then in 2012, I had at that time, for a year, I had been mentoring, our art businesses, art galleries, dealers, artists. And so, I set up a brand called 'Be smart about art'. And that's actually still going today as well. And it teaches people how to make a living in the art market. And I continue to dealing until I need to remember this, it was either 2013 or 14, when I stopped my art dealing, and then I kind of was I introduced most of the artists that I was working with to other galleries. But I was wearing too many hats. And there was potentially a perceived conflict of interest if I was selling art, and then also advising our businesses on their business plans and that kind of thing. So, by the time you got to 2018, and I was attending the art business conference, I was very much so in a position of supporting the industry. And the funny thing is that when we went out after hearing about during one of the late morning sessions, we heard about this incoming legislation, and somebody who's an Associate Director of what's the time of London gallery, she said, we were going out for tea break, and she said, Oh, Susan, it's fine. You'll sort this out and help us out with that."

E: "I'll say it's really crucial to really understand the industry when entering it."

R.1.: "And understand how to run business, how to manage people, all of it. Understand how you find out the business, develop income streams, understand business models, there's just so much to get your head round. And if you don't understand the pain points for your intended target market, if you don't understand what their needs are, it's gonna make it much more difficult to build a solution for them to actually satisfies those needs. Because what are you doing? You're adding value and you're solving problems. Typically speaking, that's what business is doing."

E: "So being a startup, what difficulties did you face before entering the market? I guess it was in 2020, right?"

R.1.: "We first started the business in terms of developing the ideas in September of 2018. But when we went full time, in October of 2019, and I guess the difficulty was probably mostly the pandemic. Yeah. So, we were developing a mobile application, which is still the work that's been done on it just sitting there. It's called AML POS. And it's really for collectors to use at art fairs, to enable them to not have to continuously upload their information to every gallery. From him, they buy a work of art. When the pandemic hit, this was about, I guess, the second half of February, early March of 2020, when we were doing this, and Chris actually has a doctorate in biochemistry.

So, he was able to read some of the scientific papers that were coming out. And it means that we were able to have a pretty good understanding of what was happening with this illness that was going around. And we were able to realize, I think, probably before a lot of people did. We decided pretty early on that it was likely that the art market was going to go online, we thought it could actually be for quite some time, we thought, maybe for a year. And we adapted the business, what we did is we adapted so that it was a browser based platform that could be used remote transactions anywhere around the world. And it wasn't predicated on having in person events. So, it was a challenge was having to make that big adjustment. And that delayed us getting to market by we think probably up to about six months.

And then the other challenge that was then faced was that the needs of our target audience was very, they were very quickly changing. And they didn't know if they're actually going to continue having qualifying transactions of 10,000 euros or above. There was this change now, but there was a lot of resistance initially to commit to something and also a lot of gallery businesses and dealerships and advisories. And even the auction houses, were very reluctant to spend any money at all on anything new. So, it was a very, very slow march to Market. But we got there. And we're really glad we made the decisions that that we did. And we actually were able to take the period of the year for the kind of from when we first lockdown up to maybe when something started to kind of open at least a bit in England, to really just focus on building out the platform. And what it means as well is it now that people understand how to attend video calls like even are doing now. Whereas we were very comfortable with it beforehand. And we were saying welcome to our world. Now because the art world understands how to use him, etc. It means that we anticipate having a much more efficient workplace in the sense of not actually having to travel in with a laptop somewhere, just to open the laptop and to show somebody something that you could do on zoom.”

E: “Could you tell me more about what your key milestones in these three years were?”

R.1.: “I would say launching the beta in summer of last year. So that was in July of 2020. That was really significant when we first started to get users on the platform, and we were actually seeing it, seeing it being applied in real life. The next milestone was December of 2020 actually launching to market and signing up our first paying customers. And these were not individuals who I had known beforehand. Since that time, we've had quite a few people who I've known for many years come in touch. So, today, we're beginning to see quite a few people who I've known for some time in the industry. And they all know that I understand their needs. I understand the VR business model. And in terms of kind of next milestones, it's, I actually think the kind of following milestone was probably something that's just come out recently, which is that we have launched a training

program for AML training, which is a requirement to operate as an art market participant. And then the next thing is that you're going to see some major development of the platform, walking people through what they need to do with a risk assessment.

As an art market participant, you need to see what the likelihood is of your business being the target of money laundering and terrorist financing activities, write a corresponding AML policy, and gorgeously using a platform like ours, this is only going to be available for people who are with the platform. But what you'll be able to do is basically let's say you've done your initial risk assessment, you've done your AML policy, a year later, you're required to do what they call a refresh. You can press go, it can take your real data, how many transactions have you done? Where were the people based how many politically exposed persons have been flagged all of this kind of thing. So, you can have that real immediate data, and then feed that into your policy, because it's based on using a platform that takes a risk based approach. So, something that would have beforehand, been more expensive. That would have taken more time is going to be it's it will actually be more accurate. It'll be faster, it'll be cheaper. I'm telling you about milestone that's coming up.”

E: “What do you think helped you to promote your company and your business idea in the market?”

R.1.: “That is based on slow and steady, and working towards being a credible business, and not going too fast. A lot of people want to race to market, and they want to get out there and close as much business. The nature of what we're doing is pretty scary. For the users, this is a legal requirement that they have, what we did not do was rushed to market in January of 2020. And say we're fully compliant, use our platform. What we did instead, as we said, we're working to incorporate the legislation, we're working to incorporate the guidance that tells you how to interpret the legislation. This is going to take some time for us to do this, we would rather get it right. So, we've not gone out and done flashy advertising campaigns. What we've done instead is we've worked closely with journalists, on what you might call thought leadership pieces on interviews. Actually, from a single tweet from the art business conference where we launched the brand in September of 2019. So, a year after we had learned about the incoming legislation we got quoted in the newspaper, and that attains attention. So, it's been much more quality and not quantity approach. That's what we continue to do.

Now in terms of attending early credibility. We also did build an advisory panel. And we've actually only still announced officially one of the people on the advisory panel people, some people kind of know who's going to be on there that that will come the big announcement will come for

that. We've actually been so busy that we haven't done the whole thing but to know that we have serious people endorsing us has been helpful, as well. And then and today. It's word of mouth. That's how we're getting business.”

E: “Have you asked any external organizations for help, state or accelerator programs?”

R.1.: “So, our channel is basically it's funded by the founders at this stage. And so there we were not part of any kind of accelerator program. And what we've done is we've worked very closely with some core individuals. So, one of our advisors, if I've got a question. He is somebody who is basically long term art market campaigner. He's a well-known journalist in the industry. So, we've worked closely with Ivan on some things. We also have a CFO or Chief Financial Officer, who's a long standing CFO, who also has been a CEO. He was once within ‘viable’, which is a big art market name. And he's worked with various companies over the years. So, Martin and I have worked very, very closely together on the business model, and on developing the revenue streams and looking at the profit, that kind of thing. But in terms of what you might think of as being the kind of typical thing that most people might experience, most energy companies think, oh, you have to have investment.

Instead, what we've done is we have managed to get the business to a situation where it has a really reasonable value now, that will knock on word touchwood only increase, it doesn't have lots of investment, it doesn't have lots of people in trying to influence us or push us in certain directions. We've achieved getting to market having a lot of credibility, having clients having a viable business that's continually being developed. And we don't have a lot of external pressures on us. But I would say that that would not have been possible if we hadn't been in a position to do that ourselves. So, we knew what we were doing. And we were able to save up funds for going full time. And the other point is, because of all of the years of experience that I have with business in that Chris with technology, it's if we were earlier in our careers, you know, I think that we would have had which would have had to have more help in different ways. We're at a certain stage in our careers, where, you know, we're kind of, I'm kind of one of the people advising other people on their businesses quite often so. So, I was able to lead it up and not go through some accelerator program. And it's interesting, when you get to a point in career, like where I am today, you always are learning.

But a lot of programs out there are designed for people who don't know very much about business, you might be newer to it. And the question is, well, what value is that going to? What value is that going to deliver to me, and to give you some idea, I'm attending, actually, a program this coming Saturday, it's a day seminar for professional speakers. So, it's important that we have different ways of continuing to develop ourselves professionally. But say, accelerators and going through

funding rounds and doing all that it's not always applicable. And when we'll be looking at funding is apart from little bits and pieces that are currently in discussion, because now people are purchasing as we're going to see think about that. But it will be for expansion. So, say, expansion into the States, for example. But not funding to get the business going.”

E: “There is also this kind of separation between startups and actually small businesses. What is your opinion about that? Do you see this difference?”

R.1.: “Yes, there are. I would say that we are a startup that is a small business. So, a startup is more of a phase of a business. So, start up, when it is no longer startup could be a medium sized business. It could be a large business. It's not about the size of business. So, for ourselves, the question is when do you stop becoming a startup? And I would say we probably have about another year to go before we would no longer be a startup.”

E: “Yeah, because I know that some startups after entering the market, they also stay in this position of startup but they still trying to find investments and they can run a good business, but they still stay in this position of startups. So that is why it's really interesting to understand how you position it that yourself.”

R.1.: “Yeah. And actually, by the time we are expanding more internationally, and there will be likely funding coming in, if we don't have to take it, and then we won't. We wouldn't be a startup, then, if we were not previously a startup, it's not like we would go kind of back and forth. And to start a startup, it's very much so a, it feels like pushing mud up a hill. And some startups have lots of money put into them. There are different cultures for startups, and that wasn't our culture, our culture was slowly develop, develop, develop, but not kind of having money thrown around, which actually, I think is really healthy if you can get away with limiting how much money if you have money put into your business, which many people need to even if it sells alone. It helps you to develop a mindset of not just like spending lots of money. Only spending money where you need to doing your due diligence. So, to my mind, I think startup is more a state of kind of mind as to where the businesses, and it's important for businesses to grow. And to stay in startup mode for too long. I wouldn't see as a healthy thing. But that's my taken and some others might disagree with me.”

E: “So how would you describe your current market position? Is it like a final step of this startup journey?”

R.1.: “Yes.”

E: "How do you think you are influencing the market and its participants? How would you describe your influence on them?"

R.1.: "Well, we're providing a solution for specific needs. So, I think our influence might actually have to do with being part of wider cultural change towards a more transparent art market. And that's much more from a point of view of being rational. So, when I was at the corporate business conference in 2018, I thought to myself, we have choice, we could either fight us which some people in the industry dead as an incoming legislation, or we could accept the fact that this is the reality of doing business in the modern day marketplace, and do our utmost to support the industry to keep transacting while they're complying. And I guess what we're doing in terms of having an influence or impact, it is being part of this wider cultural change. And I think probably increasing the level of professionalism. So, people who are not interested in being professional players might be turned off by the art market. And we could hope that the industry might attract some new patronage of people who've been turned off by some of the headlines about the dodgy happenings of the industry. I think maybe not directly, but we're part of wider change taking place, which will end up being significant but will happen over a period of time."

E: "What would you think was your final step when you realize that you entered the market, that you are now a full participant of it?"

R.1.: "Definitely. When we decided that we were going to properly pursue this business was Arthur responsible art market conference in Geneva, in late January of 2019. Without a doubt, it was that particular day that we made that decision and so we returned to England, and immediately set up the company. What happened with that is we attended this event, which was pretty much full of lawyers, and some bankers and some accountants who were professionals servicing the industry. We went into that having no idea that there was such a lack of presence of technology solutions and development for AML in the art market, anti-money laundering in the art market, and something that we experienced during the event was that there were some people on some of the panel discussions, it was just a half day kind of morning conference. Some people were saying, hey, if anybody out there, what's developed technology solutions that people don't just go to their lawyers and do something about this, there's an opportunity. And there were Chris and I sitting in this audience, going, Oh, my gosh. So, when we got to the to the big kind of open q&a at the end of the conference, I was actually the very first person to get my hands on the microphone. And I said, Okay, the first thing for us My question is, for all of you who've been mentioning, seeking a technology solution, there being an opportunity, just look at the two of us, because that's exactly what we're developing as a technology solution for AML in the art market. So, we basically would love to conference that day saying, Okay, this is this, we realized that particular day, the extent of

the need, and the interest in having technology as a solution. And so we went, it's viable, even without the specific metrics of that stage, even without having assessed the, at that stage, the size of the market, for example, which has grown and grown and grown, because actually more and more people, it turns out need to do this. We went we left that event going up. And it's still a very clear moment in my in my memory.”

E: “Could you tell me more about your financial state? How do you gain the profit? What are your main revenues?”

R.1.: “So for us there it's based on a subscription model. Yeah, so what people do is they pay a subscription, on a monthly basis to be able to access our platform. The size of subscription is predicated on what their usage needs are. By the second half of May, that will actually be a source, self-sign itself situation, we're in fact, also running a founding member subscription, which enables people to pay up front. And then they get a year's subscription. And they get two months for free if they've paid for your upfront, for example. So, if you think about kind of models, that's one way that we thought that's how we can support our early users congratulating them on being early adopters of this legislation at the same time, that they would also be able to get a discount for that. So, it subscriptions to access the customer due diligence platform for actually conducting their anti-money laundering checks. They're now paying as well for the training sessions that we're running. They will in the future be paying for their risk assessments and their AML policies. And then there'll be other add on services that they'll subscribe to or pay for individually as well. So, some things they'll be able to set up as subscriptions in which they pay overtime. And then some things will just be one off one time purchases, such as the latter. If someone needs a document to be translated, then they'll be able to kind of click a button and have that translated at the moment. We're manually making introductions for people.”

E: “Let's go back to the pandemic situation and discuss it more in detail. How has the Coronavirus affected your company?”

R.1.: “Yeah, I think it's what I was saying about being delayed getting to market, and then the target markets being impacted as well, because they've not actually been able to predict how much need that they would have for our service. Chris and I we've been able to build up the business over the year of from the lockdowns, etc. It's actually probably been helpful to our business ultimately. Because we've been able to just focus without having to travel like we normally do. And when you're building up a business, you want to be able to do as much as you can to get that business ready to go. And a technology business can take time to get to market. And by the time we actually launched a market, it was well past I'm sure you've, you've come across and VPS lot,

we were well across well past MVP, we were well past MVP by the time we launched our beta so we've really developed the product in a way that people would actually be able to have a good experience of saving time and effort to be able to conduct the checks that they need to check for AML.”

E: “So would you say that this boom of people going in digital spaces helped you a lot? Or you can say, even if this pandemic didn't happen, and people wouldn't be so pushed into these virtual spaces, everything would've been the same with the development of your company?”

R.1.: “It'll be different, particularly with our ability to have zoom meetings, instead of people expecting face to face meetings. I think it's really opened up a lot of flexibility and given us option. And it's going to be all businesses in the sector in the sense of well, why travel somewhere if you've already, it's nice to meet people face to face. But you don't have to. And you might meet somebody actually at a social event or an exhibition opening or something that really warrants being face to face. But frankly, if you're just looking at a technology platform, there's no reason to get onto a train and do all of that.”

E: “So right now, do you think you have competitors in your area of activity in the art market? Or you consider yourself a company with the unique product?”

R.1.: “Yes, there are definitely competitors. There are some competitors who are attempting to get into a very specific niche of AML for the art market. And then there are some, when you say long standing in the context of AML, none, that none of the businesses are long standing. So, companies that people think of as over the long established technology, ml providers, they're not any older than five years, typically. And the reason why this whole space is new, in fact, a lot of the solution that we provide is more robust than accountancy firms, solutions, law firms solutions that we come across ourselves. So, we actually have had several accountancy firms go wow, can we white label your product and use it ourselves? Because when they SAS up with AML, things like the identity and verification service that we provide, where you were remote link is sent to a ledger for able to upload their ID that's verified through our system using machine learning algorithms that didn't exist when a lot of companies set up there and oscillations. So, with that in mind, what we're doing is potentially competitive, if you even look outside of the sector, but specific to the sector, you do have certain needs.

So, what's now beginning to happen is, is maybe some more businesses who've gone to some of the longer standing by maybe their three year old AML providers, they're beginning to realize these art businesses are realizing Actually, this other company that is typically servicing the finance market, and the finance industry, they don't understand they don't have built into their

solution, our specific needs. Yeah, so that's really the key, I think is the fact that we are continuously building out specifically to the needs of the sector. And we would actually something that's pretty relevant to our to our technology and your interests and startups in the art space, is that you sometimes hear about the importance of unleashing, and, and this was back in December of 2019, I ended up in an art event, kind of right before Christmas. And there was somebody there from one of the finance industry AML solutions. And they were trying it's time to get into the art market. And he went, ah, so he knew about our business. And I was really pleased about this because he'd come across a little startup. And they had this big name. And they said, Oh, it's so annoying. So you're able to do this, it was the identity and verification solution using machine learning, like I was saying, and it was so annoying, because he's unable to get the developers of that company to develop things, the art market needs, their focus keeps on being on these other industries. And I suddenly had this lightbulb moment I went, how fantastic because our entire focus is this one industry, and what the pain points are for this industry, like when artwork is consigned to be sold at an auction, or when a gallery buys a work of art, there's actually there's some compliance needs not just for selling but for buying art. So, we've been able and actually, I think it's tonight we're releasing onto the platform, a whole module for taking people through not just selling art, but buying it or having it consigned. And that's just not something you're going to see on those other platforms, because they're not built for market and they can't, the art market is such a tiny part of their focus, that they can't financially be kind of warrant or justify building out art market specific solutions. So, it's so when you look at industry specific solutions there is a lot say about being that specific.”

E: “Do you think the new technologies will change the market?”

R.1.: “They are already, definitely. Yeah. And in fact, we now have multiple platforms that are supposedly going to be built. Some of them will be some of them won't be that are focusing on NF T's getting in touch with us. What is really interesting is that I actually meet with a group of artists once a week and launched online and it's been an Actually, if I think about even advisors to the art market, people who do business consulting and mentoring who I meet with once a month. So, I have these different kinds of groups that are formed every time. They're increasingly willing to use technology. And they're increasingly interested in things like online exhibitions. And these are people who beforehand had no interest in it. It is a really small pools, I feel like these small pools are representative of something much bigger. And I get why not when I hear these people who beforehand were completely anti, using anything online. Everything has to be face to face and other going, you know what? I think all of my meeting should be online. And then they're saying, you know, I can reach all of these collectors around the world by exhibiting online. And let's talk

about the different options for exhibiting virtually and I'm just going, Wow, they're even interested in sort of augmented reality experiences. It's just amazing. So yeah, the technology in many, many ways, in many senses is interrupting the art industry. It's been coming. And the technology has been here for a while. But culturally, because of the last year, people are now much more minded to embrace it.”

Appendix C.2. KOVET.ART

Interviewee: Respondent 2

Interviewer: Elena Kirpu

Date and Time: 27/04/2021 13:00

Location: Zoom

E: “I would like to start with the idea questions. And the first one is, how did you come up with this particular combination of art and technology? What was the main reason or motivation?”

R.2.: “Yeah, sure. So, my background is varied. I am a qualified electronics engineer. I studied engineering for my undergrad. And then I did a bit of coding as my first job. And after that, I did my masters in finance. I acquired finance, but it's financial engineering, quite math and geeky. And after that, I worked on Wall Street, I worked in consulting. And then I moved out from New York, then I moved to London, I worked with a bank here and then I did a quite a few courses with Christie's and Sotheby's on the art markets, contemporary art, art has always been my passion. My granddad was an artist, my mom is an artist. And my granddad was a collector as well. And his, his works, the works that he created, are available at various collections, including the Buckingham Palace. So, he was, again, a strong influence in my life, as well, I grew up with my grandfather in his studio. So that combination of wanting to live with art, the desire to enjoy art, in all its forms, because my grandma was a writer. So, there was that creative element that I always enjoyed. And my passion was also technology. Because, I mean, of course, I've studied it, but also I love following various innovations I love, you know, talking to exciting and interesting people who are creating these ideas. So, that's how I wanted to combine my passions in art, technology and business, and thought, you know, the time is right to create a platform for artists, creating the gallery of the future. While we are able to showcase some of the brightest, most exciting emerging artists, emerging out of the UK contemporary art scene. So, these are recent graduates from the

top UK, fine art universities. And then there's a very heavy aspect of curation because that's extremely important. And then the idea is to one, showcase some of the brightest artists but also we've launched the art world, which is another section of our website, where we invite emerging curators from various leading universities, for example, we have currently CSM and present Martin's then we have sled focus. And then upcoming, one of the upcoming one is Royal College of Art. And these are official collaborations. And the idea is to have an artist curator or curator, from these universities to curate a show in the digital space are obviously because of COVID. We are only doing a digital show right now. But otherwise, the idea was always to do a pop up show, and then move the show online if this was even pre pandemic, so we move pretty quickly when the pandemic hit.”

E: “So, the technology part of this combination is that you trying to showcase these artworks in digital space, right?”

R.2.: “Sure. So one is that the other one which is the exciting bit is we are working on blockchain as well. And this was again before the pre you know the pre NFT hype hit the market. Again, I've been following the blockchain space over six years of being a model blockchain conference. Like I mentioned I am a bit of tech geek. So that's how I followed various technologies, of course, explored various aspects of MRI machine learning as well. And then coming back to blockchain, we will be using that technology to certify our, our you know, basically, authentication is a big challenge. So, we will be looking at certificate of authenticity on blockchain, which is pretty much what an NFT is in its simplest form.”

E: “What in your opinion are the pros and the cons of developing this kind of idea in the market today?”

R.2.: “So, we are talking about the idea of our tech, our platform, right? pros and cons. Okay, so the Pro is the big one is moving the art world art market online, which was, again, when the when going back to kind of the internet days, right in red boom, many of the artists did not want to showcase the works online. The auction houses said, though, you know, art will never sell online. So, from that, you know, a couple of decades ago, almost now, to currently, the auction houses leading the transformation in art and tech, there's a huge shift. So, in terms of Pro, I think, one is the accessibility of collectors, you know, collectors can actually go and experience the artwork, of course, virtually, but at least they have access to discovering really exciting talent. So, we've had collectors from Canada, us, Asia, obviously, Europe, pretty much collect artwork, by artists who are graduates out of UK universities, that wouldn't have happened, obviously, if we stuck to just the physical model. And the other pro would be obviously, when we develop the technology,

blockchain tech, then there are many advantages to that. One is knowing for sure that the artwork is made by that particular artist, which is the certificate of authenticity. Obviously, tagging is something that the industry is developing, and we're looking into it as well. And then the idea around royalties secondary market, the idea of being able to track provenance as well, that is a big shift and advantage. And the other kind of generic pro would be that we have a host of exciting panel discussions and talks about the artists in the art world, anybody can join in. So that's another aspect of why it's important to embrace technology and move forward. Because those are I mean, clear pros.

And the cons would be, I mean, if you have to kind of be carried, of course, art needs to be enjoyed in person. But that's being challenged with new digital media and digital art, right? So, you can always experience out in various forms. It's a matter of preference, I would say. And you can always for example, even when you purchase artwork online, you receive it in person anyway. So, it's not that that precludes you from not experiencing Art Online. So, the cons would be of course, it's a possibility. If you look at cons of any tech possibility of hacking in various forms, till now blockchain or distributed ledger technologies was created, developed to avoid those situations, but there are systems now that we are able to do that as well. But that's always going to be the challenge for any solution or any platform anyway. So, the other thing would be it is becoming, you know, we started pre pandemic with the idea, pandemic hit, we launched. And pretty much all the galleries moved to the model of showcasing artwork online, which is not the case before the pandemic. So, it increased that appetite as well, but increased in terms of I would say, mind space competition for attention. There are a lot of talks going on, there's a lot of material out there online from the art world perspective. So, I would say that's also the con.”

E: “So, if you look at your company, like the whole, do you think which side prevails the artistic side or technological?”

R.2.: “Sure. So right now, for the past year and a bit so just to give you a background, we've been recognized by the creative industries council as wants to watch. That's the government body in the UK, and Mayor of London as well. We've been mentored and guided by them, which was a project under the European Regional Development Fund at that time and also with the mayor of London's So why am I telling you all that? It is. So, if you can please repeat the question.”

E: “Yeah, so because you're an art platform, but you're based on technology and you talk about launching a blockchain. So right now, how do you see more like an art company or more like technology?”

R.2.: “Absolutely. Sorry. Yes. So, in terms of the art aspects, so for the past year, we focused a lot on the curation, which is definitely what we wanted to brand ourselves as a highly curated platform. So aesthetically beautiful. There are many platforms, that call themselves curators, but again, are they, you know, museum quality, are institutions interested, are curators, international curators interested? I'm not sure but for us, we've been very fortunate that lots of museums have been following us. And a show is coming up as well, in June. And I can tell you this, even though some things are getting finalized, there are a few major institutions getting involved in showcasing one of our artists, and this is an emerging artist. Yeah. So that means that one, we are looking at, we looked at ourselves, as you know, highly curated art first platform, but it is a platform itself, you know, technology at the end of the day. So, I consider that as a basic standard minimum. So that's the foundation in through which we can showcase what have been created. And then adding. And that's why when I mentioned that, you know, ArtTech goes with art first. But underlying is obviously tech, and then building on these layers of integrating exciting new technologies like blockchain. And others when the time is right, I'll tell you more in terms of integrating and using these technologies, so yes, so industry vertical first, because you need to be experts in that industry. And technology is more like an enabler. As with many other industries. Yeah, no. Hope that answers your question.”

E: “The next section is about your background, the founder of the company. And you mentioned that you have a technology background and also arts background. So could you maybe tell me more about your education, more in details?”

R.2.: “Sure. Um, so I've, I've gotten a couple of degrees, but in the essence of it all, I believe education comes from learning everyday right, irrespective of what your qualifications are. So, because you asked me to go to the details, I studied electronics and Telematics Engineering in India, through one of the more reputable universities. So, we did a lot of building chips for satellites and such Telecom, that was definitely you know, I liked it, I enjoyed it, but I did not see myself spending a lot of time in the lab, I'm not that type of personality, I did not enjoy that. So, and then I started exploring more in the business realm. I knew that I was fascinated by what was happening in the markets, which is, you know, obviously, the financial markets. And I started tracking it. And looking at how companies perform, I was fascinated by that, but also looking at kind of the mathematical angle. And therefore, I applied to financial engineering at Columbia University, which is in New York. And then I got in, and then I shifted slightly because I wanted to take more courses in business school and the International School of Public Affairs. I did a bunch of different things that I was intrigued by. And then I worked in consulting right after in New York, and also at the bank on Wall Street and working with the CEO in terms of defining that strategy, but also

implementing it across various products and businesses. So, it was a high level strategic role. Very exciting, very interesting. Lots of lots of hard work. But all of these, I think all of these made me more open minded, resilient, but also a lot of transferable skill set, right. And then while I was in New York, I would always go to museums always go to gallery openings, and loads of artists, friends and art advisor, friends, all that was still happening. Like I said, I grew up in the artist studio pretty much but lots of artists visiting. So that was, you know, I cannot live without art. Then I moved to London and I did a course in contemporary art. With Christie's in the art and financial markets, at Sotheby's. And so, it's basically about art markets and contemporary markets. And then I did a course in innovation and entrepreneurship at Stanford University. And that was in 2018. And they focus more on the entrepreneurial angle more than what they would do with their GSB Graduate School of Business program, start by the Dean of GSB, or Graduate School of Business, it was great, we studied about different angles of entrepreneurship and innovation, which is more exciting for me, my project got elected, I had pitched at that point, a project and art and tech. And how it works is only the top three or four people who pitch in the class of around 30 will get selected, and people work for the idea. And whoever wants to work on the idea becomes a group and then you work on it. So, it was pretty fun, very intense, lots of homework. And then, and then after that, you get a pitch in front of investors, only for academic purposes, which is just feedback, not the fundraising at that point. And then the idea of understanding the market, looking at your target market, your operating model, your you know, idea of kind of sales, worthy innovating all of these, you know, ideas that I had at a kind of rough stage, got more developed. And then one of my classmates who worked with me on the project who voted for me, came and join me with my startup as well. So yeah, so lots of things happened. I hope that answers your question.

E: "How long have you been engaged in the process of developing your startup?"

R.2.: "Sure. So um, I've been thinking about utilizing tech for art. For the past, I would say four years. So, I've been thinking about it, right. I've been following the world of entrepreneurs and startups because that was a shift for me, I was working in corporate, right, which is the opposite, I would say, of the startup realm. So, I was very curious. And I was hanging out in kind of entrepreneurial circles, going to a lot of tech events, you know, web summit is a big one, right? in Lisbon. So going to that every year going to kind of blockchain summit, as I've told you, and meeting interesting people who are doing, you know, just fascinating things just with their time, as opposed to working with a larger system. So, the larger system, which is a corporate gave me a lot of skills, a lot of, you know, thinking capacity in terms of managing large projects, and, you know, budgets and all of that. But in terms of making a difference and working on what you're

excited about that, obviously, I wanted to meet with enough people, I spent some time thinking about it learning about different tech while I was working, right. So, and then finally, after I did my Stanford course, that's when I pretty much started, I also had a health challenge, a major health challenge. So, I still have that. I thought, you know, you just do it, you just jump into it. So that's how I started to do take me a while. But also, like I said, I was working plus I had this health challenge that I was hoping with. So yeah.”

E: “Being a startup, what kind of difficulties did you have to face before entering the market, before you launched?”

R.2.: “So some of these are, I guess, common to any founders who are launching? That will be okay, how ready should we be before we launch? To be perfect, so nothing is going to be perfect. You just put it out there you launch. So, we also launched in the middle of a pandemic, and that was when nobody knew what was happening. So now of course, you will know exactly what's happening. But this was we launched in June. That means we mean just about I think around April, all of this started, you know, in terms of the inflection point and so on. There are a lot of challenges in terms of businesses, closing down lockdowns, nobody knew any of these terms before, including follow and so on. So, there was a lot of apprehension around that whether this is the right time to launch a business. We're all the business many of the businesses were closing down. However, we were digital heavy anyways, so I thought okay, let's go ahead and do it. So Also, there's no better way to learn about your customer preferences and what the market wants till you're actually out there right.

So given that a digital first platform, and my prediction was that people are obviously going to be spending more time home and looking at their phones, which was obviously, you know, pretty much, you know, pretty standard, but that's what happened anyways, so we jumped. We jumped at it, we pretty much launched as planned, and we got some great press and feedback. We launched with a concept of the incubator, looking at mentoring eight artists, instead of going with lots of names and lots of shows and so on. We started with the eight artists across media, we did a VR. So, it was really well received lots of, you know, major press as well from the art newspaper, then later on the Guardian, and so on. So, so we got validation from the market that our artists are strong, our curation is strong, because we can think all we want, we just don't know, totally put it out there, right? You know. So that's the validation that you get. So, we looked at it as a kind of beta launch, right? And lodging, the concept of curation, curated, highly curated, artists and artwork, and using a VR space, which is on our website, you can go and have a look. So, if this was all before the other started, yeah, after that, all the other platforms started showing some sort of VR, or virtual or even many platforms don't have a website, to be honest, we are art galleries.

So anyway, for us, it was always the concept of doing a pop up show for a few days, and then moving the show online, we actually had everything booked for physical launch, but then the pandemic hits. So, it is very easy for us to shift and very quickly make a VR space, you know, that was not a problem for us. So, so that happened. And hopefully that answers your question regarding the challenges of launching.”

E: “Can you tell me about your key milestones?”

R.2.: “So um, so let's start from when we launched, right. So, we launched in June, we got registered as a company in October 2019. So obviously, we had to develop the concept, or hire the artists, the show, I remember, we didn't even have a website at this point. We literally had the name, we started all the branding exercises, and so on. So, in June, when we launched, we immediately got recognized as creative industries Council's wants to watch as soon as we launched, which is usually not the case, right? Because we didn't have a website or anything before that. So wrote a really strong pitch. And they interviewed me and us and understood what we are doing, and looked at what we have. And as soon as we launched we got recognized next is we launched a cog x and London. Yep. So, cog x is a very important and interesting, tech fair. That's where we got recognized. And we got interviewed. So basically, they invited the founder, there's me, and then a bunch of three other founders as a top four creative tech industry businesses. That was, you know, all quite fun. And then the Mayor of London, program for entrepreneurs and businesses, that was supposed to be in person as well, but because of pandemic moved online, but the idea was that you apply to it. And there's a long application process, interview process, and all of that. So, we pass through all of that without a website. Again, I'll point out anything. And this was they told us that this is the first company almost without all of that we could get through. So that was definitely a milestone. And after that, after our show, the VR show called delineating dreams, we were recognized in the press, a lot of press which is up on our websites, I won't go through everything right now. But the key highlights are, like I said, the art newspaper, la core Guardian Republic, lots of others. So, all that happened in around June, but also lots of collectors as well interested. And we made quite a few sales in that he remembers all the dynamic here people didn't know whether what will happen in the future people were not spending a lot around that time. But anyway, then we made strong sales which is great. So that was quite you know, I would say a front heavy in terms of when we launched and then in after a couple of months after summer because in summer everyone is out, not looking at virtual exhibitions a lot. And thereafter people are back and fall again. We weren't in lockdown, right in London. So, we participated in fairs. So, for example, photo London art fair, we were a part of their VIP programs. Our Artist on favor was in conversation with myself as Kovet Art, and we took over their Instagram account has done

followers and followers like I said the VIP program. Also, our chief our officer coming up Mr. Leash he is on the board of photo London. So, she was in conversation with a famous curator, Mario Cordón Yato, who's our master as well. And that was a part of the VIP talks as well. So that was definitely another highlight in terms of branding in terms of collaboration. And at the same time, you also collaborated with Sotheby's where they discovered one of our artists or photographers, who works on eco feminism, really exciting concepts and excellent work. So they did a talk with her at the head of photography's at Sotheby's when they had their contemporary photography auction. So that's another win in terms of collaborations.

And then that was all in the fall or autumn. After that, another milestone is launching the art world in December, where we had a form of association or collaboration with the universities, as you know, getting that is next to impossible. Especially for one commercial space. We're also very new art gallery space, right? No, we got that. And we had curators, as I mentioned, emerging curators from this university curate show, curate a show which is online, across media. So that was focusing on our curator during the lockdown, many of the decrees show stolon's did not get a space or opportunity to present their work. So that was a great opportunity for them as well. Lots of press again, lots of sales. We had the VIP strategic relations, liaison from Art Basel speak for a VIP introduction we had, we had a New York Times writer, come and introduce the curators as well. She also wrote wallpaper. And then we had after that we launched each show separately. So that means that was the CSM show with everybody getting introduced on this course. Curators are international. One of them is actually currently in Beijing, China as well. So, it's a lot of different time zones and ideas and so on. And so, we launched that we launched another show in February. And now we have the new milestones would be working with institutions, which are museums, and University of Buffalo in New York. That's another collaboration. And we have many more exciting news coming.”

E: “So you mentioned you took part in governmental program. But have you also applied for accelerator programs or got another government support maybe in terms of funding?”

R.2.: “So right now, it's all self-funded. So, I'm bootstrapping, which means that I'm just working with my savings. So, in terms of the government support, it was not from a funding standpoint, it was from mentoring and coaching standpoint, which was very much needed, because we were like I mentioned the pandemic. So that was excellent, but it was not monetary support. So far, it's been bootstrapping. And it's been just me. So, we did have quite a few investors interested in us. But I didn't want to dilute my equity. With many startups, there's always a question of when do you want to dilute and when do you want to raise and how much so my key points were to develop value in our business. So that will be branding, so as well as a very well recognized strong brand. And then,

of course, create some traction with sales, but also with collaborations, and then start doing a bit of development on the tech prototype before fundraising. So that's always been the plan. And we've spoken to a couple of investors. They're very excited, and I didn't want to fundraise yet. So yeah, so that's where I'm at.”

E: “So, because you launched in the pandemic, and it was really hard also with the financial side, did you have any problems with funding during this time?”

R.2.: “It was stressful, I would say yes. It was definitely. I mean, yeah, tell me which founder is not stressed about, especially in early stages, when you don't want to dilute we had a very, I mean, quite a substantial number of investors interested in fundraising with us, right, as we launched literally, the same day that we launched. But it would be too early, right? Imagine we just out in the world that day, and like, it does not make sense to fundraise at that point. So, it was stressful because I was working on my savings. And it was definitely expensive in terms of, obviously, the marketing, the outreach, having a team, and it was expensive in terms of monetary can resources, but also time, my time as well. Because there's a lot of coaching involved and you know, finding the right people. So yeah, so it was, it was definitely something that I was thinking about every day. But that's why, you know, now the investors will know that I'm always very careful with my resources, and their resources will be spent wisely as well. So, I can do a lot with quite little. Imagine competing with the biggest names, right. So yes, I can do quite a lot with very little, but I think we are open to discussions now. I will be fundraising. You know, soon I will not disclose when exactly. But the idea is to start having these discussions if people are interested. And we are interested. And when the time is right.”

E: “So in a lot of articles there is this division between startups and small businesses. Do you see this difference between them? Or do you think that they are pretty similar? What's your opinion about it?”

R.2.: “Sure. It's a good question. Actually. I would think that, at one stage startups and small businesses are the same, right? There's no particular difference, said that I would say an ambition would be one big difference. If the Small Business wishes to remain, for example, as a mom and pop shop, they love to make beautiful, you know, adult delicious baked goods for the neighborhood. And that's the ambition, that's great, super, you know, well respected. That's amazing. But what if they want to scale globally and have their brand everywhere in the world, right? So, then I would think of them as a startup, versus if someone already knew that you want to build that brand, internationally. And this model, for example, what we have is scalable internationally, we can liaise with universities everywhere having local curators. So, it's easily

scalable. So, there are a couple of key differences. Well, whether one the idea is scalable. Next is the ambition, big enough global or at least nationwide when you start off. And then in terms of, you know, growing and how do you want to fundraise and what stage then what help do you want to get? How do you want to develop yourself? How do you want to learn and grow? How do you take market validation, feedback, and pivot or change or improve? So, all these are there anyways, in good businesses, all good business are always looking at these elements anyways. But I think the distinction comes in when you're at that stage when you are a small business, but many startups could go from that stage proceed and become some of the biggest in the world. Right. I think that's where the differentiation comes in.”

E: “So, do you think you're close to this transformation from startup to the whole organizing business, or you see yourself for few more years in the position of startup?”

R.2.: “So the definition of startup is funny, right? I know some FinTech firms, which have raised billions and funding whatever still comments as a startup. I mean, it gives the cool, obviously, the aura around it. And the, you know, it's a great kind of marketing tactic as well for hiring. But I would think that any business that is always learning growing scaling is enough. In essence, when you start off at the beginning, it's a startup, right? That's pretty much what I would think our definition would be, after a while, you know, either you go public, or you exit or whatever, then you become one of the more kinds of either established companies or you merge with someone else. So, my, again, the definition of startup is all there on Google, you can look it up. But then my way of thinking about it would be that you have a prototype, you have a plan, you put it out there, you're validating, you're learning growing scaling, then you're a startup.”

E: “Okay, so how would you describe your current market position?”

R.2.: “Great question. So, our market positioning is based on the fact that we value both art, curation and understanding artistry, understanding the artists and the practice, as much as they value tech as well. And that kind of comes back to your other questions as well. And our market positioning is based exactly on expertise in the art world, but the tech world as well as the business world. So, combining these three very key pillars, is one key strength, I would think. And the other market positioning factor would be that we are looking at emerging artists only. So, we are looking at the contemporary art market. And a further niche down is the emerging art market, across media. And we will be delving into new media as well. So, in terms of our niche, that's where we are at in terms of our target market, it's both emerging and established collectors, looking to grow or build a collection, or even start the collection and emerging with the emerging artists, and another key differentiating factors that we are also liaising with interior designers and art advisors to grow

a network of these professionals who are interested in purchasing work from these artists for their own clients. That again, nobody else is doing as of now, I don't want anybody else to copy this. But yeah, of course, I mean, if it's a good idea, of course, take it, but we do want to grow that side of the business as well, especially in these times. So, I would say these three key differentiating factors.”

E: “So based on that, do you think you have some kind of influence on the market and its participants?”

R.2.: “Again, an interesting question there. So, in terms of influence, I would think that traditionally, the art market has always been dictated in some way, by the auction houses, by curators, by the art writers, the critics and so on, right. And now, there's a huge deception there. There's democratization of the art war, with artworks being up on so many websites. But where we come in is, we respect the traditional modalities as well. So that means we, as you've seen, we collaborate with auction houses, for example, Sotheby's we invite art historians and our respected art curators and advisors to our speakers to our talks. We do that as well, while making it more democratized in terms of making exquisite and curated artwork at accessible price points, accessible to collectors worldwide. So, we'll straddling both worlds, while we are heading to a new world where many of these elements may not be necessary anymore, but again, if you think about it, how do you build the art market for any artists, right? You need to have people look at their work and say that's quite an interesting perspective. Institutions wanting to collect them, collectors wanting to collect them. So, in terms of building influence, if we are able to understand both of these perspectives, and build a reputation, I think that itself will make others respect what you have to say and therefore build influence.”

E: “What was the final step that made you realize that your company now is one of the players of the market? And was it a final step? Maybe it wasn't?”

R.2.: “You're right, we don't have a final step. I believe that this is an a very exciting beginning for us. We have very many plans, grand plans, and very exciting ways of showcasing exciting artwork with the possibility of creating something new with, you know, technology and the ideas that we're generating. So final step, no, definitely. You know, we are very happy and very proud of what we've achieved, especially in a very, very tough year. And without funding and without, you know, a lot of help at all, from the external perspective, but we have a strong team, and some great ideas. And we are always working so hard. So yeah, hopefully, that shows, and next steps would be, as mentioned, looking at digital media, and how to create more innovative products

from that angle. And also create a space for digital media artists there. And a few solo shows. So more coming up this year.”

E: “How has the corona affected your company? Were there major effects on it?”

R.2.: “So I would say that we would have loved to obviously do many physical events in UK, but also globally. Our team is based globally. So, we'd have loved to have done some physical events, because it's always great to meet people physically, including our speakers, collaborators and all of that, that was very challenging. And that, of course, we would have loved. And then I would think that even the opportunity to meet many more to see more artwork in person would have been another thing, right. But I think these are the two key things. And then in terms of sales, of course, it is very uncertain times. And our target market slightly shifted as well, from the older millennials who are working with, you know, prestigious job secure banking, finance, whatever, who have disposable income, we change the target market to you know, a bit more established, collectors and so on. So, some of the changes there, obviously, sales, we have to work harder, because it was a tough year for everyone. But we made sales, which is great. It was just that in normal times, it would have been so much easier to make sales.”

E: “Would you say that you have competitors in your area of activity, or you define yourself as unique company?”

R.2.: “So we are creating a gallery of the future, right. So, in those terms, I'm not sure if anybody else is doing something that we what we are doing in terms of how the artist's work with us. They are welcome to share with other fairs or other galleries, but we are here to guide them and coach them we work very differently to other galleries. At the same time, what we do, the way we showcase work, the way we collaborate the way we do brand collaborations to museum collaboration is very different to how galleries present typically work and we'll see a very high level you know, a there's so many players in the art tech market, right? Right from MTR agency, they do a great job, but they do look at very different style of emerging artists, not particularly, for example, those who's dedicated their time studying and fine art universities. Again, not saying that this the only type of artists that exists. But obviously that's our niche. So, in our niche, there are a couple of others like new blood art, and there's a few others there. But again, I wouldn't think in terms of quality curation, we want to stand out, and we definitely see a difference there.”

Appendix C.3. Muzing

Interviewee: Respondent 3

Interviewer: Elena Kirpu

Date and Time: 28/04/2021 14:00

Location: Zoom

E: “Okay, so I have a questionnaire divided in different topics, and I will start with questions about the idea itself. So, the first question is, how did you come up with this kind of this particular combination of art and technology, like, what was the reason the motivation?”

R.3.: “I, that it all started about 10 years ago, I'm on the board of a museum in New York. And I, as we talked about a lot of the problems the museum was having, reaching audiences and, and connecting with them reconnecting with them, really, you know, engaging them and everything like that, I knew there was a better way to do it. Because they're not very efficient, they spend their money on things, you know, between spending it on advertising in the subway, or bus stops and things like that, or on Facebook, what are in there like that? Ultimately, it wasn't, it was sure they got the message out, but it wasn't, it wasn't a sustainable, it wasn't a way to engage one person and stay in front of them for you know, an increase engagement from that, from that same person over time. So, getting people to become repeat visitors. And so that kind of got me thinking about how, you know, how the current way of doing things is not very efficient, it's not optimized, and it's not really supported by data by real granular data, real time data. And then that sort of thought, eventually, I kind of extrapolated from that, I sort of, it would lead to a lot of other things. One of them was that there's no centralized connectivity point, between cultural institutions. And audiences, it's very fragmented. So, people will get an email from one Museum, and then an email from another museum and an email from other music, or they'll see on Facebook, you know, 10, promotional things about 10 different shows, all of which might not be relevant to me. And so it wasn't very effective. And, and couple that with the fact that museums are competing against each other, for your attention. It's not very efficient. So, all that there's a, there's a lot in there. But all that was sort of the beginning of where I am now. And then you know, in terms of technology, it had to be whatever the solution was, had to be driven by technology. I mean, there was just no other way people have their phones in their pocket, their phones are getting better and better, more and more powerful. The technology that supports applications and that sort of stuff, servers, all that stuff that it's developed. Just really fast. It's cheaper, all that sort of stuff. So, the two had to

come together between what I saw on the cultural sector, and we know the needs, and then the technology that could sit that can basically provide an answer or a solution to a lot of the problems that existed. So that I think that's sort of, that's sort of that's, that's how it all really began to experience talking to museums realizing that the problems of one big museum are actually not that far from the, we're talking about visitor facing stuff here. So not like managing your collection, but, you know, get reaching audiences. And you know, the problems of a big museum are actually were actually, as I learned, very similar to problems of a smaller museum. The problems of a museum in the US are the same as a province the problems of, of a museum in say, Paris or London or MIT. No, I don't I actually one regret I have is having. I've never been to Russia. But I, I've heard a lot about St. Petersburg, precisely. Because it is I mean, it correct me if I'm wrong, but it is kind of the cultural capital. And, and it's a very, you know, young Russians are very engaged, I think, probably more than Americans on the art scene or the cultural scene. So, but the problems, as I saw, never Latin America, all that sort of stuff were very, very similar. And so, if you can, if you can create a tech, if you can, if you can apply a technological approach that addresses the needs of museums, you can do that at scale. So, you can do that for the whole world. Once you go. And if you build it to be able to be scalable, then you know, everything else falls into place. And if we, if we do it correctly, and we address needs, then it kind of, it doesn't happen on its own, but it makes it a lot easier.”

E: “So based on that, what, in your opinion, are pros and cons of developing this kind of idea on the market?”

R.3.: “Well, I mean, I personally, you know, as I see, you know, cultures is, to me, very important to us in society. I mean, that's kind of why I got into it. And that's why it's fun. So, the pros are that it, it reached, it not only has the potential to, to engage existing audiences, but it has the potential to reach new audiences. The pros, as far as I'm concerned, are numerous, you know, providing, you know, real time data to museums to help them with their programming with their marketing, with decisions that they make, you know, they're, they're optimizing their marketing spend, I mean, there's any number of reasons but the cons to this approach, you know, the cons are, what are they technological? I don't think yet. You know, what, where there's, if there's money to back it up, you can build anything. I mean, basically, that's the beauty of technology, today's you have the means you can build whatever the hell you whatever you want. The cons, and it's not so much a con, but it's more of a frustration. I think it's just that the sector is not very technologically literate. Yes, it is. So, a museum director, who is probably still, even if it's changing a little bit now is probably a little older. And is used to, you know, has spent the last 40 years in basically an analog industry where everything is they can touch everything, and they, you know,

they, and they don't understand that they don't really understand the power of technology, and how it can actually really sort of make everything, there's also just the classic problem of when you build a new product or a new service, you're someone's going to feel threatened by it. Yeah, and that's, but that's just, it's a reality, it has to be just the way it is. And so, if we can, if we can make the life of a museum easier, and help them, you know, reach their goals more effectively, then probably there's a job or two in there that are going to be redundant, but I you know, that we're going off in a whole different. The cons are, are more in on that, you know, you're raising money, maybe is that also challenging? Because a lot of people's perception of culture is that it's an industry that doesn't make money, which is true, it doesn't make money. Yeah. But it, but there's a lot of money around it, you know, the audience segment, visitors. And these are these are people who have money, who can travel who have free time. And if you can capture that market, you can do a lot with it.”

E: “So in your opinion, your organization, this kind of idea, which side prevails more artistic or technological, because it's a combination, but still, some side can prevail.”

R.3.: “I don't think this could be possible without the technology. I don't think but I don't think that this would work if people didn't have a cultural interest. So that's sort of the art side, it's the combination, it has to be the combination of the two, it has to be technology in support of art, it has to be that way. Because people have access to plenty of technology. You know, I mean, everybody has access to their phone and the internet. I mean, everybody, a lot of people, at least our market has access to their phone and the technology that that allows them to access. But if it doesn't support their cultural interests, then there's no there's no, there's nothing innovative there or interesting, or we're not serving the needs of the cultural sector. So, it's a really good question, but it's hard for me to answer which one prevails. You know, a lot of my time, you know, if I tell you that I have my vision is established. I know what I want to do. But I spend a lot of my time thinking about technology, user experience, so maybe that kind of answers your question. But it's, so to say it's kind of equal, but still more technological right? At this moment, in terms of what I'm thinking about it, it's I want to, I want the user experience to be like this for it to be like that. I need the technology to do that. And so how do we do that? But to be, you know if I just needed one simple answer, it was 50/50. I mean, I would just, it's fair.”

E: “Let's move to the next topic. It's about the background, your professional background of the founders. So, the first question is, what kind of education do you have?”

R.3.: “I have a liberal arts education. And I did my studies in the US, and I focused also on economics, and political science. So, after school, I went into finance. So it was, it's very far

removed from what I'm wearing now. I got out of there, because it got kind of, I mean, it just, you know, there's a point where I had this thing in my mind, for so long this idea and this natural interest that I have for the arts, that I that I had to, you know, finance is not a terribly interesting job is not, it's not fulfilling if you know, yeah. And so, you know, I did have the experience of being on the board of a museum. So that was a lot of my time. And that was really fun. And my professional trajectory has not really been in the arts, not through, not the whole, it's really when I decided to go out on my own, and to try and build this, what I'm doing now that I decided that I sort of became a cultural entrepreneur, if that's kind of a good way. So, it's kind of a, I like, like many entrepreneurs, I think it's kind of a, I don't know, it's, I can't say that my professional career naturally led to where I am now. But I'm glad I'm here, and I'm having more fun now than I was in finance.”

E: “Could you tell me more about your professional background?”

R.3.: “Yeah. In finance, I was at I was at a bank in New York. And then, and then when I got to school, and then I went to work for the, for a division of the Financial Times the newspaper. Yeah, and so focused on mergers and acquisitions. So, you know, that's, it's very valuable information that people will buy, then I came to work, then I went to work for a hedge fund. But back in and so all this is while my role at the Museum in New York started in 2010. And as a member of the board, you know, it's all it's something you do, in addition, it's not a professional role, you don't get paid for it. But your role is to oversee the director and the management and the general strategic sort of vision of the and execution of the museum. So that was, and that's what got me, really, so professional life aside, sort of what I was doing with the museum was really where I started getting in really involved in the art world. And especially in sort of how museums operate. And sort of getting familiar there, so that I could start to formulate my own ideas and see if there was a better way to do things. So that's kind of, you know, that's, that's in a nutshell, my professional career. Okay, so how long have you been engaged in the process of developing startup? So, the process started, you know, basically in 2011-12, was the process was sort of the thinking of trying things on my own, you know, while I was working, but trying things in 2017 is when I really started to focus on it. I tried so really, this has been a three you kind of it's kind of complicated with COVID, but you have that mean, unfortunately this past year not a waste but not too bad, but it's so it's really been three years that I've been on this project, but I passed through different models to get to where I am now. So, I you know, I pivoted first I want it I built as best I could an international calendar of temporary exhibitions to the idea wish to have just one calendar, always at the programming level, because everybody knows about, you know which everybody, most people know that a museum exists. But few people will actually be able to tell you what's going on at the

museum right now. So, it's all about putting the museum's programming at the same level, whether it's a very big Museum in town or the smallest one, but they're probably the same level, so that people can,

people can learn about what's going on and then decide I want to go see that show, which is, which is at that Museum, and that museum could be tiny, like, it could be big, but I want to go see that show. So, it started off as that then then it worked. Okay, but it wasn't really very people wanting more it wasn't, it just wasn't going to blow up like I wanted it to. Then we went on a sort of a TripAdvisor for museum model. So, I tried to the idea was that you'd go see a show. And because, you know, there's a whole social dynamic here, that's very important. And I wanted to tap into that. And I am more likely to go see a show, if a friend of mine says that he saw it. Yeah, that is going to motivate me to go, what I wanted to do is create that dynamic where someone would see a show, they could rate to the rate at five questions with one star or five stars, you know, you click on it. And then you could share that. And there's sort of a peer to peer platform where people can share what they thought of a show, and then other people decide based on that. Whether they would go, and you know, it's a good idea. But the thing is, is that I think I went about it backwards, it's something that I should, I should, it's something that was difficult, because it's very difficult to market something. It's very expensive to market something to people, especially for people who go to the museum only once every, you know, two or three months. So, it didn't make much sense. And then I wanted to, I wanted to push that social angle more his people, the bottom line is that a lot of studies show this, but my personal experience, I think shows it to that people, most people will go to the museum, accompanied. So that the social motivation is actually quite powerful. So yeah, you know, if you want to go to the museum, but you don't want to go alone, you may not go if you can't find someone to go with. And so that's someone else could be, you know, your friend or your family, or, you know, if we really push this thing, someone new, you know, someone who shares your interest in that exhibition, and a nice little way to kind of meet somebody. And, and so that was kind of the dynamic that I wanted to push as much as possible. And so that was the last pivot. And that's kind of where we are now with music. And it's putting that social dynamic, really at the heart of it's basically, it speaks to people's social motivations to go to the beach to go to the city arts. And it could be a museum, like, it could be a gallery. It could also be, you know, performing arts, you know, there's any number of, but very few people go along. And so that's kind of so. So that's kind of the trajectory of where how I got to where I am now. It took a little while. And then COVID hit.

Well, the nice thing about COVID is that, at least for museums, is that when something like that hit, basically you can try anything. Because you got nothing to lose. You know, it's not like it's not

like there are millions of visitors going to museums, and they're all going to other museums, because you tried something that didn't work. There's no one going to a museum. So, all you got to do is just see online, you know, social media and all that other stuff. What can I communicate? What can I say? What can I what videos can I create where that's going to engage the most people you can test messaging? So, in those respects, yeah, it was actually a great thing. So, then all of a sudden, we'd see museums, who were investing a ton in their websites. In the videos they put in the content, odds are stuff that I gotta say that was cool. But that generally speaking, you know, it was still a major blow. Yeah, I mean, there's billions of dollars lost from museums. Over the past year, and that's gonna take a while to get back.”

E: “So let's move to the organizational side. Being a startup, what kind of difficulties did you have to face before entering the market?”

R.3.: “You know, at the beginning it was really about defining my vision. Well, I mean, first of all, I had to make the decision, I had to decide, okay, I'm leaving, you know, a secure job. And I'm going to go out on my own because I really believe in this. And then you got to kind of play around with, you know, you gotta, you got to define your vision, you know, what are you actually trying to accomplish? What are you going to communicate to people, when they, when they ask you what you're doing. And that took a long time to define, you know, now it's, it's, you know, really simple, it's bringing art lovers together, you know, it's a very simple sort of concise thing that's very accessible to people intellectual. So that was, it's not that that's a challenge, because that's actually part of the fun of starting your own your own project is figuring out your visions, trying things out, you know, working on your logo, things like that, that just sort of trying that, you know, you want to do things that reflect who you are, what you're trying to achieve, who you're trying to reach, you see what I mean. So, I wouldn't call those challenges, because it's kind of the natural process of building a startup, then you start getting into more tricky things, like, you know, I was I self-funded the thing at first, so that, you know, that wasn't, it wasn't. And then you got to start working with people, you got to find people who share your passion, you know, who are as interested in the project as you are, then you have to, you know, you got to figure out what you need, who you need, and then find the right person to work with. And I definitely made some mistakes on that front, I just, you know, I, I would, you know, there are people I've come across, and I thought, great, wonderful, you know, and then after six months, I just little things would start to pop in, you know, you know, part of conversations or habits or attention to detail, whatever it is, and it's just after a while, you got to say, look, I got to separate each other from each other, because I can't do this with you. And it's just not gonna, you know, over the long term, because it is, it is a, you know, it is a stressful thing, you know, when you're when you're out on your own,

and you're doing like that, there's a lot of, you know, sleepless nights, and there's a lot of decisions that have to be made. And there's a lot of risk that goes around. And if you can't, if you're going to work with people, and you want them at least to be sort of you want to share the burden a little bit. And I think that in terms of, you know, challenges, that's one of the biggest ones. I, you know, finally I you know, I have a business partner, and so he's great. We shared a sample; it took me a while to find him. And another challenge I talked about earlier was that museums themselves and management caught, you know, cultural professionals. Some are very good, but many are slow moving, many will tell you kind of what you want to hear. You know, that as far as the individual, as institutions, you know, man, you know, it's really hard to get them to act. Now, at first, I didn't realize that I didn't really grasp that beginning, because I talked to a lot of museums. They were very, very receptive. I visualize what the needs were never like that. And I really thought that that would translate into partnerships and that sort of thing. And it did a little bit but not at all what I thought so that was challenging. And then I think another challenge has been on the as a startup financing, it's raising money. Investors, you know, there's, there's, you know, we talked about trends and fads and stuff with the NFTs. But investors are kind of like that, you know, they'll jump on the bit on a bandwagon, and you can, it can be artificial intelligence, like it could be anything else. But culture is rarely in, it's never. You don't I mean, there is not some, you know, huge global trend towards cultural startups. startups are principally very well, often, even to this day, they're quite local. They're their few, really international scalable cultural startups. So, you know, for investors, it's not really, it's not really a money making, their perception is that it's not really a money making venture. So that's been pretty challenges. But, you know, I've found ways around that. And so far, so good, but, but it's going to, you know, it's going to take a lot more to really prove the value of what we're doing, and then be able to scale up from there. Because when you, you know, in the world today, that the thing is very important when it comes to startups, is that there's, we're talking about people's attention here. How do we capture people's attention. And when you're talking about how to capture people's attention, you have to think outside of the cultural sector. When you're scrolling through Facebook, or walking in the subway like that, you're you see an ad for a movie, or a pair of Nike sneakers, or, you know, a vacation package, or an exhibit to a museum. So, your attention is all over the place. And so, the cultural sector is competing for your attention. And so, when you when you find yourself competing globally, like, you know, much more generally like that, you know, you need a lot of money, you need to be able to compete on a on a much bigger scale with other companies that have a lot more means to create a user experience. That is, you know, that is perfect. And that means that you need, you need to hire developers, that's pretty expensive. They need to be working for you full time, there's different types of language and platforms for mobile applications. So, you need someone specialized in each

thing, you need someone specialized in servers, and there's a whole list of it's kind of never ending. And all that stuff takes a pile of money. And if not only, you have to compete for people's attention with people with companies and services from outside the sector. But you also have to look out for competitors, direct competitors, because inevitably, if what you're doing works, somebody else, obviously is going to say, Oh, that's a great idea I'm going to do, I'm gonna do it better. Or I'm going to do it. And I already have, you know, if it's a millionaire, or someone who has access to a lot more money, than they're going to do it better and faster. So, you know, those are, those are a few of the challenges. But you know, find their challenges, but frankly, if you can't, if as a startup founder, you can't anticipate or at least sort of be comfortable with those challenges. You shouldn't be doing should not be getting into it, because it's just not going to work.”

E: “Can you define your key milestones that happened in these past years?”

R.3.: “I think of milestones as much about successes as failures. You know, some of the key milestones to get to where I am now, or the failures that tried this, it didn't work, why didn't it work? Here's the reason. Okay, now we're going to move to this, why that didn't work, we're moved to that. So those are pretty meaningful milestones. When I, one of the big milestones for me was when we did a beta version of music. And that kind of worked. I didn't put any money into any marketing, we just threw it on the App Store, only the App Store. And, and I talked about it around, you know, you know, I few emails and things like that very basic for but I didn't actually pay for me, just like that, and that was that kind of validated. You know, it wasn't perfect. It was actually an awful looking at people. But what people signed up for was just this idea that you could connect around art around arch programming. That's what that just that. That's what that was, that's what we were selling on the App Store is, you know, you know, this, this app will let you connect. And all we needed to know at that time was are people going to download the app? Well, they hit the button download, and they work. So that was a big milestone. And then when we launched at the end of 2019. We got a lot of momentum. And then everything just stopped. You know, people kept coming a little bit to, you know, continue conversations that they were having. But in terms of programming, people were scared, there's a psychological element, nobody was thinking about museums, because they're scared to go. You know, we got a lot of little bit of traction back, there was a period of about two or three months in 2020, with things reopened summers sort of end to summer. Yeah. And so that that was helpful. But all we did is really just, we took advantage of that period, we change the app quite a lot during that period. And that was kind of that it's like museums, you'd have nothing to lose, you might as well work on things that, you know, are broken, or you could do better and like that. So that's what we did. And we change the app, totally, the app at first looked a lot like, you know, sort of, I mean, those are in terms of milestones, those are kind

of concretely sort of the milestones that we'd achieved. But thanks to those milestones, you know, the app went from being sort of something that was kind of look like Tinder, swipe, I guess, sort of the, we want it to be, you know, there's, there's a very strategic sort of, it wasn't just that we want to be a dating app. We want it to be playful. We wanted we needed, we needed data, points, we needed an emperor, we needed to know, if you liked or didn't like, and you were interested in seeing an exhibition or not. So, the swipe, forces you to go, I am not interested, or I am, you can't go further if you don't stay there. And, and same with people, you know, whether you are on a card of exhibition card or person, another user card. But the problem that we had there is that the perception people had of the app, and the user experience weren't. There was a disconnect. People were thinking too much about Tinder. Yeah, and not enough about the cultural side. And it turned a lot of people off. And we totally changed that. And that that's what COVID let us do. But you know, it's not it's a milestone in the sense that, you know, it's, it's all part of the process, it's more, it's more part of the process than it isn't. You know, one thing sort of leads to another.”

E: “Regarding the financial situation, you mentioned that it was all self-funding?”

R.3.: “It was all stuff; I don't want to do much get into how much I raised. Until the middle of 2019, everything was self-funded. And then I raised some money. And, and, and that was that was very helpful. But when you raise money, then you have, you know, you give up a part of your company, and you have a little bit too, I still have control. But I have to answer to say, I have another member of the team, if you know what I mean. So, the dynamic changes a little bit, you have to explain why you took a decision, you know, you can't just sort of, you can't just kind of think about it on your own. And then you have to really, you know, explain to people which means you have to think through a little bit more. But, you know, we are, we still are a pre revenue company. And we plan on staying, I mean, that the likelihood of staying that way for a little bit longer is it's definitely we're going to still be like that for a while. And we're going to need more money. And but that's just part of it. I mean, that's just part of the that's part of the game. So, you know, I have to I have to check that box too.”

E: “What do you think helped you in promotion of your business model?”

R.3.: “In general, I would say the story itself is unique. Nobody else out there scalable I mean, really, we, you know, museums, individual museums will do get together and things like that, where you come on, you know, a Saturday night and you meet other people talking about a global scalable model, where we're connecting. You know, we're building community, around the arts, and we're allowing people to connect with each other around that. That didn't exist, you know, amazingly and that at the beginning of the project before I decided to go and do this full time I

looked around and I thought this is crazy, obviously, somewhere somebody is doing this. And no, there was nothing really there was a little something like this in out of Amsterdam. I remember there was some, I don't even think it exists anymore. There was some like semblance of, of what I'm doing out of Amsterdam. I haven't thought about this in a long time. I could be wrong about where it was, but I feel like it was somewhere up there. Maybe Belgium, whatever. And, and the nobody was really doing it. So. So going back to what we were saying earlier, the social motivations of visit the museum, those are very real, you know, nobody really talks about it. There have been a few studies on it. But it's not really something that, you know, people think when you ask people why they go to the museum, there's a lot of the, oh, it's because I love art, or Oh, because I want to learn or like, okay, fine, that's true. But at the end of the day, it's also the social experience, that is really a defining element in that it's people who won't go if they can't find someone to go with. So, beyond all that, you know, high culture sort of sophisticated answers to, you know, why did you go to the museum, there's a very basic element, which is to go spend some time with somebody to, you know, it's a leisure activity. I chose to spend my leisure time at the museum, and I wanted to share it be with someone else to do it. And so that fundamental element there was just not addressed. I think that, you know, to your question, you know, that was a kind of a, I think for users, that was something that they wanted, you know, without maybe even realizing it, but it's something that appealed to them. It is it is after all, you know, if you're talking about even museums, but you know, galleries, for example, that is a community, it's a toy, you know, that people travel all over the world, galleries and things like that, it's a smaller market. And it can be it can, there's a lot of potential there. But it's like anything else sports, you know, art, you know, educate, it's a community of people who around each other, like being around each other, who feel good being there, and lots of stuff. And to build on that is, is something that attracted people. That story resonated with, with users, you know, obviously, take COVID out of this whole thing, because and with, with at least our investors, but also with people, you know, outside of our use our core user base, so the thing, that story, you know, when you start talking to them about, about capturing and about addressing the needs of a new market, a sort of an underserved market, then obviously, they're going to be interested, you know, there's, there's a point there where they're going to ask, they don't want to know more. Now, a lot of people haven't been ready to invest. You know, it's, you know, we are not, we don't have millions in the bank. But, but that'll come with time, we just have to prove to them that that, you know, we can you know, and it's everything, basically, you know, the worst part about where I am now is that basically a lot about a lot of what we did, and a lot of the money that we spent before, kind of a little bit one to waste, because we got to start again. Yeah, when there's a general reopening we're gonna have to sort of re market ourselves and rebrand ourselves. It's not something I can really complain about. I've never been

upset about this whole COVID thing is it's something that you just when you have no control over something.”

E: “So, in a lot of research papers in articles, there is a clear division between startups and small businesses. What do you think, is there a clear difference between them?”

R.3.: “I hear all the time of company, you know, companies that are worth a billion dollars or several billion dollars that are referred to as startups. You know, is it just because people prefer to use the term startup? Or because there's sort of a cultural cachet to that? Probably, but I mean, if you call a company, a startup or a small business, you know, and besides most companies, that are, that are incredibly established, have been around for a while, though, you know, when they have employee meetings, and everything like that, they'll still call themselves, you know, a startup, because they want that culture of significance, being a startup and trying new things, even if they don't really do that. We are, we are definitely a startup. And, you know, this is demonstrate, but you know, later, you know, if this thing works, and it becomes very big, people can call it whatever they want, you know, it's, you know, a large organization, you can only run it, if you're going to run it successfully, you have to, you need to, you need to have rules, you need to have a culture, you need to, you need to put a lot of money into your employees, and all that. And you kind of step out of that startup phase, and you stop coming up, more than just a small business.”

E: “Okay. So how would you describe your current market position?”

R.3.: “Well, I would say that we are the first thing that came to mind when you asked me that is, you know, we have a first mover advantage. And in terms of your market position, I think that's pretty important. The question then becomes which market because museums are all over the world. So, if you go back to St. Petersburg, and ask people about music, they're probably not going to hear about it. Where's our market position in St. Petersburg, we don't have it. But if you go to Milan, or Paris, or, you know, a little bit New York or London, and then, you know, you'll probably find a couple people say, you know, some, you know, some Milan, for example, some places in Italy, a lot of people say, yeah, I've heard of it. So, in terms of market, you know, you have to define market, and then and then in terms of the cultural market, especially this museum sector, I mean, there's no one else doing what we're doing. So, and we've defined our place in the market pretty well, you know, combining the social, and the cultural. And everybody knows us for that. So, I'm pretty happy with that. But, you know, in terms of our presence, and more original slash local markets, so a little over the wall, you know, that's something that we can work on. That's something we're gonna have to work on. But it's also, I mean, you know, the bottom line is we

can't we, you know, I can't market this to everybody everywhere around the world, same time, gentlemen. So, you have to pick and choose.”

E: “Do you think you have some kind of influence on art market and especially on its participants?”

R.3.: “I think that on a very limited basis right now. People, museum professionals are interested to hear what I have to say. Now, is that to say that, you know, a museum director is going to take my call every time now. Does it mean that you know, conference organizers are all calling me up because they want me to, you know, come and talk to them, but on a more on a one to one sort of basis. They want to know what how I see the market, what I see in the market. What we've learned is data is a very important thing here. And I think they're right now they're more intrigued. We're not at the, you know, ideally, we get to a point where everybody is going to open every door for me, you know, whenever I need it. But right now, it's more intrigued than it is. I don't have authority over anybody. I think it's more in that respect. It's more they see the potential. Just want to see how I execute that potential.”

E: “Do you think there was a final step? Some kind of, I don't know, some kind of event that made you realize that now you're an art market participant.”

R.3.: “I mean, there was one moment that I thought was kind of helped me understand my position, which is, you know, there was a conference in Paris a little while back. I can't remember the name of the conference, but they asked me to come in and be on a panel. And on the panel, were some pretty important people. And I thought, and that's where I was like, oh, okay, maybe I am actually doing something that's, that has a lot that has a lot of potential, and that people are recognizing as having a lot of potential. But, but otherwise, I just, I think it's a mistake. I personally, I think it's a mistake, if I thought that way. I need to kind of execute my vision. And, you know, learn as I go from what I'm doing. And, you know, the bottom line is the art market, especially museums and stuff, they've been at it for a long time, and they haven't really done anything innovative. But they all have an opinion. And they all are short, you know, they're all convinced that they're right. So, if I'm going to spend all my time listening to them, it would be exhausting. And it just weren't. So, my influence on the market, right? But I'm going after audiences, I'm gonna have two people like you and me. And, and if I get those people, then museums don't have a choice to have. I sometimes I have, you know, what, I don't care what they say. Because there are there are very specific questions that I have for them sometimes. And I want I want to understand how they view a problem or how they view a situation, that's really important. It helps me inform I helped keep me informed. But in terms of in terms of innovation, I see some small pockets of innovation here and there from certain museums, startups. I gotta say that I don't feel like they, I feel like a lot of

startups don't think big enough to local, and which is fine. I'm not saying it's just that for what I'm trying to do, there's a different it's a different scale. So, if I started thinking about my place in the market, and how, what influence that that means I'm thinking too much about exterior things, not enough about my target market, and what I what we need to do internally to, you know, how we respond to user feedback, or you know, all that sort of stuff, because that's really what's at the end of the day, the user is the most important thing, everything else will fall into place. If the experience I mean, I didn't waste the opportunity to ask you your feedback on the app, just because I'm obsessed. And so that's my relationship with the user 10 times more important than my relationship with the museum, even though museum can be very helpful to me, just to have a finger on the pulse, you know, what's going on? What are people talking about? You know, what are the problems? What are they? What, what, what are they missing out on? I mean, you know, data is something that I realized the importance of data. And when museums, were telling me that they didn't really have anything. They had data, you know, Facebook data, and census data and stuff like that, but nothing really interesting.”

E: “The final question, in your opinion, can these new technologists eventually change the art market?”

R.3.: “Yes, I think that, so I just want to be careful how to answer. I think that the art, the experience of seeing art, it's going to evolve. But there's always going to be a personal and a physical part of that. So, seeing a painting on your computer is never going to be the same as seeing a painting or sculpture or whatever, actually, physically in front of you. Like to a theater, you can see a theater on YouTube, you know, a production on YouTube, it's not the same as sitting there and smelling it and feeling it. I think that that's always going to be there. Technology, though, has definitely a role to play. It can be how it's consumed. So, it could be immersive experiences that you could, you know, it could be virtual exhibitions, which is just as I kind of virtual exhibitions, or the thing about the Van Gogh thing I was telling you about, the immersive experience, that's what's going on. And those are things that for me are a gateway experience, to the real thing. It's people who are naturally interested in go to the museum, they're already, that's a market that's already there, it already exists. But for people who are interested, but they don't go to the museum, this is a great way to this is like halfway. So, you get them, you they're here, they're never going to the museum, but they're interested, you want them in the museum or engaging physically, you know, buying a ticket. This is a great way, you know, the immersive experience virtual exhibit, it's a great way to get them at least here. And once they're here, they're going to route us Oh, actually, it's not that bad. It's kind of fun. It's nice to go with my wife, my girlfriend, my parents, my buddy, my brother. And then make that next leap. But, but, you know, that's in terms of the sort of the consumption.

And then there's technology. When I think of technology, I think about, how do you get people? How do you reach people on their phone? You know, obviously all that's technology, data, all that is a result of technology, or most big data sets. It's not, it's not like, on your way out of the museum, someone asked you a question. And that's how I'm talking about big data sets that are global, like those, that's all driven by technology, ticketing, merchandising, those are all things that, you know, it's all it's all a question of how do you optimize visibility? And how do you, you know, how to efficiently and inexpensively and so all of that, all of that is going to be technology is going to address all those challenges that museums have. But the actual experience, museums still need to focus on managing their collections. That's not only technology can help with them. You know, the tools they use to do that, but they still have to put on exhibitions and tell excellent stories that are relevant. They still have to Have a great visitor experience. So physically going and museum, you have to feel good. You have to have a nice time might want a cup of coffee or a beer, or lunch or whatever. So, the short answer to your question is absolutely. The long answer is kind of maybe already, but, you know, it gets, you know, it just depends on a little bit where and how I, you know, NF T's Who the hell knows where that's going? More and more people are buying art, buying physical art, but they're doing it online. You know, they're, they're seeing it, and they're paying for it online, they've never actually seen it physically. And then it's delivered to their house. So, technology and the actual work of art that's been evolving a lot. And artists are grabbing onto that and trying to make artworks that lighting or sound or the technology question, it should be part of the art market, honestly, you know, you can't nobody can reasonably say.”

Appendix C.4. Robot Muralist

Interviewee: Respondent 4

Interviewer: Elena Kirpu

Date and Time: 05/05/2021 13:00

Location: Zoom

E: “Okay, so I have a questionnaire for you with different topics about your company. And I want to start with questions about idea itself. And the first question is, how did you come up with this particular combination of art and technology? What was the main reason and motivation behind it?”

R.4.: “Well, it was inspiration. So, one of the most notorious Estonian street artist Edward Wunderland once came out with a moon shot. So basically, a moon shot is like the idea that ultimately ends up people in the moon, we're on the moon. So, the moon shot was the artist should have the power to actually create our visual environment and take this power, big power back from corporates who use our, our public space for advertising. So, he basically had this idea that, that when, how it works, how we saw that the artists are putting art on a wall was that you project the image on the wall, then with the brush who do that, like all ends, and ultimately, you call out the wall. And he thought that maybe it's possible to turn it around, so that when you move your hand, the paint only goes to the right places. And the moon shot was born. And, and now when I first heard about this idea, I immediately understood that this, this is something that when we really bring all the important parties together, this will have massive impact on the society and on the industry. So, it was all about getting inspired, having this great idea and bringing all the important parties together.

E: “So, what do you think, are the pros and cons of developing this idea on the market?”

R.4.: “Well, the journey has been very complicated. So, on one hand, our aim has always been to work to get there with the artist, but very often when we are presenting our technology or using our technology, then some artists find that we actually take the jobs away from the artist. So, it's a little bit controversial. So, it has been challenging on all aspects that you basically can measure. But that said, I would say pros definitely is that when we see our technology being used in the cityscapes or in people's hands, people always smile. So, we have brought lots of smiles with our technology. That's the key Pro. And when we're talking about cons, then well, I actually don't know any, it's just about challenges and problems to overcome.”

E: “In your opinion, which side prevails in your idea, technological or artistic? Because of this combination, do you think it's equal or one side predominates?”

R.4.: “Well, I think it's not possible to take technology and art separately, I think that building the technology and finding non-existent solution to some problems. It's also a form of creativity, which is by definition art. So, I would say it's, it's all together. It's like an art movement that we are creating. And this art movement is definitely powered by technology and robots.”

E: “Okay. So, let's move to your background. Could you tell me more what kind of education you have?”

R.4.: “Well, I have very different educations. So, on one hand, I have studied renewable energy resources, economics and marketing. And, on the same time, I'm very active in some other forms

of life as well. Like I'm actually educated see yacht captain and offshore rescuer. So, everybody's in topic on the season, and the guy goes for rescue. So many different skills. But in general, it's all about entrepreneurial mindset.”

E: “What was your professional background that led you to what you're doing now?”

R.4.: “I had founded several companies, successful companies, and also some companies that ultimately failed. So, I was all about finding the idea that really inspires me and get it going and with robot muralist we, with the inventor, we found this like perfect harmony and match from the day one. So, it was like engineering and entrepreneur in getting together and making something impactful.”

E: “So how long have you been engaged in this process of developing this idea?”

R.4.: “About five and a half years.”

E: “And being a startup, what kind of difficulties did you have to face before entering the market?”

R.4.: “Well, in the early days of any company it's all about assumption, like I assume that there is a market. Now, especially when you do something completely new when something that others have not done, then it's about assumption, and it's having faith on your assumption. So sometimes it's very challenging to actually remained the belief, to the success, because before your technology, and your product is on the market, and generating revenue before that, there is like lots of preparation works. That is all done based on faith. So, having faith even in the hard pace, that's I think, the biggest challenge. Otherwise, as I already mentioned before, it's all about having challenges and then creatively coming out from them.”

E: “Could you tell me more about your key milestones?”

R.4.: “The first milestone was when we had the first prototype, then the next very important milestone was when we had first customers, first private customers who wanted to use the technology that we are building for, like more fun purposes, like just having fun on the wall. And the next very important milestone, especially on business wise, was when, when our first big customer, so the first company actually found the business value from our providing so getting the prototype getting the product, getting first customers, these are, I think, the key milestones.”

E: “What do you think helped you in the promotion of your business model?”

R.4.: “Our technology looks good. And of course, the fact that it's very intriguing. There are some people who say we take away artists chop, there are some people who say we are actually giving the artists these new opportunities to scale their creation. So, it's also a little bit about the

polarization or like, conflict. So, if you have this polarized element, then people start talking about it. And when people start talking about it, it's all about supporting this process.”

E: “So, some startups when they just only starting, they seeking for help for external help, like for mentoring, they taking part in accelerator programs, or in state programs. Did you have something like that, or it was all about previous experience that you mentioned that you did it all by yourself? Because you already knew the processes?”

R.4.: “One fun thing about startups is that there is no right way and there is no like if you have some distance of success and the next component, take it further, it doesn't matter how much experience you had, it's all about the experience you're having right now. So, yes, indeed, we actually not only me as one of the founders, but some other founding members as well had very wide experiences before. But when you come together with something new, it's all about actually getting good from the very starting from the very basics. So, we have had lots of mentors, we have gone through several accelerators and incubators. And we have basically from the very first day, we have had the approach that we are coachable if we get feedback, if we get some pointers, and then we are able to adopt them. We are very dynamically approaching processes in a way that actually right now is working, but not how we thought we would actually work. It's all about innovating. And I think that environment of accelerators and incubators, helps companies like us grow very well.”

E: “I have a little knowledge about these accelerator programs about the duration is it always like 3-4 months?”

R.4.: “All accelerators are making a unique program. So, some modern just a couple of weeks, some three months, some actually six months, 12 months, some of them give investment, others actually charge for the program. So, it's very, very unique. We have been in two main accelerators. One is launch accelerator in Silicon Valley by Jason Calacanis. And the other one is in in Estonia billet accelerator, which is for was for hardware startups, they both have three months long, they included investment from the accelerator, and taking great putting in touch with other investors and industry specialists. And having that high level of contact network, that's something that doesn't come by chance, something you need to work for, and accelerators and incubators is excellent environment for that purpose.”

E: “So from the financial side, right now you're connected with investors, right?”

R.4.: “Yes, we have quite a few investors on board. And we also generate revenue, we're providing services and selling our products.”

E: “And do you think this connection with investors affects your company processes, or you still feel more powerful, being a founder?”

R.4.: “Investors, who I work with, they have great advice and some pointers, but they never take control of the company. So, the last decision is always mine. And the team so investors that we have on board, they have provided like, great pointers, and really nice advice, but the day to day operations and decisions that comes from us.

E: “Okay, that's great. Because some companies, when they're connected with investors, they can be really influenced by them.”

R.4.: “Of course, we are influenced, because when we have decided to take this investor, and he gives advice, then we actually respected this advice. Sometimes we even make mistakes because some investor gives some point. And then something that you just need to handle if you get 332 bits of different advice, and you try to act according to all of them. So, there are some conflicts sometimes.”

E: “There is this distinction between startup and small businesses? Do you see this kind of difference between them?”

R.4.: “Well, startup is a company that is designed for quick growth. So small businesses, lifestyle, business status, they can be exactly even sometimes even more rewarding than running a company with the potential to grow 100x's in one month. But the key difference in my head is that the startup is built on purpose to grow fast. And sometimes the structure is different than sometimes the financing is different. And the revenue models are a little bit different. But like, on paper the business is business.”

E: “So, how would you describe your current market position?”

R.4.: “Currently everything is changing, how people are working, how companies are working, I think there is not going to be a situation on global market that was before COVID. Now we are heading to post COVID world. And definitely there are some kinds of changes how operations work, and for us, pretty much as well, it gave us challenge we lost projects. I have, in the background, a mural of building sites like that kind of projects. Last year, we lost for more than 1 million euro worth. So, it's a big loss. For us it's once again presents a challenge that we can take as opportunity to do something better and for us, everything is changing, we basically have changed our business model, we are pivoting the way how we operate to the to the root level. So, I would say right now we are in great position that we can actually direct or dictate how the post

COVID world will look like and will operate and how our technology and services and products is used on the market.”

E: “So based on that, do you think you have some kind of influence on the art market and its participants?”

R.4.: “Yes. But they were a little bit ago talked about, like what is the difference between startup and small business. One other key feature on startup is that startup has some kind of solution that makes people act differently or do something differently. And I think our technology is all about creating our visual environment and visual environment is like very important part in any industry or field of life that look like starting from architecture, outdoor advertising. This is all that creates our visual environment. And our technology gives the capacity to basically transform the whole cityscapes within just days. So, we really hope that this opportunity finds a gap in the market. And if that happens, then the way our cityscapes are created. It's all about to change because of what we are doing.”

E: “Did you have like the final step like maybe some kind of event, or I don't know, that made you realize that you are now the participant of the art market?”

R.4.: “Well, yeah, originally, we mostly participated, quite straightforward startup events. But after we participate in some, some maker fairs, which is like makers and artists together, and we had some great shows in some art galleries with our robots. After that, it was quite clear that the artist is entangled part in our industry, so that basically, art is what makes it work. So, it's on one hand that our robot help to print art. On the other hand, it's all about art to create that. So, it's all entangled this as one big, beautiful thing.”

E: “Yeah. So, you mentioned a bit about the pandemic that you had to change your model. So can you tell me more in details, if this shift to digitalization to virtual spaces helped your company?”

R.4.: “As a whole team, we definitely had a nice opportunity to learn working remotely. So basically 99% of our day to day business is now going online. Which is nice, which makes it scalable, and which makes our lifestyle not very dependent, we can be on top of Himalayas and do the same business. And on the other side, the pandemic presented us some awesome opportunities because to create that kind of artwork usually takes big teams and weeks of work, we could send them to people and to execute the work with robots with just one day. So, on pandemic wire is providing that kind of services is actually a great opportunity for providers on the market to do something better. And well, because of some limitations on travel, we actually needed to figure out a way how to use our technology globally in a way that we don't need to

participate physically on site. So, we basically need to figure out the business model, how to use our robots in 10 locations simultaneously. That was great challenge for us. And we came out with great product that we believe very much will drive the company for a long time.”

E: “How does it look like right now with this? I mean, you said right now that it was 10 robots around the globe?”

R.4.: “So, before pandemic, the key revenue, like day to day business came from providing services like decorating buildings, running some open advertising campaigns, etc. Now, our focus have shifted from providing the services with our technology into building robots, and getting more users around the world. So better one service production, we make less revenue, but with the same team, we are able to serve 10 times more customers. So that's how you build a company that is designed for fast growth. We are not able to build 100 people in one day, but we definitely are able to build 100 robots in one day.”

E: “So, would you say that you have competitors in your area of activity, or you consider yourself unique company?”

R.4.: “I think we are like trend makers, there are some companies and some even technological solutions that have tried to figure the same. Figure out the same problems. I would say that the approach in using technology and art together in actually redesigning our whole landscapes of living. I think it's very unique on how profound it is and how many different parties it actually includes. So, when I said that, I think we are trend makers, what I mean is that there are some other players on the market, but they are helping us they help our message to become more clear and more widespread and if there are other companies or people doing the same thing on the market for us, it's blessing. When we began it was just us nobody believed us. Yeah, the whole world is moving that way. So, it's building something new, creating new trend and now see that the whole world is coming. Coming at this, it's actually very rewarding. That's how Steve Jobs work. That's how Martin Luther King worked. They said something that nobody believed the way they said, there's only kind of kinda Okay, let's see what's there. And they told the truth.”

E: “So, I have the final question, actually. So, do you think that new technologies can change the art market?”

R.4.: “Of course, I think that whatever industry whatever expression we are looking at, are talking about. Technology is definitely the key driver behind making something big and scalable. So, if we see some kind of technology or idea being used globally, it means that this is scalable. And if you want to do something really impactful, it needs to be scalable in my head. So, I would say the

technology is one of the key features besides creativity on making change in the market and make something new. So, I definitely think that technology is important. And my personal goal is to harness all the technologies in order to bring value to the human. And that's actually I think it's also written in my clothes. It's all about robots for humanity. It's all about making people smile. It's about bringing value that makes people more connected. And in that way, I think ultimately, the human can be on the driver's seat and controlling the technology and create what you want.”

Appendix C.5. ROKBOX

Interviewee: Respondent 5

Interviewer: Elena Kirpu

Date and Time: 05/05/2021 16:10

Location: Zoom

E: “I have a questionnaire for you with different types of questions. And the first one is about idea itself. So, the first question is basically, how did you come up with this particular combination of Art and Technology? Like what was the main reason and motivation?”

R.5.: “Okay, good question. So, it was because of two reasons. And it was because I was working in the actual art world. And I saw two things happening, one of which was, I work for galleries and auction houses. And I saw the amazing amount of waste that was produced, and people were commissioning, packaging. And because it was all purpose made, throw away, very quickly. And even though people, you know, 20 years ago weren't talking about the environment, it was just cleared to everyone to, despite the artwork, big, sophisticated, it created this huge amount of rubbish. And the second thing was that I worked for Gagosian Gallery and Sotheby's and these people as that. There are some instances where the traditional way of doing things didn't work, despite people paying the best amount of money and the best attention. So, I was involved in an exhibition, there was in Moscow that traveled to travel back to New York. And there was some painting, and it flew and change craft in Frankfurt. And unfortunately, the case took a knock. But the painting fell out inside the case. And by the time it's new painting droid, and there was a court case after where they were trying to blame the shipping company, for putting the wrong size screw in, in the box. And it was a \$10 million court case, and I thought \$10 million, the wrong size through lots of money. And then another time, I took a painting by an artist who is now dead, a

British pop artist. I took a painting to an exhibition in Korea. And on the way back, there was a thunderstorm at the airport, the rain. And because when they take the painting, and it was a museum case with Museum, everything, but when the painting has been put on the wall, they then took the empty box and chucked it in the storage. You know they chucked it in the storage. And when they threw it in storage, got a crack in the top end of exhibition, they put out working the box, it rained, some water got inside onto the painting. Because the type of material, the painting it was affected. We could never get it fixed. And I was in. We had a postmortem, everyone was screaming. And I looked around and said, We did everything we could we paid all the money we tried, but it rained. And I realized that we could never stop rain and I looked around and realized no one put the valuables in wooden safe. So, I decided to change it. That's where the idea came from.”

E: “What do you think are the pros and cons of developing this kind of idea in the market?”

R.5.: “Okay, the pros. Oh, that the art markets an amazing, unusual place that has lots of people who have an imagination, you know, you can see news, you'd like to see new things and enjoy that kind of thing. So, if you say, you know, frankly speaking we don't have a crazy idea here. It's a box. Yeah, boring. And we wish to do this is you know it works within this place. At the same time the art market is very resistant to change. So, it's very based on previous relationships. This person made my book forever, Oh, I know this client or this customer. And it hates this kind of anything radical at the same time. And another con, I would say is the art market is absolutely full of experts. Experts in art, everyone's expert, consultant expert, and they are all very precious of their job. They want to be the expert. So, you gotta move. So, you have many, many experts who like to keep their jobs. And if they are not the expert, then it makes them feel very, very threatened. So, at the moment, if you look, there's a lot of people climate crisis saying to museums, maybe we don't need to have air conditioning and heating all the time and lots of energy. But because they're experts within it have said that it must be no more than 3% in 24 hours. And it is their jobs to save this very special thing. And then everyone else to say, but this is cheaper because when Mona Lisa survived for 400 years before invented air conditioning, but there's so there's this conflict, so the rows are art well, so you can go and get money from collectors. You can get money from people and we protect painting. You know, you can never make it again. There's nothing you know every other item gold you can do. You can just get more gold, you can't hurt cash, you burn it, you can make more diamonds, you can't break them. I think the pros are that we are dealing with one of the most amazing things that you cannot make again, right. Made by people who is that it really is this fabulously precious thing. Not even the money side of it.

E: “Which side do you think prevails in this idea technological or artistic? Because you have this combination of technology and art. And what do you say it's like equal or some side predominate?”

R.5.: “Oh, I would say that it's a blend. I don't think one side wins over the other. I think that the artistic endeavor, we, as a company, through design, through creation through works very well with some of the art that we protect. I think there's a huge crossover between the technological and the artistic. I mean, we have a box, right? It is reusable, it's better for the environment. It's sustainable. But weirdly enough, we have the box, it protects the art inside it, it makes it better for protecting everything. But at the same time, what it's actually doing is protecting everything outside of the box, which is the environment by being reasonable.”

E: “So, let's move to another topic about your background as a founder. Can you tell me about your education like what kind of education you have?”

R.5.: “Not much. I didn't finish school.”

E: “So you can tell me more about your professional background then.”

R.5.: “So I can tell you, I didn't finish school because I'm stupid it's because I wasn't sure what I wanted to do after to go to university, and I wanted to travel, so I decided to become an English teacher. But I'm dyslexic, so very bad, terrible teacher. So, I taught in Moscow for two years. That was terrible. Then lectures in Prague was still terrible. And I did some other jobs on the side to make some money. And then I decided, my father, who was Russian had been involved with art when I was a child. And I always loved this. I remember being on the floor of galleries and people talking about abstract paintings and excitements and so I decided I wanted to work in art. And I didn't need any exams. And I got a job as a porter, the guy who carries the stuff in Sotheby's for a year, and I did that it was amazing, was one of the most wonderful things. I worked in the likes of the musical department, the contemporary art department, the wine department, furniture, the jewelry, store everything, which was amazing. And then I went to Gagosian gallery, were opening up a big Gallery in London. And I decided that I wanted to go work there. So, I had a friend sent an email said I was brilliant. I lied to give you a job. I worked there for 10 years. And then this thing annoys me when I was there. And I did many other things. I work for auction houses, I helped build museums, stuff like this. But this thing always just annoyed me. And then I decided to do something about it about 2016, 2015. So, I started working.”

E: “So being a startup, what kind of difficulties did you have to face before entering the market?”

R.5.: “What kind it was, so you need money. So, being a startup is an interesting thing, right? So, you need money, and you need people, there is no way I could have done this by myself. Absolutely. None. If this was me by myself, I'd be still in some room somewhere drawing on pieces of paper. So, I got incredibly lucky and was introduced to some people who saw that there

was an opportunity in what we would do or could be done, who had added skills that I did not say whether they were experts in packaging, or Payton's company finance structure. And I listened, I actually listened to a lot of what people said, which was, if you want to create a company, you want people to invest, then you need to have this kind of company structure, it needs to be very legitimate for you only to have very easy laws governing it so that there's nothing complicated. And I got lucky, I had a group of people, and then getting the money actually not so difficult. You turn around to people and say, no one puts their valuables in a wooden safe. And I have, you know, just spent \$20 million on a basket. And that basket has been broken. So, but how you structure a startup? So how you take the money, how you value a company, how you then make sure the people within the company get the benefit of working for a company because it's not very well paid working for startups. It's that all needs to be factored in. And I think that the question was, what's the difficulties. If someone told me eight years ago, that by the way this would happen. But the truth is, it's a lot of more devious startup is easy, creating a company's signing up. Anyone can do it takes 10 minutes. Having an idea. There are many of them, lots of people have lots of ideas like this, idea isn't even the best idea by any stretch of the imagination, dragging it through so that you can make real things and get real people to change that. And keeping it going right, you will always need more money, you can always make new things. So not being owned by one shareholder, not having a private company has huge benefits. I'm very lucky that I don't have two huge shareholders who make demands, I have 15-20 shareholders all of which I have good relationships with and we, and they come and add value to the business, whether they have expertise in marketing or design or whatever it is. So, for the friction, yeah, you have to be prepared to make money for a long time.”

E: “Can you tell me more about your key milestones?”

R.5.: “Never, we didn't sit down to write term key milestones on a piece of paper because by its nature, what we are as a development business, but I can tell you, the key milestones will be the first closing the first step of fundraise with twice the money that I set out to do. That meant that I could go and start creating. second key milestone was to create this prototype, basically, to go from drawing board idea concept drawing, checking to a physical thing. The morning that I went to go and see it was after two years of research, talking to insurance conservatives, technicians, galleries, auction houses. But when I went to the designers, we made our first ever one. I love sleeping, I woke up at 4:30 in the morning, wide awake. After waiting for this moment, I drove for hours to this place. I arrived. And I had to go and take a leak in the bathroom because I was too overly excited. And I couldn't pay the idea of it being disappointing. So, this thing, and it made me sad. And then I knew Oh, that'd be dreadful. But then I went through what my hands went upstairs saw

this thing was delight. And that will always stick in my mind that selling RokBox first of all sales robots. Those are pretty cool. Going to be invited to the National Gallery of Washington with a colleague. And they said what economy? What's the national government? Something about Washington, that is big streets, big building. We went through, they brought 25 people and we did a presentation. And then they bought our boxes, having gone from, you know, a spare bedroom, drawing to being in a very big museum where they buy your thing. That's cool.”

E: “What do you think helped you in the promotion of your business model?”

R.5.: “What helped us? Yeah. I think it helped us being independent of other big companies where the art world is very brand. Precious. So, they don't like share, Christie's doesn't want to share with Sotheby's like he just goes in the Tate does want to show people that they built that brand. I think being an independent outside where we're not part of other groups or the fine arts ship is we're not country specific, we're has not enabled us to be much freer. So, although we're a disruptive technology, because we are changing the way that the art world moves its stuff into a much more sustainable way. And that takes revenue from other companies that have traditionally got paid to make packaging and to throw away packaging. Being not being caught up in other people's politics has given us a freedom. So, I think that's been helpful. But then I also think it's been an Achilles heel in many ways. You know, people apart from you know, who's serving what champagne or which opening people don't have branded products, maybe Apple iPhones, maybe Apple computers, but it's all Not VR, right? You know, and so, so building an enterprise a brand new way that is cool that people like, isn't threatening within that sphere, also is complicated. discretion is really important in the art world. So, one thing we haven't done is turn around said, Phillips purely use substances or Christie's or whoever it is, because we always grew up in the art world, and you just do not talk about your customers new car, you know, is what is what is inside the box that matters. So, it's been, I think, if you were to be completely outside of the art world, and not to be not know, the difference between a museum curator and a commercial gallery curator, how big is a technician, a registrar?”

E: “So regarding the financial side, you mentioned that you did fundraising. But did you have like the external organizations help, many startups do this accelerator programs or programs from state? It was all like self-funding?”

R.5.: “It was self-fundraising. And I didn't use any external organizations. I've never been on a crowd platform. I've never used VCs. I've never done any of that. I've never paid anyone fees for raising money. That's not say I won't in the future. But we haven't needed to now. Because essentially, I mean, we have a need to we've had a compelling business case for doing what we're

doing. We have the art world, which, as you will know, has quite a lot of wealthy people in it. So, when you suggest to them that you might have an alternative way of doing something, and it's very green technology, then it makes sense. I also, we didn't we never issued different share structures. We never did any funny share structures, because if you have venture capitalists coming, they want different shares. And ultimately, that's not the value to the rest of our shareholders. So, we've been lucky in that we haven't needed to do that so far. That being said, I one of the most useful things about raising money is when you have some of the people that I've raised money from have come and serve as an observer on my board. And they bring in certain skills. So, whether it's, they've been involved in medical technology launches, or they someone running Banes incubator set as an observer, we have a chairman of an enormous marketing company, and they have invested and then they come and help advise, and things like that. So now it's been privately done. What it looks like in the future, I don't know. I need to raise money I will go and raise more money.”

E: “So there's this clear distinction between startups and small businesses. What are your thoughts about it? Do you see this clear distinction between it?”

R.5.: “No, I think it's blurrier than ever. So, I mean, are we a start up? Are we a small business? You could say we're a small business because we're generating revenue, right? We're no longer just purely cash negative. But at the same time, I think, especially with things like pandemics COVID. There has been changes in the world, which will not just go back, right. So, everything's turned digital. So, all the auction houses, all the galleries invested heavily in digital presence. Yeah. Instagram is the biggest selling platform for Arsenal. And we as a company, again, a shift and change we look at Okay, so how do we become part of this new thing? So, we're still starting up because we're still in development and it's not like we'll only ever make one product. It's the dumbest thing because people think it's cool to work as a startup. Which is not true. Because you always need money.”

E: “How would you describe your current market position?”

R.5.: “One, full of exciting opportunity, and more so than ever. Our current market opportunity is probably I would say today, bigger than when we first started out. And that's because we were lucky because we formed the company to stop waste, and to make things better. Now, there's a huge global movement rightfully for combating climate change. So, after all the years we spent in research and development, we have products that are market fit for today, but also when development market fit for tomorrow. So, what else can we do? I mean, we can make three dimensional roadmaps is perfect on three dimensional boxes. You know, maybe we can start moving things other than that. Maybe the world can start sharing stuff. Maybe there's technology

behind it that can help people do things without wasting stuff. So, I think where we started with the core principles of seeing an obvious place for an object, what we recognize and see today, because the way the world is two different things.”

E: “Do you think you influence the art market in its participants?”

R.5.: “Not very much. I mean, the art market itself is, you know, it's an incredibly niche, large, small organism with high value high margin products, we're not going to change the trade or the flow of that to suit our business. Well, we what you can imagine that in the future, if people were trying to be efficient and more sustainable about the way they're doing things, then in the same way, we now look towards maybe shipping things by sea as, as opposed to just because it's better for the environment, you can see that actually, artists not making paintings that have 46 meters wide, that way three tons are impossible to move might become a thing and whether RokBox actually can help people make things that are standardized and easier and more carbon and frankly speaking, you know, 77% of our picture, because so whether we have standardized sizing that helps people who knows, readily.”

E: “So you mentioned pandemic, and I have a question, have the pandemic affected your company some way?”

R.5.: “Yeah. You know, we built our original products based on a high volume, high movement, our auction house world, which, although that will obviously come back, and people will continue going to art fairs and the rest of it. You know, we didn't sell loads of our products and you know, in lockdowns because people were moving so it affected us. It didn't stop us being creative though. And that was in itself a wonderful thing. So instead of sitting back and go, okay. So, what can we do? And we carried on a large part of our product development sort of exercises with our designers, we started talking and developing our marketing, digital things started looking at new areas, so it affected us negatively and positively.”

E: “So right now, would you say that you have competitors in your area of activity, or you consider yourself a unique company?”

R.5.: “I would say that there are competitors. And I think that there will be more competitors. And each morning, I wake myself up, remember, what is the definition of a pioneer? Pioneer is the person at the front. So, we there, ultimately, our product is designed with industrial designers. So, where there's a barrier to entry, and so much as we've designed it, so that if you wanted to copy it, then it's going to become a race to the bottom. And from a marketing point of view, it's not very

exciting. Like, why copy something? Secondly, it took a lot of effort, a lot of testing to get more adoption, right. So, we had to prove it scientifically, this works better than wooden boxes. So, for someone else to go through all that hassle, really, I mean, but yes, there is we have a competitor, or there's another, there are more reasonable boxes on the market. we're not the only ones were the only ones who independently created this with without being working for a shipping company or being a museum and who today in a commercial sense. And there will be more people, there are more people sassily who are going to come up with better ways of living up, I'm sure. Hopefully, I mean, the No one's changed the world for the last 50 years. So hopefully, some more people come along and change.”

E: “Yeah, that's for sure. So, the final question, do you think the technologies will change the art market eventually?”

R.5.: “Yes, I think they already have, I think changes all around us. I think it's everyone gets bogged down in this idea that nothing changes. But no one had a Google. No one heard of Google 25 years ago, no one had Tesla 10 years ago, if you think our boxes are now going around the world being used internationally, but no one has seen one of these three years. And so. So, technology, or whether it's people being clever about how they manage condition reports or their collections or sell art or by art, this is all going through a state of flux. I cannot give you an opinion on non-fungible tokens, whether those are here to stay or not, or I don't know, because change is good. So, technology certainly has come to the art market is just as the art market likes to be perceived as a very traditional.”