Recent Trends in the Portuguese Video Game Industry: 2016 – 2020

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Abstract. The Atlas of the Video Game Industry in Portugal published its second edition in 2020, with the main goal of mapping, characterizing, and analyzing the evolution of the video game industry on a national scale. This paper presents information on the current situation and recent trends (2016–2020) in the video game sector in Portugal (companies, employment, products, economic and financial situation, networks, and public support), as well as the main expectations regarding the development of this industry in the national context. Methodologically, the video game sector is characterized based on the collection and analysis of original data from a survey conducted with video game companies and independent creators, which develop activities in Portugal.

Keywords: Video Game Industry · Mapping · Innovation · Creative industries · Public policies · Portugal

1 Introduction

In the last few decades, the video game sector has witnessed extraordinary development worldwide. The global market has registered steady growth since 2016, generating revenues in the order of US$ 134.9 billion in 2018, and forecasts predict this growth will be maintained, at an average annual rate of 9.3%, reaching US$ 159.3 billion in 2020 and 174 billion in 2021 (Newzoo 2019; Newzoo 2020).

2020 has witnessed many global changes in the video game industry due to the novel Coronavirus (COVID-19) pandemic. Video games are playing a crucial role in the current context of exceptional measures adopted to respond to the pandemic. The lockdown measures and confinement rules across the world, complemented with recommendations to avoid large gatherings of people, have led to not only an increase in game use but also to consumers spending more time gaming than ever (Balhara et al. 2020; Ellis et al. 2020; Gabbiadini et al. 2020). This growing interest in gaming in this atypical environment means video games have come to play a major social role, not only as an easy in-house entertainment option but also as a way to promote social interaction by connecting people

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through a shared experience. This potential of video games as a social activity has been explored like never before over the last few months, especially by people who have come to regard traditional social media as very limited in their social connection experience. Indeed, new connectivity technologies have allowed video games to become much more immersive social networks.

Recent forecasts predict a worldwide increase of 135 million new video games players just in 2020, expressing an unprecedented level of engagement that will be responsible for huge market growth in the coming years, which is expected to exceed the global US$ 200 billion mark in 2023 (Newzoo 2020). Even though Europe has not spearheaded this industry, we find the same dynamics of steady growth in the video game industry, which generated US$ 21 billion in 2018 (ISFE 2019) and US$ 21.6 billion in 2019 (ISFE 2020). However, there are substantial methodological differences supporting the figures presented in both reports[1], which underscore the limitations of any attempt to perform a comparative analysis between different markets, as well as question the relevance and reliability of the data they gather, which is currently one of the main constraints to the study of the video game industry. Nevertheless, we have chosen to list here the figures that characterize this industry, taken from the main secondary sources (the main reports regarding the video game market) only for contextualizing purposes, as a reference for the primary data collected in this study, which will be presented and discussed in the following sections.

Despite the difficulty in accessing reliable data, it is clear that, in addition to its relevant economic weight, this creative activity incorporates multiple aspects making it a complex sector that has, furthermore, a strong impact on other activities. First, video games are considered an important engine of entertainment, creating synergies with other cultural and creative sectors, such as cinema, music and design. Second, it is a highly innovative industry that has contributed to the development of new techniques and approaches (for example, related to learning, simulation and engagement) that are currently applied in areas as diverse as health, education or fashion. Additionally, video games also incorporate a cultural dimension and relevant sociocultural impacts (Rykała 2020).

The economic growth prospects of this industry as well as its multidimensional dynamics are largely related to several trends, including digital distribution, multiplatform video games, the growing diversification of the player profile, and the redefinition of the creator-user relationship.

[1] The Newzoo report assesses the size of the global games market combining data from primary consumer research (an survey of 62,500 respondents between the ages of 10 and 50 or 65, depending on the country, that represent the online urban population from 30 key countries), with data from an opaque predictive games market model that intersects very distinctive contextual metrics (household income, GDP per capita, app stores data, primary consumer research, financial information reported by public agencies and leading game companies). In its turn, the ISFE report uses sales data just from the leading games companies and representative agencies of retail and digital markets (comprising physical and online games), complemented with data from players behaviors drawn from a very narrow and limited sample of the European reality (a survey to which 3000 internet users responded aged 6–64, from just 4 European countries: France, Germany, Spain and the UK).

Although the rise in interest in video games in Portugal is evident, it appears that a systematic analysis of the sector has yet to be performed at national level. The Atlas of the Video Game Industry in Portugal, first published in 2016 (Santos et al. 2016), has now launched its second edition in 2020 (Romeiro et al. 2020), thus seeking to contribute to filling this gap. Its main goal as a useful source of information is to broaden the analysis on the size and characteristics of the video game industry in Portugal, as well as recent trends in its development. This paper will systematize some of the most relevant observations of this latest edition, designed to support decision-making and action in the development of individual and collective strategies in the video game industry, geared at promoting this economic activity in Portugal. In comparison to the previous Atlas, the main changes are related with the territorial concentration of video game companies; companies tend to be fewer but larger (in number of employees) and a higher proportion of these companies have multi-location units; a drop in the number of companies dedicated exclusively to the development of video games; a higher preference for PC games development; and a significative increase in the total revenues of its main economic players combined with higher confidence regarding the future of the Portuguese video game sector.

2 Methodology

The Atlas of the Video Game Industry in Portugal 2020 aims to analyze this industry at a national scale and is particularly focused on development and publishing activities. This study collected primary data through a survey specifically designed to explore the experiences and personal opinions of people who are directly involved in the development of video games - companies and creators.

As mentioned previously, this is a follow-up study of the findings from the Atlas of the Video Game Industry in Portugal launched in 2016 (Santos et al. 2016). Based on the first edition, we have taken an evolutionary approach to this sector. It follows a previously established structure regarding the findings and how the survey was built: characterization of the enterprise/independent creator; characterization of the video games created and the development process; the creation, development, and evaluation of social networking among the main agents of this economic sector and, finally, the identification of the main problems and obstacles to the development of both video games and the sector itself within the country.

The survey was sent to all the contacts of the updated database of companies created in 2016, as well as to different intermediate agents (SPCV – Portuguese Society for Videogames Science, digital media, higher education institutions, research centers, and business incubators). The database has been continuously updated, whenever we received new information about the current state of the agents or the creation of new agents. The survey yielded responses from 43 agents (29 companies and 14 independent creators).

In this edition of the Atlas, there were several obstacles to the inventory of agents currently working in this sector, which hindered the maintenance and updating of the database, as well as contacts with possible respondents. In fact, there is a lack of an updated official database of agents in this sector, which suffers from a high mortality rate among companies, as well as a high mobility of workers and a general lack of information.

3 Survey Results and Analysis

3.1 Creative Destruction

Generally speaking, the origins of this sector in Portugal date back to the 1980s, the result of the passion and dedication of independent creators who were entirely self-taught, gaining and developing skills in the creation of video games. They even managed to sell some of them internationally.

The 2020 sample shows that there are two distinct phases, the first being a long extension of time until 2012 and the second within the last 7 years.

The first phase comprises a period of consolidation, in which entrepreneurship in the sector began. However, among the companies surveyed in 2020, very few were founded from this period (only 3), whereas, by 2016, the survey yielded 13 companies from this first phase. Their absence in the 2020 sample is because some of the companies from this initial phase did not participate in the survey, but also because some are no longer in business. The fact that some of these pioneering video game companies have closed, indicates the short longevity of these types of agents, or the existence of merger/acquisition processes in which some companies grow through the aggregation of smaller ones.

The second phase of the sector's evolution in Portugal reflects a more dynamic economic activity, with the average entry of 5 new agents per annum (companies and creators), while also witnessing the 'disappearance' of some companies from the 2016 sample. The ultimate closure of these companies may be the result of the sector's growing maturity, reflected in the appearance of larger companies, or simply a trait of this sector, whose teams are continually restructured according to the video game that is being created and the institutional framework that it presents.

3.2 Geographical Breakdown

In terms of the location pattern of the video game sector in Portugal, the main conclusion is the geographical trend of the 2016 survey is maintained, characterized by the sector's strong territorial concentration, which seems to have been reinforced in these last few years.

Looking back, if in 2016 the companies were located in 16 municipalities, of which 3 registered more than 3 companies, in 2020 the companies surveyed were located in only 14 municipalities where only two have more than 3 companies (Table 1).

Noteworthy is that Lisbon registers the largest increase, currently concentrating more than 30% of the total number of agents in the sector in Portugal. However, if we consider the Lisbon and Vale do Tejo NUTS[2], this proportion rises to half of the creators and more than 40% (previously 38%) of the companies. Thus, it has become Portugal's main hub in terms of concentration of companies, although it loses prominence in the concentration of creators (63% in 2016 dropped to 50% in 2020). This points to a trend for new companies to concentrate in terms of location, while creators tend to disperse (in favor of the North, Center and Algarve NUTS). It should also be noted that in Continental Portugal, the North NUTS also reinforced its attractiveness for new companies, concentrating in 2020

[2] Nomenclature of Territorial Statistical Units.

a total of 34.5% of companies (while in 2016 it totaled only 27%), accompanied by a significant decrease in the Center NUTS. Also noteworthy is the Autonomous Region of the Azores which, despite the small number of companies, started to contribute to the video game sector in Portugal from 2014 onward. Finally, neither the Algarve Region (Algarve) nor the Autonomous Region of Madeira are currently contributing to this business sector.

Table 1. Geographical breakdown, by municipality, of companies and creators in 2020.

	Companies (nº)
Lisboa	**8**
Porto	**5**
Angra do Heroísmo	**2**
Barcelos	**2**
Cascais	**2**
Vila Nova de Gaia	**2**
Aveiro	**1**
Coimbra	**1**
Covilhã	**1**
Esposende	**1**
Funchal	**1**
Loures	**1**
Odivelas	**1**
Torres Vedras	**1**
Source: Survey of companies and creators (February 2020)	

To understand this geographical distribution pattern, we must analyze the main factors described by both companies and creators as the most important for their location (Table 2). Both agents highlighted proximity to other companies and creators that develop video games, which indicates the importance of networking and establishing partnerships for the development of this type of projects, where face-to-face interaction is valued, relevant for the promotion of innovation and the transmission of tacit knowledge.

The second most relevant factor is, in the case of creators, proximity to other complementary creative industries, associated to subcontracting networks of which these creators become a part. Also, proximity to where the sector's events are promoted can be related to opportunities to meet other agents and establish new collaborations. In turn, the companies identified proximity to higher education institutions as the second main factor.

Table 2. Appraisal of the proximity of companies and creators to different agents, in 2020.

	Companies (Ranking)	Creators (Ranking)
Proximity to other companies / creators that develop video games	1st	1st
Proximity to higher education institutions in areas related to video games	2nd	3rd
Proximity to places where events related to the sector take place regularly	3rd	2nd
Proximity to other (complementary) creative industries	3rd	2nd

Source: Survey of companies and creators (February 2020)

3.3 International Integration of Companies

Generally, most Portuguese companies in the sector are restricted to a single location and to the national territory (Fig. 1). Only 5 of the 29 companies surveyed (17%) show the size necessary to branch out inside Portugal. Portuguese companies with branches in other countries have also been detected, exclusively in Europe, in France (3 branches), Spain, the United Kingdom and the Netherlands (1 branch each).

This data can thus indicate the beginning of a new phase in the video game sector in Portugal. Following the development of the sector's entrepreneurship, nowadays the first steps towards video game companies with a greater complexity in the management of their production processes appear to be taking place. This entails the integration of different development units that, in some cases, are located in other countries, which can also be a way of exploring the potential for integration in international projects.

It is also worth mentioning that only 2 of the 29 companies surveyed (6.9%) are integrated in international economic groups, being themselves subsidiaries of foreign companies that have established a production unit in Portugal (Fig. 1).

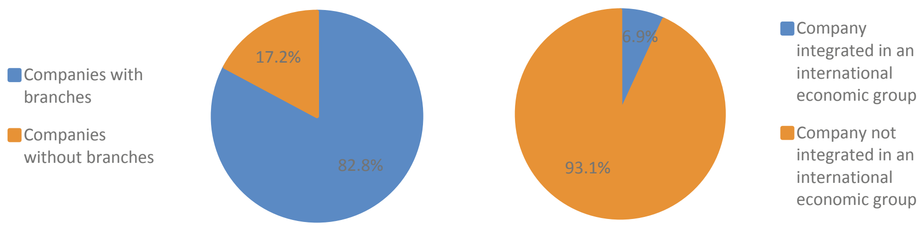

Fig. 1. Companies in 2020, according to the existence of branches and their integration in international economic groups. Source: Survey of companies and creators (February 2020).

3.4 Scope of Action of Companies / Creators in the Sector

Compared to the 2016 Survey, there was a decrease in the percentage of companies dedicated exclusively to the development of video games (from 68% to 52%), there being an opposite trend in the case of creators, whose percentage increased from 44% to 57%.

Companies that are not dedicated exclusively to the development of video games are mainly involved in programming activities. With slightly less expressiveness we find also consultancy and web design activities. In turn, the creators, in addition to programming (also the main activity), show a major involvement in multimedia illustration/animation activities (Fig. 2).

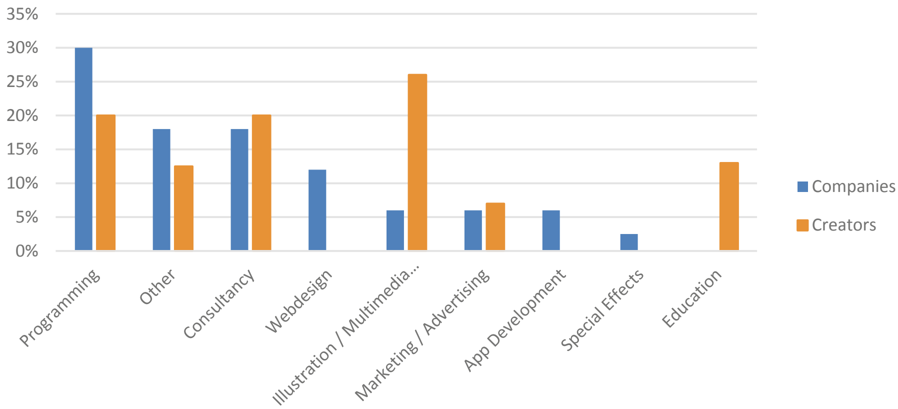

Fig. 2. Other activities, not related to video games, provided by companies and creators. Source: Survey of companies and creators (February 2020).

3.5 Subcontracting Relationships in the Video Game Development Process

With the exception of 1 company and 2 creators, all the other agents exclusively develop original games, continuing the tendency observed in the 2016 survey (Table 3).

More than 50% of companies collaborate under subcontracting in the development of video games led by other companies, whereas in 2016 this number only represented 1/5 of the companies, showing a greater level of integration by structuring deeper inter-business collaboration networks in the sector today. However, an inverse trend can be identified in the case of the creators (with a decrease from 69% to 64.3%), who remain the most dependent on the provision of services to third parties.

Furthermore, these agents are not only service providers, but they are also subcontracting promoters themselves (Fig. 3). Naturally due to their size, companies hire the most external services (44.8% of companies subcontract services to other agents, compared to 28.6% of creators). However, it is curious to note that it is the creators who work with a wider range of service providers (21.4% hire services from 3 or more providers, while only 17.2% of companies are in this situation). This could be due to the fact that

Table 3. Activities performed by companies and creators in 2020 (own video games vs. others' video games).

	Companies		Creators	
	No	%	No	%
Creation of original video games (authorship)	28	96.6	12	85.7
Collaboration on the development of video games (subcontracting per client)	16	55.2	9	64.3
Source: Survey of companies and creators (February 2020)				

companies are able to develop a more varied and diversified range of activities internally, or to a greater ease of interaction among creators in online community networks, helping each other in the specific tasks of their projects for which they do not have the required skills, such as coding or the development of artistic components.

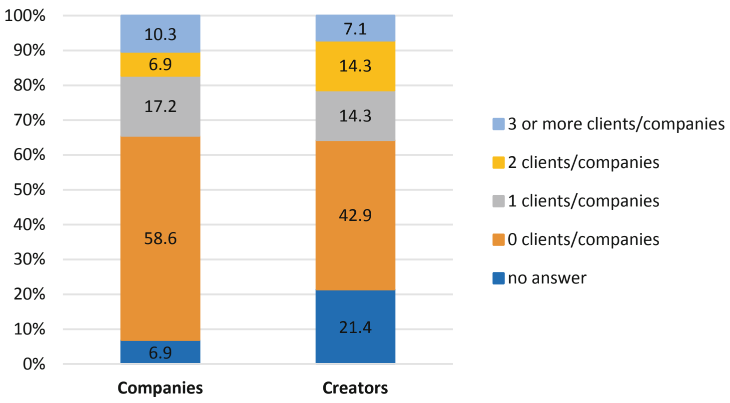

Fig. 3. Number of clients to which companies and creators provide services in the scope of video game development. Source: Survey of companies and creators (February 2020).

3.6 Employment

With regard to the volume of employment, it seems the video games sector has become more stable in recent years, showing furthermore a trend towards an increase in the number of workers of the existing companies. This trend denotes the sector's consolidation, albeit seemingly composed of fewer companies, but which tend to be larger in size suggesting a greater maturity in the sector.

The 29 companies surveyed generate an employment volume of 313 full-time workers, 29 part-time workers and 50 freelancers, corresponding to a total of 392 workers (Fig. 4), whereas in 2016, the sample of 38 companies totaled 375 workers. This suggests that Portuguese companies are expanding their size in terms of number of workers.

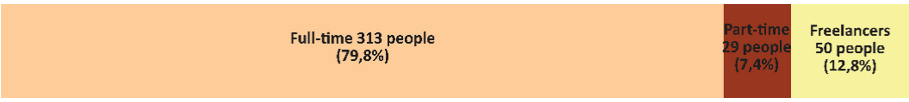

Fig. 4. Persons employed in the companies involved in the development of video games in Portugal, according to their contractual relationship. Source: Survey of companies and creators (February 2020).

Generally speaking, it is estimated that the total volume of employment generated by companies in this sector in Portugal ranges between 986 and 1270 workers. In these calculations, the creators identified in the database of this project were not considered, in order to avoid double counting the workers (since some creators can be referred to by the companies as freelance workers).

It should also be noted that the average size of the companies increased from 10 to 14 workers, between the two surveys. This evolution reflects a relevant change because, in average terms, this business sector is no longer characterized as made up mainly of microenterprises, but rather of small companies.

The demand for workers with high academic qualifications has also been reinforced since the 2016 survey, when the human capital of about 45% of the companies was composed entirely of workers with university education, having risen to over 62% in 2020.

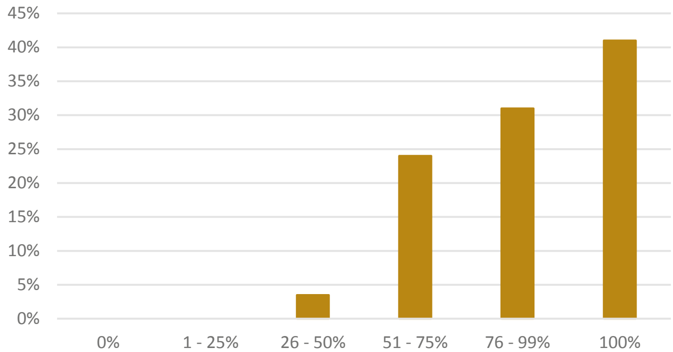

Fig. 5. Companies in 2020, according to their proportion of male workers. Source: Survey of companies and creators (February 2020).

It is also important to highlight that this is a sector where there is a significant over-representation of the male gender in the workforce (Fig. 5). In almost all the companies (96.6%), men are the large majority in the total number of workers. This characteristic may be related to a higher number of males in higher education associated with technological areas, from which the human resources of this sector come. However, this feature deserves reflection regarding the manner in which it affects the future development of the sector in Portugal, as it will certainly have an impact on the genre of video games created and the target audiences.

3.7 Video Games Made in Portugal

From the 116 games developed by the companies surveyed, 38 (33%) proved to be profitable. In addition, 44 of the 183 games (24%) in which the creators collaborated made a profit.

In terms of the target platforms for which games are developed in Portugal, since 2016 there has been a decrease in web (online) and mobile games, and an increase in the development of games for consoles and PCs, which indicates that Portuguese companies are developing larger projects. More than 80% of the games are made for PC, and more than 50% of the games made by the companies are also intended for consoles.

It is also important to mention that most games produced in Portugal have a short development cycle (less than 18 months), with only 4 companies reporting they worked on games with longer development cycles.

3.8 Game Development Software

Since 2016, there is a clear preference regarding the use of certain tools used in game development in Portugal. Unity 3D is currently used by more than 85% of the Portuguese companies, as well as an exponential growth in the use of Unreal Engine (from 13.5% to 41.4%) and Android Studio (from 2.7% to 20.7%). In terms of programming languages, there is a predominance of C variants (C #, associated with Unity 3D and C + +, associated with Unreal Engine). HTML5 is also used by about a quarter of the companies. Game Maker Studio is no longer used by the companies, but it still gathers the preferences of more than a third of the creators (Table 4).

The creators are divided according to the use of a greater number of technologies, among which Unity3D (57.1%) and Game Maker Studio (35.7%) take the lead. A high percentage of creators also work with Apple technologies (used by 35.7% of the creators, compared to 27.6% of the companies).

3.9 Advertising, Distribution and Commercialization of Video Games

There are no major changes in terms of publicizing games developed in Portugal. The main video game advertising channels continue to be social networks (more than 82% of the companies and 78% of the creators). There was an increase in the use of YouTube for companies, which together with the specialized press and their own website is now used by more than 60%. Most companies (55%) also declare they use advertising, an increase of more than 10% compared to 2016, pointing to the companies' greater financial capacity.

When we analyze the data referring to distribution and sales channels, it is clear that there are more games being developed for PC and consoles by companies in Portugal (Fig. 6), and the use of Valve's Steam platform has risen (from 40% to almost 70% of the companies), to become the dominant distribution channel for this category. The Nintendo E-shop went from a negligible number in 2016 to 31% of the companies and 14% of the creators, which may be due to the success of Nintendo Switch, whose games are simpler to produce. There is also a reduction in mobile platforms, and the creators also show a significant increase in the use of aggregator websites (more than 60%), which have become their dominant distribution channel.

Table 4. Game Development Software used to design video games

Game Engine/ Coding Programs	Companies (%)	Creators (%)
Unity 3D	86.2	57.1
Unreal Engine	41.4	28.6
Visual Studio	34.5	28.6
HTML5	27.6	35.7
C + +	24.1	28.6
Android Studio	20.7	28.6
Xcode	17.2	35.7
Own Engine	6.9	14.3
Construct2	3.4	0.0
Godot	3.4	14.3
Marmalade	3.4	7.1
Rails	3.4	0.0
Cocos2D	0.0	7.1
Corona	0.0	7.1
Flash	0.0	7.1
Game Maker Studio	0.0	35.7
Stencyl	0.0	14.3
XNA	0.0	7.1

Source: Survey of companies and creators (February 2020)

3.10 Serious Games Developed in Portugal

Serious games represent the majority of the turnover volume for about 21% of the companies and creators, which corresponds to a slight increase compared to the data collected in 2016 (from only 11% turnover for companies and 16% for creators) (Fig. 32). The importance of serious games has risen slightly for companies (from 10% to 15% of the games produced in Portugal), with an increase in the number of companies involved in the development of serious games as well (22% in 2016 vs 38% in 2020).

An increase in the diversity of serious games produced in Portugal is also visible in this data. Among the companies that produce serious games, about 46% produce games for education/training (compared to 60% in 2016), with advertising games and games for the cultural sector now being produced by about 30% of the companies in this sub-sector.

3.11 Economic Situation and Support

3.12 Financing of Video Game Development Activities

In terms of sources of financing, there continues to be a very significant use of financing by means of equity among companies and creators in Portugal, with more than half of

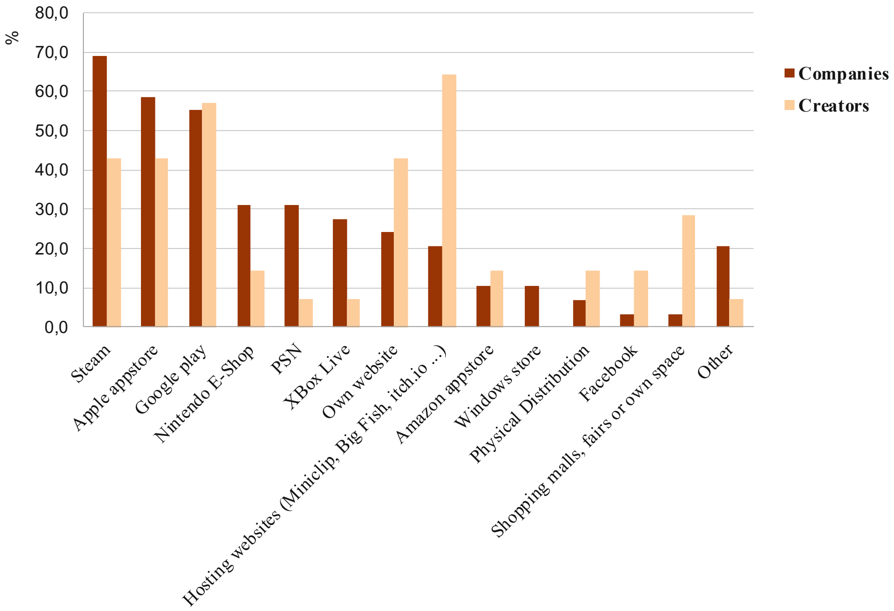

Fig. 6. Distribution channels used for the commercialization of video games. Source: Survey of companies and creators (February 2020).

the companies and 3/4 of the creators declaring this situation. However, compared to 2016, there are signs of evolution towards the use of external financing sources, with more recourse to business angels and venture capital.

Among the surveyed companies, 6 (20%) have obtained financing totally or partially through business angels or venture capital, divided equally between national and foreign capital. This situation contrasts positively with the situation in 2016, where only 2 companies reported this type of financing (Fig. 7).

While the companies refer to access to other sources of financing, in the case of the creators, all indicated the use of financing by means of equity, but those that are not financed exclusively in this way indicate funds from their publishers or a variety of sources.

Most companies do not even consider accessing credit to finance their activities. While the majority of the respondents has no formed opinion on access to these sources of finance, those with an opinion on the matter consider access to credit to be difficult or very difficult.

3.13 Sources of Economic Profitability

The most common source of revenue continues to be sales (indicated by 72% of the companies), with about half of the companies reporting also in-game sales (microtransactions). There is also a slight decrease in companies that declared advertising revenue (28%). The remaining categories have little expression, being mentioned by only 10% or less. The percentage of creators reporting revenue from sales increased by about 20%

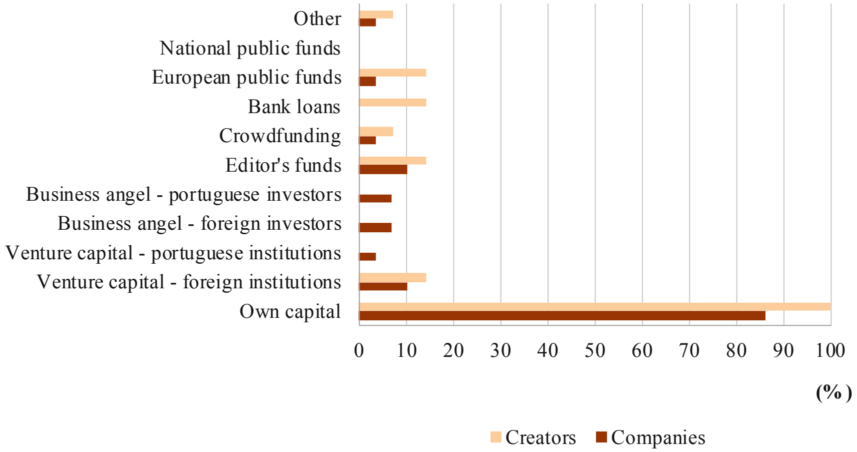

Fig. 7. Financing sources for companies and creators to develop video games. Source: Survey to Companies and Creators (February 2020).

compared to the previous survey (from approximately 38% in 2016 to 57% in 2020). In general, the creators indicated the same 3 sources (sales, microtransactions and advertising), and it is worth noting that 2 creators also declared they obtained revenues from the sale of physical products related to the video game.

3.14 Current Financial Situation

The data points to an increase in the revenues of the video game development sector in Portugal since 2016. Despite the fact that the largest company operating in this sector did not respond to the survey, given the importance of this component, we consulted official data for 2018 on its revenues and remuneration expenses. Thus, there are currently at least 4 companies in the sector with annual revenues in excess of 500,000 Euros, with the income of the largest of these exceeding 15 million Euros annually. There are also two companies with annual revenues between 250,000 and 500,000 Euros. In 2020, more than 40% of the companies declared having an average revenue of more than 50,000 Euros in the last 3 years, in contrast to the 20% that declared this amount in 2016. Furthermore, the number of companies that declared an income of up to 10,000 Euros decreased from 35% to 24% (Fig. 8).

The same trend appears when speaking of the creators. While in 2016 only 6.3% had declared income above 10,000 Euros annually, the percentage now rises to 28.6%. It should also be noted that about a quarter of the companies and a sixth of the creators refused to answer this question.

The data indicates a maturity and consolidation of the sector in Portugal, with fewer but more solid companies. If we try to estimate the total revenue of the video game development sector in Portugal, considering the average value of the response intervals and the conservative value of 750,000 Euros for the companies that responded in the highest interval, we obtain an estimate of about 4 million Euros per year for companies that actually responded. Considering that this number (22) will correspond to about one

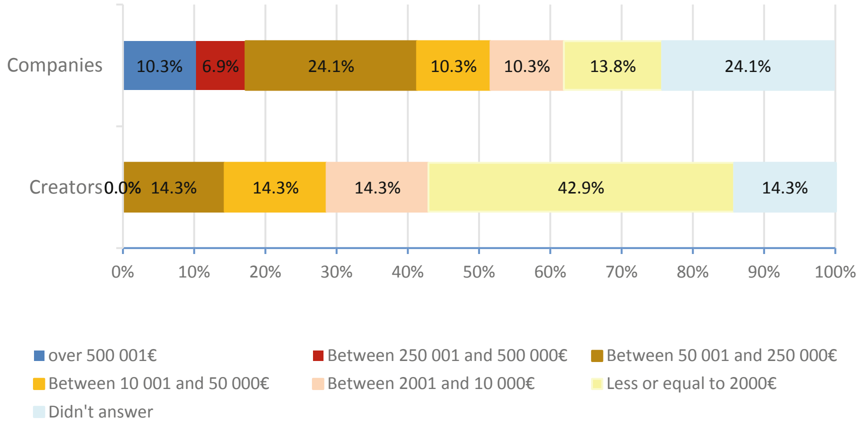

Fig. 8. Revenue of companies and creators. Source: Survey of companies and creators (February 2020).

quarter of the companies operating in Portugal, we can point to a value of approximately 16 million Euros to which the largest company should be added, with a revenue of 15 million. Thus, our estimate for this sector's annual revenue should be about 31 million Euros, which more than doubles our estimate for 2016. The increase in revenue observed also seems to have caused a slight improvement in the financial situation of the companies (34.5% now indicate a favorable situation, against only 19% in 2016), and a significant improvement in the financial situation of the creators, of whom more than half declared balanced or favorable, against 25% in 2016. Once again, this data points to a significant degree of consolidation of the industry in Portugal since the last survey.

3.15 Networks in the Structuring of the Video Game Sector in Portugal

There is a tendency to favor the national scale in the case of interactions with higher education, research and development agents. Both companies and creators have more interactions with higher education in the field of video games or similar (universities and polytechnics), than with research and development centers.

At the business level, though, companies take greater advantage of the international scale than the creators. In the case of networks with higher education and research institutions, the national scale tends to be more exploited by creators, more than by companies, as they tend to favor networks of a more local scope.

It should also be noted that interactions with other complementary creative industries are those that are structured in a more balanced way at the territorial level, revealing, for both companies and creators, a more similar proportion of interactions between the three geographic levels considered: international, national and local.

3.16 Public Financial Support

In the case of companies, there is a decrease in the proportion of companies that have never benefited from any public support, from 94.8% to 82.8%. It is also important to note that only 5 companies and 3 creators reported having benefited from any public support (Fig. 9).

The range of public support used has broadened, revealing a general increase in all cases, going from 2.7% in 2016 to 3.4% for companies in 2020.

From the data, it is possible to see that the number of creators who have never benefited from public support has increased since the previous study (from 62.5% to 78.6%). They also show a preference for access to university support (7.1%, a fact that was not mentioned in the previous version) and access to support from the QREN (NSRF-National Strategic Reference Framework) (14.3%), replacing support from the MEDIA Mundus program (18.75% in the previous study).

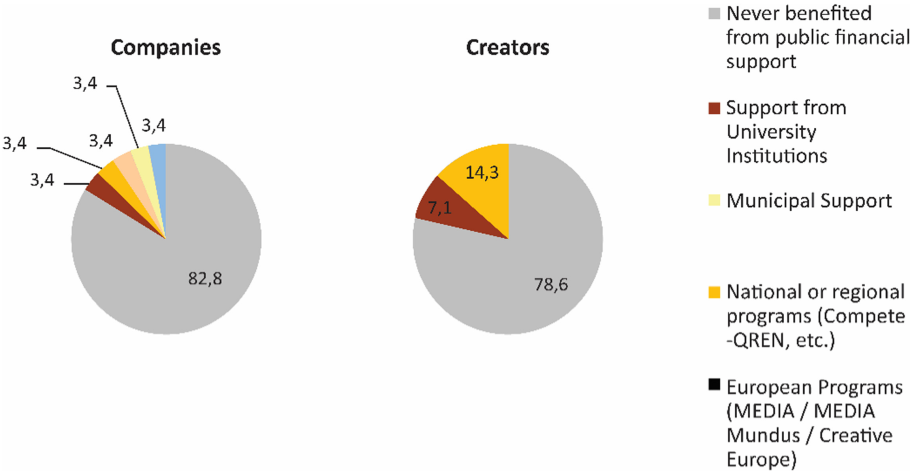

Fig. 9. Public support from which video game companies and creators have benefited. Source: Survey of companies and creators (February 2020).

4 Perspectives on the Future of the Video Game Sector in Portugal

4.1 Perceptions of the Economic and Financial Evolution of the Video Game Sector in Portugal

Both companies and creators showed an extremely positive attitude regarding their confidence in their continuity in the video game sector. This is a clear distinction from the answers obtained in the previous survey, with the largest increase being registered by the creators. Companies that responded they were very confident rose from 32.4% to 82.8% and, among the creators, the increase was from 28.1% to 92.9%. It can then be concluded that, although both perspectives have changed significantly, the creators are the most confident about the future of the sector in Portugal.

4.2 Perception of Agents About the Growth of the Video Game Sector in Portugal

This version of the survey reveals a more positive overview of companies and creators than in the previous one, with regard to the consolidation of the video game sector in their own region, with companies being the most confident in this regard.

A more positive overview can be concluded than in the previous version of the study, namely with regard to the significant rise of companies and creators that are very confident about the consolidation of the video game sector in Portugal (specially creators with 71.4% revealing high confidence, an opinion shared only by 55,2% of surveyed companies). Regarding those agents less confident (low or zero confidence), companies present a more negative view, at 44,8%, while the creators are less than 30% (Fig. 10).

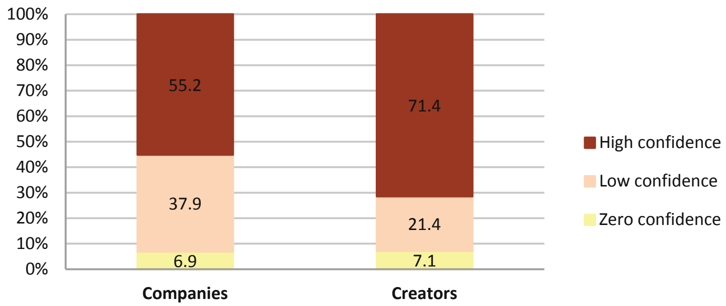

Fig. 10. Degree of confidence of companies and creators regarding Portugal's future consolidation in the video game sector. Source: Survey of companies and creators (February 2020).

5 Conclusion

In comparison to 2016, there are now fewer working companies, which can be explained by the dissolution of some companies, either because they were not viable or because they entered a merger/acquisition processes to gain size. In fact, there was a change in the composition of this economic sector, which was mainly made up of micro-companies in 2016 (less than 10 workers), but now has a majority of small companies (10 to 50 workers). Along with this trend, it should also be noted that the estimates made from the results of this survey indicate that the video game companies operating in Portugal in 2020 employ between 986 and 1270 workers and generate annual revenues of approximately 31 million Euros, a very prominent growth when comparing to the 6–12 million Euros generated by the 658 to 1204 total employees identified in the previous study (Santos et al., 2016). Thus, in Portugal there is a tendency to increase the companies' size in terms of number of employees and the volume of the companies' revenues, indicating that we are moving towards a consolidation of the sector.

Over the past 4 years, this sector has tended toward geographic concentration around the main urban-metropolitan areas in Portugal, which has reinforced troubling territorial asymmetries. Concentrating these activities which are more intensive in knowledge, innovation, technology and creativity severely underpins uneven regional development.

As for employment, it has evolved towards greater qualification and specialization, although Portugal faces difficulties in terms of retaining its most qualified professionals. This is mainly due to the small economic dimension of its projects, so measures to support the sector must include the structuring of transnational networks that promote the insertion of local producers in global value chains, namely through efforts to attract FDI in this sector of activity. Still in relation to employment, strong gender inequality is detected, which may restrict the present and future development of the sector in Portugal, as it will certainly mean limitations in terms of the genres and content of the video games created, as well as the target audiences they are intended for.

In the period from 2016–2020, this sector was responsible for the production of more than 70 video games, mostly for PC and mobile platforms, distributed in the international market, of which about 40% generated profit. These games have been developed despite the lack of external funding sources. In fact, this is one of the greatest obstacles to the growth of companies, and of the sector as a whole. Another major obstacle to the growth and development of the video game industry in Portugal is the lack of public strategies. There are no specific national public policies in Portugal to support the development of the sector, nor is there consistent regional or local support for these activities and promoters.

The results obtained in this study highlight the potential but also the main constraints to the development of this sector in Portugal. So, this study intends to contribute to more suitable public policies and actions to promote the sector's development and internationalization. The important role that public policies play in fostering the development of this activity is recognized internationally. We can mention, for example, Canada's positive experience with certain taxes exemptions to attract foreign investment or the creation of employment-friendly tax schemes (Barnes and Coe, 2011; Pilon and Tremblay 2013; Pottie-Sherman and Lynch 2019). In the case of Portugal, there are still no specific national public policies to support the development of the video game sector, or consistent regional/local support. However, the results of this study lead us to suggest that an ambitious qualitative leap is required, which is dependent on public measures that should prioritize three areas of action. First, an incentive policy should be implemented that reduces the tax burden on wages. Second, there should be support for financing this activity through measures to improve access to credit. Finally, mention should be made of various benefits and supports intended to bolster the country's attractiveness in terms of foreign business investment, such as simplifying administrative procedures or creating contact points with specific services that facilitate the reception of FDI in this sector of activity.

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