

GAMES MONITOR

THE NETHERLANDS **2018**

FULL REPORT



We are honored to present The Games Monitor 2018 edition with the latest facts, figures, trends and developments in the Dutch games industry. The Games Monitor was first published in 2012 and was followed by new research in 2015. Both reports generated a lot of interest into the Dutch games industry's facts and figures, which is why we are pleased to be able to provide you with an update for 2018.

Research was carried out during the fall of 2018 and beginning of 2019 and was conducted in a similar matter to the 2012 and the 2015 Games Monitor. An extensive survey was sent out to over 500 game companies at the beginning of 2019 and over 160 of those companies filled out the survey. A different survey was sent out to all educational institutes in The Netherlands that offer game-related educational programs. After completing our desk research and analyzing the results from both surveys, we organized several round table sessions with experts from the industry and education to discuss our findings. Four of these sessions were organized with a total of 34 participants in Utrecht, Eindhoven, Amsterdam and Groningen. Furthermore, a specific session with approximately 25 incubation participants was held during a regular incubation day at Dutch Game Garden. Therefore, the Games Monitor 2018 includes data from surveys, discussions with professionals and desk research. It was presented on June 27th at INDIGOx, Dutch Game Garden's yearly game showcase and business event.

Chapter 1 introduces the facts and figures of the Dutch games industry. Chapter 2 focuses on the trends, developments and challenges applied game studios face. As entertainment game studios face different challenges and topics, they will be discussed in chapter 3. Chapter 4 focuses on gaining insight into Dutch game education: the programs, courses, students and research activities. In chapter 5 we will present the issues that were discussed most in our industry panels, namely the challenges companies face to achieve growth and the arrangements to finance that growth. Chapter 6 analyzes a number of reports to make an international comparison and to put some international perspective to the developments in the Dutch games industry.

We hope that this version of the Games Monitor again proves useful and will give better insight into the Dutch game industry. We are looking forward to having continued conversations and discussions about the growth and development of the Dutch Games industry. We sincerely thank everybody who has contributed to this Games Monitor!

COLOPHON

TABLE OF CONTENTS

TEXT AND ANALYSIS

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COVER IMAGE

Unexplored 2: The Wayfarer's Legacy
by Ludomotion

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1. MANAGEMENT SUMMARY
2. THE DUTCH GAMES INDUSTRY – FACTS AND FIGURES 2018
3. APPLIED GAME STUDIOS
4. ENTERTAINMENT GAME STUDIOS
5. GAME EDUCATION IN THE NETHERLANDS
6. FINANCE AND GROWTH
7. INTERNATIONAL COMPARISON

APPENDIX – DEFINITION, DATA AND METHODOLOGY



MANAGEMENT SUMMARY GAMES MONITOR 2018

The Games Monitor 2018 presents an overview of the state of affairs for the Dutch video games industry between 2015 and 2018. This is the third edition of a Games Monitor for the Dutch game industry and we've made sure to make comparisons with the previous editions from 2012 and 2015. This overview is put together through desk research and the results of a questionnaire that was sent to approximately 500 companies and returned by 165. Several industry roundtable discussions were organized to verify and analyze the results from the questionnaire.

DEFINITION OF THE GAMES INDUSTRY

The games industry includes all companies whose core activities include at least one of the following processes in the value chain: the development, production, publication, facilitation and/or electronic distribution of electronic games.

As a consequence, many organizations that are actually active in the games industry (clients, educational institutions, research institutes), were excluded from our analyses. They are part of the game ecosystem, but the development of games is not their core business.

The Games Monitor further discerns two domains in the games industry: entertainment games and applied games. Entertainment games entail all electronic games that have entertainment as their primary goal. On the other hand, applied games, also referred to as serious games, aim to inform, educate or train end-users. Applied games are developed and distributed in many sectors, including

education, health, transport, marketing and defense.

COMPANIES, JOBS AND TURNOVER

The Dutch games industry is a fast-growing industry that is becoming more mature and competitive. In the period 2015-2018 growth accelerated to an average job increase of 10 percent per year. Growth in employment and turnover is now exceeding company growth due to scaling up of Dutch game companies and productivity growth. By the end of 2018 the Dutch game industry consisted of 575 companies and 3,850 jobs. Overall, they report a total turnover of approximately € 225-300 million in 2018. Compared with 2015 a larger group of companies reports a turnover of more than €1 million a year.

SIZE OF COMPANIES

The average size of a company remains small at about 7 employees on average. This can be explained by the large number of self-employed and small companies in the games industry and the limited number of large companies. Compared to the Games Monitor 2015 scaling up of game companies is taking place. The number of companies in the middle-sized size categories (companies that employ between 11 and 100 people) has increased with 40 companies.

REGIONAL HIGHLIGHTS

Amsterdam and Utrecht are the two largest game development cities in the Netherlands. Game activities are also concentrated in other cities such as Rotterdam, Eindhoven, and The Hague. Growth of the games industry in the Netherlands is concentrated in the cities of Amsterdam, Utrecht and Eindhoven.

More than 60 percent of the net job growth in 2015-2018 is concentrated in these three cities. Groningen, Haarlem, Leeuwarden and Breda also have many game development companies, but they are often small.

APPLIED VS. ENTERTAINMENT

Compared to the 2015 Games Monitor, the total number of game companies increased with more than 50 companies that focus on entertainment games. This is a continuation of the trend from the previous Games Monitor. From an international perspective, applied games have a strong foothold in the Dutch games industry. But in growth perspective, the number of applied game developers is stabilizing at a total of 114 companies. Both entertainment games and applied games companies show a growth in the number of employees.

APPLIED GAMES

When we look at clients in the applied games industry, healthcare and education are still the largest market segments for applied game companies. Other than maintaining clients in education and healthcare segments, applied game studios expect to see client growth at local/national governments and cultural organizations. The work for hire model remains an often-used business model amongst applied game studios. 62% of all applied games studios reported that they worked on five or more projects in 2018. Over the past three years we have seen some interesting business cases from Dutch applied game studios where they focus for instance on one scalable product or let the game development be part of a larger service for clients. Furthermore, we see more applied

game companies who have expanded their operations abroad.

ENTERTAINMENT GAMES

When comparing the 2015 data with the updated 2018 data, we see a considerable growth of 33% in the amount of entertainment game companies in The Netherlands. Besides new, young companies entering the market, existing game companies are scaling up and hiring more people as well. We also noted a trend that there have been more investments or strategic acquisitions of entertainment game companies.

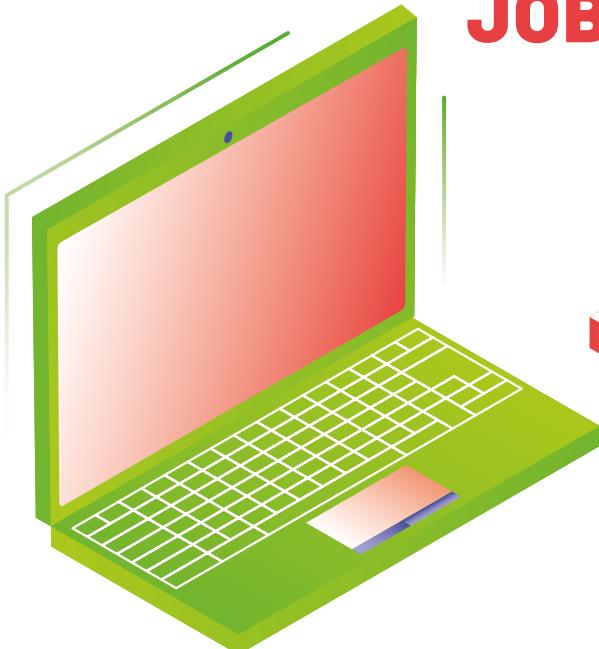
Our survey shows that most entertainment game studios rely on premium monetization or in-app purchases/advertising as their primary source of revenue.

GAME EDUCATION

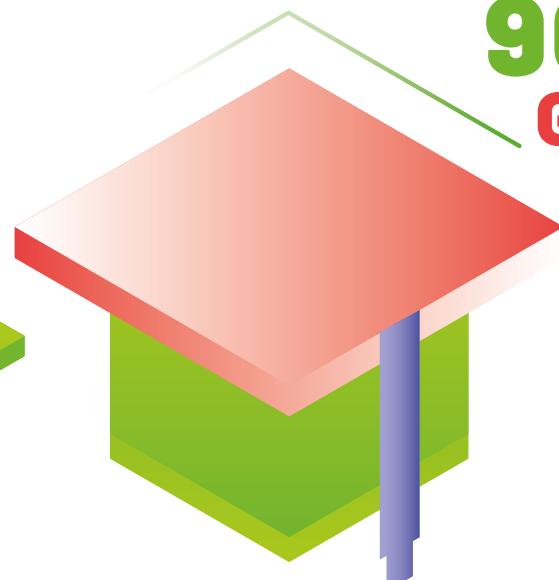
In 2018 the number of game studies has remained stable at 44. However, this amount does not contain the same educational programs as three years ago. There has been an increase in game related programs at research universities (2 more) and at universities for applied sciences (2 more). Notably, though, there has been a decrease in the amount of vocational game studies, from 22 to 18 full-time game studies. Furthermore, there are 23 game related minors and courses. If we look at full-time educational programs that focus exclusively on game development, then the number of programs is 32. The outflow of students that enter the labor market or start their own company was approximately 900 in 2018.

FACTS & FIGURES

**3850
JOBS**



**900+
GRADUATES**



**€ 225-300
MLN REVENUE**



**575
COMPANIES**



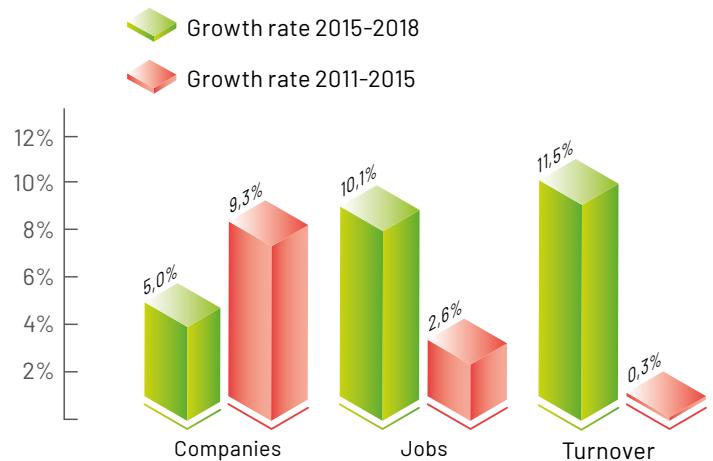
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1. THE DUTCH GAMES INDUSTRY – FACTS AND FIGURES 2018

This chapter gives an overview of developments of the size, segmentation and growth of the Dutch games industry. This chapter is based on desk research into the Dutch games industry supplemented with information from the Games Monitor Survey that was filled in by more than 160 companies. Special attention is given to the comparison with the previous edition of the Games Monitor.

The Dutch games industry is developing into the next growth stage. In 2011-2015 the growth pattern was volatile. The growth of the industry was caused by the net growth of starting and quitting companies. The Games Monitor 2015¹ showed a rapid growth in companies but only limited growth in employment and turnover. In the period 2015-2018 growth accelerated to an average job increase of 10 percent per year. Growth in employment and turnover is now also exceeding company growth (see figure 1.1) due to scaling up of Dutch game companies and productivity growth. Growth not only stems from young and starting game companies, existing game companies scale up and hire more people as well. This leads to new job opportunities for (starting) game professionals.

Figure 1.1. Growth of the Dutch games industry 2015-2018 and 2011-2015 in number of companies, number of jobs and turnover, growth in percent per year.



Source: NEO Observatory, based on data from Dutch Game Garden/LISA/CBS and Games Monitor 2015

Furthermore, the sector is now following the double-digit growth pattern of the global games market. The games industry benefits from the growth of the global games market and the boom of the total economy. Market watchers continue to forecast steady growth rates for the global games market in entertainment games and applied games (e.g. Newzoo²), Allied Market Research (2017)). Market segments with the highest growth forecasts are the market for mobile games and the market for training and simulation games. In 2019, the global entertainment games market will generate revenues of \$152.1 billion, a year-on-year increase of 9.6%. Mobile gaming remains the largest segment, generating 45% of those revenues. For the first time since 2015, the U.S. will overtake China as the largest gaming market by revenues globally with \$36.9 billion this year. Yet Asia-Pacific will remain the #1 region and generate \$72.2 billion in 2019, up +7.6% year on year, accounting for 47% of total global game revenues.

¹ Dutch Game Garden (2016), Games Monitor The Netherlands 2015, Utrecht: Dutch Game Garden
Can be retrieved from: <https://www.dutchgamegarden.nl/project/games-monitor/>

² Newzoo (2019), 2019 Global Games Market Report, www.newzoo.com

³ Allied Market Research (2017), Serious Games Market-Global Opportunity Analysis and Industry Forecast, 2016-2023

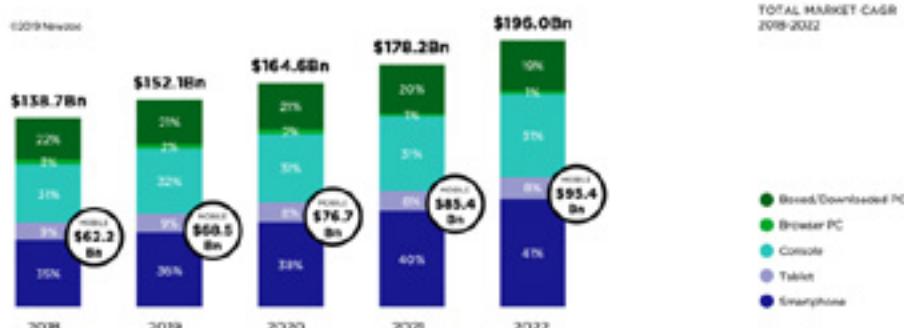


2018-2022 GLOBAL GAMES MARKET

FORECAST PER SEGMENT TOWARD 2022

+9.0%

TOTAL MARKET CAGR
2018-2022



Source: Newzoo | 2019 Global Games Market Report
newzoo.com/globalgamesreport



2019 GLOBAL GAMES MARKET

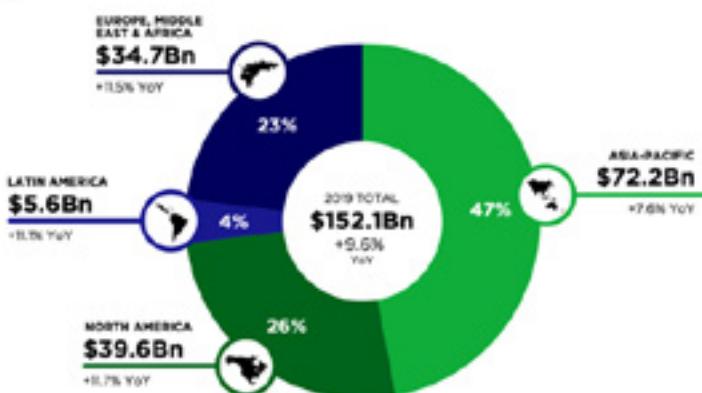
PER REGION WITH YEAR-ON-YEAR GROWTH RATES

48%

of all consumer spending on games in 2019 will come from the U.S. and China

CHINA TOTAL
\$36.5Bn

US TOTAL
\$36.9Bn



Source: Newzoo | 2019 Global Games Market Report
newzoo.com/globalgamesreport

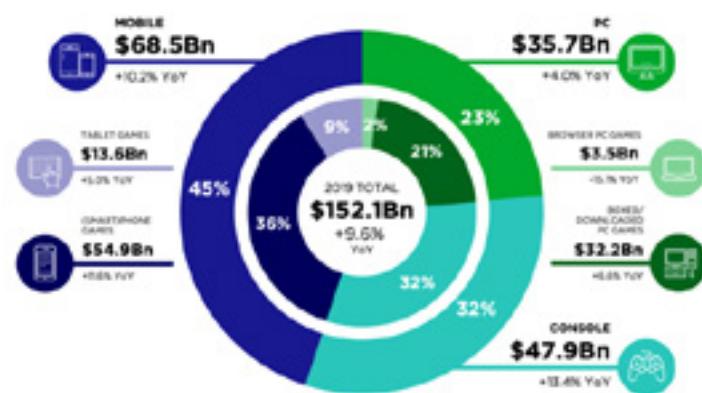


2019 GLOBAL GAMES MARKET

PER DEVICE & SEGMENT WITH YEAR-ON-YEAR GROWTH RATES

\$68.5Bn

Mobile game revenues in 2019 will account for 45% of the global market.



Source: Newzoo | 2019 Global Games Market Report
newzoo.com/globalgamesreport

Many Dutch game companies succeed in creating a sustainable business or make the difficult transition from a start-up to a scale-up, which is one of the biggest challenges for the Dutch (and European) games ecosystem. Also, internationalization of the sector occurs. More game companies in the Netherlands start international partnerships to increase market access or international game companies start a production location in the Netherlands (mainly in Amsterdam). Besides international partnerships, applied game companies start partnerships with large strategic partners in the Netherlands such as knowledge institutes, marketing agencies, publishers of educational methods or corporate business service providers.

1.1 Facts and figures of the Dutch games industry

This section describes the facts and figures of the Dutch games industry in the economic indicators number of companies, employment and turnover. The Dutch games industry consists of 575 companies and 3,850 jobs in 2018. They report a total turnover of approximately €225-300 million in 2018. The Games Monitor focuses on the direct economic impact of the production of games in the Netherlands. The overall economic and societal impact of games, including indirect impacts and impact from the consumption of games is much higher. Total revenues of entertainment games in the Netherlands for example are estimated to exceed €1.0bn in 2018 (see PwC (2019)). However, most of these revenues are earned abroad. From the supply side, the Dutch games industry hardly benefits from the huge success of Fortnite. Furthermore, consumer taxes and sales and distribution costs take a large share of the revenues from consumer expenditures. This research was conducted using the same definition and methodology as for the Games Monitor 2015 and Games Monitor 2012, taking the databases from Dutch Game Garden as a starting point. A more detailed description of the data and research methodology is provided in the Appendix.



KEY ECONOMIC INDICATORS

The Dutch games industry consists of 575 companies and 3,850 jobs in 2018. They report a total turnover of approximately €225-300 million in 2018. Most game companies, around three-quarter, are primarily active as game developer. They employ in total 2,730 jobs in 2018 and show the highest job growth in 2015-2018 (+ 795 jobs). The dominant position of game development in the value chain for games has increased. Also, the service providers for game developers show a high growth in 2015-2018 with a net growth of 385 jobs. Service providers are specialized companies that help game developers with PR, marketing, app monetization, events and knowledge sharing, and other business services. Additionally, companies that provide game development services, without developing their own games, such as freelance developers for example, are in this group.

Despite the growth of the number of game developers in the Netherlands, publishing and distribution are declining activities in the Netherlands. Both value chain segments lost hundred or more jobs in the period 2015-2018. These activities decrease in the Netherlands because of the dominance of international platforms in the global games market. On top of that, results of the Games Monitor Survey show that many (small) game developers in the Netherlands have a 'do it yourself' mentality and fulfill more roles within the value chain. Due to internationalization, concentration and digitalization developments in the underlying technologies, platforms and business models, game developers can have a direct link to an international platform relatively easily. These companies are less inclined to hire specialized companies for publishing, distribution and/or marketing of their games.

Table 1.1. Key economic indicators of the Dutch Games Industry 2018

Value Chain	Turnover 2018 (in mln euros)	Jobs 2018	Companies 2018	Jobs per company	Job growth ¹ 2015-2018	Company growth ¹ 2015-2018
Game developer	185-230 ²	2730	415	6,6	795	30
Game developer /publisher		290	25	10,9	-35	5
Publisher	5-15 ³	150	25	6,3	-110	0
Distributor		20	10	2,7	-100	-5
Technology suppliers	5-15	140	15	10,1	50	5
Service provider	30-40	520	85	6,1	385	25
NL Games industry	225-300	3850	575	6,7	985	60

Source: NEO Observatory, based on data from Dutch Game Garden/LISA/CBS

Notes:

¹ The 2015 numbers have been adjusted compared to the published results in the Games Monitor 2015. New knowledge of game companies in the Netherlands, including companies that were already active by the end of 2015, have led to increase of jobs in 2015. In addition, a stricter use of the definition of a game company has led to a negative correction of the number of game companies in 2015. This resulted in a net decrease of 150 jobs of the number of jobs in 2015 and a net increase of the number of game companies in 2015 from 455 to 515. Additionally, some game companies were reassigned in the value chain.

² The turnover of Game developers and Game developer/publishers are shown together due to the dominant position of Spil Games in the category Game developer/publisher.

³ The turnover of Publishers and Distributors are shown together due to the small size of distribution activity in the Netherlands

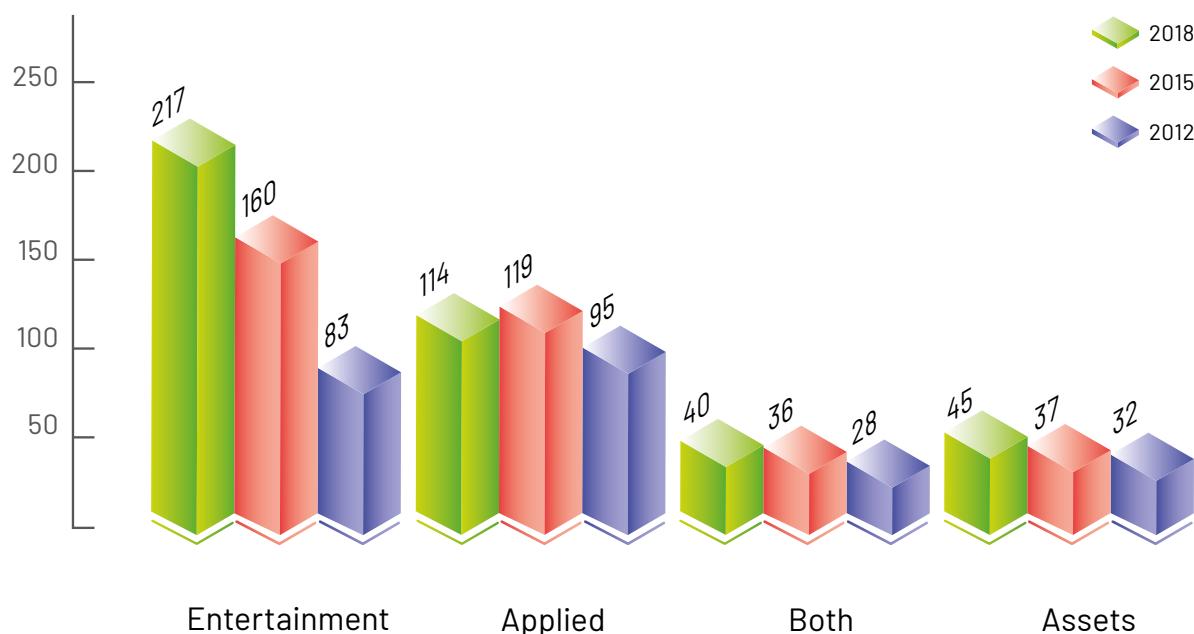
The number of companies in the games industry increased by 60 to a total of 575 companies. There is still a lot of business dynamics in the games industry. In the period 2015–2018, 136 game companies closed for business or merged into a new company, while 185 new game companies started up. Almost one third of the game companies is less than three years old. The new companies are relatively small and account for 660 jobs (17 percent of total jobs).

In the survey we asked companies about the gender distribution of their employees. They reported that 19% of their employees is female. This is an increase compared to 2012 when 13,5% of employees were women.

ENTERTAINMENT VS APPLIED GAMES

The growth of the number of developers of entertainment games in the Netherlands is the main driver of the growth of the Dutch games industry. Compared to the 2015 Games Monitor, the total number of game companies has increased with more than 50 companies that focus on entertainment games. This is a continuation of the trend from the previous Games Monitor. The growth in number of companies and average size of a company leads to a net job growth in entertainment games of 480 jobs in the period 2015–2018. From an international perspective, applied games have a strong foothold in the Dutch games industry. But from a growth perspective, the number of developers of applied games is stabilized at a total of 114 companies. Although the total number of applied games companies is not increasing, the total employment in applied games companies has increased with 180 jobs between 2015 and 2018. This indicates that scaling up is taking place. Specialists in assets for games, like arts, music and audio, profit from the growth in game development and also show an increase in the number of companies and jobs.

Figure 1.2. Number of game developers by specialization in 2018, 2015 and 2012, growth based on number of companies



Source: NEO Observatory, based on data from Dutch Game Garden/LISA and Games Monitor 2015/Games Monitor 2012

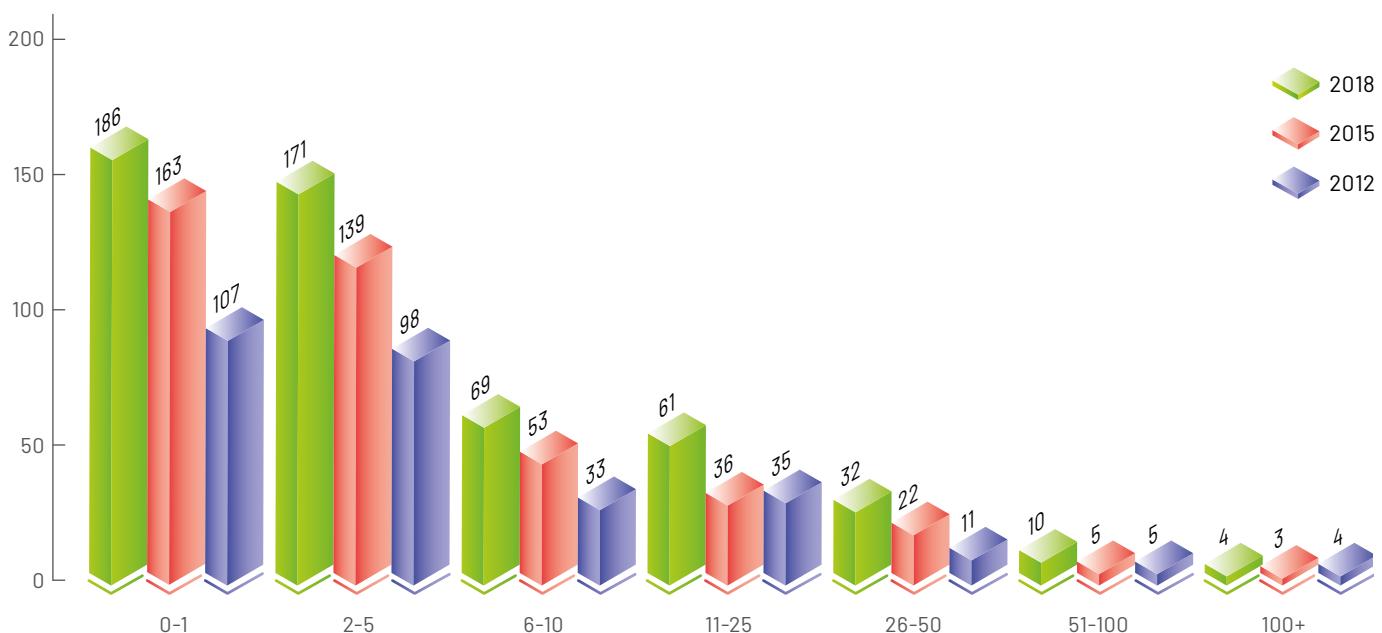
SIZE OF COMPANIES

The average size of a company in the games industry is still relatively small: about 7 employees on average. This can be explained by the large number of self-employed and small companies and the limited number of large game companies. The games industry is a crossover between creative skills and programming skills. This reflects the in-between position of the games industry between creative industries and ICT. ICT firms tend to be larger, creative firms tend to be smaller (see Immovator 2017⁴). The Dutch games industry has substantially more jobs in medium and large sized firms compared to the creative industries.

Compared to the Games Monitor 2015, scaling up of game companies is taking place. The number of companies in the middle-sized size categories (companies that employ between 11 and 100 people) increased with 40 companies. The number of small companies and self-employed further increased as well, but not as rapidly as during the previous period.

⁴ Immovator (2017), Monitor Creatieve Industrie 2016, Stichting Immovator Netwerk.

Figure 1.3. Growth of game companies by firm size in 2011-2015 and 2015-2018



REGIONAL HIGHLIGHTS

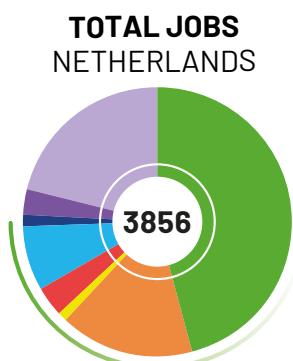
Amsterdam and Utrecht are the two largest game development cities in the Netherlands. Game activities are also concentrated in other cities such as Rotterdam, Eindhoven, and The Hague. Growth of the games industry in the Netherlands is concentrated in the cities of Amsterdam, Utrecht and Eindhoven. More than 60 percent of the net job growth in 2015-2018 is concentrated in these three cities. Amsterdam's games industry is the largest with more than 1,000 jobs divided over 100+ game companies. Guerrilla Games, by far the largest game company in the Netherlands, is located in Amsterdam. Other large game companies in Amsterdam are Newzoo, Force Field, Cliq, CoolGames Studio and IJsfontein. In recent years large international game studios have started a production location in Amsterdam such as PUBG, Perfect World and Blue Mammoth Games.

Utrecht is the second games industry hub of the Netherlands and hosts many medium sized and small game companies, both in entertainment and applied games. The largest game companies in Utrecht are Nixxes, Bright Alley Knowledge & learning, Active Cues,

Ubisoft and Ronimo Games. In comparison with Amsterdam, where game development specializes in entertainment games, game development in Utrecht is more focused on applied games.

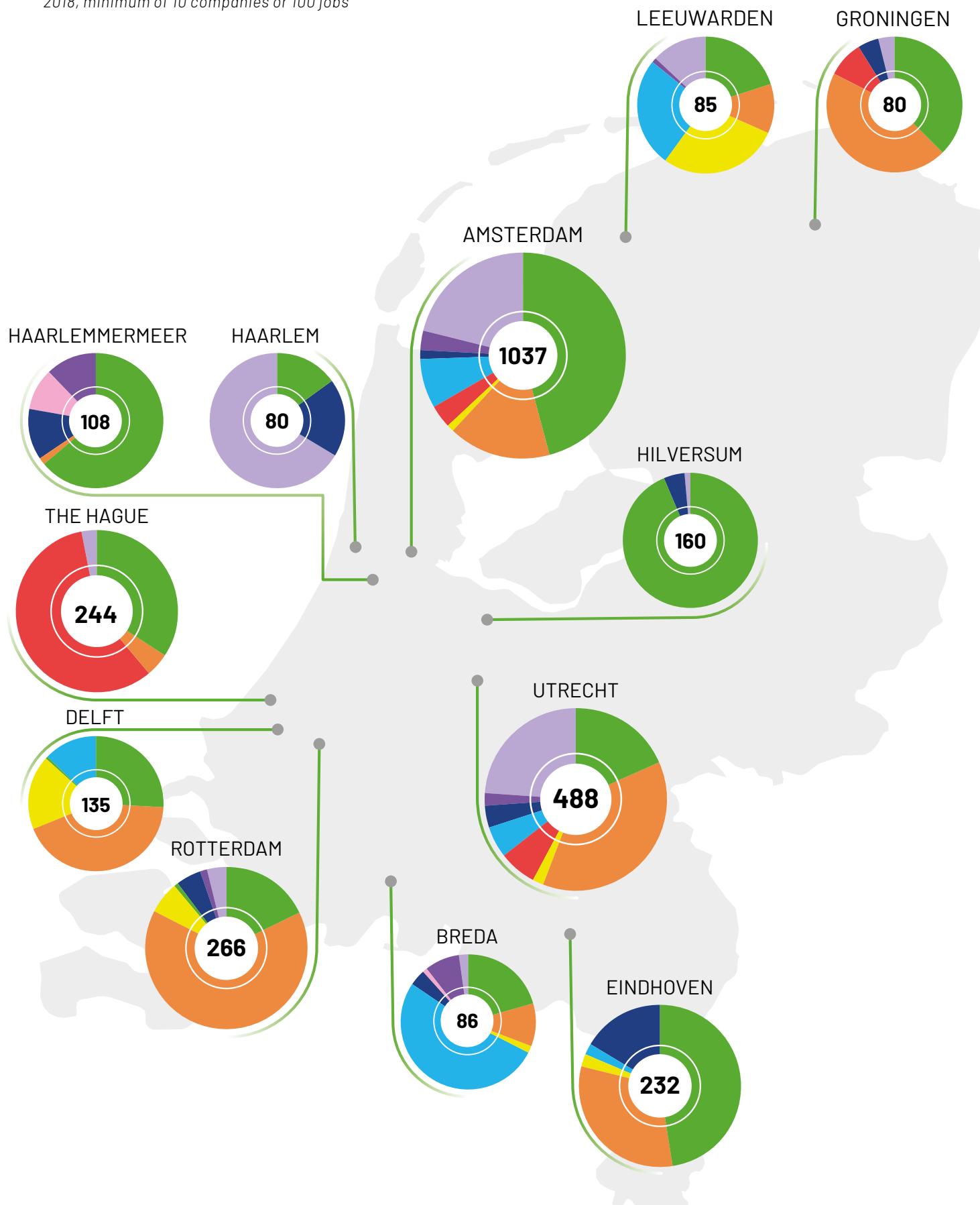
Rotterdam, Eindhoven and The Hague complete the top 5 of Dutch game cities with 200+ jobs in 2018. Rotterdam has a specialization in applied games with companies like VSTEP, &Ranj, Le Quest and dpdk. The Hague hosts Gamepoint and Paladin Studios and in Eindhoven Gamehouse is the largest game company. Hilversum (Spil Games), Delft (XVR Simulation) and Haarlemmermeer (OrangeGames, Electronic Arts Nederland), complete the list of cities with 100+ jobs in the games industry. Based on the number of companies, Groningen, Haarlem, Leeuwarden and Breda are ranked high in the list as well. These cities have many game companies, but smaller ones, often started by graduates from local game education institutions.

City	#Jobs
Amsterdam	1037
Utrecht	486
Rotterdam	266
The Hague	244
Eindhoven	232
Hilversum	160
Delft	135
Haarlemmermeer	108
Breda	86
Leeuwarden	85
Groningen	80
Haarlem	80



- Game Developer - Entertainment
- Game Developer - Applied
- Game Developer - Both
- Game Developer - Assets
- Game Developer / Publisher
- Publisher
- Distributor
- Technology Supplier
- Service Provider

Figure 1.4. Number of jobs in the games industry by city, 2018, minimum of 10 companies or 100 jobs



Source: NEO Observatory, based on data from Dutch Game Garden/LISA

2. APPLIED GAME STUDIOS

This chapter will examine key facts, figures, trends, developments and challenges regarding applied game studios in the Dutch games industry. The applied games sector, in comparison to the entertainment games sector, often works with different business and monetization strategies and therefore faces different (economic) obstacles. This chapter will closely look at the results from our survey and discussions held with companies and educators on this subject.

2.1 Key figures for applied game studios

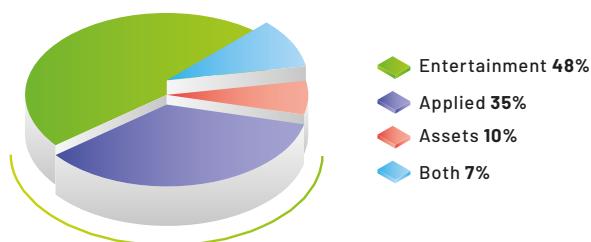
A quarter of all game companies are in some way involved in the development, production or facilitation of electronic applied games. The number of game developers that exclusively focus on applied games is 114 (20% of all companies), down from 119 in 2015. There are an additional 37 game developers that focus on both applied and entertainment games.

We found that younger companies (founded within the last three years) are less interested in developing applied games than older companies. Young people who graduate from

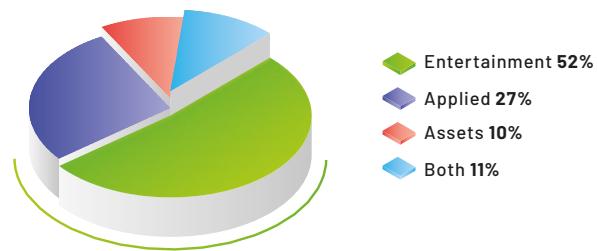
game-related educational programs and start their own companies are often more focused on the entertainment side of the games industry. They start their businesses with the personal ambition to make entertainment games. Additionally, developing applied games often requires more experience as potential clients for applied games often look at references and experiences of earlier commissions. Without a good portfolio, it will be more difficult to get contract work. Moreover, most applied game companies struggle with the problems of validation. For this, most applied game companies do not employ researchers but work together with external researchers on their games. This means a games company has to build a network of relevant researchers and always has to cooperate with external parties when they are interested in developing applied games.

82% of respondents from our survey report that their revenue has either remained stable or has increased in the past three years. 18% of our respondents saw their revenue drop.

Applied vs Entertainment (JOBS)



Applied vs Entertainment (COMPANIES)



2.2 Trends and challenges for applied games

CLIENTS

When we compare client segments to the 2015 Games Monitor, we see that the focus and market orientation for applied game studios hasn't changed much. When we look at clients in the applied games industry, healthcare and education are still the largest market segments for applied game companies. About 81% of all applied game studios report to be working together with clients in these sectors. Educating and teaching are still the most important aims of their products.

The focus on education and health for applied game studios has different reasons, some of them are listed below:

-  Education in general (in The Netherlands) has always focused on more playful forms of education i.e. using quizzes. Applied games fit those forms well and the learning goals of applied games fit education in general very well.
-  Health is a major sector for applied games studios in The Netherlands. The healthcare sector is constantly looking for new tools and ways to save costs and to optimize procedures and education of new staff. On top of that, applied health games can be developed to be used in more than one medical organization because of its scientific basis.

Worldwide, the applied game sector is expected to grow in the coming years. The global serious games market was valued at \$2,731 million in 2016, and is expected to reach \$9,167 million by 2023, growing at a rate of 19.2% from 2017 to 2023.¹ Worldwide the education segment accounts for the largest share of the applied games market.²

Internationally we see more attention for applied games in the health sector. There is an academically published journal called Games for Health and research papers about applied games are published in other journals as well. The Games for Health Europe conference³ is preparing this year for its ninth edition.

Other than maintaining clients in education and healthcare segments, Dutch applied game studios expect to see client growth at local/national governments and cultural organizations. Worldwide market reports on applied games expect to see growth in the corporate sector as well. Among the fastest growing markets are games for training purposes and simulation games.⁴

¹<https://www.alliedmarketresearch.com/serious-games-market>

²<https://www.marketwatch.com/press-release/serious-game-market-2018-global-analysis-opportunities-and-forecast-to-2023-2018-12-18>

³<https://www.gamesforhealtheurope.org/>

⁴<https://www.marketwatch.com/press-release/serious-game-market-2018-global-analysis-opportunities-and-forecast-to-2023-2018-12-18>

Figure 2.2: Applied games market

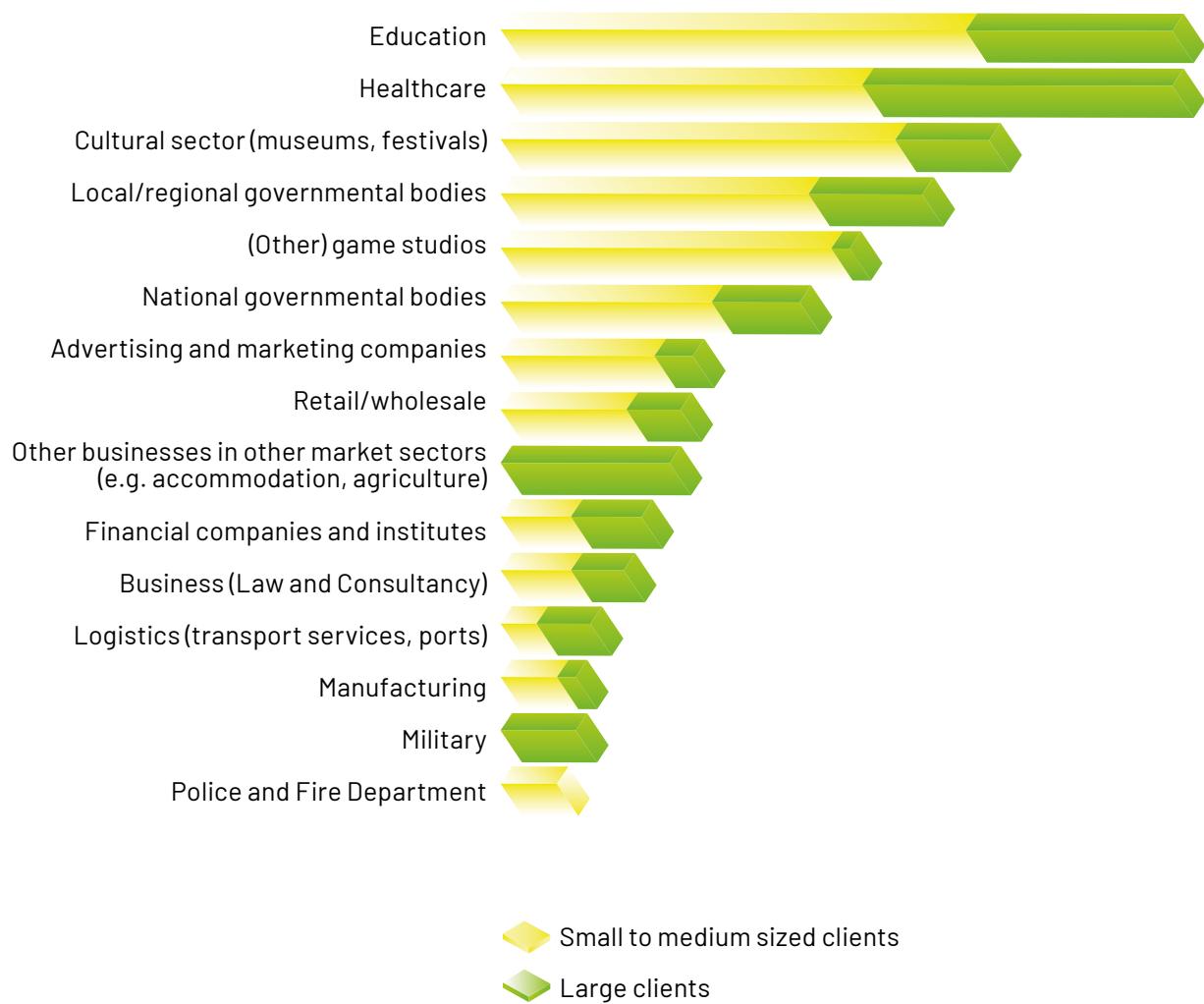
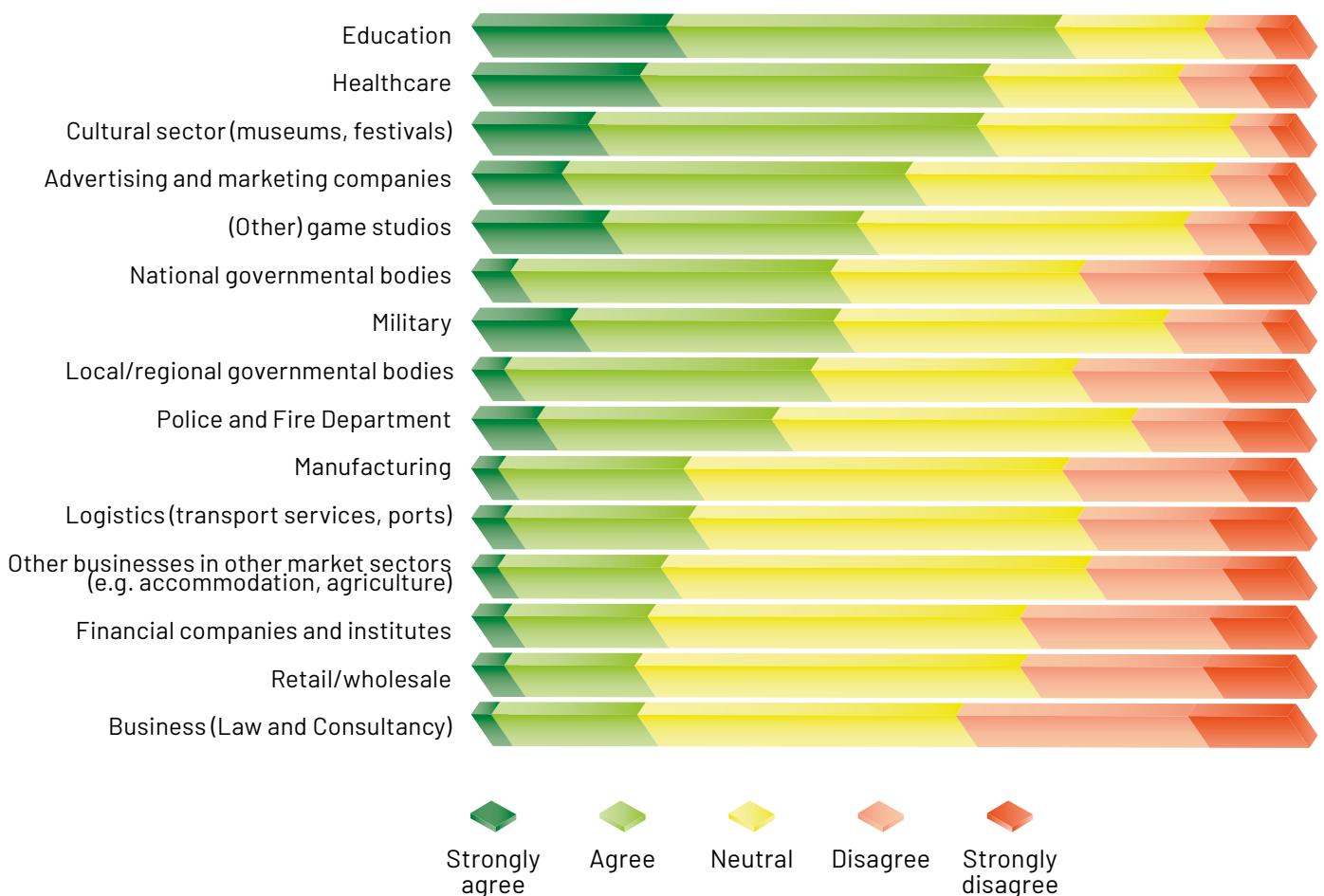


Figure 2.3: Goals of applied games (multiple answers possible)



Figure 2.4: Expected growth in applied game markets



DEVELOPMENT

Applied game studios' games are used in different settings than entertainment games. Therefore, it is not surprising to see that applied game studios develop their games mostly for PC and phones (Android & iOS). None of the applied game studios from our survey develop their games for the Sony PlayStation 4 or Microsoft's Xbox One. Applied game studios also do not develop games for Sony PlayStation VR.

Other Virtual Reality (VR) hardware, however, (Oculus, Vive) are important development platforms. For training goals and simulation exercises, VR is an apt platform. VR gear can be expensive, but businesses are already used

to working with expensive training programs. VR could even save costs for companies as trainings can be given by using one VR game instead of multiple personal trainings. An interesting example of this is the Virtual Human project by Talespin Studios. They have developed a virtual reality simulation program to train soft skills for people that for example work in human relations.⁵

The most used development engine for applied game studios is the Unity engine. Other applied game studios reported that they either use their own engine, HTML5 or the Unreal engine.

Most applied game studios collaborate with research or educational institutes. These collaborations are mostly focused on the development of concepts. Other important collaboration goals include the development of tools and of business models. For example, one interesting collaboration is the U CREATE program.⁶ The program, which is made up of research institutes and several companies from the creative sector including game developers GainPlay Studio and IJsfontein, strives collaboratively to showcase the different possibilities that creative technologies can bring to the healthcare sector.

BUSINESS MODELS

Different products require different strategies. Applied games, in comparison to entertainment games, often work closely with companies in other sectors such as health, education, armed forces and (local) government and design their games around learning, teaching and other social aims for their games. Whereas entertainment games make their money from selling games to

consumers, applied game studios mostly sell their games to commercial companies, governments or non-profit organizations. There are, however, applied game companies that sell directly to consumers. Squala, for example, supplies their learning tools not only to educational institutes but has designed the games in such a way that can be directly used by students at home. The business model is based on subscriptions for the use at home.

The work for hire model remains an often-used business model amongst applied game studios. 62% of all applied games studios in our survey report that they worked on five or more projects in 2018. 78% of these applied game studios, however, noted that they owned the intellectual property (IP) for (less than) four of those projects. Thus, applied game studios worked on more projects in 2018 than that they owned the IP of, meaning that they worked on projects for clients where the client gets the IP and other rights for the project. These one-off projects can be interesting for a portfolio, but do not provide a studio with a chance for a scalable solution.

⁵ <https://www.talespin.company/virtual-human/>
⁶ <https://ucreate-weconnect.nl/creatievecoalitie/>

Sticking primarily to B2B work for hire business models can make companies vulnerable to economic hardships because it requires a strong sense of business and acquisition and is highly dependent on customer demand. For some companies we see high fluctuations in their number of commissions. Likewise, the number of employees and freelancers working for these companies fluctuates as well. Participants of the discussion sessions emphasized building a scalable product over staying a work-for-hire business if applied game companies are interested in growth. Over the past three years we have seen some interesting business cases from Dutch applied game studios and there have even been applied game studios that have completely changed their approach, some examples:

-  IC3D Media focuses primarily on their gamified learning tool 'Knowingo'. Aimed at employers, they offer subscriptions for their learning platform that can help employees keep their knowledge up-to-date. After winning the Accenture Innovation award, they also received an investment of 2 million euros to get ready for international expansion.⁷
-  Game Solutions Lab worked on a game that was part of a large cost-saving project for a health insurance company. This led to a new business model where they use game development as part of large service provisioning to clients.⁸
-  InThere has partnered with an external vocational training company. Therefore, they can combine their sales from their applied games with in-house training programs.⁹

Re-using assets from past projects can limit the amount of costs made during a development process. Some game studios re-use their game design for new products. Some applied game studios for example re-use assets, game mechanics etc. in different games. They might use sprites that look the same and game mechanics that feel the same while still creating a whole new game for their clients.

GROWING PAINS

Games are popular as a medium, but participants of the discussion session noted that applied games need more validation than traditional learning tools and that potential clients often assume that the costs of making a game are lower than what they actually are. Therefore, the expectations from the clients and the reality of development from the studios are sometimes too far apart. Discussion participants also noted that because games are relatively new and niche for some clients, one bad collaboration between a commercial company and an applied game studio can stain the view of applied games as a whole.

⁷ <https://airbridge.nl/news/knowingo-raises-eu-2m-investment-for-international-growth/>

⁸ Warmelink, H.J.G., & de Nie, J.A.L. (2019). Final report long-run gaming start-ups: staying fit in networks. Breda University of Applied Sciences. Can be retrieved from: <https://www.dutchgamegarden.nl/project/how-to-survive-as-a-games-company/>

⁹ Ibid.

INTERNATIONAL EXPANSION

In the 2015 survey, 58% of applied game companies reported that a part of their turnover was realized outside the Netherlands. In our 2018 survey this has grown to 80% of applied game companies. However, for most companies the actual international turnover is quite small, the average international turnover for applied game companies is 25% (as opposed to 76% for entertainment companies). We do see that applied game companies over the past three years have expanded their operations abroad, some examples:

- Grendel Games has supplied their 'Wijk & Waterbattle' to several other European countries and is talking to American partners to supply their VR medical game overseas.¹⁰
- IJsfontein has expanded their operations to Germany where they aim to bring their games on health, safety, security and learning & development to a new client base.
- Active Cues has taken on several franchise holders across several European countries that help them sell and supply their 'Tovertafel' product to new clientele.



¹⁰https://www.lc.nl/friesland/Tim-Laning-van-Grendel-maakt-games-met-een-boodschap-23987335.html?harvest_referrer=https%3A%2F%2Fwww.google.com%2F

3. ENTERTAINMENT GAME STUDIOS

The previous chapter focused on the facts and figures for applied game studios. This chapter will focus on entertainment game studios. The two markets are very different and they both face different challenges. First, we will look at the facts and figures for the entertainment game industry. After that, we will highlight some of the most interesting trends and developments for entertainment game studios in the past three years.

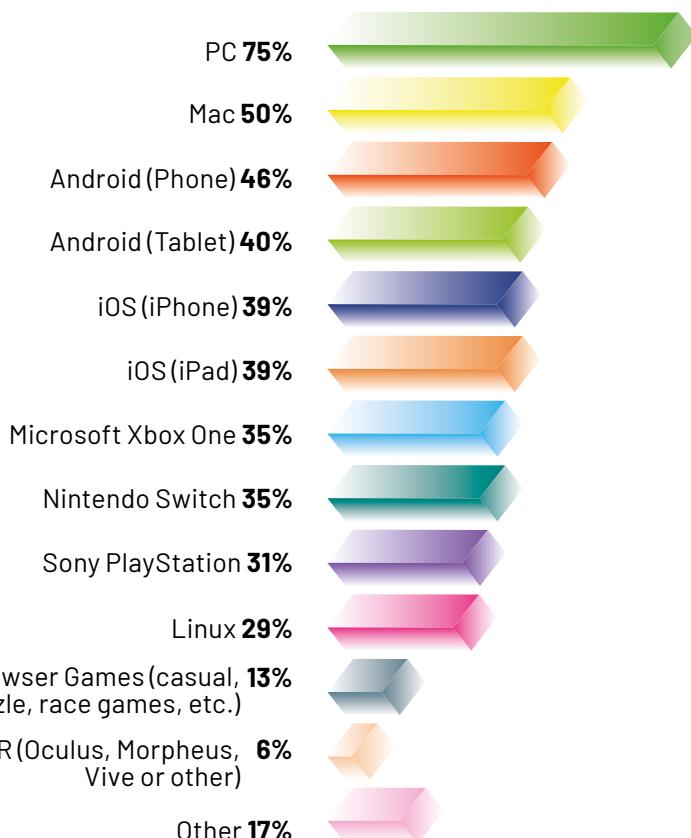
3.1 Key Figures for entertainment game studios

When comparing the 2015 data with the updated 2018 data, we can see considerable growth in the amount of entertainment game companies in The Netherlands. In 2015 we had 160 active entertainment game developers and this number has grown to 214, a growth of 33%.

From 2012-2015 the number of jobs at entertainment game studios remained about the same. The growth in number of companies and average size of a company in 2018 leads to a net growth of 480 jobs for the entertainment game sector. Besides new, young companies entering the market, existing game companies are scaling up and hiring more people as well.

For the 2018 Games Monitor, we also reviewed game companies' active status. Some studios' founders have started new projects or new jobs but without dissolving their old company. This is because some companies, although inactive, still receive revenue from their games (through Steam for example).¹¹ We have seen this more in the past three years than before. This is a result of digital distribution where the longtail of sales is longer than in the past with physical distribution.

Figure 3.1: Development platforms for entertainment game studios (multiple answers possible)



¹¹ See appendix for our review of dormant companies.

3.2 Trends and challenges for entertainment games

DEVELOPMENT AND MARKETING

The PC and mobile platforms are the most popular development platforms for Dutch game studios. PC (75%) and Mac (50%) are the most popular platforms for Dutch entertainment game companies. Closely following are Android and iOS, 46% and 39% respectively. The ‘big three’ consoles: Xbox One (35%), Nintendo Switch (35%), and PlayStation 4 (31%) are represented comparably. Game companies that develop for consoles often have one main console they develop for, they also develop for the other two consoles, although less so. So not every company uses a multi-channel strategy.

A large amount of entertainment game studios reported that they developed their games with the Unity engine (60%). 25% of all entertainment game studios work with their own engine and the rest of the game studios mostly work with HTML5, Unreal, and GameMaker studio.

Figure 3.2: Expected growth in development platforms

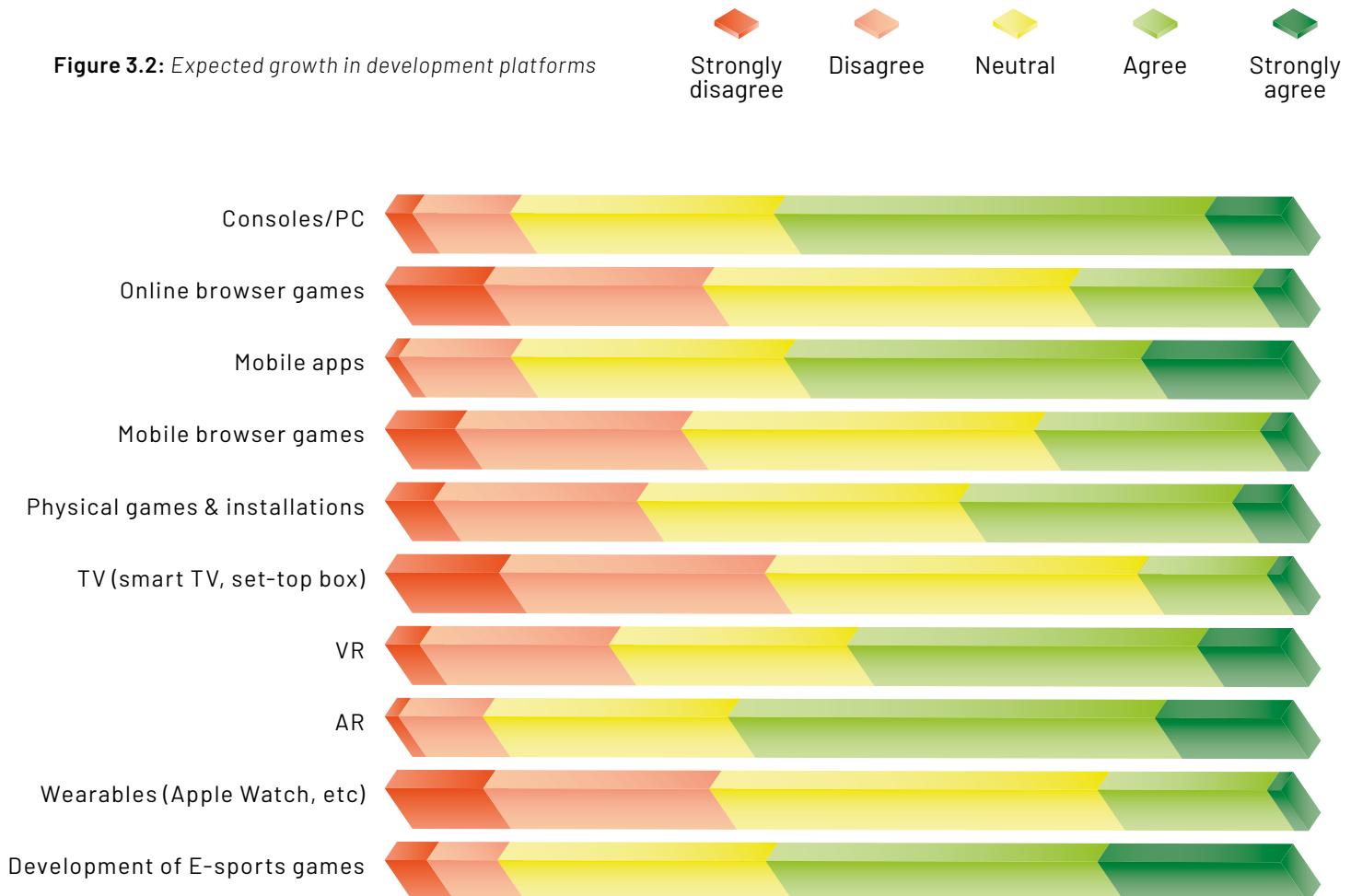
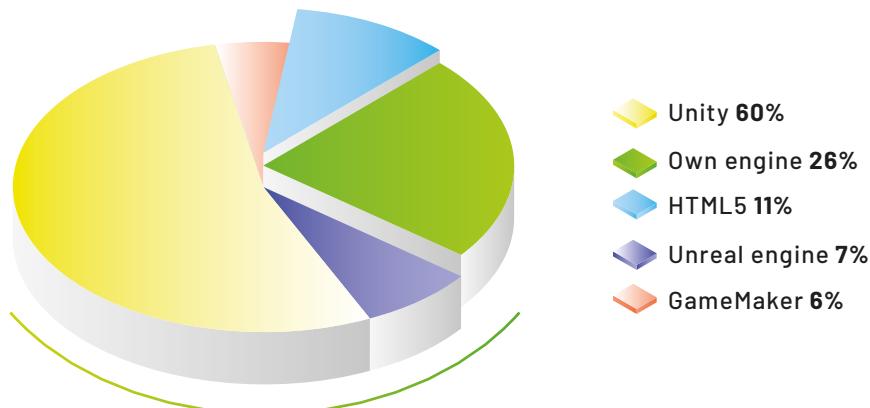


Figure 3.3: Engines used for entertainment game development



It comes as no surprise that Steam is the most popular distribution channel for Dutch game developers (60%) as it holds such an important role in the games industry. When they were asked about their primary distribution channel, 44% of all developers reported Steam as their primary channel. Equally unsurprising, the Google Play store (41%) and Apple's iOS store (37%) serve as important primary distribution channels as well.

Worldwide, developers have started discussing Steam's 30% cut on all games sold through their platform. As a response, Epic Games launched their own games store at the end of 2018, taking a smaller 12% cut from developers. At the time of the survey, the Epic store launched just very recently, so numbers on Dutch game studios using the Epic game store are not available in this report.

Another development the past years is the shift that has taken place in the influencer landscape. A couple of years ago, influencers were interested in playing games for their own benefit to increase their views, clicks and therefore their worth. Nowadays, some influencers get paid by game developers to stream their games.¹² More than half of all entertainment game studios in our survey use influencers to promote their videogame. Only 18% of those influencers are paid for. Discussion participants are interested in the use of influencers but admitted that they do not know how to start cooperating with influencers for their games. Other discussion participants also discussed the benefits of a game being suited for platforms like Twitch and YouTube and its importance in the development process.

MONETIZATION AND BUSINESS MODELS

Monetization has always been a hot topic for entertainment game developers. They have always been creative in finding new business solutions for revenue generation. Relatively new monetization methods like games as a service and different crowdfunding efforts like Patreon have gained more traction over the past three years.

Our survey shows that most entertainment game studios rely on premium monetization or in-app purchases/advertising as their

¹² <https://www.wsj.com/articles/top-live-streamers-get-50-000-an-hour-to-play-new-video-games-online-11558184421>

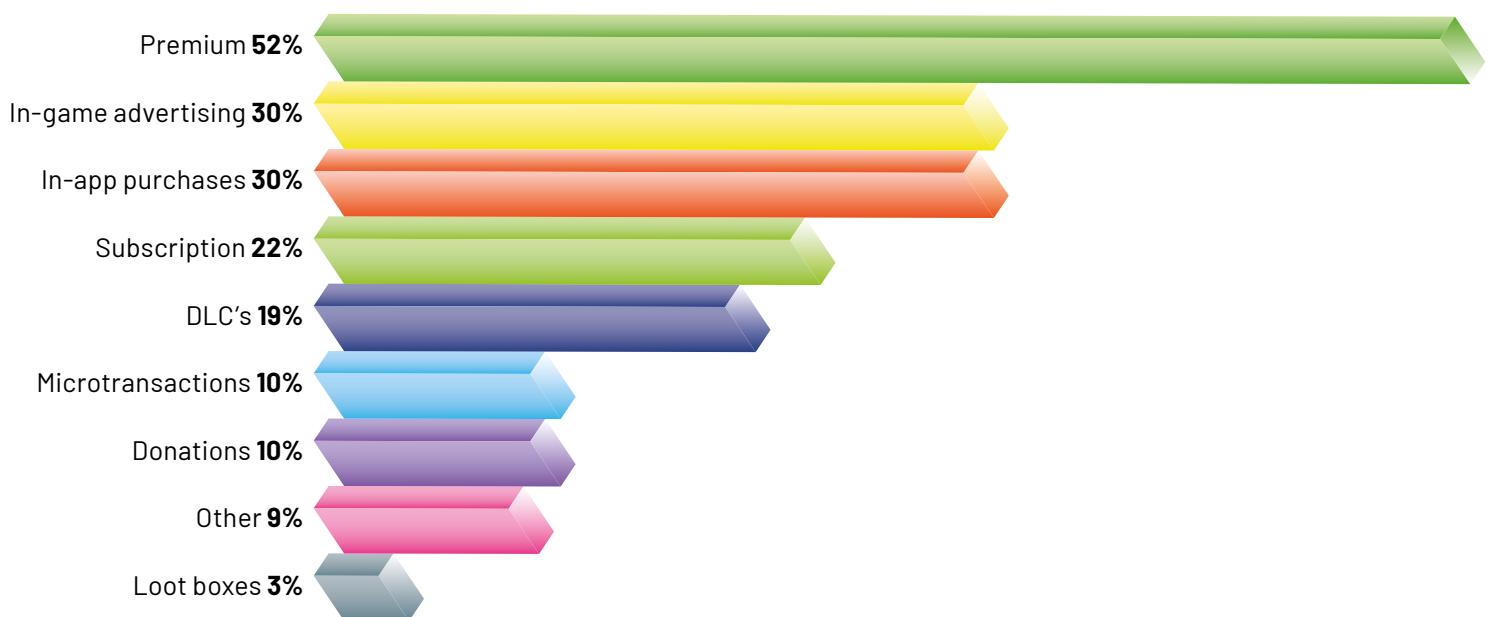
primary source of revenue. Some discussion participants were surprised to see the high amount of companies that use a premium business model and questioned the viability of this monetization strategy in the long term. Other participants also questioned the viability of premium games but explained this by the fact that premium monetization is much easier to implement than in-game advertising or in-game purchases. Game developers would need to hire new employees specifically to focus on the sales aspects.

Other popular monetization strategies include crowdfunding efforts such as Patreon subscriptions or Kickstarter campaigns. Patreon is a relatively new crowdfunding platform on which creators can easily get paid for their creative content (comics, video, music but also games). Fans can pay their favorite creators per month or per

content release. Dutch videogame developer collective Sokpop have used this platform to their advantage to create a new business strategy.¹³ The four developers, who make small to medium-sized games, release a new game every two weeks. This means that every developer works two weeks every two months on a small game which they publish for free to their Patreon subscribers. This is a creative business strategy which helps them to generate money but also test out their game ideas on an audience.

Kickstarter, which celebrates its 10th anniversary this year, has been an important monetization platform for game developers. 20% of our respondents reported that they were interested in using crowdfunding for growing their company. A recent example is Abbey Games, they kickstarted their newest god-game 'Godhood' via the platform.¹⁴

Figure 3.4: Monetization strategies (multiple answers possible)



¹³ <https://control-online.nl/gamesindustrie/2019/03/19/gdc-2019-%e2%80%a2-sokpop-kijkt-terug-op-een-jaar-patreon/>

¹⁴ <https://www.kickstarter.com/projects/abbeygames/godhood>

ETHICAL CONSIDERATIONS

For some games, loot boxes have proven to be a popular monetization strategy. Loot boxes are consumable virtual items that can be redeemed to receive a randomized selection of different virtual items. Items like avatars, customization options for a player's character and, game-changing items like better gear and weapons. However, loot boxes have become notorious for using gambling-like characteristics which might be harmful to young children and teenagers. In our survey only a very small percentage of game companies indicated they use loot boxes as a monetization strategy.

On April 19th of 2018, the Dutch gaming authority (Kansspelautoriteit) released a statement in which they addressed the issues of loot boxes in videogames.¹⁵ In their findings, they concluded that 4 out of 10 of the games with loot boxes that they researched violated Dutch gaming legislation. These games not only used loot boxes to distribute random rewards, but the rewards were also tradable among players. The economic value that this created worried the researchers as it might be addictive. Especially for younger players, this is especially worrisome.

In our 2018 games monitor survey, game developers strongly agreed with the fact that game developers themselves must take active responsibility in protecting their players against predatory loot box practices. More than half of the respondents also agreed that the government must act to regulate loot boxes more strictly. In a press release by the Dutch Games Association in 2019, game developers distanced themselves from predatory loot box practices.¹⁶

PLATFORM GROWTH

When asked in 2018 about expectations for growth on various platforms, Dutch game companies were most positive about growth for mobile games, consoles/pc and Augmented Reality (AR). Dutch game companies were less positive about Virtual Reality (VR) becoming a mainstream platform than they were three years ago, as most developers disagreed that the platform would grow to mainstream success. Discussion participants gave the following reasons for this: VR requires dedicated, expensive hardware such as the PlayStation VR or the HTC Vive and the existing hardware is not user friendly enough. This is why VR, according to them, will stay a niche. Others are somewhat more positive for newer generations of VR devices which will become less expensive and are cordless. Dutch developers in our survey are not excited about working with wearables. In contrast, they were excited for the prospect of eSports games.

¹⁵ <https://kansspelautoriteit.nl/onderwerpen/a-z/loot-boxes/>

¹⁶ https://dutchgamesassociation.nl/news/persbericht_gamesindustrie-statement

ESPORTS

As the definition for this report states, we do not consider eSports teams or eSports event organizers as game companies. The Dutch eSports scene, however, is vibrant and growing. Internationally, Dutch players, managers and teams have entered the professional scene and are performing well. Internationally acclaimed Team Liquid has training facilities in both Los Angeles and Utrecht. Universities have also begun to view eSports more seriously. The Radboud university in Nijmegen, for example, even hands out scholarships for professional eSporters. Across the country there are also several study associations focused on eSports.

The 'Edivisie'¹⁷ is a Dutch eSports competition focused on the latest FIFA games. Unique to this league is the fact that all the eSports players are linked to clubs from the 'Eredivisie', the primary Dutch football division. Every club, like Ajax, PSV and Feyenoord in the Dutch football division chooses a player to represent their club. The players don't play with the respective teams in the game, but rather

with all football players available in the FIFA games. They do this because the goal of the Edivisie is to qualify for the FIFA eWorld Cup, a FIFA game championship. The Edivisie is professionally supported by all the clubs that participate in the Eredivisie and is sponsored by some major brands. It has also earned a spot-on sports or football websites and is reported on by journalists and the matches are even televised.

BLOCKBUSTER SUCCESS: HORIZON: ZERO DAWN

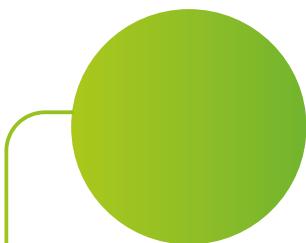
The past years were very successful for the largest Dutch game company Guerrilla Games. At the end of February 2017, they released their PlayStation-exclusive Horizon: Zero Dawn. In November 2017, the studio released their first DLC for this game, called Frozen Wilds. The post-apocalyptic adventure game was received very well, leading to a staggering number of 10 million copies sold at the beginning of 2019 (exclusively on PS4). Horizon: Zero Dawn earned Guerrilla Games numerous awards on national and international level.



¹⁷ <https://www.edivisie.nl/>

GLOBAL GAMES MARKET DATA REVENUES & GAMERS

2018 - 2019 | Global & The Netherlands



GLOBAL

# Gamers (\$ Millions)	PC	MOBILE	CONSOLE	TOTAL	Revenue (\$ Millions)
2018	1,268.5	2,228.7	638.3	2,353.0	138.22
2019	1,304.1	2,359.0	656.2	2,487.1	151.56
CAGR 2018-2022	5.3%	2.4%	2.4%	5.3%	

THE NETHERLANDS

# Gamers (\$ Millions)	PC	MOBILE	CONSOLE	TOTAL	Revenue (\$ Millions)
2018	5.9	6.3	3.6	7.3	0.69
2019	5.8	6.4	3.6	7.4	0.78
CAGR 2018-2022	-2.4%	-2.4%	-1.2%	0.5%	

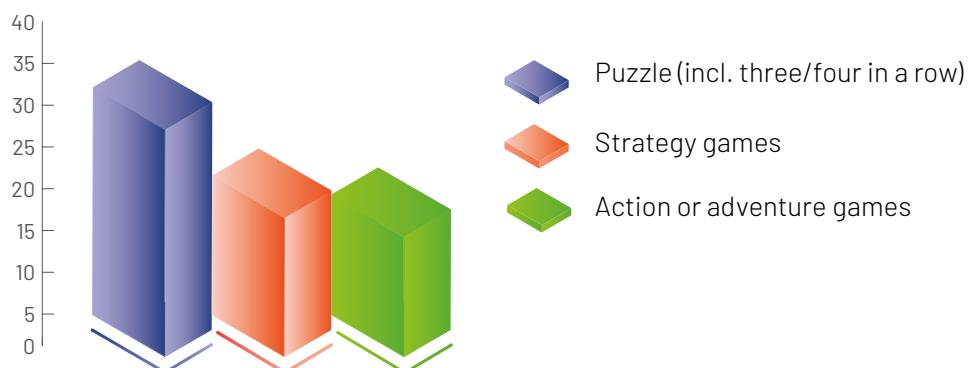
Source: Newzoo, Global Games Market Report

THREE FAVORITE GENRES PER PLATFORM AMONG PLAYERS | THE NETHERLANDS

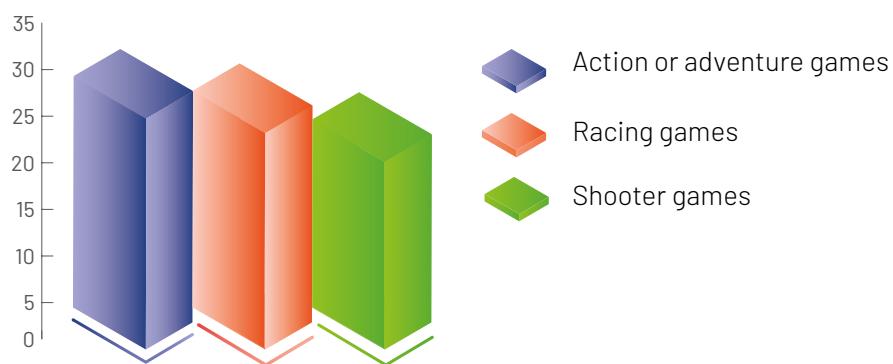
2018 - 2019 | Global & The Netherlands



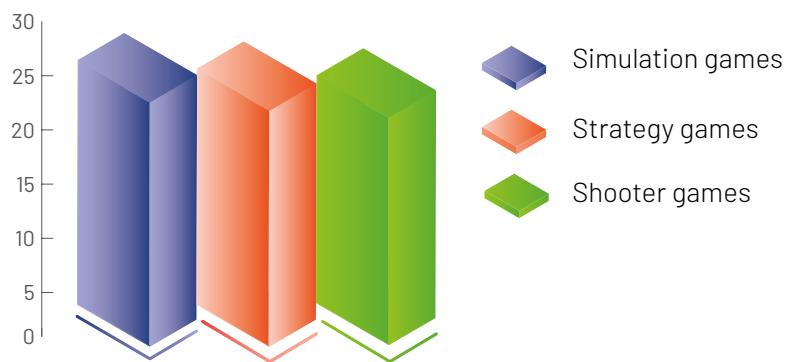
Top Three Favorite genres
on mobile devices*



Top Three Favorite genres
on a game console**



Top Three Favorite genres on a PC
(Boxed or Downloaded)***



Source: Newzoo Consumer Insights 2019 Base: Total online population in the Netherlands aged 10-65 that play games on mobile, PC, or console

4. GAME EDUCATION IN THE NETHERLANDS

For 2018 we have once again gathered information about game-related education in The Netherlands. We sent out a survey to educators to compile the number of students and graduates and we asked them questions about the games industry. In this chapter we will discuss the results from this survey and the discussions we had with our industry panels.

In 2012, the number of educational programs involving games was 35 and in 2015 it had grown to 44. In 2018 the number of game studies has remained stable at 44. However, this amount does not contain the same educational programs as three years ago. There has been an increase in game related programs at research universities (2 more)

and at universities for applied sciences (2 more). Notably, though, there has been a decrease in the amount of vocational game studies, from 22 to 18 full-time game studies. The educational institutes indicated this has happened because of the new national standards for vocational education where most programs decreased in study period from a 4-year to a 3-year program. Educators found that they could not adequately teach students to design games in that short a period.

An important note to make is that we need to distinguish between programs that exclusively offer full-time game education, e.g. game developer or game artist, and programs where games are just a small part of the curriculum. For the latter, this includes studies like Art

Table 4.1: Number of game related educational programs

Game Education by Knowledge institution	Majors, bachelors and Masters	Minors & Courses	Total
Research University	7	9	23
University of Applied Sciences	18	14	33
Vocational Education	19		18
Total	44	23	67
*Excluding partly game focused programs	32		32

Table 4.2: Outflow of game related students

Estimated outflow in 2018 of game* students	Majors, bachelors and Masters
Research University	124
University of Applied Sciences	677
Vocational Education	351
Total	1152
*Excluding partly game focused programs	907

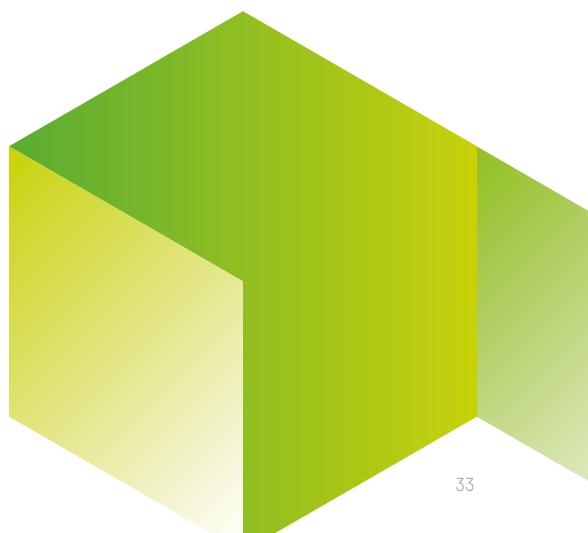
* Looking only at programs fully focused on game-related education
**Outflow is calculated by extracting 70% of the students from vocational education who will continue their education at Universities of Applied Sciences

and Economy and Communication and Multimedia Design. This distinction leads to the conclusion that the total number of game studies that focus exclusively on game education is 32, while the number of game studies that focus on more than just games is 12.

In 2012, there were 9 game related minors and courses and in 2015 they grew to 22. In 2018 we found that there are 23 game related minors and courses. The minors are part of various studies such as Communication and Media Design, ICT studies and other technical studies. These studies teach students some basic principles of game design or gamification and sometimes the students have to develop a game during their course. These students in general do not seek a job within the games industry after they graduate, but they can apply some of the game design principles in their own field of study. Therefore, the number of students that follow game related courses or minors are, opposed to three years ago, not counted towards the total number of game related graduates in The Netherlands.

OUTFLOW OF STUDENTS

The annual outflow of all game students in 2018 was approximately 900. This number consists solely of the number of graduates from full-time game-related educational programs. Similar to three years ago, we also calculated the exact number of graduates by extracting 70% of game students from vocational education from the number as they will most likely continue their studies. There is a growth of approximately 23% in the number of graduates.





Twirlbound Pine

EDUCATION MAP OF THE NETHERLANDS



TOTAL NETHERLANDS



QUALITY AND QUANTITY

Three years ago, there was much discussion about the quality of Dutch game education. There were many experts that encouraged educational institutes to take up more business-orientated courses for game related bachelors and masters.

Half of all respondents in our education survey claimed to offer courses that combine either business, management or entrepreneurship and videogames. Several educators during the discussion sessions mentioned the increase in entrepreneurial focus of their programs. Other educators also mentioned that they are playing a bigger role in making students aware of the limited amount of game jobs available in The Netherlands. However, there still is criticism from the industry about this subject as it came up in almost all discussions about game education we had in the past months. From our survey, we found that an average of 3,5% of all game students starts their own company after graduating. It seems this amount is somewhat lower than a couple of years ago when we saw more direct out-of-school start-ups in our incubation programs.

Furthermore, from our survey we found that most of the game graduates in 2018 found a (full-time) job. Besides finding a full-time job, a lot of students also decided to continue their studies. A small percentage of students either started working as a freelancer or pursued other activities after graduating. According to our survey respondents, only a very small number of graduates do not find a job after graduation.

Some industry experts argued against the amount of game related programs in The Netherlands, stating that there are too many graduates every year. However, it is important to note that we found from our survey and from our discussion sessions that many students also found work in related fields such as other creative industries, communication and media or IT. Some game student graduates also find game-related jobs at companies fall outside of the scope of our definition of a game company, like corporates such as KLM and creative agencies as Media Monks. Trained artists can work as designers for creative or communication companies, while programmers often work at different IT companies. We know that talented programmers are acquired by IT companies before they even graduate. While this already occurs for some years for students from (applied) science universities, this is now also the case for programmers at vocational level.

GAME RESEARCH

One of the key problem areas with interns that industry experts pointed out is the fact that they are mostly being taught to work in a single engine, for example Unity. Experts emphasized the fact that to become a successful programmer it is important to be able to have a basic understanding of and to write code in different programming languages. Some educational institutes also faced problems with their students finding internships, citing the limited number of internships available as the primary problem and also the requirements the games industry has. Industry experts on the one hand acknowledged that they had become more critical in assessing interns (through their portfolios) and giving them an internship over the past three years. On the other hand, the requirements from some schools have also become more demanding.

As games play an increasingly important role in our society, they have also become of more importance as research objects. The Utrecht Centre for Game Research, for example, is an interdisciplinary research center that focuses on serious (applied) gaming and playful interaction¹. Larger research groups can also be found at Breda University of Applied Sciences², HKU³, Fontys⁴, University of Amsterdam⁵ for example. The Open University is lead partner for the European funded project RAGE – Realizing an Applied Gaming Ecosystem⁶. In other institutes games are being researched from a broader perspective, for example behavioral sciences or creative industries.

Applied game studios sometimes collaborate with research institutes to for example develop business models, tools and concepts. In the past few years we have also seen that some of those PhD graduates are (co)founding their own game company. Active Cues' CEO Hester Anderiesen-Le Riche developed the Tovertafel product during her promotion at the Technical University Delft in collaboration with game company Monobanda⁷. Other examples are:

Joris Dormans who got a PhD at the University of Amsterdam on procedural game design (machinations) and now runs game studio Ludomotion; Menno van Pelt-Deen is involved in several companies and organizations and holds a PhD from Eindhoven University of Technology on games autonomy motivation and education and Teun Aalbers co-founder of Gainplay Studio who got a PhD on lifestyle improvement through e-health including games from the Radboud University in Nijmegen.

¹<https://www.uu.nl/en/research/game-research>

²<https://www.buas.nl/en/research/domains/games>

³<https://www.hku.nl/OnderzoekEnExpertise/InnovatieStudio.htm>

⁴<https://fontys.nl/Innovatie-en-onderzoek/High-Tech-Systems-and-Materials/Fontys-Centre-of-Expertise-HTSM/Over-Serious-Game-Design-and-Technology.htm>

⁵<http://www.amsterdamaus.com/create-it/shared-content/research-groups/play-and-civic-media/play-and-civic-media.html?origin=5lys0t2ETWiyhUFtEXhJPg>

⁶<http://rageproject.eu/>

⁷<https://www.tudelft.nl/2017/tu-delft/tovertafel-brengt-mensen-met-dementie-in-beweging/>

5. FINANCE AND GROWTH

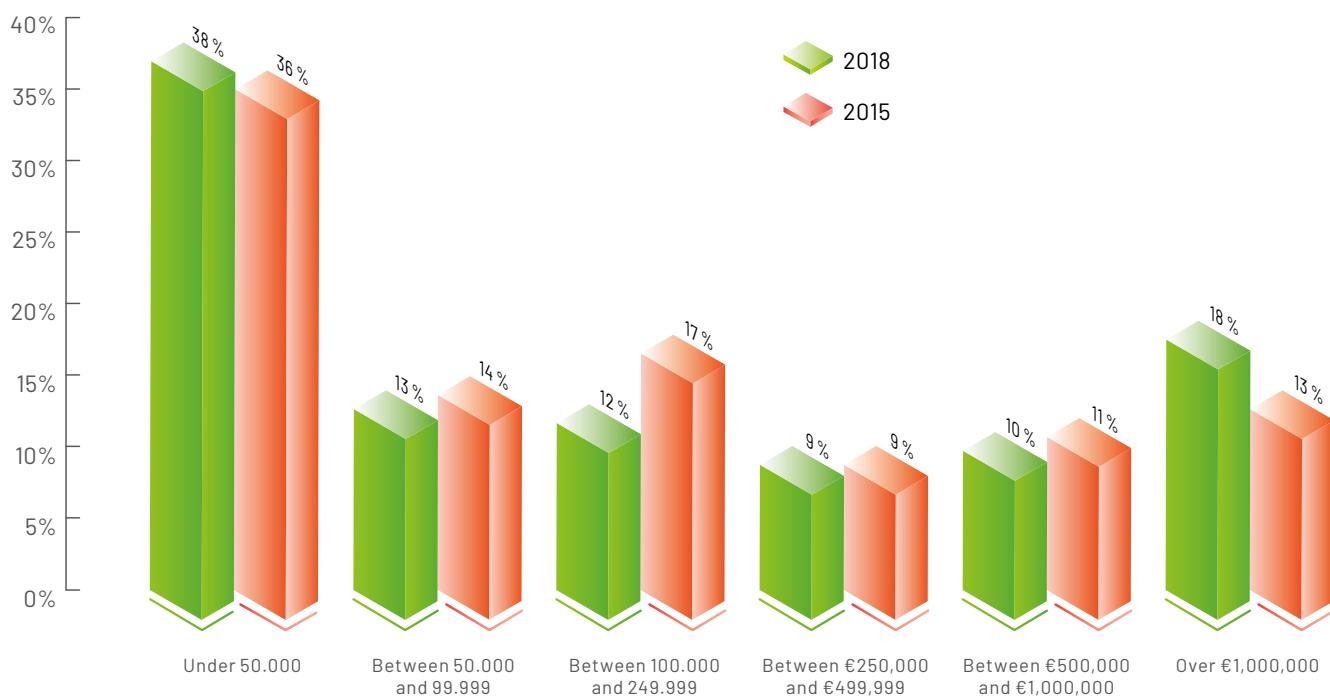
Following our survey and our discussion sessions with industry professionals, finance and growth were the two most debated topics overall. This chapter therefore focuses on finance interest, possibilities and the constant challenge for game companies to try and grow their companies. First, we will discuss some key facts and figures regarding games industry financing. Then, we will describe some general challenges, obstacles and concerns for growing a game company.

FINANCE AND INVESTMENT

As the previous chapters have shown, the games industry is a dynamic sector with many start-ups but with many veteran companies as well. In the past three years we have seen more companies scale up their business. There are now 40 companies extra compared to 2015 with more than 10 employees. Start-ups and more experienced companies face different challenges and might have different ideas about financing and growing their companies.

In our facts and figures chapter, we reported a total turnover of approximately €225–300 million in 2018 in the Dutch games industry. From our survey, we focused on the turnover distribution between companies and found a shift from 2015–2018 in different revenue segments. Since the number of respondents is higher in the 2018 survey, there is an increase in the actual number of companies in all categories, in the figure we present the distribution over the different categories. First, we see that the amount of companies that make less than 50.000 euros has grown. This is unsurprising as the number of companies has risen over the past three years and most new companies are still in this category. The largest increase we find in the over 1.000.000 euro's category. In actual numbers there is a doubling of the amount of companies in this category. This corresponds with the overall growth of the turnover. We also asked about profit as we did three years ago. We see there is a growth in profit as well, but not as significant as in revenues.

Figure 5.1: Distribution of yearly revenue for 2015 and 2018



When we discussed this with our industry experts, we reached the conclusion that most companies invest in the growth of their companies and therefore do not report (a growth) of profit. Also, for tax reasons, companies try to keep their profit as low as possible.

Most Dutch game companies are interested in growth (78%). Three years ago, Dutch game companies were equally interested in growth. Preferably by autonomous growth, accessing new markets and collaborating with other companies.

For 2018, autonomous growth was by far the largest preference (81%). 36% of all companies were interested in entering new markets and 40% of all companies were interested in collaboration with other companies.

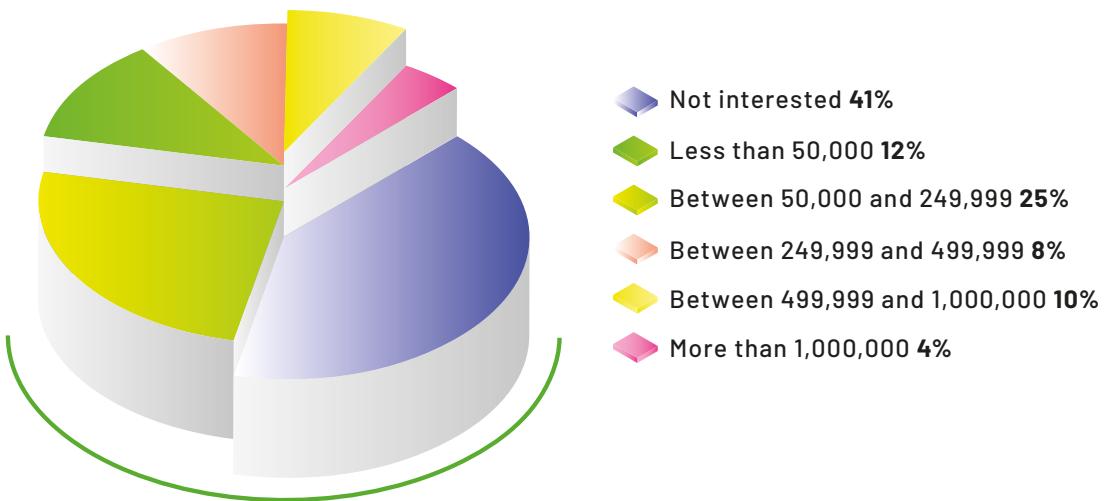
When we look at financing interest, we see that most game companies are interested in growing their companies via own means. Venture capital, subsidies and publisher investments were the next three most interesting investment opportunities for game companies. All of them score higher than 3 years ago.

In contrast to entertainment studios, applied game studios were hardly interested in financing their growth through publishers. This can be explained by the fact that applied game studios operate by selling their products to different businesses instead of selling a game to the public. Applied game studios were, however, more interested in venture capital and subsidies than entertainment companies.

Figure 5.2: Type of funding to finance growth



Figure 5.3: Required investment amounts



In our survey, we asked our respondents what kind of investment amounts they would be interested in. A large amount of game studios was not interested at all in an investment opportunity. 37% of companies interested in investment indicated a required investment amount of less than 50.000 to 250.000 euros. Only 22% of all game companies were interested in more than 250.000 euros investment. In general, the amounts required are modest.

STARTING VS. ESTABLISHED COMPANIES

When we look at the difference between starting and older established companies, we find some interesting things. For the purpose of this research starting companies are the ones who started out in the past three years since our previous Games Monitor edition.

87% of all starting companies were interested in growing their company. In terms of financing interest, starting companies were most interested in growing via own means (80%) but also in using venture capital (40%) as an investment opportunity. Starting companies were also interested in financing through crowdfunding, publishing and subsidies (34%).

Discussion participants noted that for start-ups it is often more difficult to receive outside investments because they do not have an extensive portfolio yet, which means that it is more difficult for them to convince investors to invest in their company or their project. It requires a different set of skills as well and a team member who can spend a sufficient amount of time on this process.

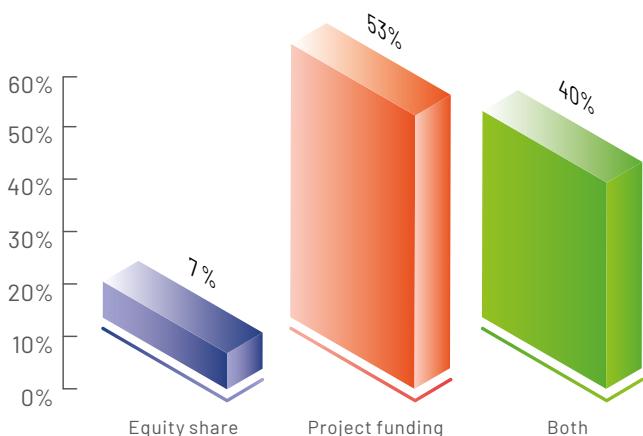
74% of all established companies were interested in growing their companies. They were mostly interested in growing via own means (87%). Established companies were also more interested in financing through venture capital (38%), publishers (27%) and subsidies (36%). So, when comparing older and younger companies, it turns out that established companies are more interested in outside investment and might have more experience applying for subsidies, explaining the increased interest.

The amount of projected investment needed by start-ups companies is low. 30% was not interested in attaining in a private investor or a fund at all. 15% was interested in attaining less than 50.000 euros and 46% was interested in an amount between 50.000 and 250.000 euros. Only 6% was interested in more than 250.000 euros for their game or company.

Established companies were even less interested in an outside investment (47%). However, the amount that they were interested in was higher. 29% was interested in an amount between 50.000 euros and up until 250.000 euros and 23% of established companies were interested in an investing amount of more than 250.000 euros.

When asked about the type of arrangement for external funding they would agree to most companies would be interested in project funding where revenue is shared. Some companies were also interested in an equity share. A large group is open to either kind of agreement.

Figure 5.4: Type of investment



¹<https://www.paradoxinteractive.com/en/paradox-interactive-acquires-triumph-studios/>

²<https://www.talespin.company/sticky-studios-joins-talespin/>

³<https://www.pocketgamer.biz/news/66196/force-field-series-a-one-million-euros/>

⁴<https://www.investormatch.nl/nieuws/1401-bb-capital-investeert-in-gameontwikkelaar-sparkling-society/>

⁵<https://www.emerce.nl/wire/gumption-lanceert-newbird-digital-agency-helder-perspectief>

⁶<https://newzoo.com/news/advance-acquires-majority-stake-in-games-and-esports-analytics-firm-newzoo/>

⁷<https://www.emerce.nl/wire/leerplatform-knowingo-haalt-2-miljoen-investering-binnen-internationale-expansie>

⁸<https://venturebeat.com/2019/01/23/gameye-raises-1-6-million-to-minimize-delays-in-multiplayer-games/>

INVESTMENT OPPORTUNITIES

In the previous Games Monitor we mentioned a few partnerships emerging between game companies and strategic and financial partners. This trend seems to continue as we see more investments being reported in news media. In 2015 we saw most developments in this regard for applied game companies, but the past few years we saw investments occurring in entertainment game companies as well. Some examples:

- In 2017 Triumph Studios (established in 1997) was acquired by Swedish game publisher Paradox Interactive.¹
- That same year Sticky Studios Utrecht was acquired by Talespin in Los Angeles and operates from Utrecht and LA offices.²
- Also, in 2017 ForceField obtained around 1 million euros in series A investment to continue development on a wide portfolio of games especially in VR.³
- In 2018 BB Capital took a majority stake in Sparkling Society.⁴
- Qlvr was acquired by Gumption and first became Newbird and later Liftov.⁵
- In 2018 Blue Giraffe was acquired by Gamehouse.
- The US based Advance (Wired, Reddit) took a majority stake in Amsterdam based game market intelligence company NEWZOO in the fall of 2018.⁶
- Knowingo managed to attract investments to ensure their growth.⁷
- Applied game company SharkMark attracted investments from three parties in 2018.
- Early in 2019 Gameye raised \$1,6 million for its business of creating matchmaking services for multiplayer online games.⁸

These developments show a rising willingness of Dutch game companies to think bigger and seek partners to assist in growth and stability.

GROWTH: TRENDS AND CHALLENGES

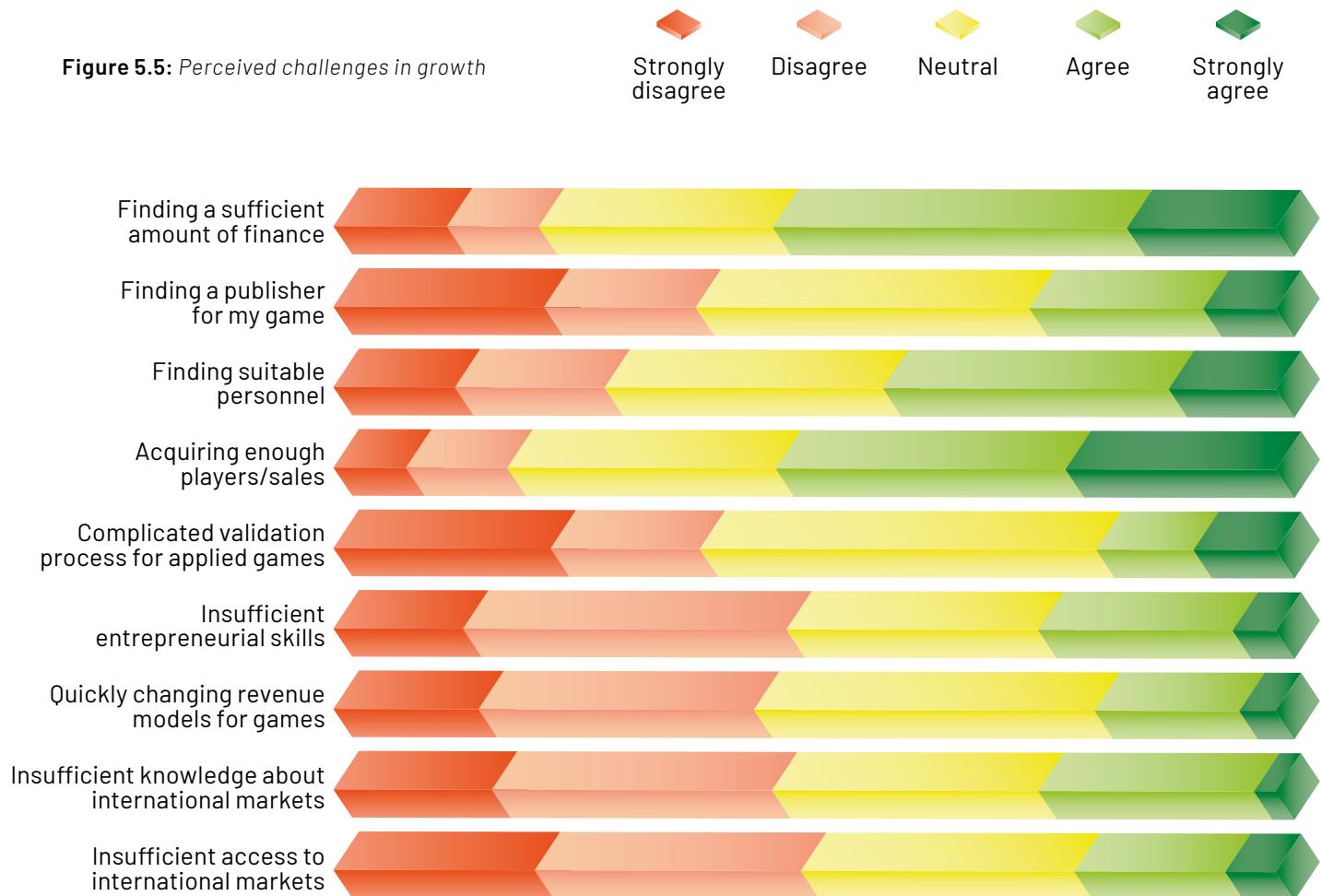
The biggest challenges for both applied and entertainment game studios were finding enough players/sales, acquiring sufficient funds and acquiring suitable personnel. Furthermore, for applied game studios an additional challenge is the complicated validation processes required for their games. This is similar to three years ago, when the same challenges were identified.

Even though there was a lot of interest in investment opportunities such as venture capital, subsidies or publisher connections, discussion participants noted that there is a lack of investors for the games industry in The Netherlands and that the disappearance of the Game Fund has not aided the game companies' interest in subsidies for their games.⁹

When asked about the search for qualified personnel, discussion participants noted that the problem of finding talented personnel has mostly to do with the lack of programming expertise of graduates and the fact that talented programmers often get offers from bigger (IT) companies with better terms of employment. Additionally, discussion participants thought that a lot of talented graduates move abroad.

Discussion sessions also highlighted the fact that there is not enough free-to-play game knowledge in the Netherlands and therefore not enough companies that can try and grow those business models. The exchange of information between game companies could help grow this segment in the Dutch games industry.

Figure 5.5: Perceived challenges in growth



Some discussion participants also mentioned that they had less interest in growth as it would mean that they would have to take more risks. So, companies were not opposed to growth per se, but they were opposed to the idea of having to take more risks like increasing their personnel or taking investments to get there. Some discussion participants also thought that this was a key difference between The Netherlands and other countries with successful games industries like Sweden, Finland and the United States.

Game developers are less interested in sharing equity as it means that they must give away ownership of their own product and/or company. Also, investors are often looking for products with a low risk, high reward possibility.

Finally, the Dutch video game industry has not reached a full circle yet, where entrepreneurs have realized successful exits and are investing back into the industry in new start-ups or scale-ups.



⁹ Game companies can now apply their games at the subsidy for the creative industries as part of the "Deelregeling digitale cultuur". (https://stimuleringsfonds.nl/nl/subsidies/deelregeling_digitaal_cultuur/)

6. INTERNATIONAL COMPARISON

We have looked at and analyzed international data and reports on the games industry from several countries. Different reports use different methodologies to compile their data, which makes it hard to accurately and fairly compare their reports to ours. We have created a general overview in the form of a table to provide a comparison between The Netherlands and other countries.

Compared to our first Games Monitor in 2012 we now see more countries where specific research into their national games industry has been carried out. Often with

questionnaires or interviews to back up the general data. Some countries have yearly reports, while others have recently delivered their first edition. Often, a national games association is at the basis of the report. Many country reports use data from Dutch company Newzoo for their introduction to the global games industry market.

When we look at the reports in detail, we find some interesting statements about the countries' respective games industry. There are several differences but also similarities:

Country	Game companies	Game developers	Jobs	Turnover*	Population**	Year**	Source
The Netherlands	575	415	3850	225-300	17.1	2018	Games Monitor 2018
Belgium ¹	72			43	11.5	2017	Flega
Finland ²		220	3200	2100	5.5	2018	Neogames
Sweden ³	343		5338	1526	10	2017	Dataspelsbranschen (Game Developer index)
Denmark ⁴	186		1009	123	5.7	2016	Interactive Denmark
Norway ⁵	180		599	39		2016	Virke Prodsentforeningen
Germany ⁶	524		11705	3300	82	2018	Verband der Deutschen Games-Branche (Game.de)
United Kingdom ⁷	2175		16450	4453	67	2017	UKIE
Spain ⁸	455	120	6300	713	46.4	2017	Desarrollo España de Videojuegos (DEV)
France ⁹		832			65	2017	Le Syndicat National du jeu vidéo (SNJV)
Italy ¹⁰	127		1100		59.2	2018	AESVI
Poland ¹¹	331				30	2017	Polish Gamer Observatory
Slovakia ¹²	35		580	42	5.4	2018	Slovak Game Developers Association
US ¹³¹⁴	2858	2322	220000	43,400	328.9	2018	Entertainment Software Association
Canada ¹⁵	596		21700	3700	37	2017	Entertainment Software Association

*In millions, rounded up

** In millions

SIMILARITIES BETWEEN THE NETHERLANDS AND OTHER COUNTRIES

- More European game companies are focusing on VR & AR applications than three years ago.
- A lot of countries have one or more 'top dogs' revenue-wise (e.g. CD Projekt Red in Poland, Supercell in Finland, Guerrilla Games in The Netherlands)
- Small companies do not generate a lot of revenue. Spain, Sweden, Belgium and The Netherlands reported that small companies employ the most employees (percentage-wise) but do not generate a lot of revenue.
- In most countries the numbers for female employees, range between 14 and 20%.
- In several countries local or regional clusters and incubators (hubs) are playing an essential role in the development of the game industry ecosystem.

DIFFERENCES BETWEEN THE NETHERLANDS AND OTHER COUNTRIES

- When we look at countries with a similar amount of companies (Germany, Spain, Canada), we see that The Netherlands has significantly less jobs to offer and lower revenues as well.
- The Netherlands are still focused heavily on applied games, more so than other countries. In France we could find an official figure of around 20% of developers in their 2017-2018 survey, who reported to develop serious games. In Spain 24% of developers (also) make serious games.
- In several countries some game companies are listed on the stock market, while the Netherlands has studios who a part of listed companies (Guerrilla Games is part of Sony, Triumph studios was sold by Swedish company Paradox) no individual company in the Netherlands is publicly owned.

¹ <http://www.flega.be/download/>, Flega Report 2016

² <http://www.neogames.fi/wp-content/uploads/2019/04/FGIR-2018-Report.pdf>

³ <https://dataspelsbranschen.se/game-developer-index>

⁴ Game Developer Index 2018 (see note 3) and (In Danish) http://interactivedenmark.dk/wp-content/uploads/2018/10/Danske-Indholdsproducenter-i-tal-2018_0.pdf

⁵ Game Developer Index 2018 (see note 3) and (In Norwegian) <https://www.virke.no/globalassets/spillanalysen2017.pdf>

⁶ <https://www.game.de/anzahl-der-beschaeftigten-in-der-deutschen-games-branche-stabilisiert-sich-nach-rueckgang/>

⁷ <https://ukie.org.uk/sites/default/files/UK%20Games%20Industry%20Fact%20Sheet%20October%202018.pdf>

⁸ <http://www.dev.org.es/images/stories/docs/Libro%20Blanco%20DEV%202018.pdf>

⁹ http://snjv.org/wp-content/uploads/2017/11/SNJV_barometre_2017_18.pdf

¹⁰ http://www.aesvi.it/cms/view.php?dir_pk=902&cms_pk=2975

¹¹ http://polishgamers.com/upload/raport_A4_EN_2017_web.pdf

¹² http://press.sgda.sk/SGDA_Katalog.pdf

¹³ <https://www.theesa.com/industry/economic-growth/>

¹⁴ <https://www.invenglobal.com/articles/1086/us-video-game-industry-expands-to-50-states-supporting-220000-jobs-and-304-billion-in-revenue>

¹⁵ <http://theesa.ca/resources/essential-facts/>



OTHER INTERESTING OBSERVATIONS:

- The Finnish games industry has seen a period of stabilization the past few years. There was a modest decline of revenues and in the number of game studios. Less new games were released in the past year, a clear outcome of the game-as-a-service model. The number of non-Finnish employees has increased.
- The Swedish games industry has grown rapidly in the past years, both in revenues and in employees. In 2017 alone a staggering amount of more than 1000 new employees were counted. 2017 and 2018 saw a lot of investments and acquisitions on the Swedish market. Mojang (owned by Microsoft) represents around 30% of revenues. King (owned by Activision Blizzard) is one of the largest employers of game development in Sweden and has produced the most downloaded game (Candy Crush) in the App Store ever with over three billion downloads. EA Dice was Sweden foremost games employer with over 700 employees by the end of 2017.
- The German games industry seems to be in a stabilization period as well. Revenues have declined slightly, and the number of companies has not grown.
- Belgium is set to receive a tax shelter for their games sector, which might help grow their industry.
- Some countries have trouble finding qualified personnel and see an increase in the number of foreign employees in game companies.



7. APPENDIX – THE DEFINITION OF THE GAMES INDUSTRY, DATA AND METHODOLOGY

The Appendix gives a description of the data and methodology used to obtain the results. It includes the definition of the games industry, the selection criteria for the companies included in the games industry, and the data sources and methodology used concerning companies, employment and turnover figures. The data methodology for the results of the number of game students and educational programs is also given.

The Games Monitor focuses on the direct economic impact of the *production* of games in the Netherlands. This research was conducted using the same definition and methodology as for the Games Monitor 2012¹ and Games Monitor 2015². For this edition extra search efforts were made using several new data sources that will result in a more complete picture of the Dutch games industry. Also, the selection procedure of game companies and linkage with official data sources of the Chamber of Commerce and LISA have been improved based on experiences from previous editions. An additional check has been carried out for the current activity of a game company. A game company from the Games Monitor 2015 can still exist but be a dormant company now, with no regular activities to develop new games and few assets. It only exists to collect (small) revenues from existing games. For these dormant companies, we've reviewed their activities. When they only have a Chamber of Commerce notice, but do not actively update their website or social media and founders are working elsewhere, we have judged them to

have ceased to exist. When the founders have a job elsewhere but if they still promote their games or have even launched an updated version or port to a new platform during their spare time, we have counted them as active companies but not as active places of employment.

DEFINITION AND SCOPE OF THE GAMES INDUSTRY

This research was conducted using the same definition and methodology as for the Games Monitor 2012 and Games Monitor 2015. In order to measure the economic impact of the games industry, a clear definition of a game company is needed. The OECD³ (2009) defines the content and media industry as: "Content and media industries [who] are engaged in the production, publishing and/or electronic distribution of content products".

Similarly, the games industry includes "companies that develop, produce, distribute and facilitate electronic games".⁴ Using the above-mentioned criteria, the games industry is defined as:

"All companies whose core activities include at least one of the following processes in the value chain: the development, production, publication, facilitation and/or electronic distribution of electronic games."

The Games Monitor discerns two domains in game development: entertainment games and applied games. Entertainment games entails all electronic games that have entertainment as the primary goal. Applied games, also referred to as serious games, aim to inform, educate or train end-users. Applied games are developed and distributed in many sectors,

¹ Koops, O. & T. Bachet (2012). De Nederlandse gamesindustrie in cijfers, In: Taskforce Innovatie Utrecht (2012) – Games Monitor 2012, Utrecht.
Can be retrieved from: <https://www.dutchgamegarden.nl/project/games-monitor/>

² Dutch Game Garden (2016), Games Monitor The Netherlands 2015, Utrecht: Dutch Game Garden
Can be retrieved from: <https://www.dutchgamegarden.nl/project/games-monitor/>

³ OECD. (2009). Guide to measuring the information society. OECD/OCDE

⁴ Games Monitor 2012

including education, health, transport, marketing and armed forces.

Besides game development, the following types of actors are involved in the value chain of the games industry: game technology supplier, service provider, publisher and distributor (see Games Monitor 2012 for a more extensive description of the value chain). Publishers should also publish games from other game developers. Service providers do not (or barely) develop their own games but provide development or other services to game developers.

The current definition will be referred to as the *core definition* of the games industry because it selects a part, and not all, of the economic impacts of games activity in the Netherlands. Game development must be one of the core activities of the company in order to be part of the games industry. The selection criteria for 'core activity' is that a significant part (at least one quarter/one third) of the company's turnover and/or strategic focus should be on the development, production, publication, facilitation and/or electronic distribution of electronic games.

As a consequence, many organizations that are actually active in the applied games industry (clients, corporates, educational institutions, research institutes), were excluded from our analyses. Clients can range from advertising agencies, hospitals and the Ministry of Defense to several public authorities and training agencies. In many cases, these companies are often already active in domains for applied games, such as education, health, and marketing. They use games or elements of games to enrich their product portfolio ('gamification') but are not a game company. In such cases, game development is not the core business of the company, but a secondary activity. For example, an advertising company may develop a campaign on social media that includes

a game. The same goes for a museum that develops an online game for its visitors or Philips that employs an in-house group of game developers for their health product portfolio.

Another example is e-learning. E-learning companies have learning and education as a primary goal and use games as part of the e-learning concept. The e-learning concept however is not an electronic game. Also, some large organizations, such as the Ministry of Defense and TNO, cannot be defined as a game company, although their in-house game development activity can be significantly large.

To conclude, the core definition of the games industry captures the economic impact of companies that include games as their core business. The overall economic and societal impact of games, however, is expected to be much higher. Games and game mechanics are also adopted by companies who are active in all kinds of sectors such as education, health, finance, public safety, and energy. For these companies, games are not their core business, but they do add value to their bottom line.

Impact measurement resulting from these crossovers are not included in this study nor are indirect impacts on the ecosystem of the games industry (customers, suppliers, institutional stakeholders etc.). In order to capture the true and full economic impact of the game industry, future studies should ideally include the effects of in-house game activity in other sectors and the more indirect societal impacts of gamification.

NUMBER OF COMPANIES

A first selection of game companies was provided via Dutch Game Garden networks and the list of game companies of the Games Monitor 2015. A more in-depth selection was carried out by including companies from other

sources (newspaper articles, Startup Delta.org, Chamber of Commerce, NVPI members, VRbedrijf.nl, Indiedatabase, Dutch Game Industry Directory, Google and LinkedIn). All companies have been cross-referenced with data from the Chamber of Commerce and verified by NEO Observatory and Dutch Game Garden on the selection criteria. The idea and application of the selection criteria has been carried out more refined thanks to the learning experiences from the previous two editions of the Games Monitor. This has led to the exclusion of about ten percent of the game companies of the Games Monitor 2015.

The final list of companies is the result of a strict selection process. Currently, there are a total of 575 game companies in the Netherlands in 2018.

The selection criteria led to the exclusion of the following:

- The development and publication of physical and analog games such as board and card games.
- Companies whose core activity is not the development of games. To be included in the criteria, a company must have a significant part (at least one quarter/one third) of the company's turnover and/or strategic focus should be from the development, production, publication, facilitation and/or distribution of electronic games.
- Companies should be registered at the Chamber of Commerce and have economic activity of substance. For example, dormant companies, student projects and hobby projects are excluded.
- Parties involved in applied games such as clients, educational institutions and research institutions. Clients can range from advertising agencies and the Ministry of Defense to several public authorities and training agencies. For

these companies, game development is not a core activity but a secondary activity that strengthens their core activity. They often employ people, sometimes even a department, that is primarily occupied with applied games. On a company scale however, it is an in-house and/or ad hoc activity. Therefore, these companies have been excluded from the core definition of the games industry.

- Public authorities and governments, and educational institutions do operate in the games industry ecosystem but have not been included in the core definition of the games industry.
- For the distribution of electronic (digital) games, retail is explicitly left out of the core definition.
- Online gambling is not considered an electronic (digital) game.

EMPLOYMENT

Employment figures concerning game companies are based on two main sources: the LISA register of employment and the Games Monitor 2018 Survey.

LISA is the most comprehensive national database including information about Dutch companies and branches who employ personnel. The database is closely linked to the Chamber of Commerce and includes information on the location (address) and socio-economic data (employment by type of economic activity) of companies.

We have used the latest available data from the LISA register of May 2018. Some game companies (18 in total) have separate entities and/or more than one location in the LISA register. These entities are all counted as separate game companies and have been included in the total tally. This has led to the addition of 34 companies to the list. Also, in 40 game companies no substantial labor activity takes place (at least one person should work

for 12 or more hours per week in the company). These companies have zero employment.

In case the two main sources do not provide consistent information, the company website and/or LinkedIn is checked for information on employment. For all game companies, information was found in one of these sources. In contrast to the Games Monitor 2015, no additional estimations for employment are needed.

TURNOVER

The turnover of game companies is estimated based upon the employment information and data of turnover per employee from CBS National Accounts of similar industries (IT, Advertising agencies, publishing, wholesale and design) and the Games Monitor 2018 survey.

The Games Monitor 2018 survey was used to verify the results. A total of 140 companies (representing 24 percent of the total number of game companies) filled in the turnover questions of the questionnaire. The results of the survey by firm size and specialization in the value chain are compared with the results of 2015 Games Monitor questionnaire. Due to the limited information from game companies and the high heterogeneity in turnover and profits per company, we have decided to publish the results on turnover in a range.

GAME EDUCATION

Desk research was carried out at the beginning of 2018 by compiling a list of active game-related educational programs in The Netherlands. The desk research was based on the 2015 Games Monitor research efforts and was complemented by new research based on nationwide educational databases and institute websites.

The information and data in the chapter Game education in The Netherlands was based on a survey that was sent out to all educational institutes in The Netherlands with a focus on game-related education. The survey was used to compile the number of game graduates, to collect general information about Dutch game education and to analyze trends and challenges in Dutch game education. The information from the survey about the number of graduates was complemented by nationwide educational databases.





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